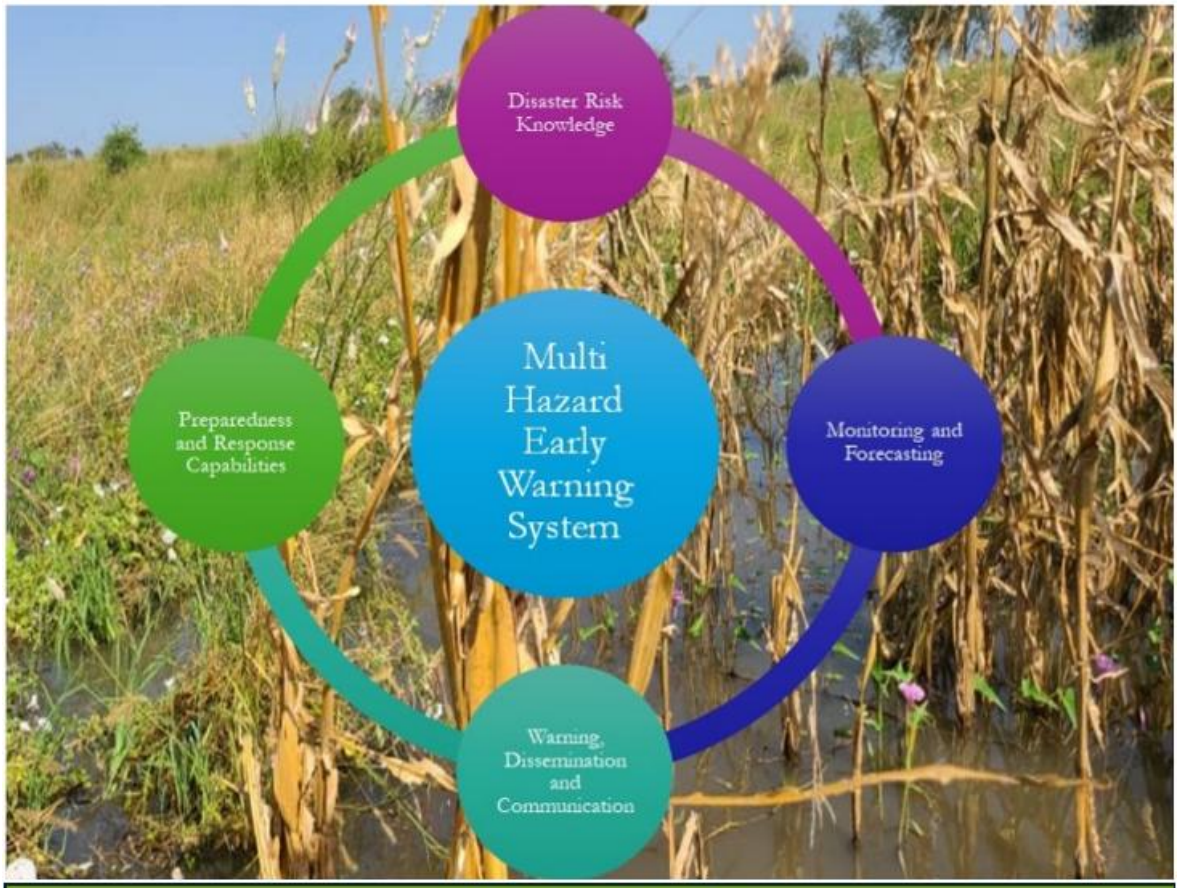
MULTI-HAZARD EARLY WARNING SYSTEM ASSESSMENT AND IMPLEMENTATION PLAN FOR

THRIVE - TRANSFORMING HOUSEHOLD RESILIENCE THROUGH INCLUSIVE ECONOMIC DEVELOPMENT IN SOUTH SUDAN



SUMMARY REPORT

APRIL 2025

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Acronyms

CAFOD	Catholic Agency for Oversees Development
CBEWS	Community-Based Early Warning Systems
CCA	Climate Change Adaptation
CLIMAND	Climate Analysis for Decision-Making
CRMP	Climate Risk Management Plan
DRR	Disaster Risk Reduction
DRRC	Disaster Risk Reduction Committee
EWS	Early Warning System
FEWS NET	Famine Early Warning Systems Network
GIS	Geographic Information System
GDP	Gross Domestic Product
GUN	Greater Upper Nile
HDX	Humanitarian Data Exchange
IASC	Inter-Agency Standing Committee
ICS	Incident Command System
IPC	Integrated Food Security Phase Classification
IPCC	Intergovernmental Panel on Climate Change
MHEWSA	Multi-Hazard Early Warning System Assessment
MODIS	Moderate Resolution Imaging Spectroradiometer
NGO	Non-Governmental Organisation
NOAA	National Meteorological Services and National Oceanic and Atmospheric Administration
SOP	Standard Operating Procedures
SSBC	South Sudan Broadcasting Corporation
SSHARP	South Sudan Humanitarian & Resilience Programme
THRIVE	Transforming Household Resilience Through Inclusive Economic Development in South Sudan
VSF Swiss	Vétérinaires Sans Frontières Suisse

1 ACKNOWLEDGMENT

This Multi-Hazard Early Warning System Assessment for the FCDO-funded THRIVE Programme, a four-year initiative aimed at strengthening community resilience navigating the complexities of conflict and climate change across eight priority counties in Upper Nile, Unity, and Jonglei States. Targeting approximately 120,000 households, THRIVE integrates gender-responsive and inclusive approaches encompassing livelihoods development, market system strengthening, financial inclusion, women's economic empowerment, disaster risk reduction, climate change adaptation, and social cohesion.

This Multi-hazard Early Warning System Assessment was conducted by DUBELIG Development Consulting, an experienced international consulting firm commissioned by CAFOD, the lead consortium agency for THRIVE Output 2, with the funding support of FCDO. Conducted between March 1st and 25th, 2025, the assessment embraced an inclusive methodology, actively engaging THRIVE consortium members, five downstream partners, local stakeholders, government agencies, and, crucially, beneficiary communities.

We extend our profound gratitude to the diverse array of individuals, organizations, and stakeholders whose invaluable contributions were pivotal to the successful completion of this report. Their collective wisdom and dedication to understanding and addressing the critical challenges posed by climate change in this region have been paramount.

We particularly acknowledge the strategic leadership and dedicated coordination of CAFOD team. CAFOD, with long-term and demonstrated experience and expertise in CLDRM, DRR and environmental protection initiatives, successfully led and commissioned the entire MH-EWS assessment process. Furthermore, we deeply appreciate the exceptional professionalism, technical rigor, and meticulous analysis provided by DUBELIG Development Consulting. The expertise and diligence of their team were crucial in delivering a high-quality and comprehensive assessment report.

The active engagement of the THRIVE Consortium members – GOAL, Mercy Corps, and VSF Suisse – alongside their local partners significantly enriched the depth and relevance of this assessment. We also extend our sincere appreciation to the government agencies at the national, state, and county levels for their crucial participation and provision of essential insights, data and policy perspectives.

Crucially, we recognize the invaluable contributions of community leaders, local organizations, and the residents of the eight counties. Their firsthand experiences, traditional knowledge shared through HH surveys, KIIs, and FGDs, provided critical ground-level insights that have shaped the core findings of this report, ensuring its relevance to the lived realities of climate risk in GUN.

Finally, we express our sincere gratitude to FCDO for the generosity of vital funding of the THRIVE Programme. This executive summary report of the MH-EWS Assessment stands as a product of shared knowledge and collective action, providing readers and users with a concise overview of the key findings. We are deeply grateful to all who have contributed and trust that its findings will serve as a vital resource for the THRIVE Project and broader efforts aimed at fostering a functional Early warning system across the GUN Region.

Executive Summary

The THRIVE programme is designed to enhance the resilience of communities facing conflict and climate challenges in the Greater Upper Nile (GUN) region. Over a four-year span, this initiative will focus on eight key counties: Ulang, Renk, Fashoda, and Panyikang in Upper Nile State; Rubkona and Panyijiar in Unity State; and Akobo in Jonglei State. The programme is implemented by GOAL in collaboration with Mercy Corps, CAFOD, and VSF Swiss, alongside local partners. THRIVE will address various strategies, including livelihood development, market system enhancement, financial inclusion, women's economic empowerment, climate change adaptation, and social cohesion initiatives. This report outlines the findings from a Muti-Hazard Early Warning System (MHEWS) study and an Early Warning System Management Plan (EWSMP) conducted by DUBELIG Development Consulting, contracted by CAFOD.

Findings

The MHEWS is vital in the GUN region, serving as a proactive tool for managing risks associated with climate-related hazards such as floods, droughts, violent winds, heatwaves, fires, human disease outbreaks, livestock disease outbreaks, conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance. The study reveals that the state of Early Warning Systems (EWS) and Disaster Risk Management (DRM) in South Sudan faces numerous challenges, including inadequate infrastructure, poor data collection, and insufficient integration of community-based strategies into national DRM frameworks. The findings indicate that a significant portion of respondents, 58.1%, do not have access to crucial climate-related information that would support adaptation and resilience efforts. Only 33.5% reported awareness of climate-smart agricultural practices, while 66.5% were unaware, highlighting a critical gap in knowledge necessary for enhancing food security in a climate-affected region.

Moreover, 67.4% of respondents lack knowledge or skills related to EWS, which poses a barrier to effective disaster preparedness and response. Additionally, only 25.1% believe local health services have sufficient capacity and resources, suggesting that most health facilities are struggling to meet community needs. While 42.2% reported having an EWS in place, 57.8% indicated no such system exists, underscoring a significant gap in community preparedness. Engagement with local government during disasters is minimal; only 29.7% of respondents reported interactions with local authorities, while 70.3% did not. A majority, 85%, believe that local governments lack the capacity and resources to respond effectively to disasters, reflecting widespread skepticism about local governance capabilities. Furthermore, only 18.6% of respondents feel that transport infrastructure is adequately maintained, and 81.4% expressed dissatisfaction with local government performance in managing infrastructure.

Access to alternative shelter is also limited, with only 22.4% of respondents reporting availability, while 33.6% indicated they have alternative water sources during droughts, leaving 66.4% without critical backup resources in times of need. In terms of agricultural resources, only 23.6% confirmed access to fertilizers, seeds, or livestock breeds, indicating that 76.4% lack essential inputs for agricultural productivity. Financial inclusion remains a pressing issue, with 88.1% of respondents without access to bank accounts or community funds, and only 11.9% indicating access to insurance for emergencies, leaving the majority unprotected. Key informants highlighted some of the

insurance products available to the communities as being community savings groups, livestock insurance, social networks[1], **c**rop sharing arrangements and traditional healer support[2].

Overall, at least 45.7% of respondents confirmed that the community does communicate warnings, while a slightly higher percentage, 45.9%, reported that such information is not communicated. Additionally, a smaller segment of the population, comprising 8.4%, expressed uncertainty by responding with "Don't know." This distribution suggests that there is a significant divide in perceptions about warning communication within the community, highlighting potential areas for improvement in information dissemination and clarity. Analysis of warning communication mechanisms reveals a significant reliance on community meetings and announcements, with 86.8% of respondents identifying this as the primary method for disseminating warnings. In contrast, radio and television broadcasts are utilized by 39.8%, while mobile phone alerts, including SMS and WhatsApp, account for 30.8%. Traditional methods, such as drum beating and horn blowing, are used by 31.1%, and word of mouth through local leaders is important for 43.5% of the population. However, less formal methods like posters and banners are the least utilized at 9.0%.

A significant 63% indicated that hazard maps are not available in their communities, and 49.2% reported no vulnerability assessments conducted, suggesting a lack of systematic evaluation to inform disaster preparedness. Community engagement in monitoring climate hazards is low, with only 10.8% of respondents consistently participating in such activities. A concerning 39.4% stated they never engage in monitoring, which may heighten vulnerability to climate impacts. Conversely, 18.8% reported always using indigenous knowledge for hazard prediction, illustrating the value of traditional practices in environmental risk management. At the regional level, 59.3% indicated that there is no disaster preparedness and response plan in their communities. The presence of Civil Protection or Disaster Risk Reduction Committees is limited, with only 32.8% confirming their existence, indicating a gap in structured disaster preparedness mechanisms.

Recommendations

Several actionable recommendations have been proposed to address these challenges. Investing in infrastructure repair and maintenance is crucial, alongside establishing structured EWS training programs for community members. Enhancing access to communication tools, such as radios and mobile devices, will facilitate timely information dissemination. Also critical will be the utilization of the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Strengthening local government capacity is essential for effective disaster management, while creating and empowering DRR Committees at the community level is vital for coordinated preparedness efforts. There is need to recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.

Promoting financial inclusion initiatives will enhance community resilience, and integrating indigenous knowledge into disaster preparedness plans is essential for culturally relevant strategies. Conducting regular vulnerability assessments will help identify risks and inform preparedness initiatives, while enhancing media outreach and education will improve communication about hazards. Lastly, establishing feedback mechanisms will enable community members to voice their

[1] These are informal agreements where community members help each other financially in times of need, relying on social bonds and trust

[2] Informal payment or barter systems for health services provided by traditional healers, often seen as a primary healthcare option.

opinions on warnings and preparedness initiatives, fostering a more resilient and informed population.

2 Introduction

2.1 Background

2.1.1 Overview of the THRIVE Programme and its objectives.

The THRIVE programme seeks to enhance the resilience of communities grappling with conflict and climate challenges in the Greater Upper Nile (GUN) region. Over a four-year span, this initiative will focus on eight key counties: Ulang, Renk, Fashoda, and Panyikang in Upper Nile State; Rubkona and Panyijiar in Unity State; and Akobo in Jonglei State. The programme aims to positively impact around 120,000 households, comprising 105,000 direct beneficiaries and 15,000 indirect beneficiaries. THRIVE will implement gender-sensitive and inclusive strategies that encompass livelihood development, market system enhancement, financial inclusion, the economic empowerment of women, climate change adaptation and social cohesion initiatives.

Under the leadership of GOAL, in collaboration with Mercy Corps, CAFOD, and VSF Swiss, along with local partners, the consortium brings together over a century of combined expertise in the GUN area. The focus of the consortium is on promoting sustainable and inclusive economic growth, while simultaneously strengthening household resilience. The partners will leverage their specialized knowledge in community-centred strategies, market systems development, financial inclusion, peacebuilding, disaster risk reduction and the empowerment of women.

The design of the THRIVE programme is firmly rooted in extensive evidence drawn from the profound insights of consortium members into both South Sudan and comparable global contexts. The myriad and interlinked challenges faced by communities in the targeted regions will be systematically addressed under the project through customized and integrated interventions that encourage local ownership and participation. By merging market systems development with community-driven initiatives, THRIVE presents a distinctive solution aimed at tackling the underlying causes of entrenched issues within pastoral and agro-pastoral value chains, ultimately fostering long-lasting and sustainable enhancements in household resilience.

The primary objective of THRIVE is **to empower target households to attain economic stability and food security, while simultaneously improving their resilience against the adversities posed by conflict and climate-related shocks.** Anticipated key outcomes from these integrated intervention strategies include:

1. Increased incomes among individuals and micro/small-scale businesses engaged in the fishing, livestock, and agro/non-timber forestry sectors;
2. Improved food security among households targeted with livelihoods and women/youth empowerment activities;
3. Strengthened disaster preparedness and coping capacities for climate and conflict shocks and stresses;
4. Improved social cohesion and conflict resolution capacities among target communities; and
5. Women and youth economic empowerment, including financial inclusion and improved gender equality.

Aligning with the broader South Sudan Humanitarian & Resilience Programme (SSHARP) Theory of Change, THRIVE's Theory Of Change envisages that: IF markets in target agricultural systems critical

to the target population are thriving, inclusive, diverse, competitive, and serve users, and IF women and youth are economically empowered to access sustainable market-oriented livelihoods opportunities within those systems, and their participation is valued by their communities, and IF communities dependent on those systems are able to mitigate, adapt to, and manage the effects of climate change and conflict shocks and stresses, and resolve conflicts peacefully, THEN target households and communities will be more resilient, live in harmony, have improved economic and food security, and reduced need for humanitarian assistance.

The above theory of change will hold under the following key assumptions:

- **Market Viability –** The assumption that agricultural markets can be successfully developed and sustained in the targeted regions.
- **Empowerment of Marginalized Groups –** Belief that empowering women and youth will lead to significant improvements in economic participation and overall community resilience.
- **Community Engagement –** Assumption that communities will actively engage in and support initiatives aimed at improving their livelihoods and resolving conflicts.
- **Adaptation Capacity –** The expectation that communities have the capacity to learn from and adapt to climate change impacts, as well as to manage conflict effectively.
- **Long-term Commitment –** The necessity for sustained support and commitment from stakeholders, including government, NGOs, and community leaders, to ensure the effectiveness of the interventions.
- **Interconnectedness of Factors –** Recognition that economic empowerment, market development, and social cohesion are interconnected and that progress in one area will positively influence the others.

2.2 Purpose of the Assessment

As climate change continues to pose significant threats to communities around the world, the need for effective early warning systems has never been more critical. In South Sudan, where vulnerability to climate-related hazards is pronounced, and particularly in the 8 targeted counties, the THRIVE programme aims to establish a robust framework for proactive risk management. Central to this effort is the Multi-Hazard Early Warning System Assessment (MHEWSA), which seeks to evaluate and strengthen existing warning systems at various levels – community, county, state and national. By identifying gaps and opportunities for improvement, this assessment will pave the way for enhanced preparedness and resilience among the targeted populations.

Therefore, the primary aim of the MHEWSA during the initial phase of the THRIVE project is to evaluate the current early warning systems across all levels – community, county, state, and national **–** within the programme's operational areas. The resulting implementation plan will outline essential recommendations and strategies for enhancing the early warning system, which will be linked to the Climate Risk Assessment and the Climate Risk Management Plan (CRMP)**.** Establishing or improving an early warning system is a proactive measure against climate change, utilizing integrated communication systems to prepare communities for potential climate-related hazards.

The multi-hazard early warning system in the Greater Upper Nile region will not only address climatic-related hazards such as droughts, floods, violent winds, heat waves, and fires, but will also encompass a range of other critical hazards. These include human disease outbreaks (cholera, malaria, measles), livestock disease outbreaks, conflict and violence, malnutrition, and

displacement pressures that strain resources and humanitarian needs driven by both conflict and natural disasters. Additionally, the system will take into account the threats posed by landmines and unexploded ordnance, as well as the impacts of environmental degradation, ensuring a comprehensive approach to risk management and community resilience.

2.2.1 Specific Objectives

The study seeks to achieve two major objectives:

1. **The assessment Conduct a Comprehensive Multi-Hazard Early Warning System Assessment**: This will take place in eight counties where the THRIVE programme operates. Guided by the Climate Risk Assessment and CRMP, this assessment creates a holistic early warning framework that identifies current actors, stakeholders, humanitarian partners, and community structures through a mapping process. It also evaluates the existing communication systems to better equip communities for hazardous climate events.

2. **Develop an Early Warning System Implementation Plan**: Following the EWS assessment, an actionable implementation plan is crafted. This plan includes key recommendations and strategies aimed at strengthening early warning capabilities at household, community, and organizational levels. This early warning system for the THRIVE program is centered on four key components:
    - Hazard detection, monitoring, and forecasting;
    - Risk analysis and integration of risk information into emergency planning and warnings;
    - Timely and authoritative dissemination of warnings; and
    - Community planning and preparedness initiatives.

Therefore, the MHEWSA is a critical step for the THRIVE programme, laying the groundwork for a more resilient response to climate-related challenges. By systematically assessing current capabilities and developing a comprehensive implementation plan, the project will empower communities to proactively manage risks and enhance their preparedness.

Ultimately, strengthening the early warning system will not only improve immediate responses to hazards but also foster long-term resilience and adaptability in the face of ongoing climate change. Through this initiative, THRIVE envisions a future where communities are better equipped to navigate uncertainties, ensuring safety and stability for targeted communities.

2.3 Scope of Work

The scope of the consultancy encompassed a range of tasks aimed at enhancing the effectiveness of Early Warning Systems (EWS) in South Sudan, particularly in the 8 targeted counties in the GUN region. The tasks included, but were not limited to, the following:

- **Inception Report development** – In collaboration with the Project Team, an Inception Report was prepared and submitted, outlining the methodology and approach for the assignment. This report included a detailed work plan, timelines, and key milestones.
- **Desk review** – A thorough desk review was conducted of the project documentation and other relevant materials in the fields of EWS, Climate Change Adaptation (CCA), and Disaster Risk Reduction (DRR). This review focused on identifying best practices and lessons learned applicable to the South Sudan context.

- **Assessment of existing EWS** – The current EWS at national, regional, and local levels was evaluated to identify existing gaps, challenges, and opportunities for improvement. This assessment considered the unique challenges faced in South Sudan, including infrastructure limitations and communication barriers.
- **Policy Review** – Policies, regulations, and frameworks related to the integration of early warning information into public and private decision-making were analyzed. Gaps and challenges in mainstreaming this information were identified to enhance its effectiveness in disaster management.
- **Project Inventory** – Information on past, current, and planned projects associated with the EWS was gathered and reviewed, focusing on disaster risk management and risk reduction initiatives. This inventory helped to understand existing efforts and potential synergies.
- **Engagement with Institutions** – Consultations with both public and private institutions assessed the current state of the EWS. This included evaluating existing equipment, telecommunications infrastructure, databases, forecasting and monitoring products, and the communication of EWS information.
- **Stakeholder Consultations** – Consultative meetings were facilitated with Disaster Risk Management Committees and relevant stakeholders, including project beneficiaries, to evaluate the functionality and effectiveness of the existing EWS. This feedback was critical in identifying areas for improvement.
- **Integration of EWS for Drought and Shocks** – Consultations were conducted to explore how an EWS specifically for floods and drought and other shocks affecting the GUN region could be effectively integrated and mainstreamed into the existing National EWS framework.
- **Drafting Standard Operating Procedures (SOP)** – Based on insights gained from field visits and stakeholder consultations, a draft SOP for Community-Based Early Warning Systems (CBEWS) was developed. This included practical guidelines and a visual poster illustrating the mechanisms and information flow within the system.

Given the unique socio-political landscape in South Sudan, including ongoing conflicts, limited infrastructure, and vulnerability to climate-related disasters, the consultancy approached each task with sensitivity and adaptability. Engaging local communities and stakeholders throughout the process was essential to ensure that the systems developed were culturally appropriate, sustainable, and effective in addressing the specific needs of the targeted communities.

2.4 Study Limitations

- **Limited time for the conduct of the study –** The timeframe allocated for the study was constrained, which restricted the depth of analysis and the number of consultations that could be conducted. **To mitigate this limitation, the project team prioritized key stakeholders and critical data sources, focusing on the most relevant areas to ensure that essential information was captured effectively within the available time.**
- **Unavailability of some stakeholders –** Several stakeholders were unavailable due to short notice for appointments for interviews, which limited the range of perspectives and insights that could be gathered. **To address this issue, the team employed a flexible scheduling approach, utilizing remote communication methods such as phone interviews and virtual meetings to engage stakeholders who could not meet in person. This approach allowed for broader participation despite logistical challenges.**

- **Inaccessibility of some locations due to flooding –** Certain areas were inaccessible due to flooding, which hindered field visits and direct engagement with communities affected by climate hazards. **To mitigate this impact, the study team utilized secondary data sources, including reports and studies from local NGOs and government agencies, to supplement field data. Additionally, community representatives were engaged to provide insights and feedback, ensuring that local perspectives were still included in the analysis.**
- **Security concerns –** Ongoing conflict and security instability in certain regions posed risks to fieldwork and stakeholder engagement. In this regard, the data collection for Nasir County could not proceed as it was deemed too risky for field activities to be conducted. However, the sample for Nasir was distributed evenly across the other counties in Upper Nile State, therefore the overall sample size was not affected by this change. In other locations **the team mitigated this limitation by conducting thorough risk assessments prior to field visits and coordinating with local organizations to ensure safe access to areas while adhering to security protocols. Remote consultations were also utilized where necessary to avoid travel to high-risk areas.**
- **Language barriers –** In some instances, language differences hindered effective communication during interviews and consultations, leading to potential misunderstandings. **To overcome this limitation, the team employed local translators who were familiar with both the language and the cultural context, ensuring that communication was clear and that nuanced insights were accurately captured.**

While the study encountered several limitations that could have impacted the depth and breadth of its findings, proactive strategies were implemented to mitigate these challenges effectively. Through the prioritizing of key stakeholder engagement, utilizing alternative communication methods, and leveraging secondary data sources, the project team ensured that valuable insights were still gathered. Additionally, careful planning around security and language barriers further enhanced the overall integrity of the study. Despite these obstacles, the findings remain relevant and provide a solid foundation for enhancing EWS in South Sudan and in the targeted counties, ultimately contributing to the resilience of communities facing climate-related hazards in GUN region.

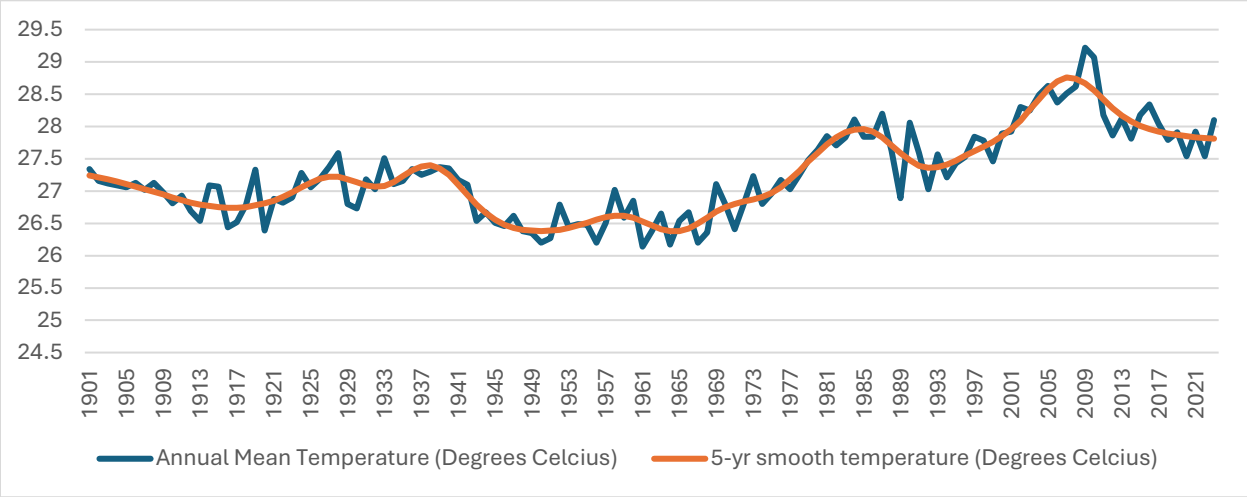
3 Socio-Economic Context of South Sudan

3.1 Geographic and Climatic Overview

South Sudan, the world's youngest nation, has a total area of approximately 619,745 square kilometers and is characterized by its humid equatorial climate. The region experiences significant variability in annual rainfall, which ranges from as low as 200 mm in the Southeast to between 1,200 mm and 2,200 mm in the forest zones of Western Equatoria and the Equatorian highlands[3]. The northern states see rainfall levels varying between 700 mm and 1,300 mm. The rainy season, extending from April to December, often results in seasonal flooding of rivers, which can disrupt local communities and agriculture.

[3] Source: Climate risk profile: South Sudan | PreventionWeb

Figure 1: Observed Annual Average Mean Surface Air Temperature of South Sudan for 1991-2023



Source: South Sudan - Climatology | Climate Change Knowledge Portal

Mean average temperatures in South Sudan typically range from 26°C to 32°C (see Figure 1). Projections indicate that by 2060, the country will experience a temperature increase of approximately 1°C, with potential variations in rainfall patterns that remain uncertain. This climatic variability poses significant challenges to South Sudan's socio-economic stability, particularly in terms of agricultural productivity, water resources, and public health. The annual mean temperature has shown a relatively stable range from about 26.2°C to 29.22°C over the last century, with a gradual increase observed particularly in recent decades. The early 20th century (1901-1950) displays lower temperature averages, generally hovering around 26-27°C. In contrast, more recent years (2000-2023) indicate a notable rise, with averages frequently exceeding 28°C. The highest recorded average temperature in this dataset is 29.22°C in 2009, with subsequent years also showing elevated temperatures around 28°C. This suggests a warming trend that is likely tied to broader climate change patterns. The smoothed temperature averages help to visualize the underlying trend without the noise of annual fluctuations. The smoothed data indicates a clear upward trajectory since the late 20th century, reinforcing the notion of increasing temperatures.

3.2 Population Dynamics

With a population estimated at 8 million, South Sudan is predominantly rural, with over 98% of its population relying on agriculture for their livelihoods. The demographic structure is characterized by a young population, with a median age of around 18 years, reflecting high birth rates and lower life expectancy due to ongoing conflicts and health challenges. This youthful demographic presents both opportunities for development and challenges in terms of employment and social services.

3.3 Economic Landscape

The economy of South Sudan is heavily reliant on oil, which constitutes approximately 71% of the Gross Domestic Product (GDP) and accounts for nearly 98% of government revenue. This reliance on a single commodity makes the economy particularly vulnerable to fluctuations in global oil prices and highlights the urgent need for economic diversification. Agriculture, while critical for food security, remains underdeveloped due to a lack of infrastructure, investment, and access to markets.

Agriculture serves as the main livelihood for the vast majority of the population, with rain-fed farming being the predominant method. Key crops include sorghum, maize, groundnuts, cassava, rice, and various fruits and vegetables. Livestock rearing also plays a crucial role, with over 70% of livestock keepers engaging in subsistence farming of cattle, goats, and poultry[4]. However, the agricultural sector faces numerous challenges, including climate-induced disruptions such as floods and droughts, which can devastate crops and livestock, leading to food insecurity.

3.4 Climate Vulnerabilities and Impacts

The climate-related challenges of South Sudan are compounded by its political instability and ongoing conflicts. The country is highly susceptible to extreme weather events, including both floods and droughts. Recent years have seen increasing incidences of flooding, which have overwhelmed traditional management capacities and submerged areas previously deemed safe. These climatic extremes have resulted in significant humanitarian crises, including displacement, loss of property, and increased mortality rates. A DRR officer in Rubkona county highlighted that:

> *"The region has a troubling history of flooding, with the most catastrophic event recorded in 1964, which forced many residents to flee across the Nile. Recently, flooding has resumed since 2021, causing ongoing concern among communities. Water levels have been fluctuating, and as the rainy season approaches, uncertainty about future flooding intensifies, necessitating urgent planning and preparedness measures".* **Interview with a THRIVE project DRR officer in Rubkona County, 16 March, 2025**

Floods and droughts directly affect agricultural productivity, leading to lower yields, soil erosion, and land degradation. The frequency of these events has escalated the risk of famine, particularly among vulnerable populations reliant on subsistence farming. Additionally, climate change exacerbates health risks, increasing the prevalence of vector-borne diseases and heat-related illnesses, further straining an already fragile healthcare system.

3.5 Socioeconomic Consequences

The socio-economic consequences of climate change and environmental degradation in South Sudan are profound. Increased temperatures and unpredictable rainfall patterns threaten food security and economic stability, with agricultural communities facing reduced crop yields and livestock productivity. This scenario not only undermines livelihoods but also heightens the risk of conflict over dwindling resources, particularly in pastoralist communities where competition for grazing land can lead to violence.

The economic reliance on oil further complicates the situation, as fluctuations in oil prices can lead to budget deficits and reduced government services. The lack of diversification in the economy means that alternative livelihoods are limited, leaving many populations vulnerable to external shocks. Efforts to promote economic resilience through agricultural development, infrastructure investment, and access to markets are crucial for mitigating these risks.

[4] Source: https://www.cia.gov/library/publications/the-world-factbook/geos/od.html

3.6 Health and Education Challenges

Public health in South Sudan is severely impacted by both climate and conflict. The healthcare system is under-resourced and struggles to meet the needs of the population, particularly in remote areas. Increased temperatures and flooding can exacerbate health issues, leading to higher incidences of diseases such as malaria and cholera. Access to clean water and sanitation facilities remains limited, further complicating public health efforts. A male DRR officer in Panyijir county summed up the extent of the health challenges being faced in some of the counties in the GUN region:

> *"Waterborne diseases significantly impact Rubkona, as well as Mayoum County and Panyijiar, with cholera being a major concern. These areas suffer from a lack of access to safe drinking water, forcing residents to rely on contaminated sources."* **Interview with THRIVE Program DRR Officer, Rubkona County, 16 March 2025**

Education is another critical area affected by the socio-economic context. High levels of poverty, coupled with ongoing conflict and displacement, have severely disrupted educational opportunities for children. Many schools lack basic infrastructure, and the safety of students is often compromised. Investing in education is essential for building human capital and fostering long-term development in South Sudan.

4 Background on South Sudan's vulnerability to hazards

4.1 Importance of an EWS under THRIVE programme

MHEWS is essential in the GUN region, particularly within the framework of the THRIVE programme as a proactive risk management tool, as it enables communities to anticipate climate-related hazards such as floods, violent winds, heatwaves, fires, droughts, other environmental shocks and other critical hazards such as human disease outbreaks (cholera, malaria, measles), livestock disease outbreaks, conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance. This proactive approach significantly reduces the impact of these events on vulnerable communities by providing timely and accurate warnings, allowing communities to take necessary precautions to protect lives, livelihoods, and property, thereby enhancing overall safety.

The MHEWS contributes to building the resilience of targeted communities by enhancing their capacity to respond to and recover from shocks, which is crucial in a region like GUN that faces multiple stressors, including conflict and climate change. The assessment and implementation plan for the MHEWS will create a comprehensive framework that supports community preparedness, response, and recovery, fostering long-term resilience.

By mitigating the impacts of climate-related hazards, the MHEWS supports the economic stability of households engaged in agriculture, fishing, and livestock, directly aligning with THRIVE's objectives of promoting food security and increasing incomes. Additionally, the system ensures that vulnerable groups, particularly women and youth, are included in preparedness activities, promoting their empowerment and participation in decision-making processes.

Further, the development of an MHEWS encourages community involvement and cooperation, fostering social cohesion. Through working together to prepare for and respond to hazards, communities can build stronger relationships and trust, which is essential for conflict resolution, particularly regarding resource allocation during crises.

The MHEWS assessment will also leverage existing data, insights, and stakeholder input to develop tailored interventions that address specific local needs, emphasizing the importance of an evidence-based approach for the success of the THRIVE programme. Furthermore, by identifying gaps and opportunities in existing early warning systems, the MHEWS can continuously evolve and improve, ensuring its effectiveness in a changing climate and socio-political landscape.

Establishing a MHEWS will be linked to national disaster risk management strategies, ensuring that local efforts contribute to broader national and international resilience goals. The collaborative nature of the MHEWS, involving local partners and stakeholders, aligns with THRIVE's emphasis on community-driven initiatives and the importance of multi-sectoral collaboration.

5 Early Warning System Design

An EWS is defined as "an integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication, and preparedness activities that enable individuals, communities, governments, businesses, and other stakeholders to take timely action to reduce disaster risks in advance of hazardous events" (UNDRR, n.d.a). An effective "end-to-end" EWS consists of various components that operate harmoniously within and across sectors to provide critical information and guidance aimed at protecting lives, property, and livelihoods. This system connects those who need to receive warning messages and take action with those responsible for collecting and monitoring hazard-related information. According to the UNDRR, a robust end-to-end EWS includes feedback mechanisms that facilitate continuous improvement. It is essential that all components are coordinated at local, national, and regional levels.

The EWS comprises four key interrelated components:

1. **Disaster risk knowledge** – This is based on systematic data collection and comprehensive disaster risk assessments.
2. **Hazard detection and monitoring** – This involves analyzing and forecasting hazards and their potential consequences.
3. **Dissemination and Communication –** This component ensures the authoritative, timely, accurate, and actionable dissemination of warnings and associated information regarding likelihood and impact from official sources.
4. **Preparedness –** This encompasses readiness at all levels to respond to the warnings received.

For the system to function effectively, these four interconnected components must be coordinated across various hazards, sectors, and actors at multiple levels. A failure in one component or a lack of coordination among them could jeopardize the entire system. In addition to these four components, there is a growing consensus to include a crucial overarching enabler: governance. This encompasses the institutional arrangements that shape the EWS and promote early action.

An overarching governance framework serves as a critical element to ensure institutionalization, incorporating legal and regulatory frameworks as well as operational procedures that clearly delineate roles and responsibilities. A comprehensive multi-hazard and multi-actor governance framework fosters coherence, facilitates resource access for routine system operations, ensures coordination and engagement among key actors and stakeholders, and reinforces integration among the four components. This approach enables the effective, inclusive, and sustainable operation of the system, facilitating the implementation of early actions. Moreover, it enhances accountability and promotes feedback mechanisms for continuous learning and improvement among the involved actors, thereby reducing the likelihood of system failure.

Three Aspects for Effective and People-Centered Multi-Hazard Early Warning Systems (MHEWS)

Effective MHEWS must be:

1. **Inclusive -** They should address the needs, perspectives, priorities, and meaningful participation of diverse societal groups, taking into account variations based on age, sex, disability, gender roles, indigeneity, sexual orientation, literacy, language, cultural practices, race, geographic location, and socioeconomic position, while adopting an intersectional approach.
2. **Accessible -** Information must be disseminated in a manner that reaches all potentially affected individuals, ensuring it is easily understandable regardless of individual circumstances, including disability, literacy levels, and language proficiency.
3. **Actionable -** The information provided should convey potential impacts and recommended actions that individuals are capable of undertaking, thereby enabling them to mitigate their disaster risk and minimize potential damage and loss.

5.1.1 Social Aspects of People-Centered Multi-Hazard Early Warning Systems

It is crucial to acknowledge that social factors may hinder individuals from taking appropriate action upon receiving a warning. These considerations are essential, as they can limit or obstruct the effectiveness of the warning system, potentially leading to its failure. Key considerations include:

1. Community understanding of imminent hazards and individual perceptions of their potential risks.
2. Trust in the information source.
3. Reliability and inclusiveness of communication channels, such as access to mobile phones, radio, internet, and television.
4. Knowledge of appropriate actions to take and familiarity with methods for acting, including evacuation routes, lead times before hazards such as floods, and access to treatment during epidemics or pandemics.
5. Consideration of individual impediments, such as physical or mental disabilities, responsibilities for those with reduced mobility, and comprehension of the language in which warning messages are issued.

Source: Adapted from RiskKAN (2021)

Additionally, the behavior of recognized family or community leaders can significantly influence others who may seek affirmation or reinforcement before deciding to act. Neighbours, family members, and religious or community leaders can provide the necessary reassurance if they themselves act upon the warning. Training key groups or specific individuals as trusted leaders can

help reassure community members seeking validation of the warning. Such reinforcement can motivate others to engage in early actions more readily.

The extent to which timely, effective, and appropriate actions are taken following a warning is a critical measure of the effectiveness of the system. While technology and operational procedures are vital components of an effective system, social factors also play a crucial role in enabling or obstructing the implementation of timely and appropriate actions. Designing people-centred MHEWS involves engaging meaningfully with potentially affected communities and considering the needs of the entire population when developing early warning and early action plans.

6 Methodology

6.1 Approach

The assessment aimed to establish a holistic multi-hazard EWS by integrating comprehensive risk assessments, robust monitoring systems, and effective communication strategies, emphasizing inclusivity and continuous improvement while considering social, economic, and environmental factors across diverse disaster scenarios. A mixed-methods approach was employed, incorporating a document review that analysed existing EWS documentation, historical hazard data, and operational guidelines to identify gaps and insights, as well as field data collection through household surveys to assess community preparedness and identify needs and risks.

6.2 Data Collection

The methodology began with an inception phase, starting with an inception meeting between the consultant and the THRIVE team to establish reporting structures, gain insights into project implementation, and request relevant documents. Following this, the consultants delivered an inception report that outlined the methodology, research tools, timelines, and a data analysis plan for review and approval. Data collection involved a thorough document review of existing EWS materials, policy frameworks, and international literature to gather insights on disaster management practices, particularly in South Sudan. Additionally, 43 qualified and experienced enumerators were recruited and trained, ensuring they could effectively engage with local languages and communities. Household surveys were conducted using the KoBo Collect tool, where enumerators gathered data on demographics, environmental factors, and community vulnerabilities. The sampling strategy included random sampling, utilizing the Raosoft Sample Size calculator to ensure statistical validity; stratified random sampling, which divided the population into subgroups (by county, gender, etc.) and selected participants accordingly; and cluster sampling to identify geographic clusters for practical survey implementation.

For sample size determination, a total population of 105,000 beneficiaries was considered, with a recommended sample size of approximately 800 to 1,200 beneficiaries distributed across eight counties. This approach balanced statistical rigor and logistical feasibility while allowing for a 10% buffer for non-responses. The ultimate sample distribution of survey respondents is summarised in Table 1.

Table 1: Sample size targets and achievements by County

State	County	Sample Size Target	Number achieved	Variance
Upper Nile	Ulang	90	97	7
	Renk	70	71	1
	Fashoda	80	81	1
	Panyikang	60	60	0
	Nasir	0	0	0
Unity	Rubkona	320	330	10
	Panyijiar	150	136	-14
Jonglei	Akobo	100	105	5
TOTAL		**880**	**880**	**0**

Nasir county was dropped from the study due to the insecurity situation that developed in that county at the start of the data collection period. It was decided to distribute the Nasir sample equally among the other three counties being targeted by the THRIVE project in the Upper Nile State.

Table 2 summarizes focus group discussions (FGDs) conducted across Upper Nile, Jonglei, and Unity states, with a total of 56 targeted FGDs and 44 achieved, resulting in an overall success rate of 78.6%. Jonglei and Unity exhibited high achievement rates, with 100% in Akobo and Rubkona, respectively, while Upper Nile faced challenges, particularly in Renk and Fashoda, which had the lowest success rates at 62.5%.

Table 2: Summary of Focus group discussions conducted

State	County	FGDs	
		Targeted FGDs	FGDs achieved
Upper Nile	Ulang	8	6
	Renk	8	5
	Fashoda	8	5
	Panyikang	8	7
Jonglei	Akobo	8	8
Unity	Rubkona	8	8
	Panyijiar	8	5
Total		56	44

This analysis highlights varying levels of completion across counties, suggesting a need for targeted strategies to address barriers in less successful areas.

6.3 Stakeholder Engagement

The study also engaged stakeholders at various levels: national; state; county; and local. Table 3 presents a summary of key informant interviews (KIIs) conducted across Upper Nile, Jonglei, and Unity states, with a total of 76 targeted KIIs and 63 achieved, resulting in an overall success rate of 82.9%. Jonglei and Unity showed strong performance, achieving 100% in Akobo and exceeding targets in Rubkona, while Upper Nile faced challenges, especially in Panyikang with only 62.5% completion.

Table 3: Summary of key stakeholders interviewed

State	County	KIIs	
		Targeted KIIs	KIIs achieved
Upper Nile	Ulang	8	6
	Renk	8	7
	Fashoda	8	7
	Panyikang	8	5
Jonglei	Akobo	8	8
Unity	Rubkona	8	10
	Panyijiar	8	8

State Level	Upper Nile; Jonglei; Unity	15	6
National Level	Juba	5	6
Total		**76**	**63**

Additionally, national-level interviews in Juba exceeded targets, highlighting effective engagement at multiple levels. This analysis underscores the varying success across regions and levels, suggesting areas for improvement in future efforts.

7 Situational analysis of EWS

7.1 National Level

Overview of existing national EWS frameworks and policies.
The study found that the state of EWS and Disaster Risk Management (DRM) in South Sudan is characterized by a complex interplay of challenges and opportunities. Ongoing conflict, economic instability, and the impacts of climate change have made the country particularly vulnerable to disasters such as flooding and drought. Nonetheless, there have been concerted efforts to establish frameworks aimed at enhancing disaster preparedness and response, with key institutions playing critical roles in this process.

Institutional Framework and Key Players
One of the central institutions in the EWS in South Sudan is the **South Sudan Meteorological Office**. This agency is responsible for providing essential weather forecasts and climate data that are crucial for informing communities about impending hazards. Accurate meteorological data enables local authorities and communities to prepare for adverse weather conditions, thereby reducing vulnerabilities and enhancing resilience. However, the capacity of the Meteorological Office is often hampered by limited resources and outdated technology, resulting in gaps in data accuracy and timeliness.

The **Ministry of Water** also plays a pivotal role in managing the country's water resources, which is vital for preventing flooding and ensuring sustainable access to water during droughts. The Ministry implements various measures, such as building and maintaining drainage systems, to mitigate the impacts of floods. Additionally, it works on water management strategies that are crucial for both agricultural productivity and community resilience. Collaboration between the Ministry of Water and the Meteorological Office enhances the overall effectiveness of the EWS, as timely weather data informs water management decisions.

The **Technical Working Group (TWG) on Disaster Risk Management** is another vital component of the national DRM framework. This group facilitates coordination among various stakeholders, including government agencies, NGOs, and international organizations. However, the effectiveness of the TWG is often limited by the inadequate representation of NGOs and other partners at the national level. This exclusion can result in a lack of diverse perspectives and resources, which are essential for comprehensive disaster planning. NGOs often bring valuable local knowledge and experience in disaster response, and their absence from the TWG can hinder the development of inclusive strategies that are responsive to community needs.

The **Relief and Rehabilitation Commission (RRC)** plays a crucial role in coordinating disaster response efforts at both the national and county levels. The RRC is responsible for implementing disaster preparedness initiatives and engaging communities in resilience-building activities. At the county level, RRC offices work closely with local governments and communities to develop tailored disaster response plans. However, the RRC often faces challenges related to resource constraints, insufficient data, and limited training for personnel, which can hinder its operational capacity. Strengthening the capabilities of the RRC is vital for improving the overall effectiveness of the EWS and DRM in South Sudan.

In addition to these institutions, **national broadcasters** have a critical role in disseminating timely information and warnings to the public. Effective communication through media channels ensures that communities are informed and prepared to respond to disasters. Broadcasting weather updates, emergency alerts, and preparedness messages can significantly enhance community awareness and readiness. However, the lack of a unified communication strategy can lead to misinformation and confusion during emergencies, highlighting the need for a coordinated approach to public messaging.

Disaster Risk Reduction Initiative in 7 States

According to key informants, there are seven states in South Sudan that are jointly involved in a disaster risk reduction initiative are: Central Equatoria; Eastern Equatoria; Western Equatoria; Jonglei; Unity; Lakes; and Upper Nile. These states collaborate on various disaster risk reduction efforts to enhance resilience and preparedness in their communities. This initiative was established in the early 2010s, following the country's independence in 2011. This period marked a growing recognition of the need for systematic approaches to mitigate the impacts of natural disasters and conflicts. Major components of the initiative include the establishment of early warning systems that monitor and report on weather patterns, food security, and health risks. Community engagement is a key focus, involving local populations in the planning and implementation of disaster risk reduction strategies. Capacity building is also essential, with training programs designed to improve disaster preparedness and response skills among local officials and communities.

Additionally, the initiative emphasizes data collection and analysis for risk assessment and vulnerability mapping, which informs decision-making processes. Collaboration with NGOs and international organizations, such as the UN and humanitarian NGOs, provides essential resources and support. Resource management strategies are developed to promote sustainable use of resources, thereby reducing vulnerability to climate-related disasters. Finally, emergency response planning creates frameworks for coordinated responses during disasters, ensuring the efficient allocation of resources.

Current Challenges in EWS and DRM

Despite the existence of these foundational elements, several challenges impede the effectiveness of the EWS and DRM in South Sudan. One of the most pressing issues is the **lack of infrastructure**. Many regions in South Sudan are remote and poorly connected, making it difficult to disseminate warnings and mobilize resources during emergencies. The destruction of roads and communication networks due to conflict exacerbates these challenges, limiting access to vital information and assistance. Another significant challenge is the **insufficient data collection and analysis** capabilities. Accurate and timely data is essential for effective disaster management, yet many areas lack the resources and technology needed for comprehensive data gathering. This gap in information

can lead to inadequate assessments of vulnerabilities and risks, resulting in poorly informed decision-making during disaster events.

Furthermore, the **integration of community-based approaches** into national DRM strategies remains limited. While local knowledge and practices are invaluable for effective disaster response, they are often overlooked in formal planning processes. Engaging communities through the establishment of local Disaster Risk Reduction Committees can enhance the effectiveness of the EWS by ensuring that local needs and insights are incorporated into disaster preparedness strategies. The exclusion of NGOs from the TWG further compounds these challenges. NGOs often have first-hand experience in disaster response and recovery, and their involvement could greatly enrich the planning process. Their absence may lead to strategies that do not fully address the realities faced by affected communities, resulting in a lack of trust in the EWS and DRM efforts.

The Path Forward

To effectively address these challenges and enhance the EWS and DRM frameworks in South Sudan, a multi-faceted approach is essential. First, there is an urgent need for **investment in infrastructure**. Improving transport and communication networks will facilitate timely access to vital information and resources. Collaborating with international partners to secure funding and technical support for infrastructure projects can significantly enhance resilience. Second, it is crucial to implement **comprehensive training programs** for personnel involved in disaster management. This includes training for staff at the RRC, local governments, and community leaders on effective disaster response strategies and the use of data in decision-making. Capacity-building initiatives can empower local stakeholders to take ownership of disaster preparedness efforts, fostering a culture of resilience.

Increasing access to **communication tools** is another vital step. Ensuring that communities have access to radios and mobile devices will improve the dissemination of warnings and information. Tailoring messages to be clear and culturally relevant across various local languages will enhance understanding and compliance. Additionally, establishing partnerships with local media outlets can amplify outreach efforts. The establishment of **Disaster Risk Reduction Committees** at the community level should be prioritized. These committees can play a crucial role in engaging diverse stakeholders, including women, youth, and marginalized groups, in disaster preparedness initiatives. By incorporating local knowledge and practices, these committees can develop strategies that are more effective and culturally relevant.

Finally, it is essential to strengthen the **Technical Working Group** by ensuring the inclusion of all relevant partners, particularly NGOs. This will promote a more inclusive approach to disaster management, allowing for a wider range of perspectives and resources. Regular consultations and workshops can facilitate collaboration among stakeholders, fostering a shared understanding of community needs and priorities.

7.2 State and County Level findings from the EWS study

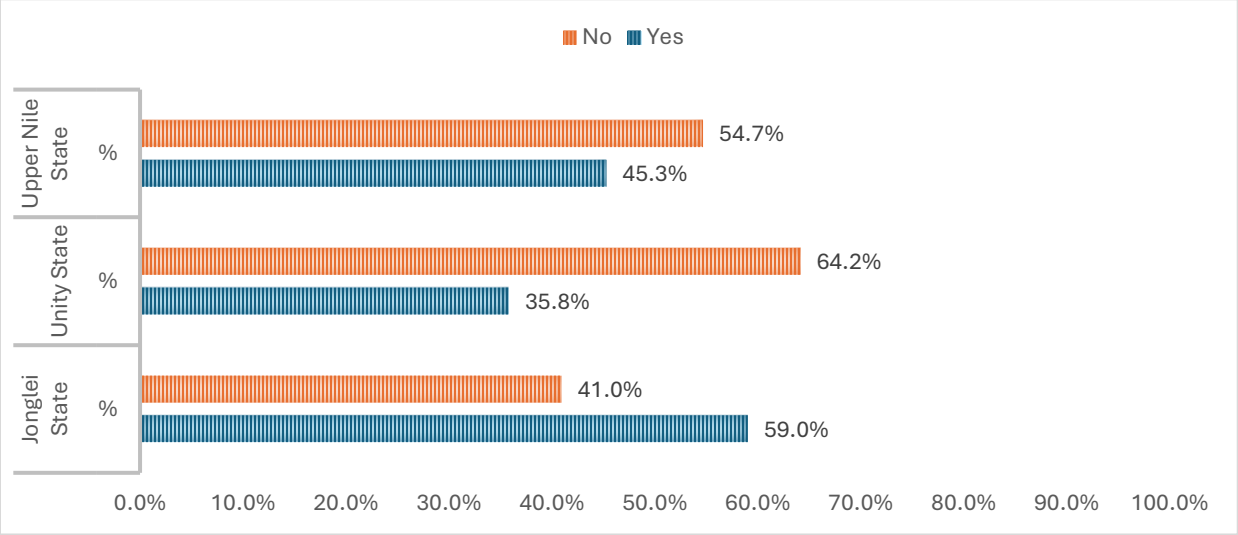
7.2.1 Extent to which respondents have access to climate-related information to enable adaptation and resilience

Overall, for the entire sample, the findings indicate that a significant portion of respondents, 58.1%, do not have access to climate-related information that would enable adaptation and

resilience. This suggests a gap in the dissemination of crucial climate knowledge, which may hinder the ability of the communities to prepare for and respond to climate-related challenges effectively. Conversely, 41.9% of respondents reported having access to such information, highlighting that while some individuals or groups are informed, there remains a need to improve outreach efforts to ensure broader accessibility. Addressing this disparity could enhance climate resilience by equipping more people with the necessary knowledge and resources to mitigate risks and adapt to changing environmental conditions.

An analysis of climate-related information accessibility reveals significant disparities among the three states under consideration: Jonglei, Unity, and Upper Nile (see Figure 2). In Jonglei State, **59.0% of respondents** reported having access to climate-related information that enables adaptation and resilience, indicating a relatively higher level of awareness and preparedness compared to the other states. Conversely, Unity State shows a concerning trend, with **only 35.8% indicating access to such information**, which underscores potential vulnerabilities in climate resilience efforts in this region. Upper Nile State falls in between, with **45.3% of respondents affirming access to climate-related data**.

Figure 2: Extent of access to climate-related information to enable adaptation and resilience by State



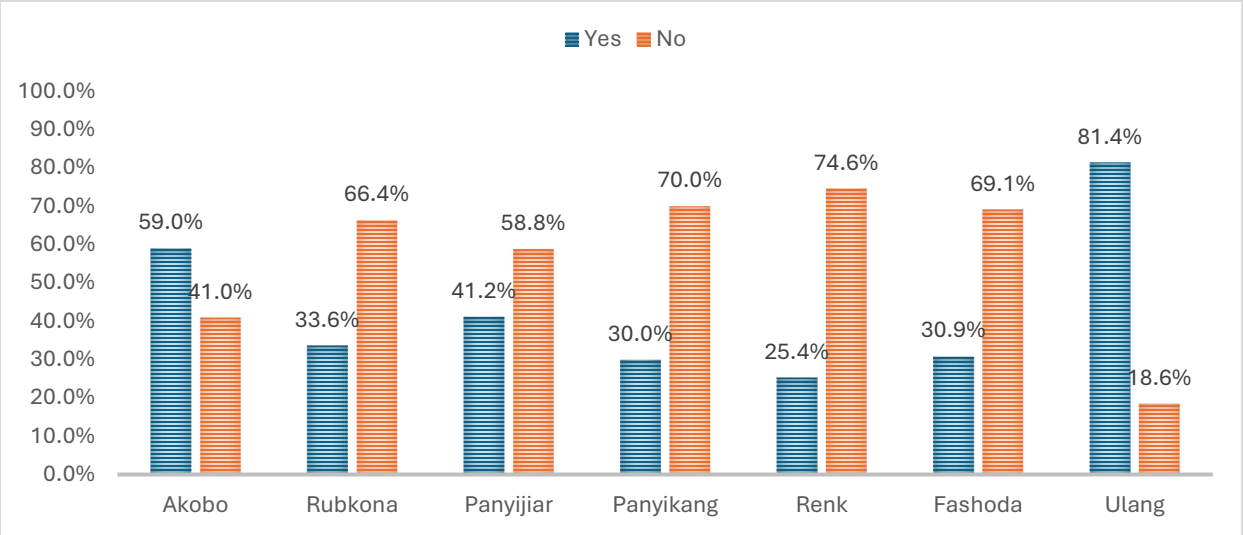
Source: Household Survey Data

Overall, the data suggests that while Jonglei State demonstrates a more favorable situation regarding climate information access, Unity and Upper Nile States face considerable challenges. The high percentage of respondents in Unity State (64.2%) and Upper Nile State (54.7%) who lack access to climate-related information highlights critical gaps that could hinder effective adaptation strategies and resilience-building measures in these states. Addressing these disparities is essential for enhancing the capacity of communities in to adapt to climate impacts and ensure sustainable development.

Analysis of the data by county, shows that in Akobo County, 59.0% of respondents reported having access to climate-related information, whereas in Rubkona and Panyijiar counties, access levels were much lower at 33.6% and 41.2%, respectively (see Figure 3). In Upper Nile State, access to climate information varied significantly among counties. Panyikang County reported 30.0% access, while Renk and Fashoda counties exhibited even lower levels at 25.4% and 30.9%,

respectively. However, Ulang County stood out with 81.4% of respondents affirming access to climate-related information, making it the most informed among the surveyed areas.

Figure 3: Extent of access to climate-related information to enable adaptation and resilience by County



Source: Household Survey Data

Conversely, the lack of access to climate information remains a challenge, with the highest levels of inaccessibility recorded in Renk County (74.6%) and Panyikang County (70.0%), followed by Rubkona (66.4%) and Panyijiar (58.8%). For example, the challenges in communicating EWS within Panyijir County, as highlighted by a DRR officer for one of the partner organisations, include funding shortages that hinder facilitation, the need for resources to organize and prepare communities and a lack of expertise and technical capacity. The findings emphasize the need for targeted interventions to improve climate information dissemination, particularly in counties with lower access. In an interview with a THRIVE project staff member in Rubkona county, the study was informed currently, there is no robust early warning system established at the county level in Rubkona. The dissemination of information about impending flooding primarily comes from the central government in Juba, which issues warnings based on meteorological assessments. This information is then conveyed to local leaders, who are responsible for communicating it to the community. It was further noted that:

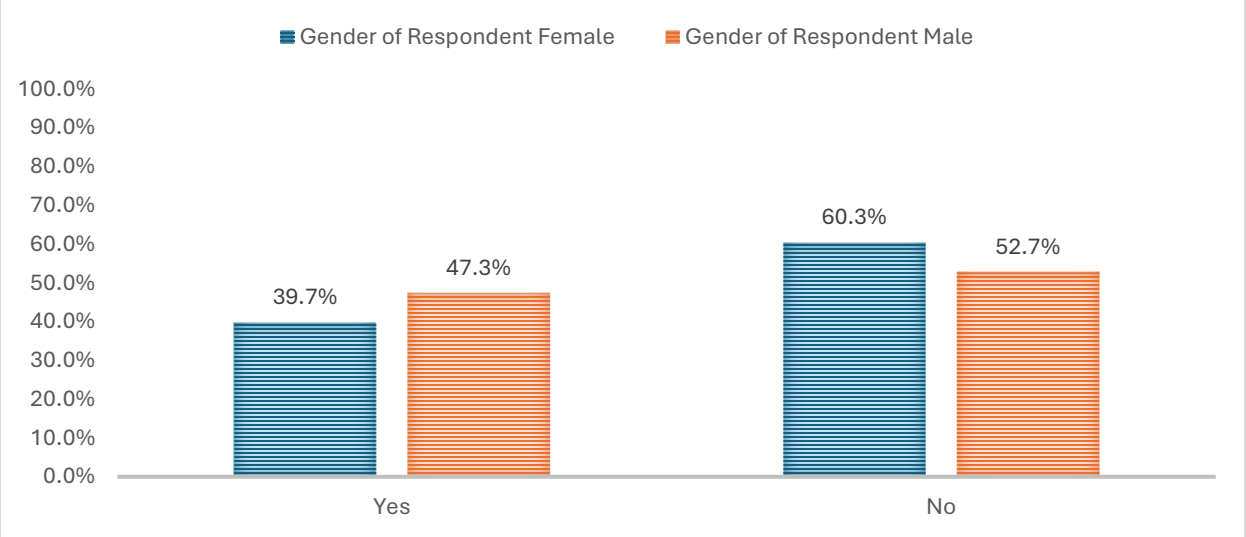
> *"This reliance on a top-down approach often leads to delays in information transfer, leaving residents unprepared for potential disasters. The absence of a localized early warning system hampers effective disaster preparedness and response efforts, making it difficult for communities to take timely actions to protect their lives and property. Localized systems that involve community participation in monitoring climate patterns and developing response strategies would significantly enhance resilience. Through integrating traditional knowledge with modern technologies, communities could better anticipate floods and prepare accordingly, thereby reducing vulnerability and improving overall disaster readiness".* **Interview with Mercy Corps staff, Rubkona County, 18 March 2025**

Figure 4 provides insights into the access to climate-related information among male and female respondents. Overall, a significant portion of the population lacks access to this vital information, with 60.3% of females and 52.7% of males indicating they do not have access.

Conversely, only 39.7% of females and 47.3% of males report having access to climate-related information necessary for adaptation and resilience.

In the context of South Sudan, these findings highlight a critical gap in climate information accessibility, particularly among women. Given the vulnerability to climate change in the country – characterized by frequent droughts, floods, diseases, conflict and erratic weather patterns – access to timely and accurate climate information is essential for resilience-building, particularly in rural and agricultural communities. The gender disparity suggests that women, who play a key role in subsistence farming and household management, may face greater challenges in adapting to climate shocks due to limited information access. Structural barriers such as lower literacy rates, limited participation in decision-making, and fewer technological resources could contribute to this disparity.

Figure 4: Extent of access to climate-related information to enable adaptation by Gender of Respondent



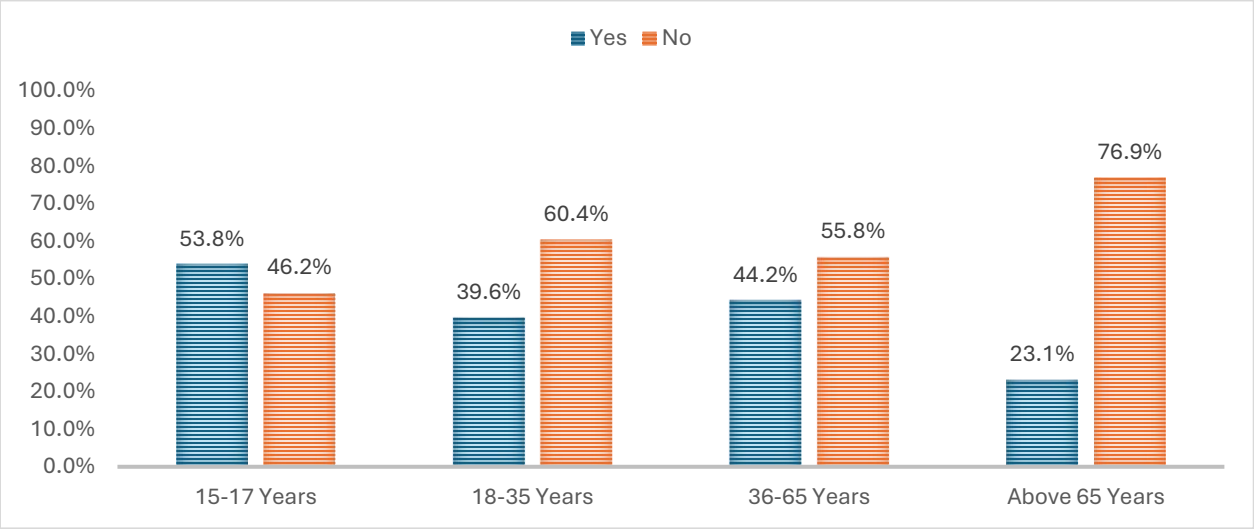
Source: Household Survey Data

Therefore, efforts to bridge this information gap should focus on gender-sensitive climate communication strategies. These could include community-based awareness programs, the use of local languages, and leveraging radio or mobile technology to reach marginalized groups. In Fashoda County an FGD with a group of women highlighted that current methods such as radio broadcasts, community messengers, and mobile alerts are hindered by issues like limited access, slow dissemination, and inadequate network coverage. Information sharing occurs through community meetings, public announcements, and social media, but accessibility remains a challenge, particularly with radio and other channels. One of the female participants had this to say:

> "The effectiveness of our early warning systems is severely limited by the accessibility of communication channels. While we rely on radio broadcasts and mobile alerts, many community members still struggle to receive timely information due to network issues and slow dissemination. We need to find ways to improve these systems to ensure that everyone is informed and prepared." **A participant in an all-female FGD, Fashoda County, Hai Ochuj Boma, 19 March 2025**

Figure 5 highlights access to climate-related information across different age groups in the GUN region, which is crucial for enabling adaptation and resilience in the face of climate change. The findings indicate that younger individuals, particularly those aged 15-17 years, have the highest level of access to climate-related information, with 53.8% reporting that they do. However, this access decreases significantly among older age groups, with only 39.6% of individuals aged 18-35 years and 44.2% of those aged 36-65 years having access. The lowest level of access is observed among those above 65 years, where only 23.1% receive climate-related information. Conversely, a significant proportion of the population lacks access, with 60.4% of young adults (18-35 years), 55.8% of middle-aged individuals (36-65 years), and 76.9% of the elderly reporting that they do not have access to such information.

Figure 5: Extent of access to climate-related information to enable adaptation by Age of Respondent

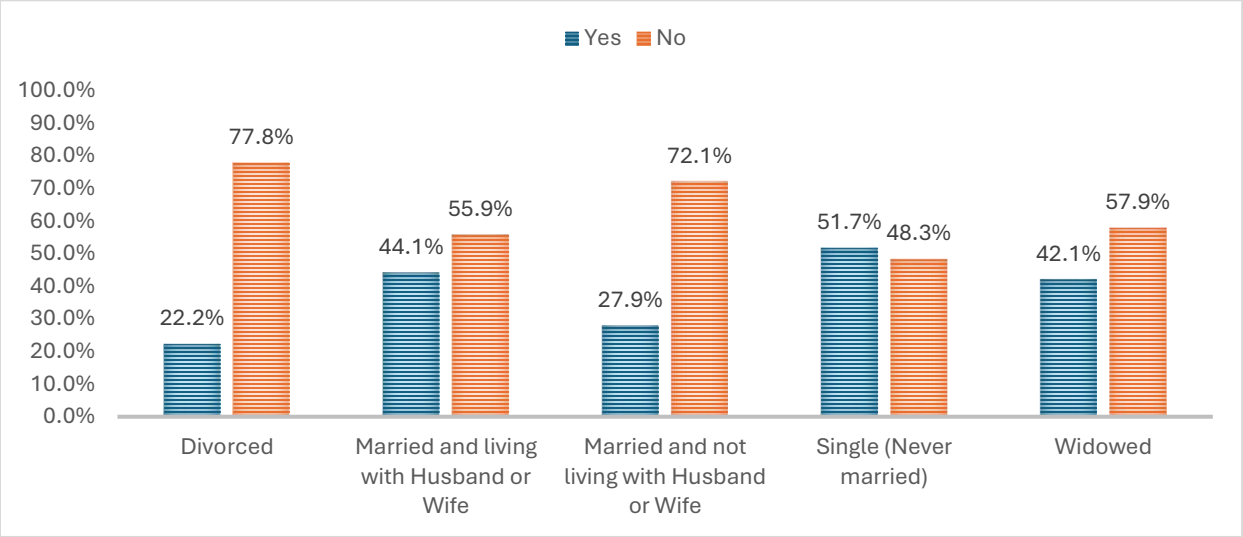


Source: Household Survey Data

These findings suggest a gap in the dissemination of vital climate-related knowledge, particularly among older populations who may rely on traditional methods for agricultural and livelihood decisions. The relatively high access among adolescents (15-17 years) could be attributed to increasing integration of climate education in schools or exposure to digital platforms, though accessibility issues remain for older groups. Addressing this disparity requires targeted interventions such as community-based awareness programs, improved access to technology, and the inclusion of traditional knowledge systems to ensure that all age groups are well-equipped to build resilience against climate-related shocks.

The findings indicate that among divorced individuals, only 22.2% have access to climate-related information, while a significant majority (77.8%) do not (Figure 6). For those who are married and living with their spouse, access is notably higher at 44.1%, though 55.9% still lack such information. Among those married but not living with their spouse, 27.9% have access, whereas 72.1% do not. Single individuals (never married) show a slightly higher level of access at 51.7%, but nearly half (48.3%) remain uninformed. Widowed individuals also demonstrate relatively limited access, with only 42.1% having the necessary information and 57.9% lacking it.

Figure 6: Extent of access to climate-related information to enable adaptation by Marital Status of Respondent

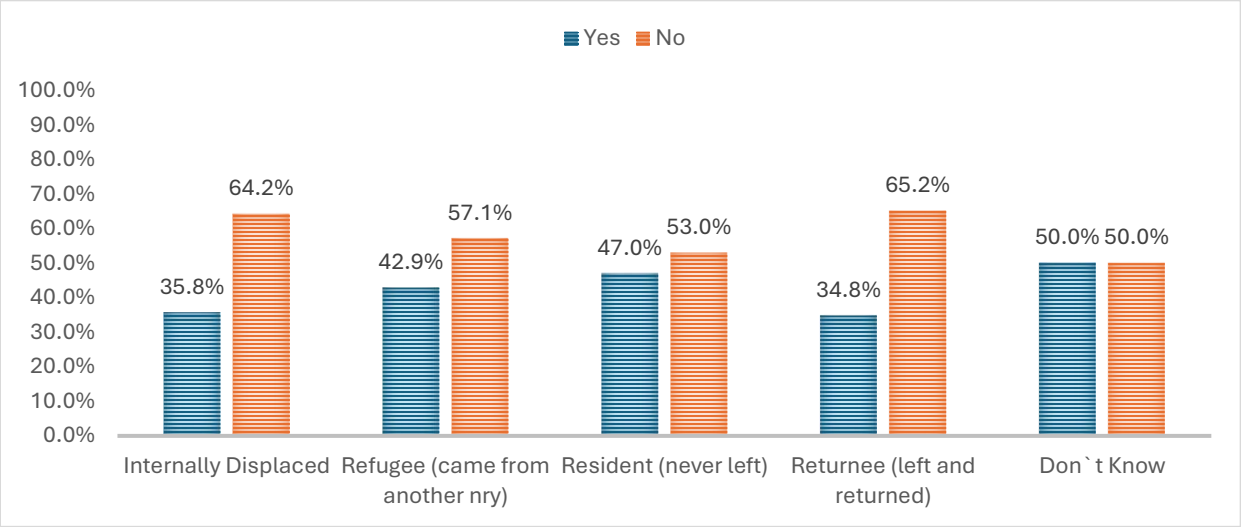


Source: Household Survey Data

The disparities in access among different marital groups highlight potential social and economic barriers that must be addressed. For example, divorced and widowed individuals, who often face economic and social vulnerabilities, may struggle more with obtaining crucial information needed for climate adaptation. Similarly, individuals married but not living with their spouses may face difficulties in accessing resources due to displacement or migration patterns common in South Sudan. Efforts to improve access to climate-related information should consider gender dynamics, community structures, and literacy levels to ensure inclusive adaptation strategies. Strengthening information dissemination through local networks, media, and community engagement could significantly enhance resilience, particularly for vulnerable groups such as widowed and divorced individuals who may lack support systems. Additionally, integrating climate education into community programs could help bridge the information gap and promote sustainable adaptation practices across all social categories.

Among internally displaced persons (IDPs), 35.8% reported having access to climate-related information, while 64.2% lacked such access (see Figure 7). Refugees showed a slightly higher level of access, with 42.9% indicating they receive climate-related information, while 57.1% do not. Residents who have never left their communities had the highest level of access, with 47.0% confirming they receive such information, whereas 53.0% reported they do not. Conversely, returnees – individuals who had left and later returned – had a lower access rate at 34.8%, with 65.2% lacking climate-related information. Interestingly, among those who responded "Don't Know" regarding their displacement status, access and lack of access were evenly split at 50.0%.

Figure 7: Extent of access to climate-related information to enable adaptation by Family Status of Respondent

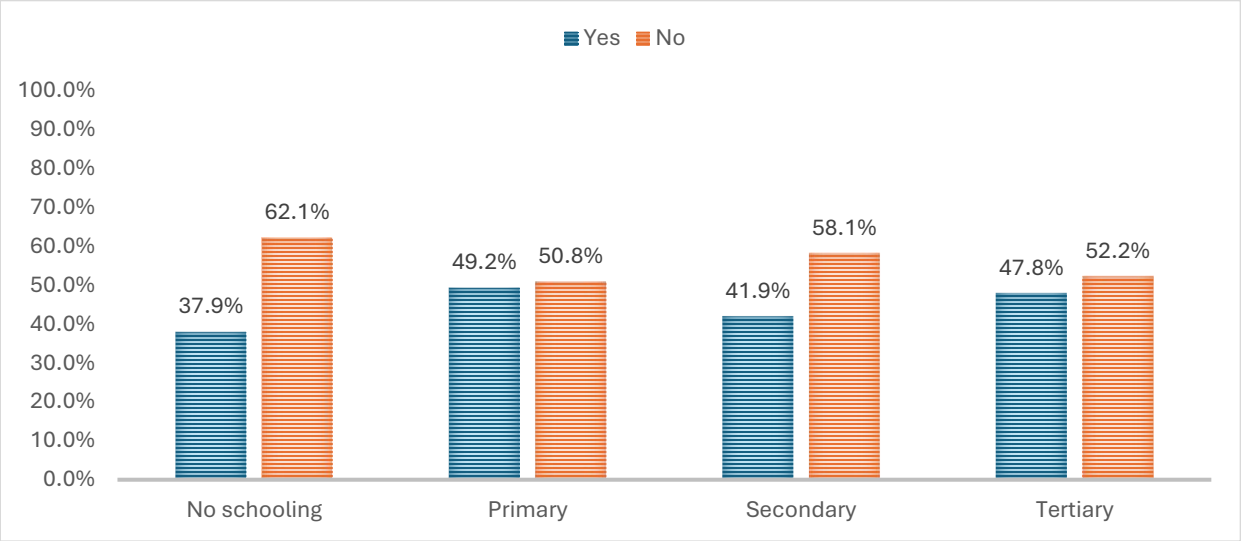


Source: Household Survey Data

The relatively lower access among IDPs and returnees may indicate gaps in information dissemination in displacement settings, where vulnerability to climate shocks is already heightened. The higher access rates among residents suggest that stability and continued community presence may facilitate better information flow. However, even among the highest group (residents), less than half have access to climate-related data, underscoring a significant need to strengthen information-sharing mechanisms. Effective early warning systems, community outreach, and inclusive communication strategies should be prioritized to enhance climate resilience, particularly for displaced and returning populations who may lack established information networks.

Figure 8 shows the percentage of individuals with access to climate-related information for adaptation and resilience across different educational levels in the GUN region. Among those with no schooling, only 37.9% have access to climate-related information, while the majority (62.1%) do not. At the primary education level, access improves to 49.2%, yet still, a significant portion (50.8%) lacks such information. Similarly, for individuals with secondary education, 41.9% have access, whereas 58.1% remain uninformed. At the tertiary level, access to climate-related information increases to 47.8%, but 52.2% still do not receive it.

Figure 8: Extent of access to climate-related information to enable adaptation by Education Level of Respondent



Source: Household Survey Data

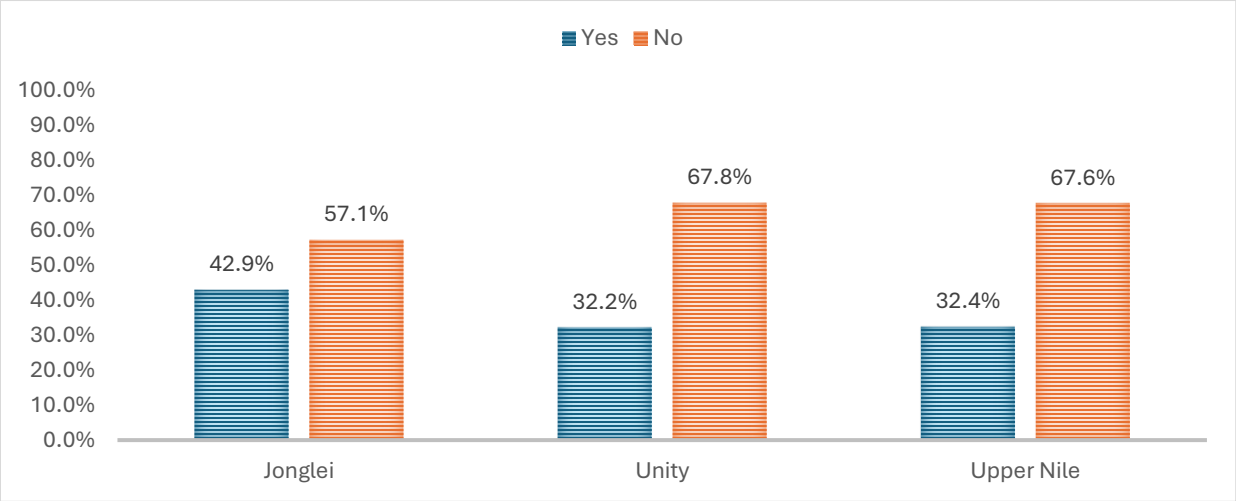
These figures highlight a concerning trend where a substantial portion of the population, regardless of education level, lacks critical climate-related knowledge. This limitation poses challenges for adaptation and resilience efforts, as informed decision-making is crucial for mitigating climate risks. The data suggests that while education plays a role in improving access, it does not guarantee widespread dissemination of climate-related information. Enhancing climate literacy, particularly among those with lower education levels, is essential to strengthening resilience and ensuring that communities can effectively respond to climate change.

7.2.2 Extent to which beneficiaries have access to information about climate-smart agriculture

The data regarding awareness and adoption of climate-smart agriculture reveals significant insights into the agricultural landscape. According to the survey results, only 33.5% of the respondents reported having knowledge of climate-smart agricultural practices, while a substantial 66.5% indicated they were unaware of such methods. This disparity highlights a critical gap in awareness that could hinder the adoption of sustainable agricultural practices essential for enhancing food security in a region significantly affected by climate change. The limited awareness suggests that efforts must be intensified to educate farmers about these practices, which include techniques that improve resilience and increase productivity. Addressing the knowledge gap through targeted training and support can empower farmers to implement strategies that are better suited to the changing climate, ultimately contributing to sustainable agricultural development in the GUN region.

The data reveals a significant divide in awareness or access to climate-smart agriculture practices across the communities in the GUN region (Figure 9). In Jonglei State, 42.9% of respondents indicated that they have access to climate-smart agriculture, while a majority of 57.1% reported they do not. This trend continues in Unity State, where only 32.2% have access to such practices, leaving 67.8% without. Upper Nile State shows a similar pattern with 32.4% of the population having access and 67.6% lacking it.

Figure 9: Extent of access to information about climate-smart agriculture by State

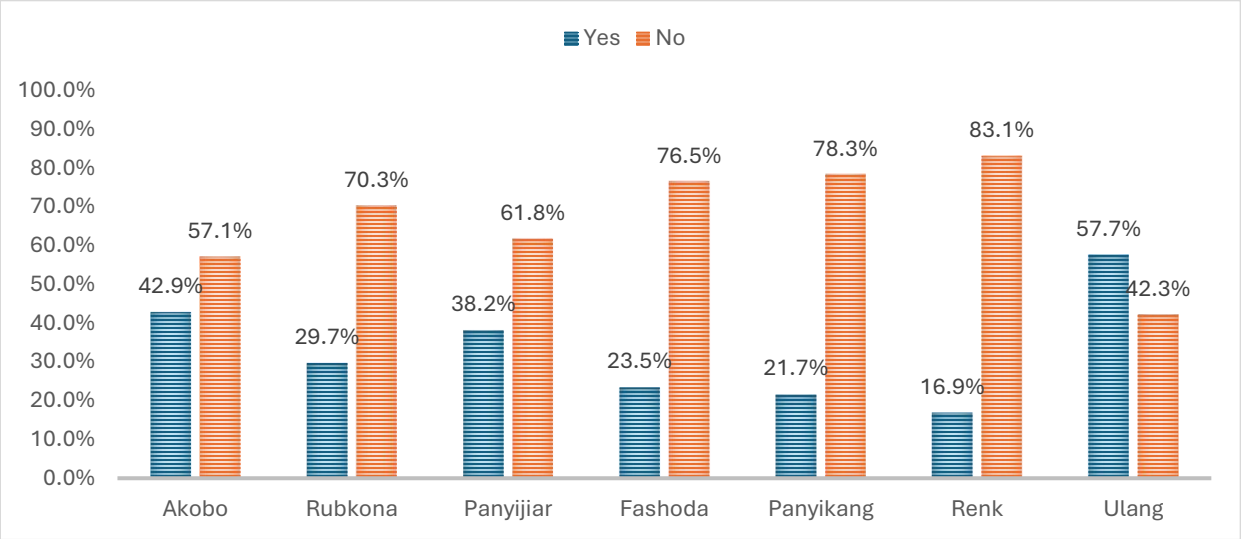


Source: Household Survey Data

These statistics highlight a critical challenge in promoting sustainable agricultural practices in these regions, which are vulnerable to the impacts of climate change. The low percentage of access to climate-smart agriculture suggests that many farmers are potentially unprepared to adapt to changing environmental conditions, risking food security and livelihoods in an already fragile context. To improve agricultural resilience, there is an urgent need for initiatives that increase awareness and accessibility of climate-smart practices, particularly in the states where the majority of the population currently lacks such resources.

Analysis by county shows that in Jonglei State, particularly in Akobo, 42.9% of respondents reported having access to information about climate-smart agriculture, while 57.1% indicated they do not have such access (Figure 10). Unity State shows a lower percentage of access in Rubkona at 29.7%, with a corresponding 70.3% lacking this information. The situation is even more pronounced in Upper Nile State, where Panyijiar has only 38.2% access, Fashoda shows 23.5%, and Panyikang at 21.7%. Renk and Ulang further exemplify this trend with only 16.9% and 57.7% access, respectively, highlighting a critical gap in information dissemination.

Figure 10: Extent of access to information about climate-smart agriculture by County

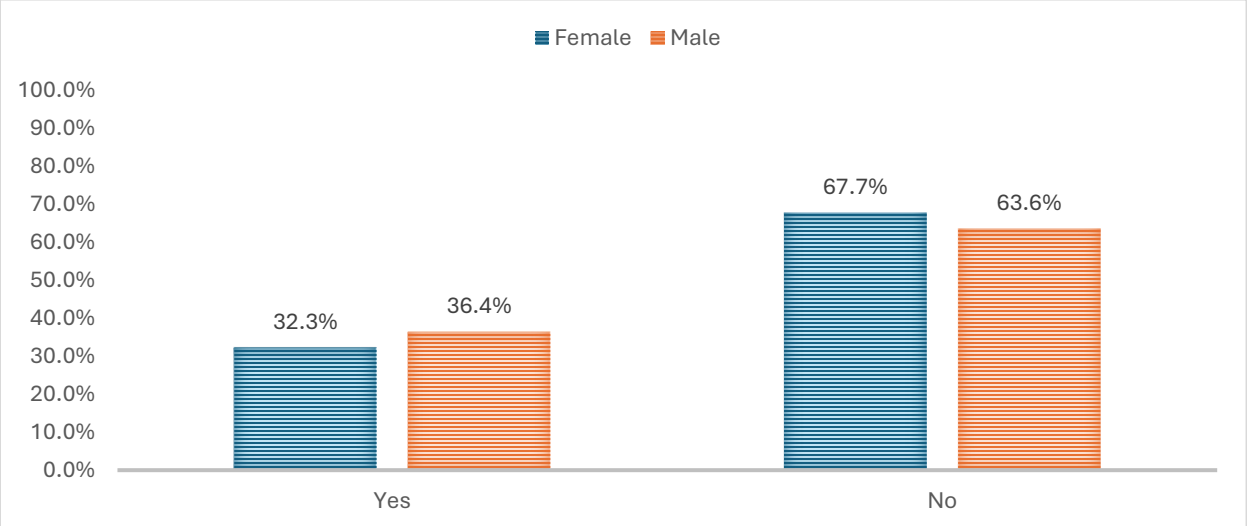


Source: Household Survey Data

Overall, the data indicate that a majority in these counties lack access to vital information on climate-smart agricultural practices, which is essential for enhancing food security and resilience against climate change. This lack of access can hinder agricultural productivity and sustainable development, making it imperative for stakeholders to address these knowledge gaps through targeted educational initiatives and outreach programs.

Analysis by gender of respondent shows that 32.3% of females and 36.4% of males reported being familiar with climate-smart agriculture, indicating a higher awareness among males than females (Figure 11). Conversely, a substantial 67.7% of females and 63.6% of males indicated they do not have knowledge of climate-smart agriculture techniques.

Figure 11: Extent of access to information about climate-smart agriculture by Gender of Respondent

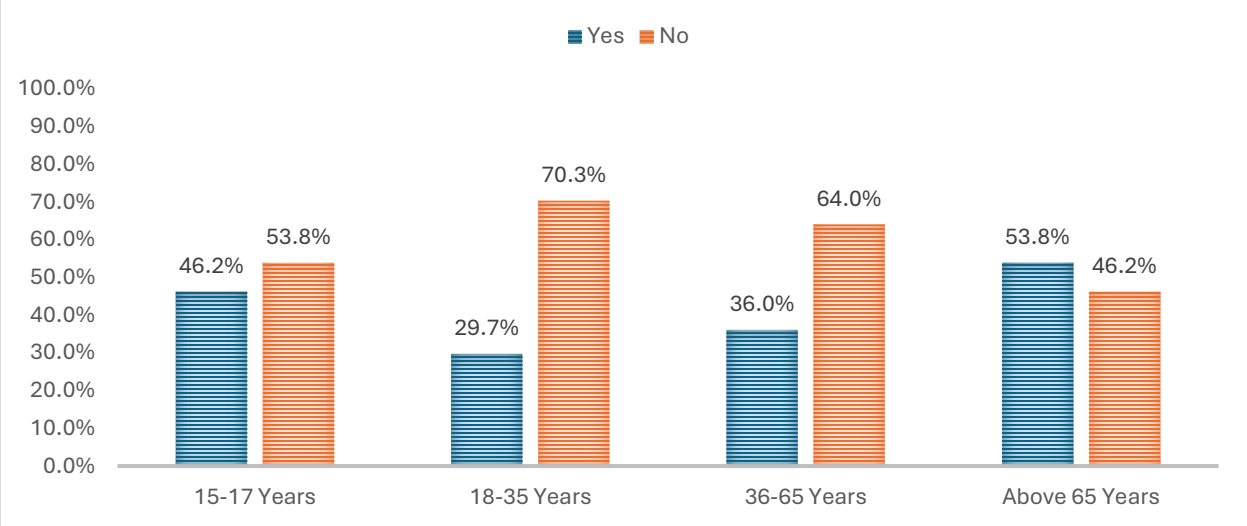


Source: Household Survey Data

The high percentage of individuals unaware of these practices suggests an urgent need for targeted educational initiatives, particularly aimed at women, who are often key players in agricultural production but may lack access to information and resources. Enhancing awareness and understanding of climate-smart agriculture could empower both genders, fostering a more resilient agricultural sector in the face of climate challenges.

The data indicates varying levels of awareness and acceptance of climate-smart agriculture across different age groups in in GUN (Figure 12). Among individuals aged 15-17 years, 46.2% reported familiarity with climate-smart agriculture, suggesting a moderate level of awareness among the youth. However, this figure declines significantly in the 18-35 age group, where only 29.7% are aware of such practices. In contrast, the 36-65 age group shows a slightly higher awareness at 36.0%, but still lags behind the older demographic of those above 65 years, where 53.8% are familiar with climate-smart agriculture. This trend highlights a notable generational divide, with younger individuals exhibiting less awareness compared to their older counterparts.

Figure 12: Extent of access to information about climate-smart agriculture by Age of Respondent

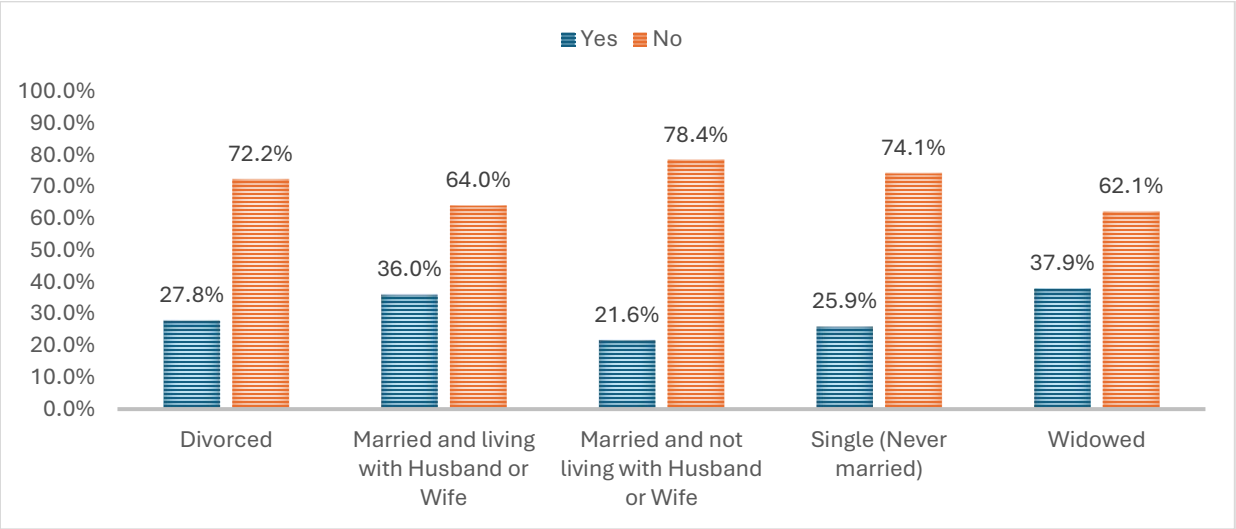


Source: Household Survey Data

The data reveals that a majority of respondents across all age groups, particularly the younger ones, are not familiar with climate-smart agriculture. Specifically, 53.8% of the 15-17 age group and a striking 70.3% of those aged 18-35 indicated they do not have knowledge of these agricultural practices. This lack of awareness poses challenges for promoting sustainable agricultural methods in the region. This emphasizes the need for targeted educational initiatives to enhance understanding and implementation of climate-smart agriculture, particularly among the younger population.

The data on marital status reveals significant trends that may impact social dynamics and agricultural practices in the context of climate-smart agriculture (Figure 13). The statistics show that among respondents, 27.8% of those who are divorced are familiar with in climate smart agricultural activities, while 36.0% of married individuals living with their spouses were not. In contrast, 21.6% of those married but not living with their partners are familiar, and only 25.9% of singles have said yes to familiarity with climate smart agricultural practices. Notably, a higher percentage, 37.9%, of widowed individuals are familiar with climate smart agriculture, indicating a potential reliance on farming for livelihood post-loss of a partner.

Figure 13: Extent of access to information about climate-smart agriculture by Marital Status of Respondent

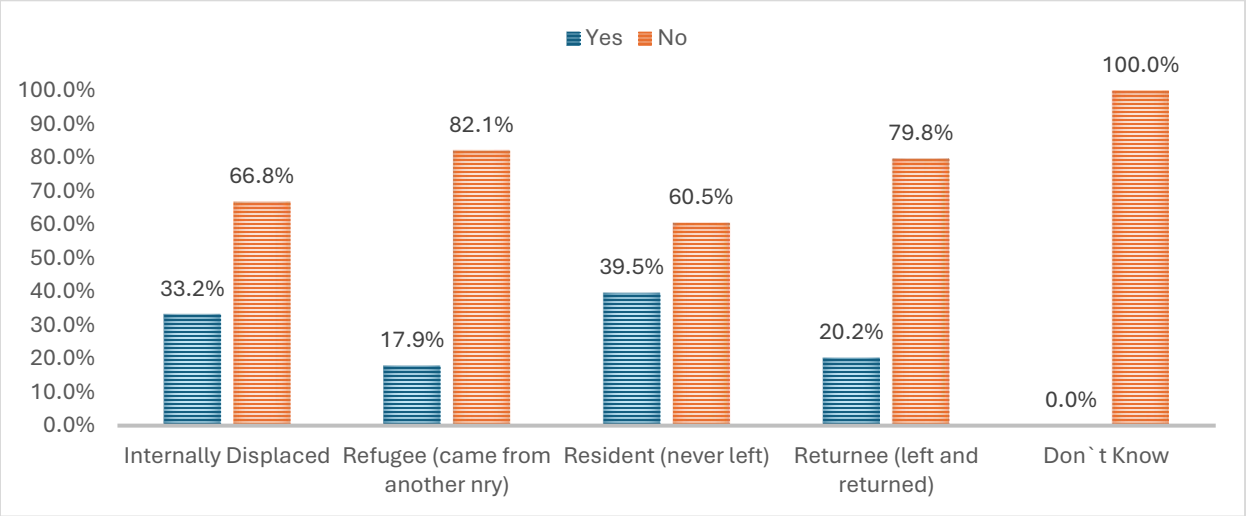


Source: Household Survey Data

On the other hand, a substantial majority of respondents – ranging from 62.1% of widowed individuals to 78.4% of those married and not living with their partners – indicate that they are not familiar with climate smart agricultural activities. This pattern highlights a significant gap in climate smart agricultural awareness across different marital statuses in the GUN region. The implications of these findings suggest that marital status may influence access to resources, decision-making, and participation in climate-smart agriculture initiatives. Those who are married and living together may have more stability and support to be aware of and possibly engage in climate smart agricultural practices, while divorced and widowed individuals might face challenges that limit their knowledge and participation, despite a notable engagement rate among the widowed. Understanding these dynamics is crucial for developing targeted interventions that promote climate-smart agriculture in the targeted counties, ensuring that all segments of the population can contribute to and benefit from sustainable agricultural practices.

The data provided reveals significant insights into the awareness of climate-smart agriculture among various population groups in the region, categorized as Internally Displaced Persons (IDPs), Refugees, Residents, and Returnees. **Among IDPs, only 33.2% reported awareness of climate-smart agriculture, while a substantial 66.8% indicated they were not aware (see Figure 14)**. This suggests a critical gap in knowledge that could impact their agricultural practices, which is particularly concerning given their vulnerable status and reliance on agriculture for sustenance.

Figure 14: Extent of access to information about climate-smart agriculture by Family Status of Respondent



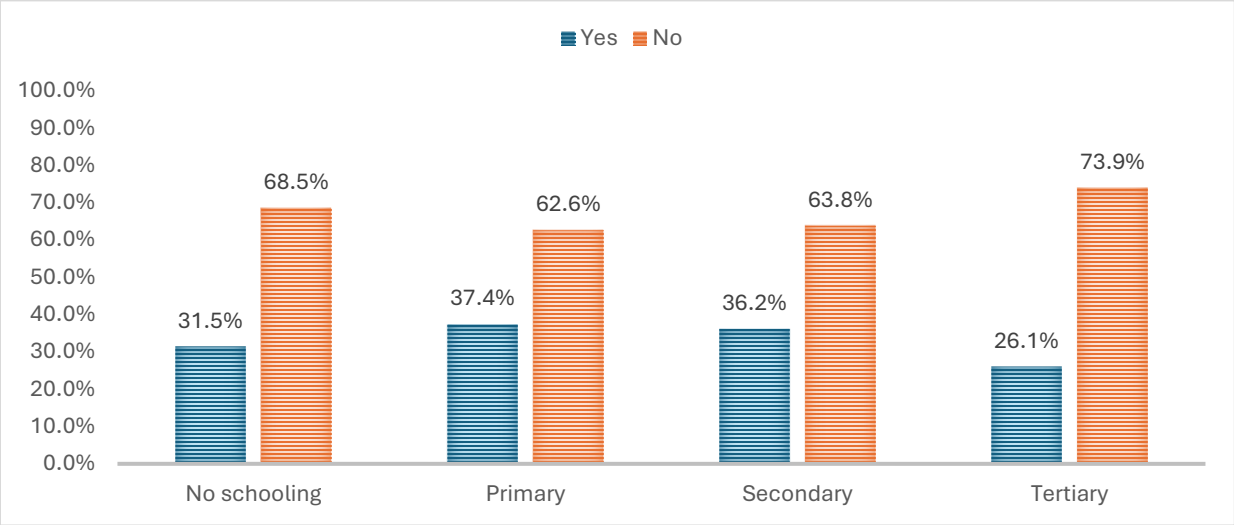
Source: Household Survey Data

For Refugees, the situation is even more pronounced, with just 17.9% acknowledging awareness of climate-smart practices and a striking 82.1% unaware. This low level of awareness may hinder their ability to adapt to climate challenges, further exacerbating their precarious living conditions. Residents, who have never left their homes, display a slightly higher awareness at 39.5%, but still, 60.5% remain uninformed about climate-smart agriculture. This indicates that even in more stable living conditions, there is a need for education and resources to promote sustainable agricultural practices.

Returnees show awareness level of 20.2%, but the majority, 79.8%, are still unaware of these practices. This suggests that while they may have returned to their communities, they still lack access to essential knowledge that could help them reintegrate effectively and sustainably. Across all groups, the absence of awareness regarding climate-smart agriculture highlights an urgent need for targeted educational initiatives. The data indicates that 100% of respondents who selected "Don't Know" reflect a complete lack of awareness, underscoring the necessity for comprehensive outreach programs to enhance understanding and implementation of climate-resilient agricultural practices in the region.

In analyzing the provided data on educational attainment in relation to climate-smart agriculture, it becomes evident that there is a significant correlation between education levels and the level of awareness of such agricultural practices (see Figure 15). Among individuals who have received no formal schooling, only 31.5% are aware of climate-smart agriculture, compared to 68.5% who are not aware of these practices. Conversely, as educational attainment increases, so does the percentage of individuals who are aware of climate-smart agriculture. For those with primary education, 37.4% are reported being aware of these practices, while 62.6% are not. At the secondary level, the figures rise to 36.2% for awareness and 63.8% for not being aware. Finally, among those with tertiary education, 26.1% are aware of climate-smart agriculture, leaving a substantial 73.9% who are not.

Figure 15: Extent of access to information about climate-smart agriculture by Education Level of Respondent



Source: Household Survey Data

This trend underscores the critical role of education in awareness of sustainable agricultural practices in the three states. As educational levels increase, individuals are more likely to be aware of innovative farming techniques that can enhance productivity while mitigating environmental impacts. This highlights the need for targeted educational programs that emphasize the benefits of climate-smart agriculture, particularly in a region where agriculture is a primary livelihood yet remains vulnerable to climate change. Addressing educational disparities could therefore play a pivotal role in fostering resilience and sustainability in agricultural sector in the GUN region.

7.2.3 Extent to which respondents have skills and information on how to react/respond to an EWS

In analyzing the provided data regarding awareness or response to an early EWS, it is evident that a significant majority of the respondents across the three states, **67.4%, indicated that they do not have knowledge or skills related to the EWS, while only 32.6% reported having such awareness.** This disparity suggests a critical gap in understanding and preparedness for potential emergencies, which is particularly concerning in the context of GUN region, which is prone to various crises, including conflict, natural disasters and food insecurity.

The lack of familiarity with the EWS could hinder effective disaster response and preparedness efforts, making communities more vulnerable to the impacts of such crises. Enhancing knowledge and skills related to the EWS is essential for improving local resilience and ensuring that communities can react promptly to warnings, ultimately saving lives and reducing damage. To address this issue, targeted training and awareness programs should be implemented, focusing on educating the population about the EWS, its importance, and the specific actions to take when alerts are issued. Engaging local leaders and community organizations can also help in disseminating information effectively, fostering a culture of preparedness that is crucial for the stability and safety of the communities in this region.

7.2.4 Extent to which respondents have skills and information on how to react/respond to an EWS

Table 4 reflects the varying levels of preparedness among respondents in different states regarding their skills and information on how to react to an EWS. In Jonglei State, 43.8% of respondents reported having the necessary skills and information, indicating a relatively higher level of awareness and readiness compared to the other states. Conversely, Unity State and Upper Nile State show significantly lower percentages, with only 30.9% and 31.4% of respondents, respectively, feeling equipped to respond effectively to an EWS.

Table 4: Extent to which respondents have skills and information on how to react/respond to an EWS by State

Beneficiary Response	Jonglei State	Unity State	Upper Nile State
Yes	43.8%	30.9%	31.4%
No	56.2%	69.1%	68.6%

Source: Household Survey Data

This disparity highlights a critical gap in preparedness, particularly in Unity and Upper Nile States, where over two-thirds of respondents lack the skills and information needed to react appropriately to early warnings. Such findings underscore the necessity for targeted training and awareness programs in these areas to enhance community resilience and response capabilities in the face of potential crises. Addressing these gaps is essential for improving the overall effectiveness of EWSs and ensuring that communities in the region are better prepared for emergencies.

In analyzing the data presented in Table 5 regarding the extent to which respondents possess skills and information on how to respond to an EWS across the targeted counties, several significant observations can be made. **In Jonglei State, Akobo County shows that 43.8% of respondents believe they have the necessary skills and information to effectively react to an EWS.** This is a relatively higher percentage compared to the other counties in the table. Conversely, a majority, 56.2%, lack such knowledge, indicating a critical gap in preparedness for potential emergencies.

Table 5: Extent to which respondents have skills and information to react/respond to an EWS by County

	Jinglei State	Unity State		Upper Nile State			
Beneficiary response	Akobo County	Panyijiar County	Rubkona County	Panyikang County	Fashoda County	Renk County	Ulang County
Yes	43.8%	39.0%	27.6%	23.3%	21.0%	16.9%	55.7%
No	56.2%	61.0%	72.4%	76.7%	79.0%	83.1%	44.3%

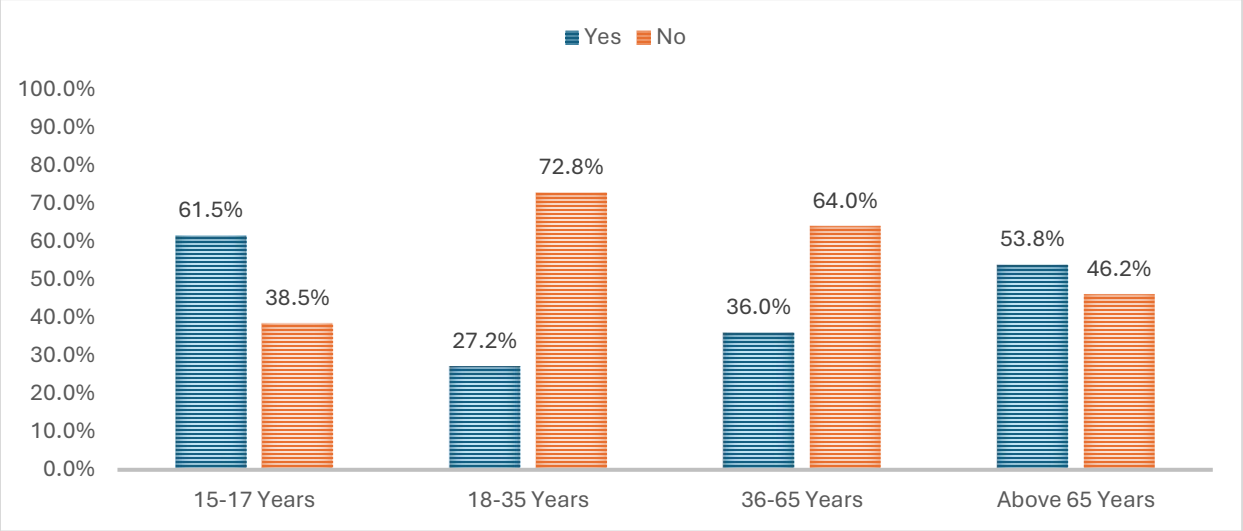
Source: Household Survey Data

Moving to Unity State, the situation appears less favorable. **Panyijiar County reports that only 39.0% of respondents feel equipped to respond to an EWS, while a concerning 61.0% do not.** This trend continues in Upper Nile State, where Rubkona County has only 27.6% of respondents affirming they have the required skills, and a significant 72.4% indicating they lack this essential information. In Panyikang County, 23.3% of respondents feel prepared, while 76.7% do not, illustrating a significant deficit in awareness and readiness. The situation is even more dire in Fashoda County, where only 21.0% of respondents are confident in their abilities to respond, and 79.0% are unprepared. Renk County, with 16.9% of respondents feeling capable, reflects similar challenges, as 83.1% express a lack of readiness.

In contrast, Ulang County stands out with 55.7% of respondents indicating they possess the necessary skills to respond to an EWS, which is significantly higher than the other counties listed. However, this also means that 44.3% are still without the required skills or information. The findings highlight a concerning trend across the counties in the region, where a substantial percentage of respondents lack the skills and information to effectively respond to early warning signals. This lack of readiness poses significant risks, emphasizing the urgent need for targeted training and information dissemination programs to enhance community preparedness in the face of potential emergencies.

Analysis by age shows that among the 15-17 year age group, 61.5% indicated familiarity with the EWS, suggesting a relatively high level of awareness among younger individuals (Figure 16). In contrast, the 18-35 year age group exhibits a significantly lower awareness, with only 27.2% acknowledging having the skills and information. This trend continues in the 36-65 year demographic, where 36.0% have skills and information on the EWS, indicating a gradual increase in awareness as age increases, but still below the awareness levels of the youngest group. Interestingly, the over 65 age group shows a substantial 53.8% awareness, marking a notable shift compared to the younger adults.

Figure 16: Extent to which respondents have skills and information on how to react/respond to an EWS by Age of Respondent



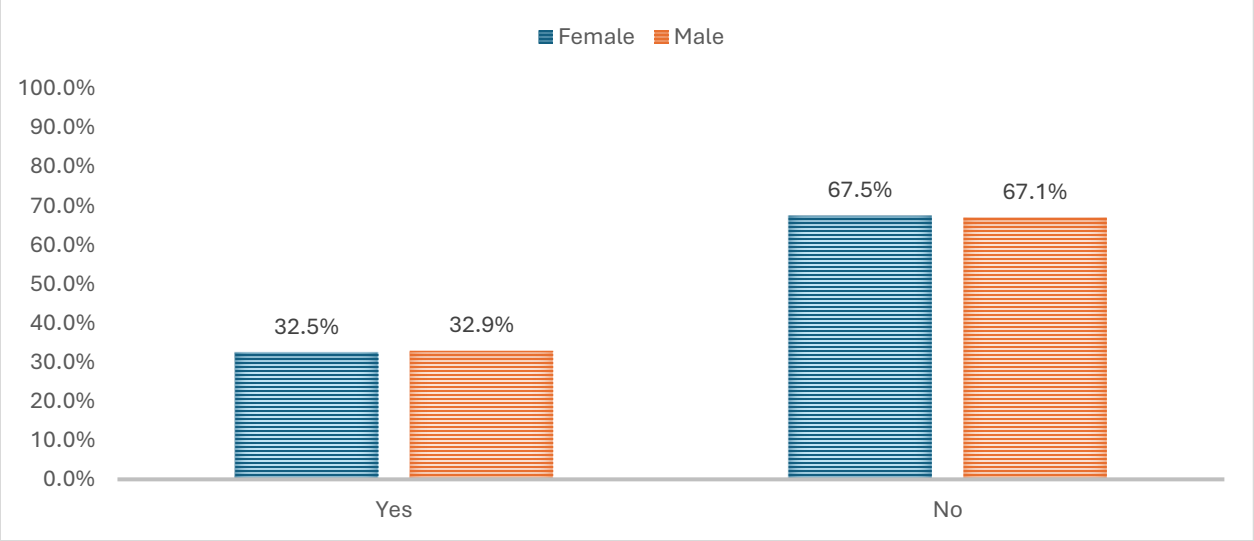
Source: Household Survey Data

Conversely, the data also reveals the proportion of individuals who are not aware of the EWS. **Among the 15-17 year group, 38.5% are unaware, while this figure rises sharply to 72.8% in the 18-35 age bracket.** The 36-65 year group reflects a 64.0% unawareness rate, and the over 65s demonstrate a lower unawareness rate of 46.2%. The analysis indicates that while younger individuals may have a higher awareness of the EWS, the challenge lies in bridging the knowledge gap among young adults and middle-aged individuals. Effective strategies for responding to an EWS should focus on enhancing communication and education initiatives targeted at these age groups, ensuring that critical information is disseminated widely and effectively. Engaging community leaders and leveraging technology could be key in improving awareness and preparedness across all

demographics, ultimately fostering a more resilient society that can respond effectively to potential crises.

Analysis by gender of respondents shows that 32.5% of females and 32.9% of males express familiarity with or support for the EWS, while a substantial majority - 67.5% of females and 67.1% of males – report a lack of awareness or engagement (see Figure 17). This disparity highlights a critical challenge in ensuring that early warning systems are effectively communicated and accessible to all demographic groups. The high percentage of individuals unaware of the EWS suggests that efforts to educate and inform the population about these systems are urgently needed, particularly in in this region where conflict and natural disasters are prevalent.

Figure 17: Extent to which respondents have skills and information on how to react/respond to an EWS by Gender of Respondent



Source: Household Survey Data

To respond effectively to an EWS, it is essential to implement targeted outreach programs that address the specific needs and concerns of both men and women. This could involve community workshops, radio broadcasts, and the use of mobile technology to disseminate information. Additionally, engaging local leaders and organizations can help build trust and encourage participation, ensuring that the EWS is not only recognized but also integrated into community resilience strategies.

In analyzing the data presented in Table 6 regarding the extent to which respondents possess skills and information on how to react to an EWS, notable variations emerge based on marital status. **Among the divorced respondents, 22.2% report having the necessary skills and information, indicating a significant gap in preparedness, as 77.8% lack this knowledge.** Conversely, 34.8% of those married and living with their spouse feel equipped in this regard, suggesting that cohabitation may contribute positively to access to information or skills related to disaster response. However, for those married but not living with their spouse, only 20.7% possess these skills, echoing a possible disconnect in support systems or resources.

Table 6: Extent to which respondents have skills and information to react/respond to an EWS by Marital Status of Respondent

Beneficiary response	Divorced	Married and living with Husband/ Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	22.2%	34.8%	20.7%	29.3%	36.8%
No	77.8%	65.2%	79.3%	70.7%	63.2%

Source: Household Survey Data

In the single (never married) category, 29.3% have the requisite knowledge, while a majority of 70.7% do not. Interestingly, the widowed respondents demonstrate the highest level of preparedness, with 36.8% indicating they are equipped to respond to an EWS. This data highlights a concerning trend in GUN region and in the context of South Sudan, where marital status significantly influences access to vital information regarding emergency preparedness. It is evident that a substantial majority across all marital statuses lack the necessary skills, emphasizing the need for targeted educational programs and resources to enhance the overall readiness for disasters of the communities.

Table 7 reveals significant disparities in the awareness and preparedness regarding EWS among different family statuses. **Among internally displaced individuals, 35.8% reported having skills and information on how to respond to an EWS, indicating a relatively higher level of awareness compared to the other groups.** In contrast, only 14.3% of refugees expressed similar knowledge, highlighting a gap that may affect their ability to respond effectively to emergencies.

Table 7: Extent to which respondents have skills and information on how to react/respond to an EWS by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	35.8%	14.3%	38.3%	16.9%	0.0%
No	64.2%	85.7%	61.7%	83.1%	100.0%

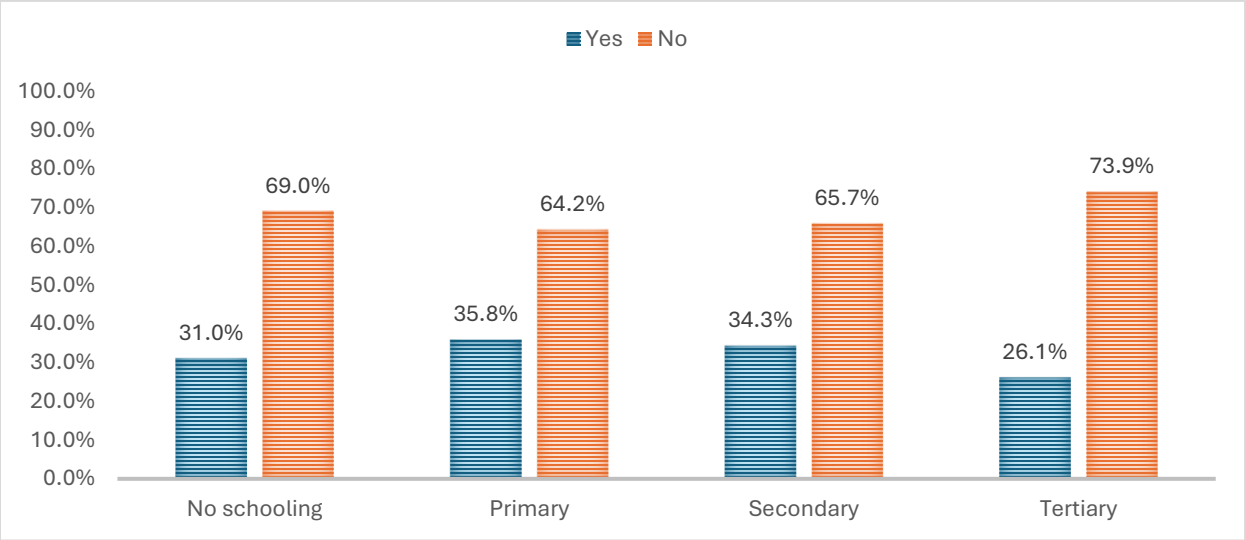
Source: Household Survey Data

Residents, who have never left their homes, reported the highest percentage of awareness at 38.3%, suggesting that those who have remained in their communities might have better access to local resources and information. On the other hand, returnees, who have left and then returned to the GUN region, showed a low level of preparedness, with only 16.9% indicating they possess the necessary skills and information regarding EWS. The data also reveals a concerning trend, as a significant portion of respondents across all categories lacks awareness. Notably, 64.2% of internally displaced individuals and a staggering 85.7% of refugees reported having no knowledge or skills related to EWS. Among returnees and residents, the figures were still high, with 83.1% of returnees and 61.7% of residents lacking this crucial information. This suggests a critical need for targeted interventions and education to enhance the understanding of EWS, particularly among the most vulnerable populations such as refugees and those who have returned to their communities after displacement. Overall, the findings underline the urgent need for capacity-building initiatives in the region to improve community resilience against potential emergencies.

The data reveals significant disparities in awareness and responsiveness to EWS based on educational attainment in the GUN region. **Individuals with no formal schooling exhibit the lowest level of awareness, with only 31.0% indicating they know how to react to an EWS, while 69.0% do not (see Figure 18)**. Similarly, those with only primary education show a slightly higher level of

awareness at **35.8%**, yet a majority (**64.2%**) remain uninformed. Among individuals with secondary education, **34.3%** understand how to respond, but a considerable **65.7%** do not. The highest level of education, tertiary, paradoxically reflects the lowest awareness rate at **26.1%**, with a substantial **73.9%** lacking knowledge on how to react to an EWS.

Figure 18: Extent to which respondents have skills and information on how to react/respond to an EWS by Level of Education



Source: Household Survey Data

This trend highlights a critical gap in disaster preparedness and risk communication strategies in the region. While one might expect higher education levels to correlate with increased EWS awareness, the lower percentage among tertiary-educated individuals suggests potential barriers such as a lack of targeted training, inadequate integration of disaster preparedness into curricula, or insufficient dissemination of EWS information in academic and professional circles. The findings underscore the urgent need for inclusive and accessible awareness campaigns that cater to all education levels, ensuring that communities, regardless of their schooling background, understand and can act effectively in response to early warnings. Strengthening localized training, incorporating EWS response education into school curricula, and leveraging community-based communication channels could significantly enhance preparedness and resilience against disasters in the GUN region.

7.2.5 Extent to which respondents are provided with information regarding your families' health

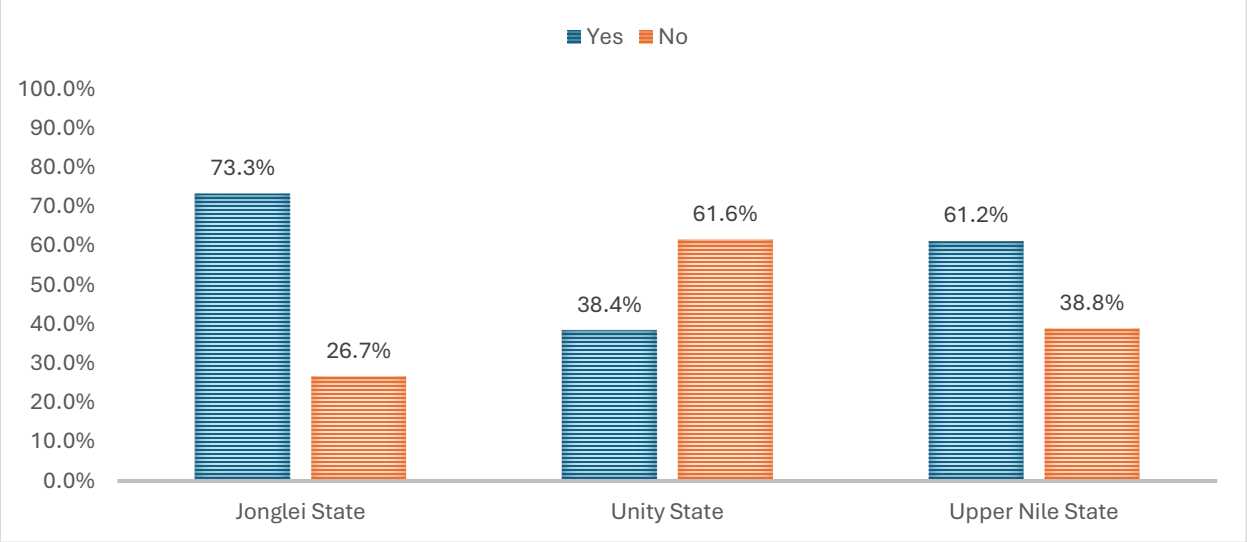
The survey results indicate that 50.6% of respondents across the GUN region reported receiving information regarding the health, of their families while 49.4% stated that they did not. This near-even split suggests that access to health-related information remains inconsistent, potentially affecting the ability of individuals and families to make informed healthcare decisions. In the context of South Sudan, these findings highlight significant challenges related to healthcare communication and information dissemination. Given the country's fragile healthcare system, which has been impacted by years of conflict, limited infrastructure, and a shortage of medical professionals, the lack of adequate health information can hinder disease prevention and treatment efforts. Rural

populations and IDPs may face even greater barriers due to poor access to healthcare facilities, lower literacy rates, and limited communication channels.

The fact that nearly half of the respondents do not receive health-related information suggests a need for strengthened public health initiatives. Efforts should focus on improving community engagement through local health workers, mobile health campaigns, and radio broadcasts in multiple languages to ensure wider accessibility. Additionally, partnerships with international organizations and NGOs could enhance health education efforts, equipping communities with vital knowledge on disease prevention, maternal health, nutrition and immunization programs.

Analysis by state shows that in Jonglei State, a substantial majority of 73.3% of respondents reported receiving information about their families' health, while 26.7% indicated they did not have access to such information (see Figure 19). This suggests a relatively higher level of health communication in the state, potentially due to better outreach programs or healthcare infrastructure. In contrast, Unity State presents a more concerning scenario, where only 38.4% of individuals reported receiving health information, whereas 61.6% lacked such access. This indicates a significant gap in health awareness, which could contribute to poor health outcomes due to delayed medical intervention or preventive care.

Figure 19: Extent to which households are provided with information regarding family health by State



Source: Household Survey Data

Meanwhile, in Upper Nile State, 61.2% of respondents affirmed receiving family health information, while 38.8% did not, positioning the state between Jonglei and Unity in terms of access. The data underscores the need for targeted interventions to improve health information dissemination, particularly in Unity State, where the majority of residents lack access to crucial health updates. Strengthening community health programs, investing in mobile health initiatives, and improving health service delivery in underserved areas could help bridge these gaps and promote better health outcomes across the region.

Analysis by county indicates that Ulang County in Upper Nile State has the highest proportion of households (93.8%) receiving family health information, indicating a strong presence of health communication efforts (see Table 8). In contrast, Renk County, also in Upper Nile State, has

the lowest coverage, with only 23.9% of households receiving health information, highlighting potential gaps in health education dissemination.

Table 8: Extent to which households are provided with information regarding family health by County

	Jonglei State	Unity State		Upper Nile State			
Beneficiary response	Akobo	Rubkona	Panyijiar	Fashoda	Panyikang	Renk	Ulang
Yes	73.3%	32.7%	52.2%	66.7%	45.0%	23.9%	93.8%
No	26.7%	67.3%	47.8%	33.3%	55.0%	76.1%	6.2%

Source: Household Survey Data

Within Jinglei State, Akobo County demonstrates relatively high access, with 73.3% of households reporting that they receive information on family health. This suggests that public health awareness campaigns in Akobo may be more effective compared to other areas. Meanwhile, Unity State exhibits a more mixed scenario, with Rubkona County having the lowest access in the state at 32.7%, while Panyijiar County performs slightly better at 52.2%. These figures suggest that efforts to distribute health information in Unity State may be inconsistent across counties.

In Upper Nile State, there is significant variation in access to health information. **While Ulang and Fashoda counties report high levels of access at 93.8% and 66.7%, respectively, Panyikang and Renk counties show much lower levels, with only 45.0% and 23.9% of households receiving information.** These disparities may reflect differences in infrastructure, outreach programs, or community engagement in health initiatives. The data underscores the uneven distribution of family health information across the targeted counties. Counties with lower access, such as Renk, Rubkona, and Panyikang, may require targeted interventions to improve the dissemination of health-related information. Enhancing communication strategies, expanding healthcare outreach, and addressing logistical challenges could help bridge these gaps and ensure that more households are informed about family health matters.

The analysis of Table 9 highlights the extent to which households receive information regarding family health across different age groups in the GUN region. **The data indicates a varying level of access to health information, with the highest proportion of respondents receiving information found among individuals above 65 years (76.9%).** This suggests that older individuals may have better access to health-related resources, possibly due to their greater reliance on healthcare services or established community networks. Conversely, young adults aged 18-35 years exhibit the lowest percentage of respondents receiving family health information (46.5%), highlighting a potential gap in health communication targeted at this demographic.

Table 9: Extent to which households are provided with information regarding family health by Age of Respondent

Beneficiary response	15-17 Years	18-35 Years	36-65 Years	Above 65 Years
Yes	61.5%	46.5%	53.1%	76.9%
No	38.5%	53.5%	46.9%	23.1%

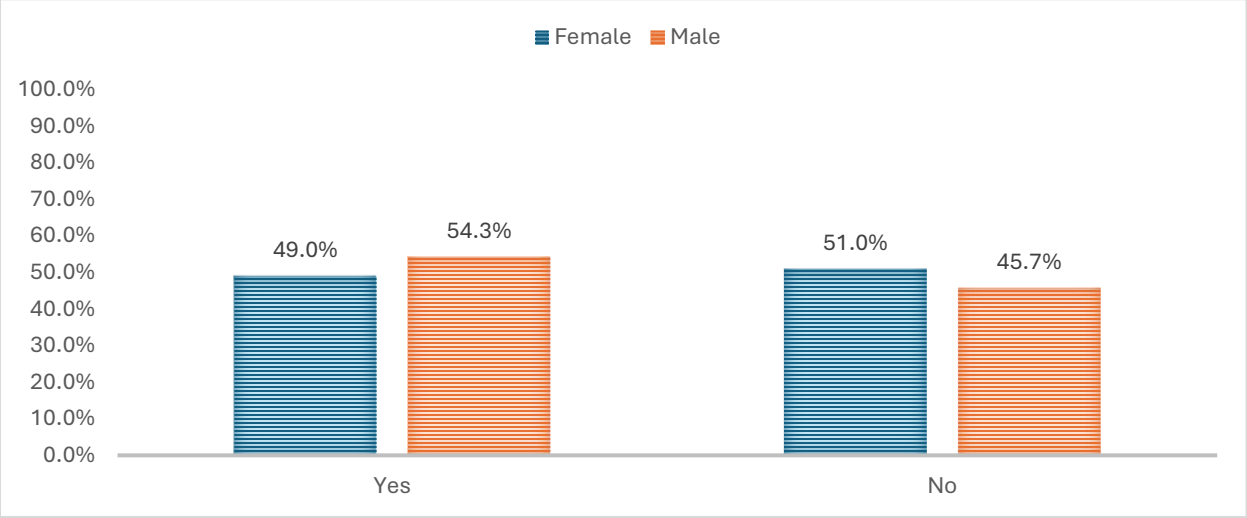
Source: Household Survey Data

Adolescents aged 15-17 years report a relatively high rate of access (61.5%), which may be attributed to school-based health programs or parental guidance. Meanwhile, individuals aged 36-65 years show a moderate level of access (53.1%), indicating that middle-aged adults may

receive health information through workplace initiatives, community health programs, or family discussions. The data also reveals that a significant portion of respondents, particularly in the 18-35 and 36-65 age groups, lack access to critical health information, with 53.5% and 46.9% respectively reporting not receiving such details. This gap underscores the need for targeted health education campaigns, particularly for younger and middle-aged adults, to ensure comprehensive health awareness across all age groups. Given the context of South Sudan, where healthcare infrastructure remains underdeveloped and health literacy levels vary, these findings suggest an urgent need for improved community health outreach, increased dissemination of public health information, and strengthened health communication strategies to ensure equitable access to health-related knowledge across all age groups.

The data provided reflects the percentage of males and females who receive information regarding the health of their families (see Figure 20). **Among females, 49.0% reported having access to such information, while 51.0% stated that they do not**. In contrast, 54.3% of males indicated that they receive health-related information, whereas 45.7% do not. This suggests that men are slightly more likely than women to be informed about the health of their families.

Figure 20: Extent to which households are provided with information regarding family health by Gender of Respondent



Source: Household Survey Data

In the context of the GUN, these findings highlight potential gender disparities in access to health information. The region faces significant challenges in healthcare accessibility due to ongoing conflict, displacement, and underdeveloped health infrastructure. Cultural norms and societal roles may also contribute to the differences observed, as men are often regarded as decision-makers in many households, potentially giving them greater exposure to health-related discussions. On the other hand, women, who are typically primary caregivers, might lack direct access to formal health information, relying instead on informal networks.

The data underscores the need for targeted interventions to ensure equitable health communication strategies in the region. Enhancing access to health information by women through community engagement, healthcare worker outreach, and improved literacy programs can help bridge this gap. Additionally, leveraging radio, community health workers, and digital platforms

could play a critical role in improving health awareness for both genders, ultimately leading to better health outcomes for families across the region.

The analysis in Table 10, which examines the extent to which households receive information regarding family health based on the marital status of respondents, reveals significant variations across different groups**. Widowed individuals report the highest level of access to family health information, with 58.9% affirming that they receive such information, followed by single respondents (53.4%).** Married individuals who are living with their spouse have a slightly lower rate of 49.5%, while those married but not living with their spouse report 48.6%. Divorced individuals have the lowest access, with only 44.4% stating that they receive family health information.

Table 10: Extent to which households are provided with information regarding family health by Marital Status of Respondent

Beneficiary response	Divorced	Married and living with Husband/ Wife	Married and not living with Husband/ Wife	Single (Never married)	Widowed
Yes	44.4%	49.5%	48.6%	53.4%	58.9%
No	55.6%	50.5%	51.4%	46.6%	41.1%

Source: Household Survey Data

On the other hand, respondents who do not receive family health information are highest among the divorced (55.6%), followed by those married and not living with their spouse (51.4%), and married individuals living with their spouse (50.5%). The proportion of single individuals who lack health information access is 46.6%, while widowed respondents report the lowest level of exclusion, with 41.1% stating they do not receive such information.

Access to health information is crucial due to the country's ongoing challenges with healthcare infrastructure, high maternal and child mortality rates, and limited access to medical services, particularly in rural areas. The findings suggest that widowed and single individuals may have better access to family health information due to their increased engagement with community health programs, NGOs, or government initiatives that target vulnerable populations. Meanwhile, divorced individuals, who show the lowest levels of information access, may face social stigma or exclusion from household or community-based health initiatives. The relatively low access among married individuals, particularly those not living with their spouse, could indicate a gap in health communication within families, possibly due to migration, conflict-related displacement, or gender dynamics that limit access to health-related information by women. The data highlights the need for targeted health awareness programs in the GUN region that address marital status as a key determinant of information dissemination, ensuring equitable access for all groups, especially divorced and married individuals separated from their spouses.

Table 11 shows significant disparities in access to family health information among different household categories in the GUN region. **IDPs and residents who have never left their communities report the highest levels of access to such information, with 52.8% of both groups confirming that they receive updates on family health.** In contrast, refugees who have arrived from another country have a slightly lower access rate of 50%, indicating possible challenges related to integration into local health communication systems.

Table 11: Extent to which households are provided with information regarding family health by Family Status

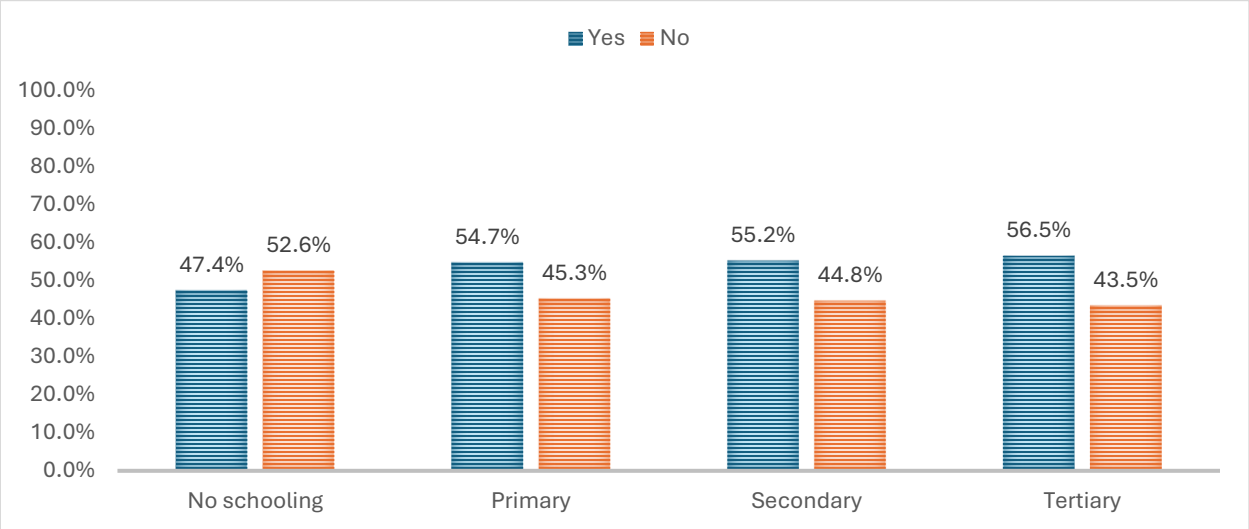
Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	52.8%	50.0%	52.8%	42.1%	0.0%
No	47.2%	50.0%	47.2%	57.9%	100.0%

Source: Household Survey Data

Returnees, who left and later returned, experience the lowest access to family health information, with only 42.1% receiving updates, highlighting potential difficulties in reintegration and access to essential services. All respondents in the "Don't Know" category report a complete lack of access to family health information, suggesting gaps in awareness and outreach efforts. Overall, the data suggests that displacement, migration history, and reintegration challenges significantly impact the extent to which households receive critical health information, underscoring the need for targeted interventions to improve communication and healthcare accessibility, particularly for returnees and refugees.

The data presented highlights the correlation between education levels and access to family health information in in the region (see Figure 21). It indicates that individuals with higher education levels are more likely to receive information regarding the health of their families. **Among those with no schooling, only 47.4% report receiving such information, whereas this proportion increases to 54.7% for individuals with primary education, 55.2% for those with secondary education, and 56.5% for individuals with tertiary education.** Conversely, the proportion of respondents who do not receive health information decreases as education levels increase, from 52.6% among those with no schooling to 43.5% among those with tertiary education.

Figure 21: Extent to which households are provided with information regarding family health by Level of Education Status



Source: Household Survey Data

This trend suggests that education plays a significant role in access to health information in the region. Limited education can hinder ability of individuals to seek, understand, and utilize health-related information, potentially leading to poorer health outcomes. The disparities in health information access emphasize the need for targeted interventions to improve health literacy,

particularly among those with little or no formal education. Strengthening community health programs, incorporating health education into adult literacy initiatives, and utilizing accessible communication methods such as radio broadcasts and community workshops could help bridge this gap and ensure wider dissemination of crucial health information across all education levels.

7.2.6 Extent to which health services have sufficient capacity and finance

An analysis of the health services capacity reveals a concerning picture. **According to the findings, only 25.1% of the respondents indicated that health services have sufficient capacity and financial resources, while a staggering 74.9% reported the opposite.** This significant disparity suggests that the majority of health facilities in the GUN region are struggling to meet the needs of the population, potentially leading to inadequate access to essential health services. The low percentage of respondents who affirm the sufficiency of capacity and finance highlights the urgent need for increased investment and support in the healthcare sector to enhance service delivery and improve health outcomes for the communities.

Analysis of the capacity and financial sufficiency of the health services across various states reveals significant disparities. **According to the data presented in Table 12, only 22.9% of respondents from Jonglei State reported that their health services have sufficient capacity and finance.** This figure is slightly better in Unity State, where 20.8% of respondents affirmed the adequacy of health services. However, Upper Nile State stands out with a higher percentage, as 32.4% of respondents indicated that their health services are sufficiently equipped and financed.

Table 12: Extent to which health services have sufficient capacity and finance by State

Beneficiary response	Jonglei State	Unity State	Upper Nile State
Yes	22.9%	20.8%	32.4%
No	77.1%	79.2%	67.6%

Source: Household Survey Data

Conversely, the majority of respondents across all three states expressed concerns regarding the inadequacy of health services. In Jonglei State, a substantial 77.1% reported insufficient capacity and finance, while Unity State recorded an even higher rate of 79.2%. Upper Nile State, although showing a relatively better situation, still reflected a significant 67.6% of respondents who felt that health services lacked the necessary resources. The analysis underscores the urgent need for improvements in health service provision, particularly in Jonglei and Unity states, where the overwhelming majority lack access to adequately funded and resourced health services. Addressing these deficiencies is critical for enhancing the overall health outcomes and welfare of the population in these states.

In analyzing the capacity and financial sufficiency of health services across various counties, it is also evident that there are significant disparities in access to adequate healthcare resources. **The data summarized in Table 13 reveals that only 22.9% of respondents in Akobo reported sufficient capacity and finance for health services, which indicates a critical shortfall.** This situation is echoed in Rubkona, where just 14.2% felt that their health services were adequately supported, highlighting a severe lack of resources. In Panyijiar, the situation is somewhat better, with 36.8% affirming sufficient capacity and finance; however, this is still far from ideal. Conversely, Panyikang faces a dire scenario, with only 5.0% of respondents indicating that health services are

adequately funded and equipped. Fashoda and Renk also report low levels of sufficiency at 30.9% and 15.5%, respectively, suggesting widespread inadequacies in health service provision.

Table 13: Extent to which health services have sufficient capacity and finance by County

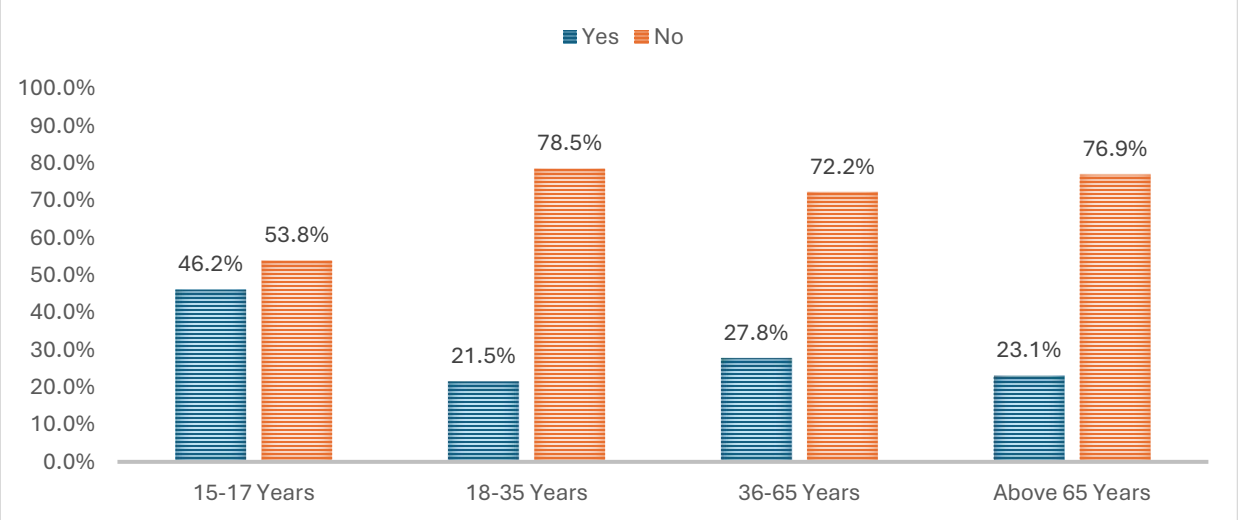
Beneficiary response	Akobo	Panyijiar	Rubkona	Panyikang	Fashoda	Renk	Ulang
Yes	22.9%	36.8%	14.2%	5.0%	30.9%	15.5%	62.9%
No	77.1%	63.2%	85.8%	95.0%	69.1%	84.5%	37.1%

Source: Household Survey Data

Ulang stands out with a more favorable report, where 62.9% of respondents believe that health services have sufficient capacity and finance. This is significantly higher than the other counties and may reflect localized efforts to improve healthcare infrastructure. However, the overall picture remains grim, as the majority of respondents across all counties indicate a lack of sufficient health service capacity, with the highest percentage of dissatisfaction in Panyikang (95.0%) and Rubkona (85.8%).

In analyzing the health services capacity and financial sufficiency, the findings show significant challenges across different age groups as summarized in Figure 22**. Among respondents aged 15 to 17 years, only 46.2% reported that health services have sufficient capacity and finance, indicating a troubling lack of resources for younger populations.** This issue becomes more pronounced in the 18 to 35 years age group, where a staggering 78.5% expressed dissatisfaction with the adequacy of health services.

Figure 22: Extent to which health services have sufficient capacity and finance by Age of Respondent

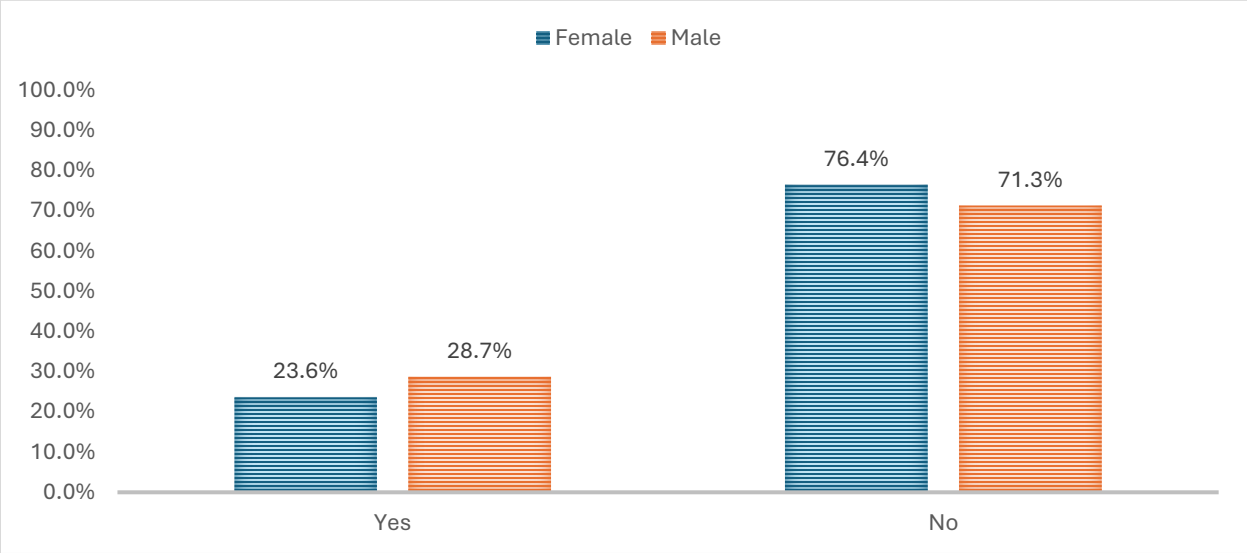


Source: Household Survey Data

The trend continues with those aged 36 to 65 years, where 72.2% indicated insufficient capacity and finance in health services. The most concerning figure arises from the population aged above 65 years, with 76.9% reporting that health services are inadequate. Collectively, these statistics underscore a critical gap in health service provision in the region, particularly affecting younger and older age groups. The data clearly illustrates a pressing need for investment in health infrastructure and financial resources to enhance service delivery across all demographics.

In analyzing the provided data on health services capacity and financial sufficiency, it is evident that a significant portion of both the female and male populations perceive a lack of adequate health services (see Figure 23). Specifically, 76.4% of females and 71.3% of males responded negatively, indicating that they do not believe health services have sufficient capacity and financing to meet their needs. This suggests a pressing concern regarding the accessibility and quality of health care in the region, highlighting the need for substantial improvements.

Figure 23: Extent to which health services have sufficient capacity and finance by Gender of Respondent



Source: Household Survey Data

Conversely, only 23.6% of females and 28.7% of males feel confident that health services are adequate, underscoring an urgent demand for increased investment and resources in the health sector to enhance service delivery. In a FGD, women in Kodok payam in Hai Navishai boma, Fashoda County, emphasized the absence of women and girl-friendly spaces, highlighting the critical need for safe environments that offer essential resources, including kits and dignity kits, especially during and after disasters. Overall, the data reflects a critical gap in health service provision that requires immediate attention from policymakers, health authorities and other relevant stakeholders to ensure better health outcomes for the communities.

Figure 24: A Focus Group Discussion taking place in Fashoda County, Kodok Payam 18 March 2025

Analysis of data concerning the capacity and financing of health services in the targeted counties, particularly as it relates to marital status, shows a significant disparity emerges (see Table 14). Among those who are divorced, only 5.6% report that health services have sufficient capacity and finance, indicating a dire situation for this demographic. In contrast, the percentage of married individuals living with their spouses is notably higher, with 27.1% affirming the adequacy of health services. However, even in this group, a substantial 72.9% express dissatisfaction with the capacity and financial support of these services.

Table 14: Extent to which health services have sufficient capacity and finance by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/ Wife	Single (Never married)	Widowed
Yes	5.6%	27.1%	19.8%	20.7%	25.3%
No	94.4%	72.9%	80.2%	79.3%	74.7%

Source: Household Survey Data

For those married but not living with their spouses, the situation is also concerning, as 19.8% believe health services are sufficient, leaving 80.2% feeling that their needs are unmet. Among single individuals, the percentage claiming sufficient capacity and finance is slightly better at 20.7%, yet still reflects a majority of 79.3% who feel inadequately served. Lastly, the widowed population shows a somewhat more positive outlook, with 25.3% indicating that health services are sufficient, although this still means that 74.7% do not feel their health needs are adequately addressed. The analysis highlights a critical challenge in the health service landscape, where a large majority across all marital statuses perceive a lack of sufficient capacity and financial support in health services, underscoring the urgent need for systemic improvements to meet the health care demands of the population.

In analyzing the data presented in Table 15 regarding the capacity and financing of health services in the GUN region, a significant portion of the population, particularly the internally displaced individuals and returnees, feels that these services are insufficient. Specifically, only

18.1% of internally displaced persons reported that health services have adequate capacity and finance, while a staggering 81.9% indicated that they do not. This trend continues among refugees, with 21.4% affirming sufficient health service capacity against 78.6% who do not.

Table 15: Extent to which health services have sufficient capacity and finance by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	18.1%	21.4%	32.2%	14.0%	50.0%
No	81.9%	78.6%	67.8%	86.0%	50.0%

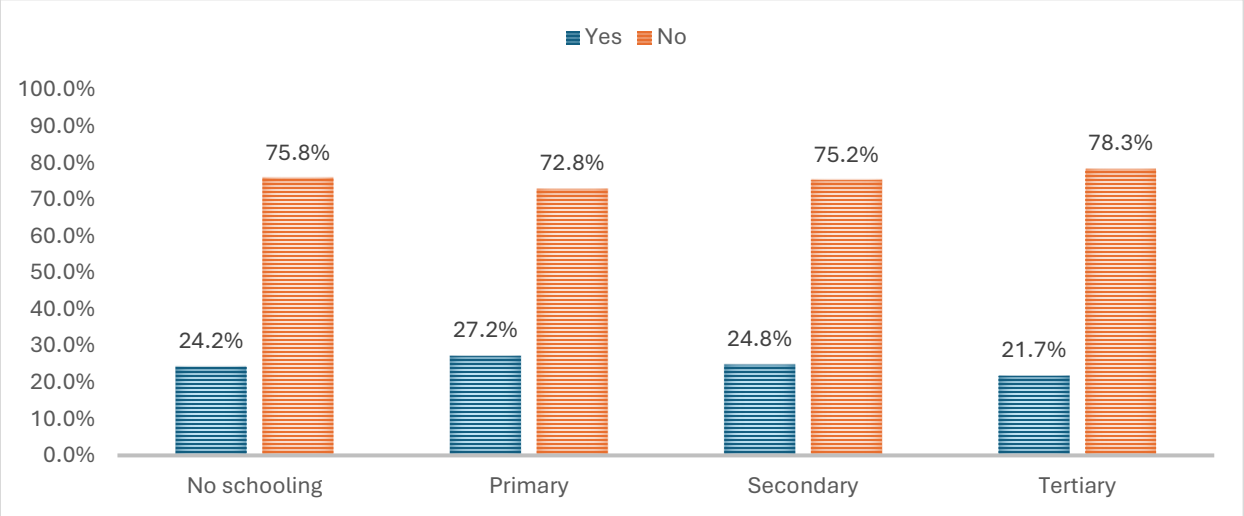
Source: Household Survey Data

Residents, who have never left their homes, report the highest level of satisfaction, with 32.2% acknowledging sufficient capacity and finance, yet this still means that a majority, 67.8%, feel underserved. The situation is particularly dire for returnees, with only 14.0% reporting adequate services and 86.0% expressing dissatisfaction. Interestingly, 50.0% of respondents in the "Don't Know" category indicates uncertainty about the availability of sufficient health services, reflecting a potential gap in communication or awareness regarding health resources.

Overall, these statistics highlight a pressing need for enhanced investment and capacity building in the health sector across all family statuses in the region. The disparities in perceptions of health service adequacy suggest that internally displaced individuals and returnees are particularly vulnerable and may require targeted interventions to improve their access to essential health services. This analysis underscores the critical necessity for policy-makers and humanitarian organizations to prioritize health service improvements to meet the needs of all community members.

The analysis of educational attainment in relation to health service capacity reveals significant challenges (see Figure 25). Among individuals with no formal schooling, 75.8% reported a lack of access to health services, which is notably higher than those at the primary level (72.8%) and secondary level (75.2%). This trend suggests that educational attainment plays a crucial role in health service accessibility.

Figure 25: Extent to which health services have sufficient capacity and finance by Level of Education



Source: Household Survey Data

Conversely, those who have attained different levels of education show varying capacities to access health services. For instance, while 24.2% of those with no schooling affirm access to health services, this figure increases across educational levels, with 27.2% of primary, 24.8% of secondary, and 21.7% of tertiary education holders indicating access. The overall data indicates that as educational levels rise, the proportion of individuals reporting access to health services fluctuates, highlighting potential disparities in both education and health service provision.

In terms of capacity and finance, the health services in the GUN region appear to be under considerable strain, especially for those with lower educational attainment. The high percentage of individuals without schooling who lack access to health services underscores the need for targeted interventions. Strengthening the capacity of health services, particularly in underserved areas, and ensuring adequate financial resources could significantly improve health outcomes, particularly for populations with limited education. Therefore, addressing educational barriers is essential for enhancing health service accessibility and ensuring a more equitable healthcare system in the region.

7.2.7 Presence of an early warning system (EWS) in respondent's community

In analyzing the provided data regarding the existence of an EWS in communities, it is evident that a significant portion of the respondents, specifically 42.2%, reported having an EWS in place, while the majority, 57.8%, indicated that no such system exists. This disparity highlights a critical gap in preparedness and response mechanisms within communities, particularly in the context of the GUN region, where vulnerabilities to natural disasters and conflict are prevalent. The lack of an effective EWS can exacerbate the challenges faced by communities, as timely information is essential for disaster risk reduction and mitigation efforts. An early warning system can play a pivotal role in saving lives and protecting livelihoods by providing alerts about impending dangers, whether from environmental hazards such as floods or from socio-political instability.

Furthermore, the absence of an EWS in over half of the surveyed population underscores the urgent need for investment in infrastructure that supports early warning capabilities. This includes enhancing communication networks, training local personnel, and fostering community engagement to ensure that the information disseminated is understood and actionable. Therefore, the findings reflect a pressing need to bolster EWS in the GUN region, as they are vital for enhancing community resilience and ensuring better preparedness in the face of various threats.

The findings show that existence of EWS within communities varies significantly across different states, as highlighted in Table 16. In Jonglei State, a substantial percentage, 59.0%, reported the presence of an EWS, indicating a relatively strong infrastructure for monitoring and responding to potential threats. This contrasts sharply with Unity State, where only 32.6% of the respondents confirmed the existence of such systems, suggesting a significant gap in preparedness and response capabilities in that state. Upper Nile State falls in between, with 50.8% of communities having an EWS.

Table 16: Existence of an EWS in the community by state

Beneficiary response	Jonglei State	Unity State	Upper Nile State
Yes	59.0%	32.6%	50.8%
No	41.0%	67.4%	49.2%

Source: Household Survey Data

The data underscores the critical need for enhancing early warning mechanisms across the GUN region, particularly in Unity State, to better equip communities in anticipating and mitigating risks related to conflicts, climate change, and other emergencies. Strengthening these systems could play a vital role in improving overall community resilience and safety in a region that faces numerous challenges.

The existence of EWS across various counties reveals significant variability in preparedness and community resilience. According to the data presented in Table 17, Akobo has the highest percentage of communities with an EWS, at 59.0%, indicating a relatively stronger framework for anticipating and responding to emergencies. In contrast, Panyijiar and Rubkona show lower levels of EWS presence, with 44.9% and 27.6% respectively, highlighting potential vulnerabilities in these areas. As part of the 44.9% positive responses, in a boys-only FGD in Panyijiar County, it was reported that both the Disaster Risk Committee and the Dyke Committee are active, regularly alerting communities in flood-prone areas, while spiritual leaders also provide warnings before disasters occur; these efforts support anticipatory actions that began in March-April, prior to the onset of the rains.

Table 17: Existence of an EWS in the community by county

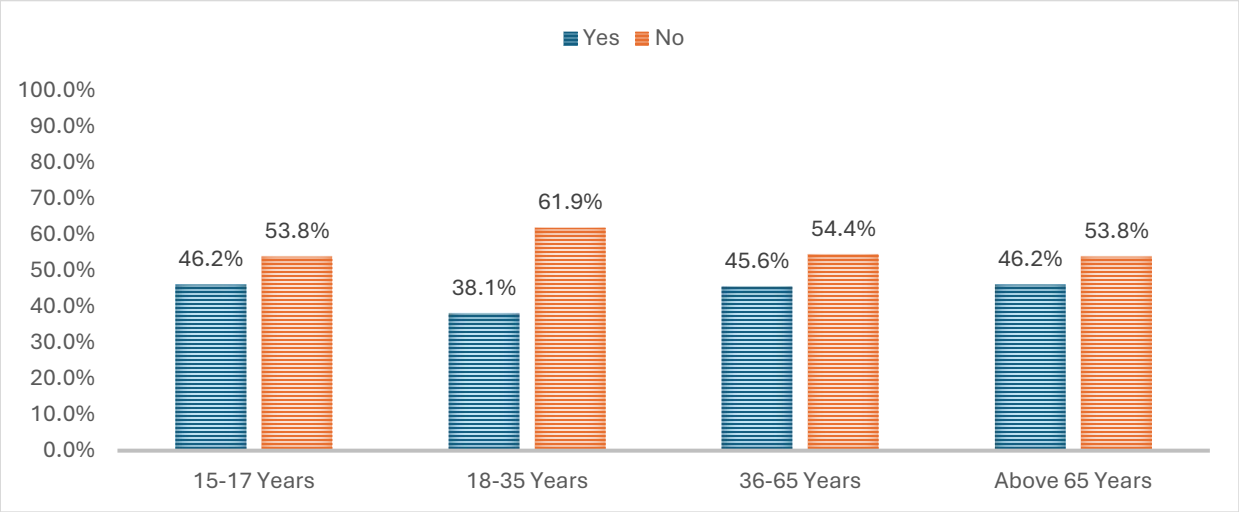
Beneficiary response	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	59.0%	44.9%	27.6%	42.0%	20.0%	39.4%	85.6%
No	41.0%	55.1%	72.4%	58.0%	80.0%	60.6%	14.4%

Source: Household Survey Data

Fashoda and Panyikang further reflect a concerning trend, with only 42.0% and 20.0% of communities having an EWS, respectively. This suggests that a majority of residents in Panyikang, specifically, may lack adequate systems to alert them to impending threats. Renk also exhibits a significant gap, with 39.4% of communities reporting the existence of an EWS, leaving over half without such critical support. Remarkably, Ulang stands out with a high 85.6% of communities reporting an EWS, positioning it as a leader in proactive disaster management within the region. However, the overall data indicates that across the GUN region, there is a pressing need to enhance the establishment and functionality of EWS in many counties, especially in those where less than half of the communities are equipped to handle emergencies effectively. This disparity underscores the importance of targeted interventions to improve early warning capabilities, thereby fostering resilience in vulnerable populations throughout the region.

In analyzing the findings regarding awareness of an EWS across different age groups in the GUN region, it is evident that a significant portion of the population is not informed about such systems (see Figure 26). Among the youth aged 15-17 years, only 46.2% reported awareness of an EWS, while 53.8% indicated they were unaware. This trend continues in the 18-35 age group, where 38.1% are aware of an EWS, leading to a larger 61.9% who are not. The 36-65 age group shows slightly better awareness, with 45.6% familiar with the EWS, yet still, more than half – 54.4% – lack this knowledge. Lastly, those aged above 65 years mirror the first group, with 46.2% aware and 53.8% unaware.

Figure 26: Existence of an EWS in the community by Age of Respondent

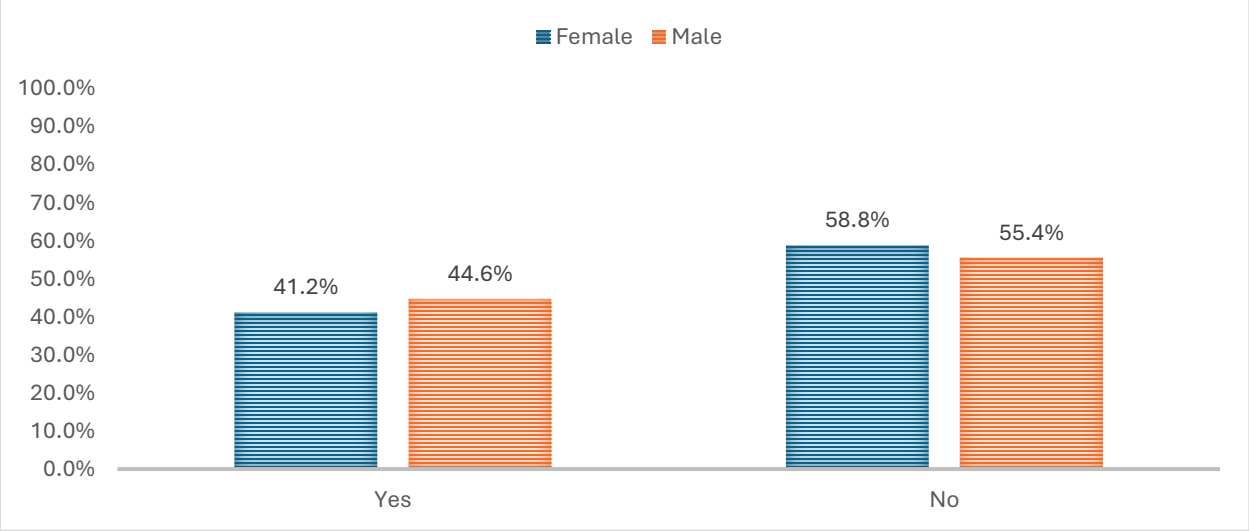


Source: Household Survey Data

The analysis highlights a concerning gap in awareness across all age demographics, particularly among the younger populations. The lack of knowledge about early warning systems is critical, especially in this region of South Sudan, which faces numerous risks such as conflict, natural disasters and food insecurity. An effective EWS is essential for community resilience and preparedness. The data suggests that there is a need for targeted education and outreach initiatives to enhance awareness and ensure that all age groups understand the importance and functionality of early warning systems in their communities.

Analysis of awareness of an EWS within the context of the GUN region by gender shows that 58.8% of females and 55.4% of males do not have knowledge of an EWS in their community (see Figure 27). Conversely, a smaller portion of the population, with 41.2% of females and 44.6% of males, affirmed the existence of an EWS.

Figure 27: Existence of an EWS in the community by Gender of Respondent



Source: Household Survey Data

This disparity highlights a critical gap in community awareness and preparedness regarding potential hazards, which is particularly concerning. The lack of an effective EWS can hinder timely responses to crises, potentially exacerbating vulnerabilities among the population. Therefore, it is essential for local authorities and organizations to enhance community engagement and education efforts to improve awareness and understanding of early warning systems, ultimately fostering resilience in the face of adversity.

The analysis of the existence of an EWS reveals significant disparities across different marital statuses (see Table 18). According to the data presented, individuals who are single (never married) report the highest percentage of EWS presence in their communities at 46.6%, closely followed by widowed individuals at 48.4%. This indicates a relatively strong awareness or implementation of EWS among those who may be more vulnerable due to their marital status. Conversely, married individuals living with their spouses show a lower presence of EWS, at 43.1%. This could suggest that the dynamics of support and communication within these households may impact the accessibility or visibility of such systems. Notably, divorced individuals report an EWS presence at 27.8%, which is the lowest among the groups analyzed. This may reflect additional social challenges faced by divorced persons in the region, potentially limiting their engagement with community resources.

Table 18: Existence of an EWS in the community by Marital Status of Respondent

Beneficiary response	Divorced	Married and living with Husband/ Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	27.8%	43.1%	31.5%	46.6%	48.4%
No	72.2%	56.9%	68.5%	53.4%	51.6%

Source: Household Survey Data

On the contrary, a significant portion of respondents across all categories reported the absence of an EWS. The highest absence rate is among divorced individuals at 72.2%, followed by married individuals living together at 56.9%. This highlights a concerning trend, as over half of the respondents in each marital category do not have access to EWS that could aid in disaster preparedness and response. The findings illustrate a critical need for enhancing the awareness and establishment of early warning systems, particularly focusing on supporting divorced and married individuals living with their spouses, who currently exhibit lower engagement with these crucial community resources. Addressing these disparities may improve overall community resilience against potential crises.

In examining the existence of an EWS within GUN communities, the data shows significant disparities based on family status. **Among IDPs, 43% reported the presence of an EWS, indicating a relatively moderate awareness or implementation of such systems (see Table 19)**. In contrast, only 35.7% of refugees acknowledged the existence of an EWS in their communities. This suggests potential gaps in communication or resources available to refugees compared to IDPs.

Table 19: Existence of an EWS in the community by Family Status

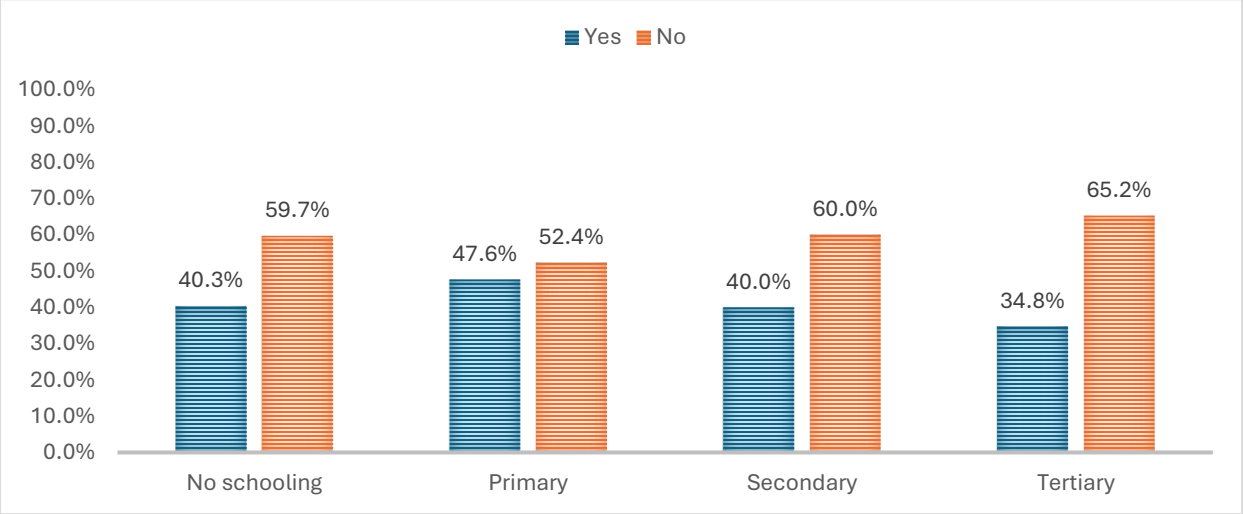
Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	43.0%	35.7%	48.0%	26.4%	0.0%
No	57.0%	64.3%	52.0%	73.6%	100.0%

Source: Household Survey Data

Residents, who have never left their communities, had the highest percentage at 48%, reflecting a greater integration or awareness of local emergency preparedness initiatives. However, returnees, who have left and subsequently returned to their communities, reported the lowest awareness of EWS at just 26.4%. This may indicate challenges faced by returnees in re-establishing connections with community resources or highlights the ongoing instability that affects their reintegration. Furthermore, the data shows a concerning trend where 100% of respondents in the "Don't Know" category indicate a lack of awareness regarding EWS, underscoring the critical need for educational outreach and infrastructure development. Overall, the analysis suggests that while there are some mechanisms for EWS in the region, significant gaps remain, particularly for vulnerable populations such as returnees and refugees. These findings point to the necessity for tailored interventions that enhance community resilience and improve the implementation of EWS across all demographics.

The data presented provides insight into the presence of an EWS across different education levels in in the GUN region. **Among individuals with no formal schooling, 59.7% reported that there is no EWS in their community, compared to 40.3% who stated that such a system exists (see Figure 28).** Similarly, those with only primary education showed a slightly lower proportion (52.4%) reporting the absence of an EWS, while 47.6% acknowledged its presence. The trend remains consistent at the secondary education level, where 60.0% reported the absence of an EWS, compared to 40.0% who indicated its presence. Among individuals with tertiary education, the gap is even wider, with 65.2% stating that no EWS exists in their community, while only 34.8% acknowledged its presence.

Figure 28: Existence of an EWS in the community by Level f Education



Source: Household Survey Data

In the context of the GUN region, these figures suggest that access to EWS may be limited, particularly for those with higher education levels, which could indicate a disconnect between information dissemination and educated individuals who might be expected to play a role in disaster preparedness and response. The relatively higher percentage of EWS presence among individuals with primary education suggests that awareness efforts might be more effective at the community level where basic education is common. However, the overall lack of access across all education levels highlights the need for strengthening early warning mechanisms to ensure that communities, regardless of their educational background, are adequately informed and prepared for potential hazards such as conflict, flooding, and food insecurity, which are prevalent challenges in

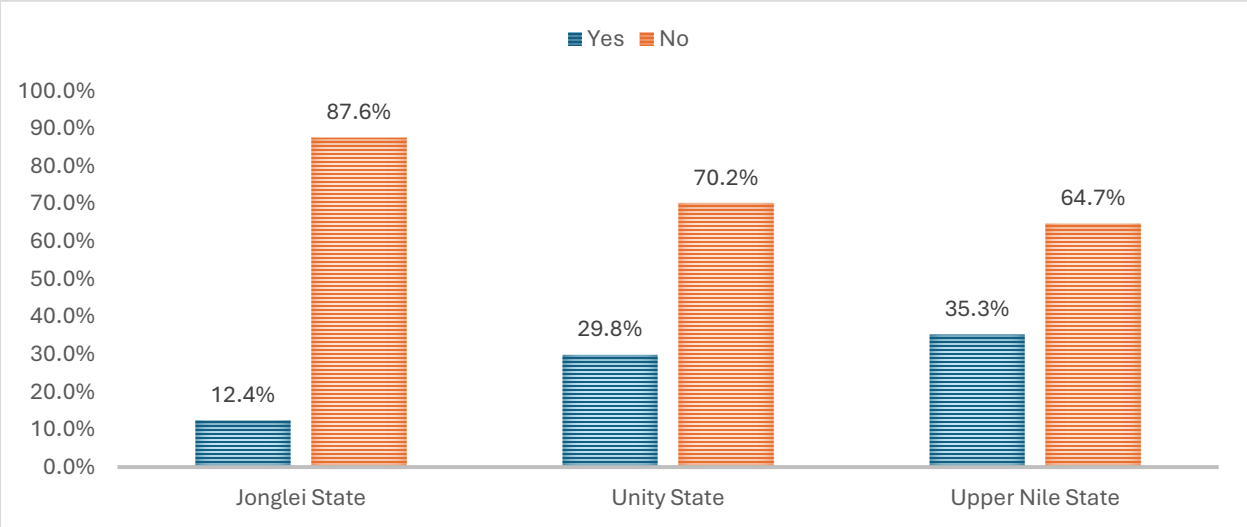
the GUN region. This calls for targeted policy interventions to enhance disaster preparedness and risk reduction through improved communication channels, infrastructure and community engagement.

7.2.8 Extent to which the local government/ Payam administration engage respondents during disasters

Analysis of the engagement of local government or Payam administration during disasters across the three states, shows that only 29.7% of respondents reported having interactions with these authorities during such events, while a significant 70.3% indicated that they did not engage with local governance structures. This disparity highlights a critical gap in disaster management communication and support, suggesting that the majority of the population may feel abandoned or unsupported during crises. The low percentage of engagement could be attributed to several factors, including lack of awareness about available resources, ineffective communication channels, or a general mistrust in local governance. To improve disaster response and community resilience in the GUN region, it is essential for the local government to enhance outreach efforts, build trust, and foster more proactive engagement with the community during emergencies.

As represented in Figure 29, analysis by state shows that in Jonglei State, only 12.4% of respondents reported receiving assistance from local authorities during disasters. This indicates a substantial lack of governmental engagement, as up to 87.6% of individuals stated they did not receive support. In Unity State, the situation is slightly better, with 29.8% of the population affirming the involvement of the local government, yet a considerable 70.2% still report no engagement. Upper Nile State shows the highest level of reported assistance, with 35.3% of respondents indicating that local authorities engage with them during disasters, while 64.7% experience a lack of support.

Figure 29: Whether or not local government/ Payam administration engages communities during disasters by State



Source: Household Survey Data

The data highlights a critical gap in disaster response mechanisms across these states, emphasizing the need for improved communication and collaboration between local

administrations and communities. The low percentages of engagement suggest that many residents feel unsupported during crises, which can exacerbate the challenges faced in disaster management and recovery efforts in the region. Enhanced efforts to foster local government involvement could potentially lead to more effective disaster preparedness and response strategies.

Table 20 reveals significant disparities in community engagement by local government and Payam administrations during disasters across various counties. **Notably, Akobo exhibits a low engagement rate, with only 12.4% of respondents indicating that local authorities involve them in disaster management efforts.** In contrast, Panyijiar shows a much higher engagement level at 56.6%, suggesting that the local government there is more proactive in involving communities during crises.

Table 20: Whether or not local government/ Payam administration engages communities during disasters by County

Beneficiary response	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	12.4%	56.6%	18.8%	56.8%	41.7%	21.1%	23.7%
No	87.6%	43.4%	81.2%	43.2%	58.3%	78.9%	76.3%

Source: Household Survey Data

Rubkona and Ulang have engagement rates of 18.8% and 21.1%, respectively, highlighting a concerning trend where a large majority – 81.2% in Rubkona and 78.9% in Ulang – do not receive any engagement from local authorities during disasters. Fashoda and Panyikang also reflect moderate engagement rates of 56.8% and 41.7%, respectively, which indicate that while some efforts are being made, a substantial portion of the population remains uninvolved. Renk stands out with an engagement rate of just 21.1%, revealing a critical gap in disaster management communication and support. All in all, the data suggests that while certain counties, like Panyijiar and Fashoda, show better engagement efforts, the majority of populations in the counties remain largely unsupported by local government initiatives during disasters. This highlights a pressing need for improved communication and community involvement strategies to enhance disaster resilience.

Analysis by age in Table 21 shows that among younger respondents aged 15-17 years, 46.2% reported that the local administration engages them during disasters. This is notably higher compared to older age groups, with only 30.0% of those aged 18-35, 28.7% of those aged 36-65, and 38.5% of individuals above 65 years indicating similar engagement.

Table 21: Whether or not local government/ Payam administration engages communities during disasters by Age of Respondent

Beneficiary response	15-17 Years	18-35 Years	36-65 Years	Above 65 Years
Yes	46.2%	30.0%	28.7%	38.5%
No	53.8%	70.0%	71.3%	61.5%

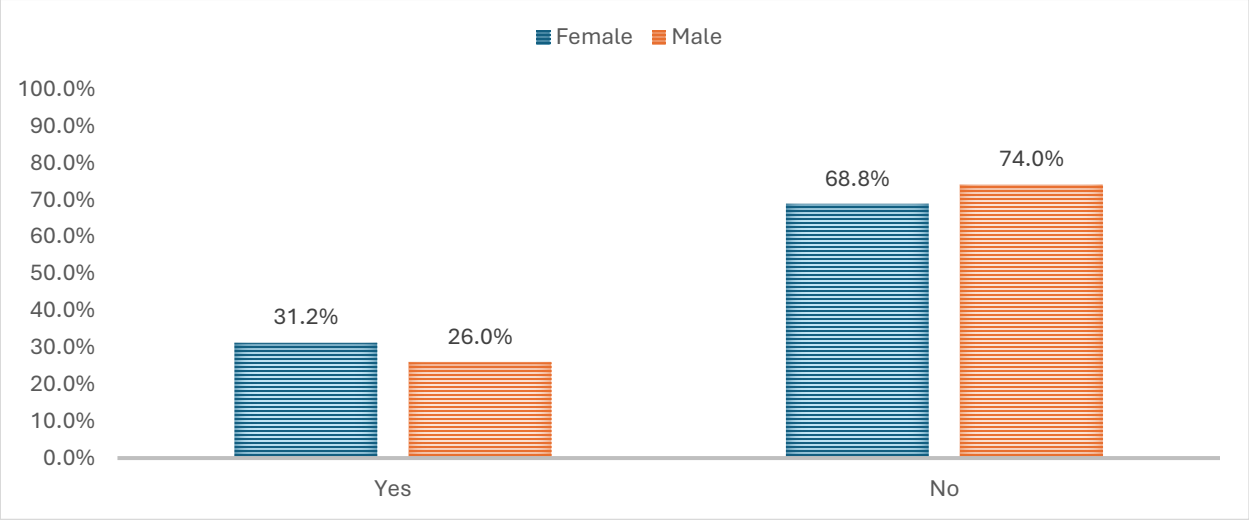
Source: Household Survey Data

Conversely, the percentage of respondents who feel disengaged is higher across all older age groups. Specifically, 53.8% of 15-17-year-olds reported no engagement, but this figure rises dramatically to 70.0% for the 18-35 age group, 71.3% for the 36-65 age group, and 61.5% for respondents above 65 years. This trend suggests a concerning gap in communication and involvement from local government during critical times, particularly affecting younger adults and older populations who may rely more on official channels for disaster management. The lack of

engagement from local authorities could exacerbate vulnerabilities during disasters, as older individuals and those in transitional age groups may be less likely to receive timely information or support. The disparity highlights the need for local governments to enhance their outreach strategies, ensuring that all age groups, especially the underserved older populations, are actively involved in disaster preparedness and response initiatives.

Analysis by age of respondent reveals that among females, 31.2% reported that they are engaged by local authorities during such events, while a significant 68.8% indicated they are not (see Figure 30). In contrast, the male respondents show a lower engagement rate of 26.0%, with 74.0% stating they do not receive assistance from local government during disasters.

Figure 30: Whether or not local government/ Payam administration engages communities during disasters by Gender of Respondent



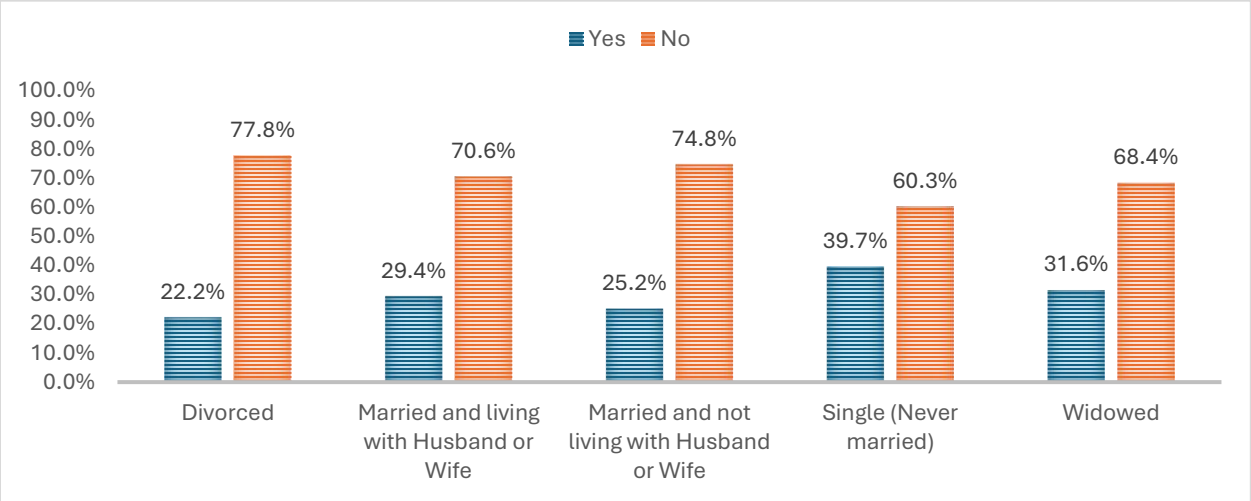
Source: Household Survey Data

This indicates a critical gap in disaster management communication and support, particularly for women, who experience a higher rate of disengagement. The overwhelming majority of both genders feel excluded from local governance processes that are essential for effective disaster response. This highlights the need for improved strategies to involve both male and female community members in disaster preparedness and response initiatives, ensuring that local administrations actively engage with all segments of the population to enhance resilience and support during crises.

Figure 31 highlights the extent to which the local government or Payam administration in South Sudan engages individuals during disasters based on their marital status. Overall, a significant proportion of respondents indicated that they are not engaged by the local government during disasters, with 77.8% of divorced individuals, 70.6% of those married and living with their spouse, 74.8% of those married but not living with their spouse, 60.3% of single individuals, and 68.4% of widowed individuals reporting a lack of engagement. However, there are variations in engagement levels across different marital groups. Among those who reported engagement, single individuals had the highest rate at 39.7%, followed by widowed individuals at 31.6%, married individuals living with their spouse at 29.4%, married individuals not living with their spouse at 25.2%, and divorced

individuals at 22.2%. These variations suggest that the engagement efforts of Payam administrations may be more accessible to certain groups, particularly single and widowed individuals, who may be perceived as more vulnerable or in need of direct support.

Figure 31: Whether or not local government/ Payam administration engages communities during disasters by Marital Status of Respondent

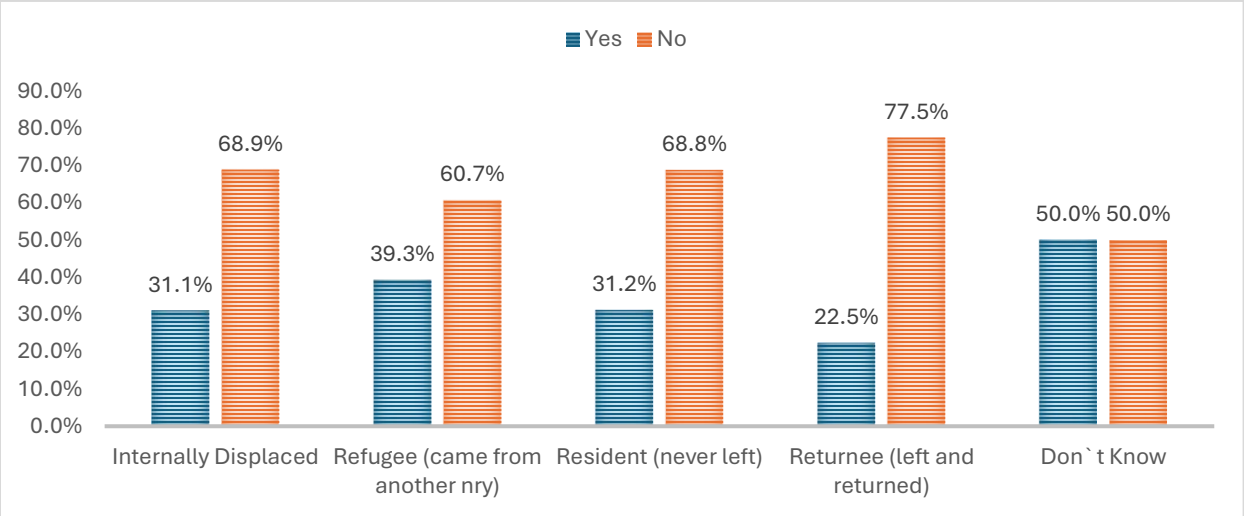


Source: Household Survey Data

The high percentage of respondents indicating a lack of engagement raises concerns about the inclusivity and effectiveness of local disaster response mechanisms in the three states. It suggests potential gaps in communication, coordination, or resource allocation that may hinder the ability of the government to reach affected communities. Strengthening community engagement strategies, particularly among divorced and married individuals who do not live with their spouses, could enhance disaster preparedness and response efforts. Additionally, the relatively higher engagement of single and widowed individuals may indicate targeted assistance or community-based support networks that should be further studied and expanded to other demographic groups.

The engagement by local government or Payam administration during disasters varies significantly across different population groups (see Figure 32). Refugees report the highest level of engagement, with 39.3% stating that they have been involved in disaster response efforts. IDPs and residents who have never left their communities show similar levels of engagement at 31.1% and 31.2%, respectively.

Figure 32: Whether or not local government/ Payam administration engages communities during disasters by Family Status

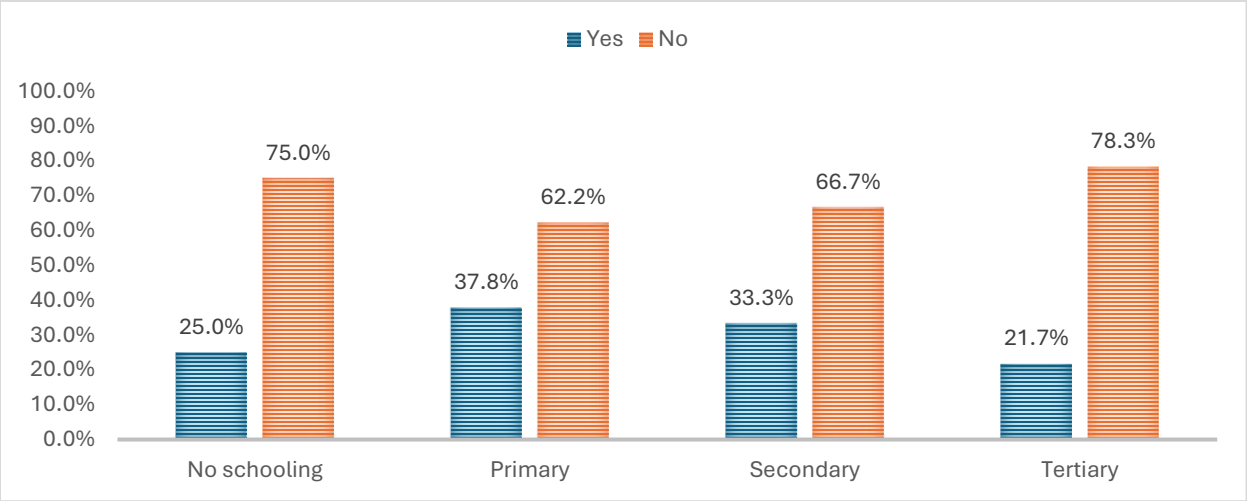


Source: Household Survey Data

Meanwhile, returnees – those who left and later returned – experience the lowest level of engagement, with only 22.5% indicating participation. Notably, half of those who were uncertain about their status also reported being engaged. However, the majority across all categories indicate a lack of involvement, with 68.9% of IDPs, 60.7% of refugees, 68.8% of residents, and 77.5% of returnees stating that they have not been engaged by local authorities during disasters. This suggests that while there are efforts by the government to involve affected populations, significant gaps remain, particularly among returnees. Strengthening disaster response mechanisms and ensuring more inclusive engagement across all groups could enhance resilience and preparedness.

Figure 33 shows that local government or Payam administration engagement during disasters varies significantly based on education levels. Among individuals with no formal schooling, only 25% report being engaged by local authorities, while the majority (75%) do not receive such engagement. A slightly higher proportion (37.8%) of those with primary education experience government involvement during disasters, but still, a significant 62.2% remain disengaged. Similarly, 33.3% of respondents with secondary education acknowledge engagement, though two-thirds (66.7%) are not engaged. At the tertiary level, the lowest proportion (21.7%) report engagement, with the highest disengagement rate of 78.3%.

Figure 33: Whether or not local government/ Payam administration engages communities during disasters by Level of Education



Source: Household Survey Data

The findings suggest that individuals with higher education levels are less likely to experience government interaction in disaster situations, raising concerns about inclusivity and accessibility of disaster response efforts. In the context of the GUN region, where local governance structures such as Payam administrations play a crucial role in community-level disaster management, the limited engagement across all education levels suggests gaps in coordination, awareness, or resource allocation. Strengthening disaster preparedness strategies and ensuring more inclusive engagement of all citizens, regardless of their education levels, could enhance resilience and response effectiveness in affected communities.

7.2.9 Extent to which respondents believe local government/ Payam administration has capacity and finance to respond to disasters

The data shows that across the GUN region, a significant majority (85%) of respondents believe that the local government or Payam administration lacks the capacity and financial resources to effectively respond to disasters. Only 15% perceive it as capable. This suggests a critical gap in disaster preparedness at the local level, potentially due to insufficient funding, limited infrastructure and inadequate institutional frameworks. The overwhelming lack of confidence in local government response capabilities highlights the urgent need for increased investment in disaster risk management, capacity building and resource allocation. Given the vulnerability to climate-related disasters in the GUN region such as floods and droughts, as well as ongoing conflicts and economic instability, strengthening local governance structures and securing financial support are essential for improving resilience and response mechanisms.

The capacity and financial ability of local government or Payam administrations to respond to disasters vary significantly across states, with the majority of local authorities struggling to provide adequate disaster response (Table 22). In Jonglei State, only 3.8% of the Payam administrations possess the necessary capacity and resources, while an overwhelming 96.2% lack the ability to effectively respond to emergencies. Similarly, in Upper Nile State, only 12.9% of local

government units have the required financial and operational capacity, whereas 87.1% are unable to manage disaster situations adequately.

Table 22: Extent to which local government/ Payam administration has capacity and finance to respond to disasters by State

Beneficiary response	Jonglei State	Unity State	Upper Nile State
Yes	3.8%	18.9%	12.9%
No	96.2%	81.1%	87.1%

Source: Household Survey Data

Unity State demonstrates a relatively higher preparedness compared to the other two states, with 18.9% of its Payam administrations capable of responding to disasters, but still, a significant 81.1% fall short in terms of capacity and financing. These findings highlight a critical gap in the disaster management framework in the GUN region, with local governments across all three states facing severe limitations in their ability to address emergencies. The lack of financial resources and institutional capacity at the Payam level suggests an urgent need for increased investment in disaster preparedness, infrastructure and emergency response mechanisms to enhance local resilience in the face of natural and man-made disasters.

The capacity and financial ability of local government or Payam administrations to respond to disasters also varies significantly across counties, highlighting critical gaps in disaster preparedness and response (Table 23). Based on the data, the majority of counties report a severe lack of capacity and financial resources to handle disasters. In Akobo County, only 3.8% of the local government has the necessary capacity and financial resources, leaving 96.2% unable to respond effectively. A similar trend is observed in Panyikang County, where 96.7% of the administration lacks the necessary support, and in Renk County, where an overwhelming 98.6% face the same constraints.

Table 23: Extent to which local government/ Payam administration has capacity and finance to respond to disasters by County

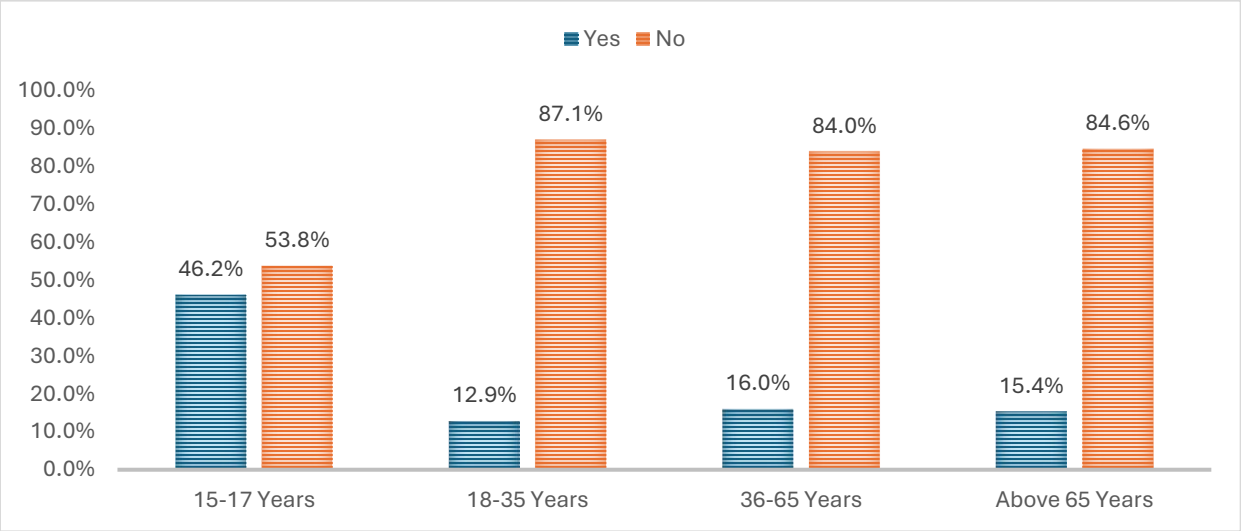
Beneficiary response	Akobo County	Panyijiar County	Rubkona County	Fashoda County	Panyikang County	Renk County	Ulang County
Yes	3.8%	36.0%	11.8%	29.6%	3.3%	1.4%	13.4%
No	96.2%	64.0%	88.2%	70.4%	96.7%	98.6%	86.6%

Source: Household Survey Data

While the situation is dire in most counties, some exhibit relatively higher levels of capacity. **In Panyijiar County, 36.0% of the local government has the means to respond to disasters, making it the best-equipped among the listed counties.** Fashoda County follows, with 29.6% of its administration demonstrating the capacity and financial resources needed for disaster response. Meanwhile, Rubkona and Ulang Counties have moderate capacities, with 11.8% and 13.4%, respectively, indicating some ability but still highlighting significant challenges. The figures underscore the widespread institutional weaknesses and financial limitations that impede effective disaster response in the targeted counties. The heavy reliance on external aid and the inability of local governments to manage crises independently suggest the need for urgent policy interventions. Strengthening local governance, increasing budget allocations for disaster preparedness, and fostering partnerships with humanitarian organizations could help bridge these gaps and enhance resilience at the county level.

Across all age groups, the majority of respondents believe that local authorities lack the necessary resources to respond to disasters (Figure 34). Notably, 87.1% of individuals aged 18-35 years, 84.0% of those aged 36-65 years, and 84.6% of respondents above 65 years expressed doubts about the ability of the government to handle disaster response. This suggests widespread skepticism among adults, particularly among young and middle-aged individuals, who are likely to be actively engaged in economic and community development activities.

Figure 34: Extent local government/ Payam administration has capacity and finance to respond to disasters by Age of Respondent

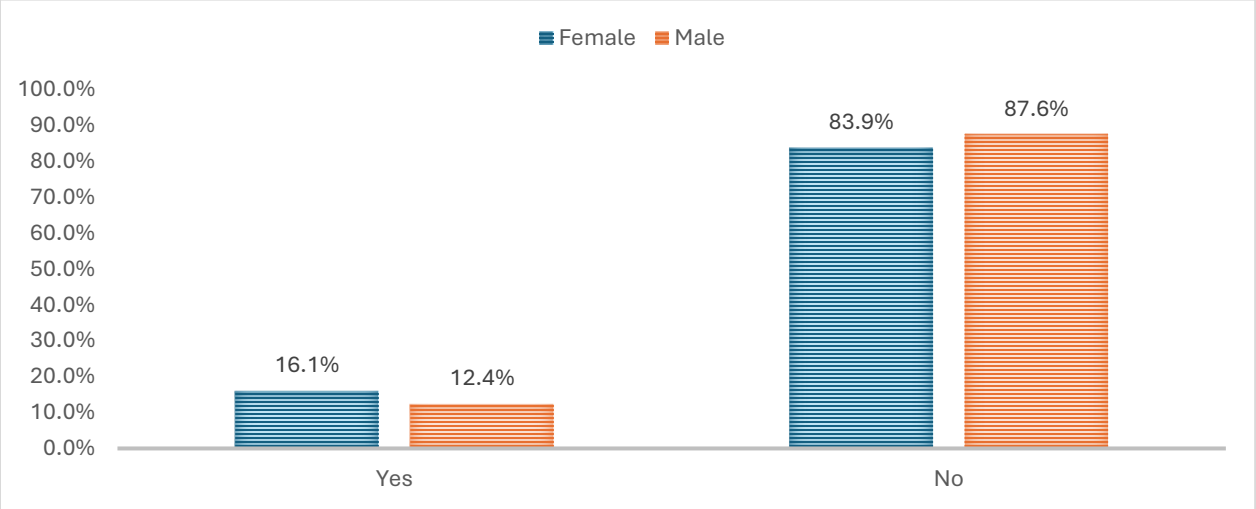


Source: Household Survey Data

Interestingly, the only age group where a significant proportion believes that local authorities have the capacity to manage disasters is the 15-17-year-old category, with 46.2% expressing confidence. However, even within this group, a majority (53.8%) still believes that local government lacks the required capacity and financial resources. This disparity in perception could be attributed to younger individuals having limited exposure to governance challenges or a more optimistic outlook compared to older age groups, who may have witnessed repeated governance failures. The overwhelming lack of confidence in Payam administrations among adults suggests that local institutions may be underfunded, inadequately trained, or poorly equipped to address emergencies. This could have severe implications for disaster management, particularly in rural and conflict-affected areas where communities rely heavily on local governance structures for immediate relief and support. Strengthening financial support and capacity-building initiatives for Payam administrations could be essential to improving disaster resilience and restoring public confidence in local governance systems.

The results show that a significant majority of both female and male respondents believe that the local authorities lack the necessary resources and capability (see Figure 35). Specifically, 83.9% of females and 87.6% of males indicated that the local government does not have the capacity to effectively respond to disasters. In contrast, only 16.1% of females and 12.4% of males expressed confidence in the ability of local administration to manage disaster situations.

Figure 35: Extent local government/ Payam administration has capacity and finance to respond to disasters by Gender of Respondent



Source: Household Survey Data

This overwhelming consensus suggests a critical gap in disaster response infrastructure and funding within the local governance framework. The high percentage of respondents who answered "No" points to systemic challenges, including inadequate financial resources, insufficient training, and a lack of emergency preparedness strategies. Consequently, this situation raises concerns about the resilience of communities in the GUN region, as the inability of local authorities to respond effectively to disasters could exacerbate the impact of natural and man-made crises in the region. Addressing these deficiencies is essential for improving disaster readiness and ensuring the safety and well-being of the population.

The data in Table 24 illustrates the perceived capacity and financial capability of local government or Payam administration to respond to disasters, as assessed by respondents based on their marital status. The findings indicate that across all marital groups, there is a prevailing belief that the local government lacks the necessary resources and preparedness for disaster response. **Notably, 100% of divorced respondents expressed that their local administration does not have the capacity and financial means to handle disasters, highlighting a complete lack of confidence in government support within this demographic.** Similarly, overwhelming majorities in other marital categories – 84.3% of married individuals living with – their spouse, 88.3% of those married but not cohabiting, 84.5% of single respondents, and 83.2% of widowed individuals – also reported that their local government is ill-equipped for disaster management. Conversely, only a small fraction of respondents in each category believed that the Payam administration has both the capacity and financial resources to address disasters.

Table 24: Extent to which local government/ Payam administration has capacity and finance to respond to disasters by Marital Status of Respondent

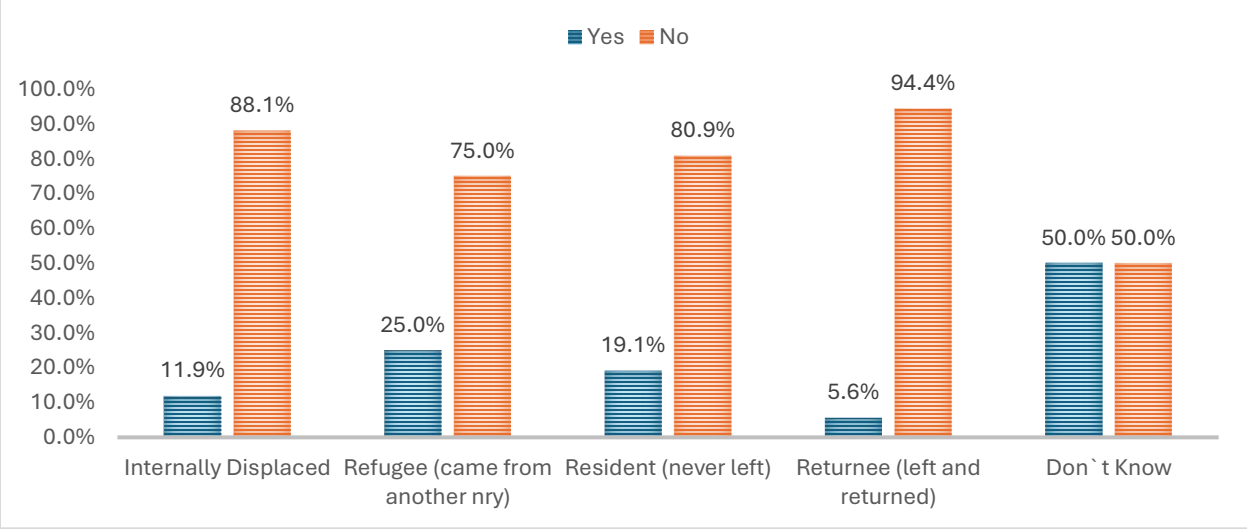
Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	0.0%	15.7%	11.7%	15.5%	16.8%
No	100.0%	84.3%	88.3%	84.5%	83.2%

Source: Household Survey Data

The highest confidence level was observed among widowed respondents, with 16.8% stating that their local government could respond effectively, followed closely by married individuals living with their spouse (15.7%) and single respondents (15.5%). Those married but not cohabiting showed lower confidence at 11.7%. These figures suggest that while some individuals perceive local authorities as somewhat capable, trust in their ability to manage disasters remains low overall. These findings highlight significant gaps in disaster preparedness at the local level. The lack of confidence in Payam administrations may be linked to limited financial allocations, inadequate institutional frameworks, and weak coordination in disaster response efforts. Addressing these concerns requires a strengthened approach to disaster risk management, including increased funding, capacity building, and improved engagement with local communities to enhance resilience and preparedness.

The data highlights the perceived capacity of the local government or Payam administration in the three states to respond to disasters across different population groups (See Figure 36)**. Among IDPs, only 11.9% believe that local authorities have the capacity and financial resources to manage disasters, while a significant 88.1% do not share this confidence.** Similarly, 25.0% of refugees who have arrived from another country feel that the local administration is capable, whereas 75.0% disagree.

Figure 36: Extent local government/ Payam administration has capacity and finance to respond to disasters by Family Status

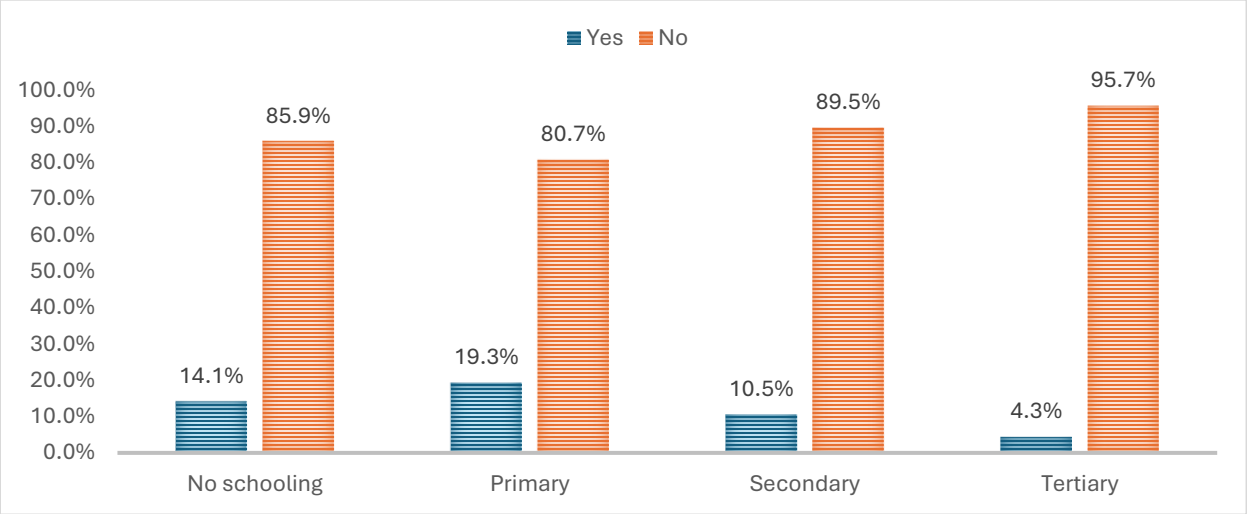


Source: Household Survey Data

Among residents who have never left their communities, 19.1% trust the local government ability to respond to crises, but a larger 80.9% express doubts. For returnees – those who left and later returned – only 5.6% perceive the local administration as capable, while a striking 94.4% do not. Meanwhile, among those who are uncertain about their status, responses are evenly split, with 50.0% believing in the ability of the local authorities and the other 50.0% expressing skepticism. Overall, these findings indicate that the vast majority of the population, regardless of displacement status, lack confidence in the Payam administration capacity and financial resources to effectively manage disasters.

The data in Figure 37 highlights the perceived capacity and financial ability of the local government or Payam administration in the GUN region to respond to disasters, categorized by levels of education. **The overwhelming majority of respondents, regardless of their education level, believe that the local administration lacks both the capacity and financial resources to manage disaster responses effectively.** Specifically, 85.9% of individuals with no formal schooling, 80.7% of those with primary education, 89.5% of those with secondary education, and 95.7% of those with tertiary education expressed a lack of confidence in local disaster management capabilities. Conversely, only a small proportion of respondents – 14.1% of those with no schooling, 19.3% with primary education, 10.5% with secondary education, and 4.3% with tertiary education – believe that the local government has the necessary capacity and funding.

Figure 37: Extent local government/ Payam administration has capacity and finance to respond to disasters by Level of Education



Source: Household Survey Data

These findings indicate a widespread perception that local disaster response mechanisms in the region are inadequate, with confidence levels decreasing as education levels rise. The highest skepticism comes from those with tertiary education, who are likely more informed about governance structures and financial limitations, reinforcing concerns about the ability of local authorities to effectively manage disasters.

7.2.10 Extent to which local government provides additional water storage during disasters

Overall, across the three states, the data indicates that the local government role in providing additional water storage during disasters is significantly limited. With only 19.7% of respondents confirming that the government offers such support, a vast majority – 80.3% – reported that no additional water storage is provided in times of crisis. This suggests that communities facing disasters, such as floods, droughts, violent winds, heatwaves, fires, human disease outbreaks, livestock disease outbreaks, conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance often struggle with inadequate water supply management, exacerbating humanitarian challenges. Given the vulnerability to extreme weather conditions and ongoing infrastructural challenges in the GUN region, the lack of sufficient government intervention

in water storage may contribute to increased water scarcity, health risks and displacement. Strengthening disaster response mechanisms, including investment in water infrastructure, emergency reserves, and coordinated relief efforts, would be crucial in enhancing resilience against climate-induced disasters.

The ability of local governments in the GUN region to provide additional water storage during disasters varies across different states, with a generally low capacity to support affected communities (Table 25). **In Jonglei State, only 9.5% of respondents highlighted that the local government structures can offer additional water storage during emergencies, leaving a significant 90.5% indicating that the government is unable to provide this crucial resource.** Similarly, in Unity State, while the situation is slightly better, only 23.0% of local authorities have the capacity to supplement water storage, meaning a vast 77.0% lack the ability to respond adequately.

Table 25: Ability of local government provide additional water storage during disasters by State

Beneficiary response	Jonglei State	Unity State	Upper Nile State
Yes	9.5%	23.0%	18.1%
No	90.5%	77.0%	81.9%

Source: Household Survey Data

In Upper Nile State, the figures indicate that just 18.1% of communities are convinced that local governments can provide additional water storage, while 81.9% remain unable to do so. These statistics highlight a critical gap in disaster preparedness, particularly in regions frequently affected by floods and conflicts, where access to clean and sufficient water is essential for survival.

The data in Table 26 provides a clear indication of the perceived capacity of local governments across the different counties to provide additional water storage during disasters. The majority of respondents in most counties expressed that their local governments do not offer additional water storage support during such crises. **Notably, Renk had the highest percentage of respondents (98.6%) indicating a lack of such support, followed by Akobo (90.5%), Ulang (88.7%), and Rubkona (81.5%).** Similarly, Panyikang (78.3%) and Fashoda (61.7%) also recorded high levels of dissatisfaction, suggesting that access to emergency water storage remains a critical issue in these areas.

Table 26: Ability of local government provide additional water storage during disasters by County

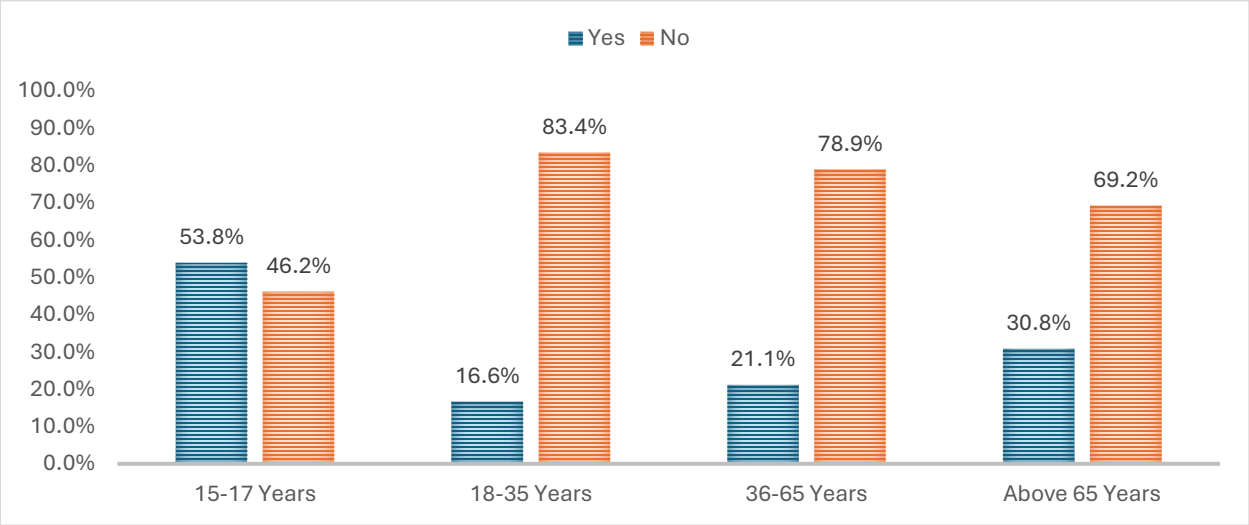
Beneficiary response	Akobo	Rubkona	Panyijiar	Fashoda	Panyikang	Renk	Ulang
Yes	9.5%	18.5%	33.8%	38.3%	21.7%	1.4%	11.3%
No	90.5%	81.5%	66.2%	61.7%	78.3%	98.6%	88.7%

Source: Household Survey Data

On the other hand, Panyijiar and Fashoda reported relatively higher levels of government support, with 33.8% and 38.3% of respondents, respectively, acknowledging the provision of additional water storage. However, even in these counties, the majority still reported a lack of support. This suggests that while some local governments in the GUN region have made efforts to address water storage needs during disasters, the overall capacity remains significantly inadequate. Strengthening local government response capabilities through increased funding, infrastructure development, and coordination with humanitarian organizations could significantly improve disaster resilience in the country.

The analysis of beneficiary views regarding the provision of additional water storage by local government during disasters in reveals significant disparities across different age groups (see Figure 38). **Among the youngest respondents (15-17 years), 53.8% believe that local government provides additional water storage, while 46.2% disagree.** However, confidence in government intervention decreases sharply among the 18-35 age group, with only 16.6% acknowledging support and a striking 83.4% stating otherwise. This trend persists in the 36-65 age category, where only 21.1% affirm the role of government, while 78.9% disagree. The skepticism is also high among respondents above 65 years, with 69.2% expressing dissatisfaction and only 30.8% agreeing that additional water storage is provided.

Figure 38: Ability of local government provide additional water storage during disasters by Age of Respondent

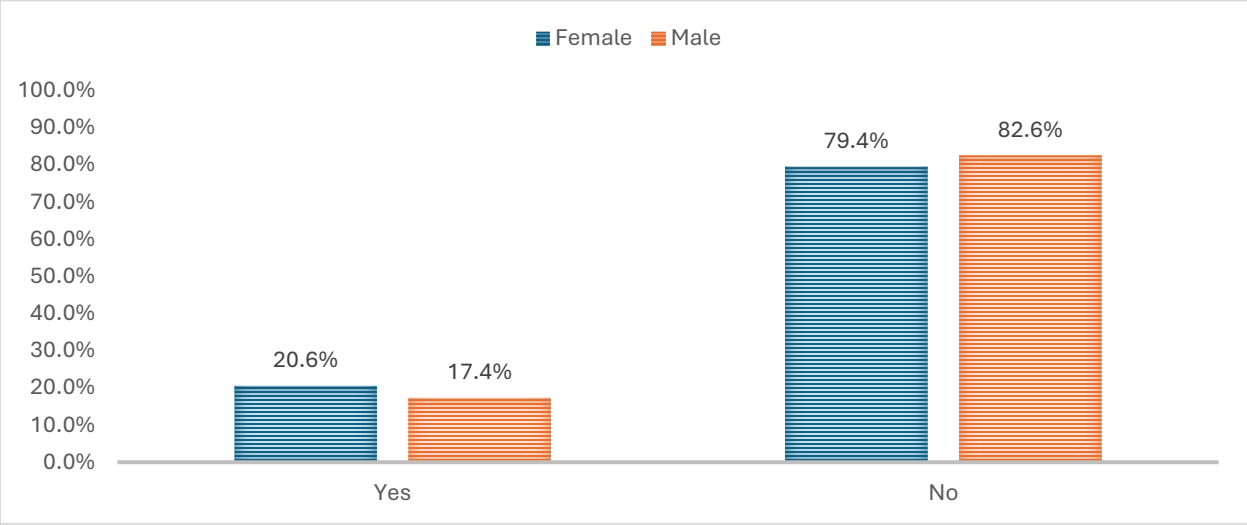


Source: Household Survey Data

These findings suggest a generational divide in perceptions, with younger individuals more optimistic about government efforts, while older age groups – who may have experienced prolonged water insecurity – express greater dissatisfaction. The data highlights a critical gap in government response. The overwhelming negative perception among adults and elderly populations indicates the need for improved disaster preparedness and infrastructure investment in water storage solutions to enhance resilience and public trust.

Analysis by gender of respondent shows that among female respondents, only 20.6% believe that the local government provides additional water storage, while the overwhelming majority, 79.4%, do not perceive such support (see Figure 39). Similarly, male respondents reflect an even lower level of confidence in government intervention, with just 17.4% acknowledging the provision of additional water storage, whereas 82.6% indicate that no such assistance is provided.

Figure 39: Ability of local government provide additional water storage during disasters by Gender of Respondent

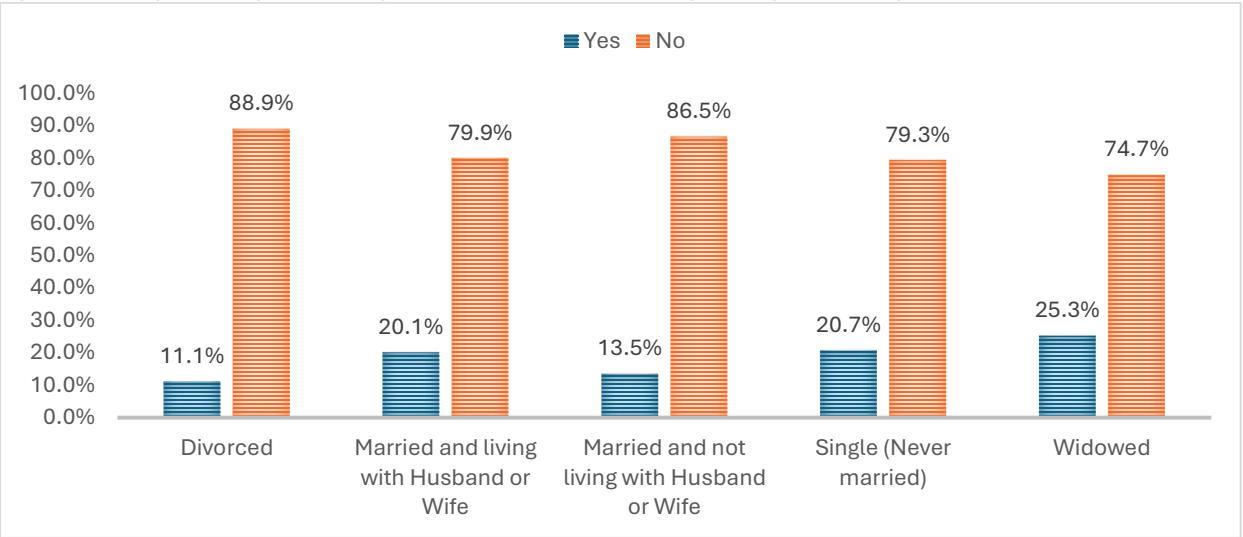


Source: Household Survey Data

The slightly higher affirmative response among women could indicate that they are more engaged in water collection and management at the household level, making them more aware of any limited support that might exist. However, the overall perception of inadequate government intervention suggests the need for enhanced disaster preparedness policies, increased investment in water infrastructure, and improved communication between local authorities and communities to ensure equitable and efficient water distribution in times of crisis.

A significant percentage of individuals, particularly those who are widowed, have indicated a need for additional water storage during disasters, with 25.3% affirming this necessity (see Figure 40). This is closely followed by those who are single and never married at 20.7%. Conversely, a smaller proportion of those who are married and living with their spouse (20.1%) also expressed a similar need.

Figure 40: Ability of local government provide additional water storage during disasters by Marital Status



Source: Household Survey Data

Notably, the majority of respondents across all marital statuses reported that they do not receive additional water storage during disasters, with the highest percentage among divorced individuals at 88.9% and the lowest among the widowed at 74.7%. This indicates a critical gap in disaster preparedness and resource provision by the local governments, highlighting the urgent need for improved water management strategies, especially during times of crisis. The data suggests that while there is a recognition of the need for additional resources, the lack of support for water storage during disasters remains a significant issue that requires immediate attention from local authorities. Addressing this gap could enhance resilience and improve the overall well-being of the population, especially among the most vulnerable groups.

Table 27 provides insight into the perceptions of different family status groups regarding the local government ability to provide additional water storage during disasters in the GUN region. **Among the surveyed groups, refugees had the highest percentage (28.6%) of respondents who believed that the local government provides additional water storage during disasters.** This was followed by internally displaced persons (26.4%) and widowed individuals (25.3%). However, only 19.3% of residents who never left their area and 11.8% of returnees (those who left and returned) shared this view. Notably, none of the respondents who answered "Don't Know" believed the government provided additional water storage.

Table 27: Perceptions on Ability of local government provide additional water storage during disasters by Family Status

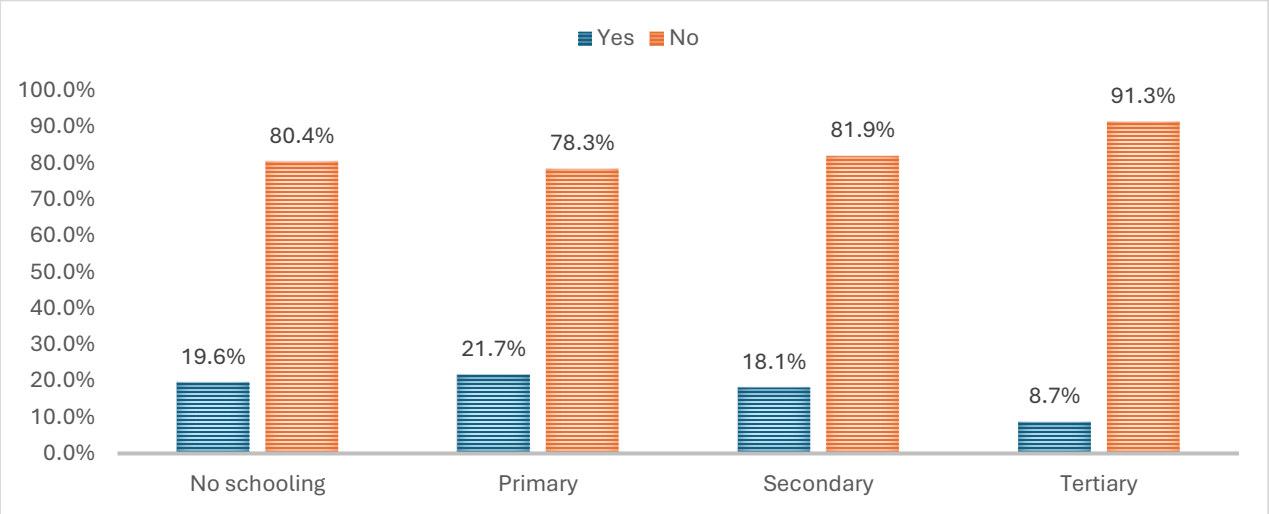
	Internally Displaced	Refugee (came from another county)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	26.4%	28.6%	19.3%	11.8%	0.0%
No	73.6%	71.4%	80.7%	88.2%	100.0%

Source: Household Survey Data

On the other hand, the majority of respondents in all categories expressed skepticism about the local government ability to provide water storage support. The highest percentage was among returnees, with 88.2% stating that the government does not provide additional water storage, followed by residents who never left (80.7%) and internally displaced persons (73.6%). Similarly, 71.4% of refugees also expressed doubt. Strikingly, all respondents in the "Don't Know" category (100%) indicated that the local government does not provide such support. The findings highlight significant concerns regarding water security during disasters in South Sudan, particularly among returnees and long-term residents. The lower levels of confidence in government intervention may stem from past experiences of inadequate disaster response, lack of infrastructure, or weak institutional support. The relatively higher confidence among refugees and internally displaced persons could indicate exposure to humanitarian assistance programs that supplement government efforts.

Analysis of views of beneficiaries regarding the provision of additional water storage by local government during disasters reveals significant discrepancies based on educational attainment (see Figure 41). Among those with no formal schooling, only 19.6% believe that local government provides additional water storage, whereas a substantial 80.4% express scepticism about this provision. This trend continues among individuals with primary education, where 21.7% affirm the local government efforts compared to 78.3% who do not.

Figure 41: Ability of local government provide additional water storage during disasters by Marital Status



Source: Household Survey Data

For those with secondary education, the figures show 18.1% in support and 81.9% in opposition, indicating a consistent pattern of doubt across educational levels. At the tertiary level, the perception is even more pronounced, with only 8.7% believing in government action while a striking 91.3% disagree. Overall, these statistics highlight a critical lack of confidence in the local government ability to provide adequate disaster response resources, particularly in the GUN region. This suggests a pressing need for the government to enhance communication and improve resource allocation to address the concerns of all educational demographics effectively.

7.2.11 Extent to which roads and transport infrastructure is adequately maintained

Analysis of the general perceptions regarding the maintenance of roads and transport infrastructure reveals a concerning picture. **Only 18.6% of the whole sample respondents across the three states believe that the roads and transport infrastructure are adequately maintained, while a significant 81.4% express dissatisfaction.** This overwhelming majority points to a critical gap in infrastructure development, which is particularly troubling for a region facing numerous challenges related to mobility and access to essential services. Poorly maintained roads can hinder economic growth, impede humanitarian aid delivery, and exacerbate existing vulnerabilities in a region already grappling with conflict and instability. The lack of confidence in the transport infrastructure underscores the urgent need for government intervention and investment in road maintenance and development to improve connectivity and support the overall resilience of communities.

The analysis of the maintenance of roads and transport infrastructure in the GUN region shows disparities across the three states (see Table 28). **According to the data presented, only 6.7% of respondents in Jonglei State believe that roads and transport infrastructure are adequately maintained.** This figure starkly contrasts with Unity State, where 26.6% of respondents feel that maintenance standards are acceptable. In Upper Nile State, the situation appears similarly challenging, with only 10.7% of the population affirming adequate maintenance.

Table 28: Whether or not roads and transport infrastructure is adequately maintained by State

Beneficiary response	Jonglei State	Unity State	Upper Nile State

Yes	6.7%	26.6%	10.7%
No	93.3%	73.4%	89.3%

Source: Household Survey Data

The overwhelming majority of respondents in each state reported dissatisfaction with the state of roads and transport infrastructure. In Jonglei State, a staggering 93.3% indicated that maintenance is inadequate. This sentiment is echoed in Upper Nile State, where 89.3% share the same concerns, and in Unity State, where 73.4% express dissatisfaction. These high levels of discontent across all three states highlight the urgent need for improved infrastructure maintenance in the region. The lack of adequately maintained roads and transport systems poses significant challenges to mobility, trade, and overall economic development in the region.

Analysis by county shows that in Akobo, only 6.7% of respondents believe that the roads are adequately maintained, while a staggering 93.3% express dissatisfaction (see Table 29). This pattern of discontent is echoed in Panyijiar, where 33.8% feel the infrastructure is sufficient, yet 66.2% do not. Rubkona shows a similar trend with 23.6% approval and 76.4% disapproval.

Table 29: Whether or not roads and transport infrastructure is adequately maintained by County

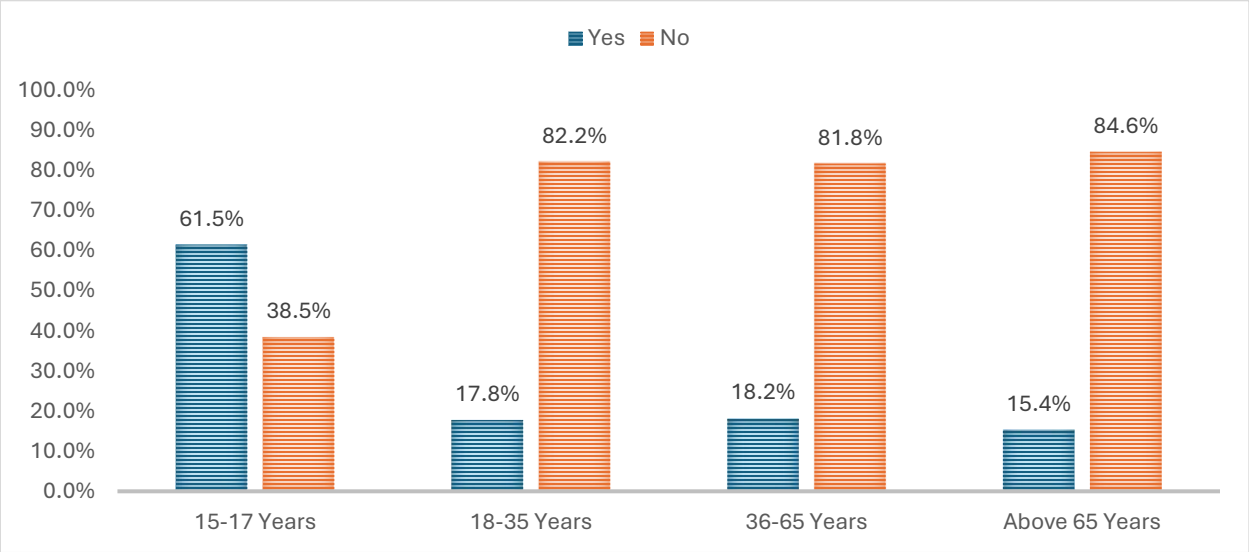
Beneficiary response	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	6.7%	33.8%	23.6%	17.3%	1.7%	9.9%	11.3%
No	93.3%	66.2%	76.4%	82.7%	98.3%	90.1%	88.7%

Source: Household Survey Data

Fashoda presents a slightly better outlook with 17.3% of respondents affirming adequate maintenance, but 82.7% still indicate otherwise. In Panyikang, the situation is dire, with a mere 1.7% believing in proper maintenance and 98.3% disagreeing. Renk and Ulang also reflect high levels of dissatisfaction, with 90.1% and 88.7% respectively stating that the infrastructure is not adequately maintained. Overall, the data from these counties highlight a critical infrastructure crisis in the GUN region, where the overwhelming majority of respondents across all regions express concerns about the state of roads and transport systems.

Figure 42 provides an analysis of the survey data regarding road and transport infrastructure maintenance and shows significant age-related disparities in perceptions. **Among respondents aged 15 to 17 years, a notable 61.5% believe that the roads and transport infrastructure are adequately maintained.** This positive sentiment sharply contrasts with the older age groups. For those aged 18 to 35 years, only 17.8% agree that maintenance is satisfactory, while this figure declines further to 18.2% for the 36 to 65 age group and plummets to 15.4% among individuals above 65 years.

Figure 42: Whether or not roads and transport infrastructure is adequately maintained by Age of Respondent

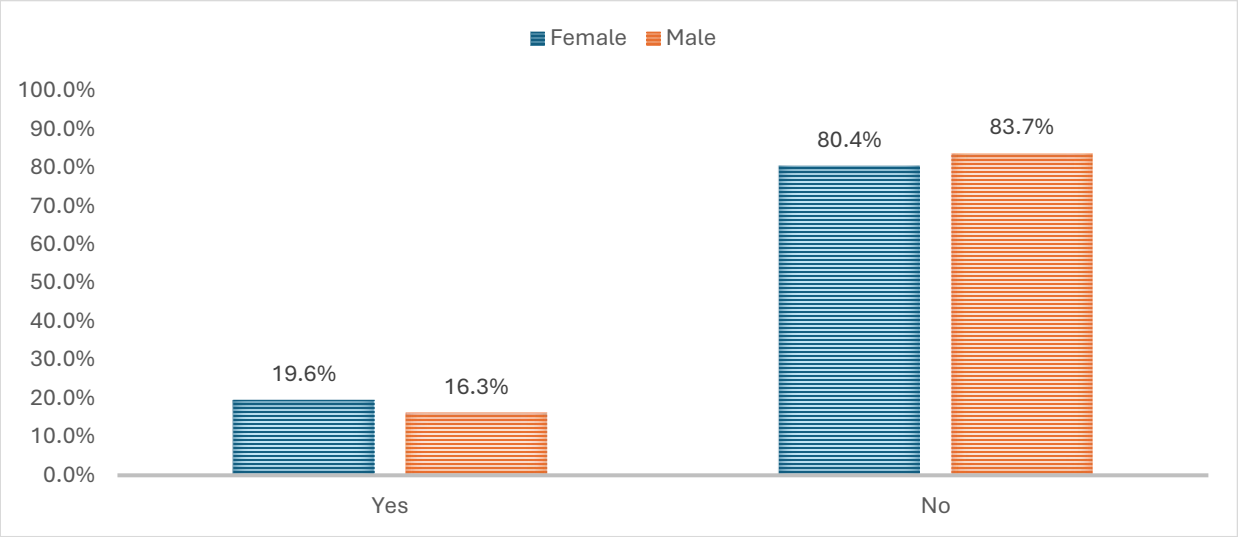


Source: Household Survey Data

Conversely, a majority of respondents across older demographics express dissatisfaction with the maintenance of transport infrastructure, with 82.2% of the 18 to 35 age group indicating inadequacy, followed by 81.8% of those aged 36 to 65, and 84.6% for those over 65. This trend highlights a critical concern within South Sudan, where younger individuals perceive better maintenance levels compared to older generations, who have likely experienced the deterioration of infrastructure over time. The findings suggest that while a small portion of younger respondents feel positively about the state of roads and transport, the overwhelming majority of the population, particularly among older age groups, views the maintenance of infrastructure as inadequate. This disparity calls for urgent attention to improve the transport network in South Sudan, which is vital for economic development and mobility.

The analysis of survey responses regarding the maintenance of roads and transport infrastructure in in the region reveals a significant disparity between male and female perceptions (see Figure 43). **Among female respondents, 19.6% believe that the infrastructure is adequately maintained, whereas this figure is slightly lower for males, at 16.3%.** Despite this marginal difference, a predominant majority in both groups express dissatisfaction. Specifically, 80.4% of females and 83.7% of males indicate that the roads and transport systems are not adequately maintained.

Figure 43: Whether or not roads and transport infrastructure is adequately maintained by Gender of Respondent



Source: Household Survey Data

The findings highlight a concerning consensus among both genders regarding the poor state of transport infrastructure in the GUN region. The high percentage of dissatisfaction underscores the urgent need for improvement and investment in road maintenance and transport services. Addressing these infrastructure challenges is vital for enhancing mobility, fostering economic growth, and improving the overall quality of life for the communities.

The analysis of survey data regarding the adequacy of road and transport infrastructure maintenance in the GUN region, segmented by marital status, reveals significant concerns (Table 30**). Among divorced respondents, an alarming 100% indicate that the infrastructure is not adequately maintained, reflecting a complete lack of confidence in road conditions.** In contrast, 20.7% of those married and living with their spouses believe that the infrastructure is sufficient, although a substantial 79.3% disagree.

Table 30: Whether or not roads and transport infrastructure is adequately maintained by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	0.0%	20.7%	8.1%	22.4%	18.9%
No	100.0%	79.3%	91.9%	77.6%	81.1%

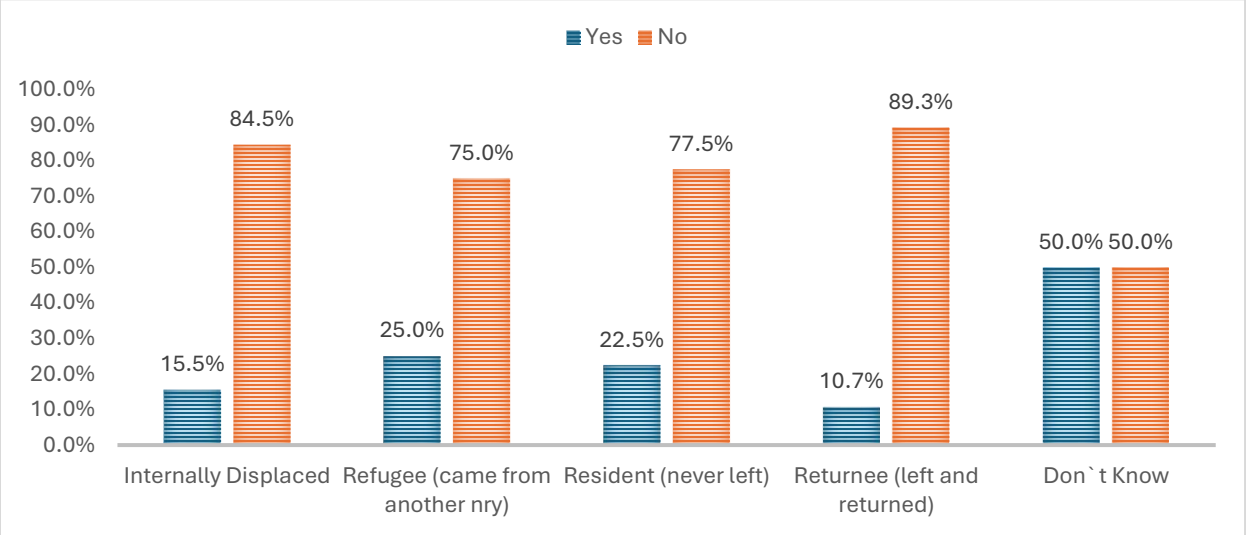
Source: Household Survey Data

For individuals who are married but not living with their spouses, only 8.1% feel positively about the maintenance of roads, while a significant 91.9% express dissatisfaction. Single individuals, who have never married, show a more favourable outlook, with 22.4% affirming adequate maintenance, yet 77.6% remain critical of the current state. Lastly, among widowed respondents, 18.9% believe in the adequacy of infrastructure maintenance, with 81.1% voicing concerns. The data highlights a pervasive sense of dissatisfaction with road and transport infrastructure across all marital statuses in the region. The findings suggest an urgent need for focused improvement initiatives to address the infrastructure challenges faced by the population, which are crucial for enhancing connectivity and supporting economic development in the GUN.

Analysis by respondent status shows that among internally displaced individuals, only 15.5%

believe that the infrastructure is adequately maintained, while a substantial 84.5% express dissatisfaction (see Figure 44). Refugees exhibit a slightly more positive outlook, with 25.0% affirming adequate maintenance; however, 75.0% still indicate that the infrastructure is lacking. Residents who have never left their homes report that 22.5% find the roads and transport systems satisfactory, yet 77.5% disagree. In contrast, returnees – those who left the country and have since returned – show the lowest level of satisfaction, with only 10.7% believing in adequate maintenance and a concerning 89.3% expressing dissatisfaction. Interestingly, 50.0% of respondents who selected "Don't Know" represent a distinct category, indicating uncertainty about the state of the infrastructure.

Figure 44: Whether or not roads and transport infrastructure is adequately maintained by Family Status

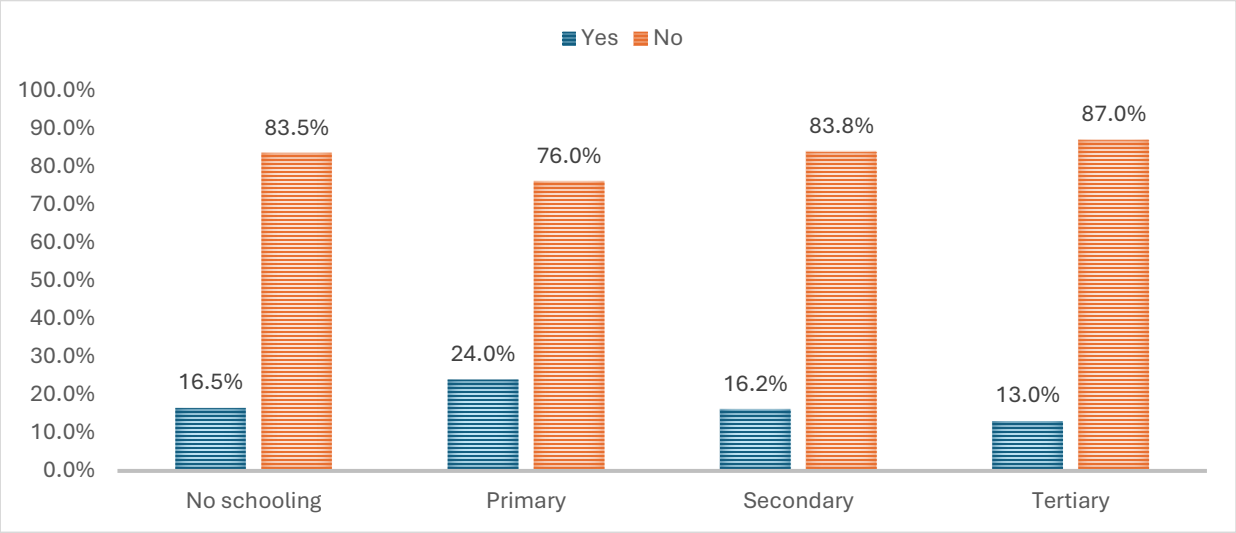


Source: Household Survey Data

All in all, the data paints a grim picture of the state of transport infrastructure in in the region, with high levels of dissatisfaction across all categories of respondents. This widespread concern underscores the urgent need for targeted interventions to improve infrastructure, which is essential for enhancing mobility, fostering economic development, and ensuring the well-being of the communities, particularly those most affected by displacement and conflict.

The analysis of survey responses regarding the adequacy of road and transport infrastructure maintenance, segmented by educational attainment, also reveals noteworthy trends (see Figure 45). **Among individuals with no formal schooling, 16.5% believe that the infrastructure is adequately maintained, while a significant majority of 83.5% express dissatisfaction.** Respondents with primary education show a slightly more optimistic view, with 24.0% affirming adequate maintenance; however, 76.0% still indicate that the infrastructure is lacking.

Figure 45: Whether or not roads and transport infrastructure is adequately maintained by Level of Education



Source: Household Survey Data

In the secondary education category, 16.2% of respondents feel positively about the state of roads and transport systems, yet 83.8% disagree with this sentiment. Those with tertiary education report the lowest level of satisfaction, where only 13.0% believe in adequate maintenance, and a considerable 87.0% express dissatisfaction. The data highlights a pervasive sense of dissatisfaction with transport infrastructure across all educational levels in the GUN region. This widespread concern underscores the urgent need for substantial improvements and investments in infrastructure to enhance connectivity, support economic development, and improve the quality of life for citizens, regardless of their educational background.

7.2.12 Extent to which respondents believe government has the capacity and finance to manage and maintain infrastructure

The analysis of survey responses regarding the local government capacity and financial resources to manage and maintain infrastructure in the GUN region shows a strikingly negative outlook. Among the entire sample, only 15.5% of respondents believe that the local government possesses the necessary capacity and financial means to effectively manage and maintain infrastructure. In stark contrast, a significant majority of 84.5% express skepticism, indicating that they do not believe the local government is adequately equipped to handle these critical responsibilities.

This overwhelming dissatisfaction highlights a major concern for the future of infrastructure development in region, suggesting systemic issues within local governance that hinder effective management and maintenance. The lack of confidence in local government capabilities could impede efforts to improve infrastructure, which is essential for economic growth, public safety, and overall quality of life for citizens.

The data presented in Table 31 highlights the significant challenges faced by local governments in the GUN, regarding their capacity and financial resources to manage and maintain infrastructure. **In Jonglei State, only 3.8% of beneficiaries reported that local government possesses the capacity and financial means necessary for effective infrastructure management, while a staggering**

96.2% indicated a lack of such capacity. This stark contrast underscores the critical infrastructure deficits and the urgent need for support in Jonglei. Unity State shows a slightly better situation, with 20% of beneficiaries affirming local government capability to manage infrastructure. However, this still leaves 80% who believe that the local government lacks the necessary resources and abilities, highlighting ongoing challenges in governance and infrastructural development.

Table 31: Capacity and finance of local government to manage and maintain infrastructure by State

Beneficiary response	Jonglei State	Unity State	Upper Nile State
Yes	3.8%	20.0%	12.6%
No	96.2%	80.0%	87.4%

Source: Household Survey Data

Upper Nile State presents a similar picture, with 12.6% of respondents expressing confidence in local government capacity, contrasted by 87.4% who do not. This data indicates a pervasive issue across all three states, revealing that local governments are largely under-resourced and unable to fulfill their infrastructural responsibilities effectively. The findings illustrate a critical need for investment and capacity-building initiatives in the GUN local governments to enhance their ability to manage and maintain vital infrastructure for the benefit of the communities.

Table 32 presents a concerning overview of the capacity and financial resources of local governments across the seven counties, specifically Akobo, Panyijiar, Rubkona, Fashoda, Panyikang, Renk, and Ulang. **In Akobo, only 3.8% of beneficiaries believe that the local government possesses the necessary capacity and financial means to manage and maintain infrastructure, while a staggering 96.2% report a lack of such capability.** This highlights the severe infrastructural challenges faced by Akobo, pointing to an urgent need for intervention and support. Panyijiar shows a slightly more favorable situation, with 33.1% of respondents affirming local government capacity. However, the remaining 66.9% still express doubts about the government's ability to effectively manage infrastructure, indicating significant room for improvement.

Table 32: Capacity and finance of local government to manage and maintain infrastructure by County

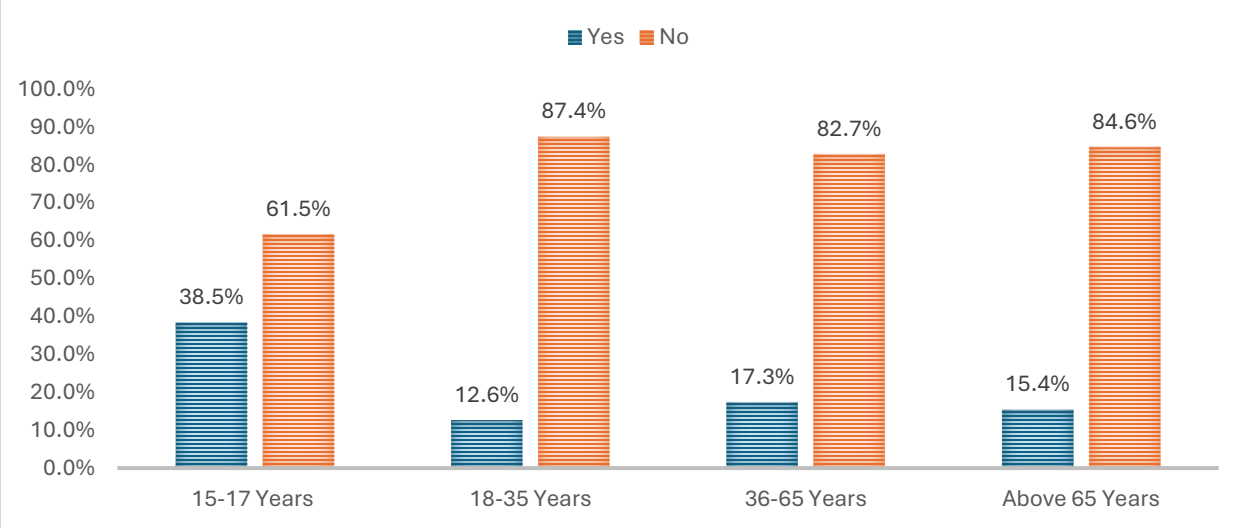
Beneficiary response	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	3.8%	33.1%	14.5%	28.4%	0.0%	2.8%	14.4%
No	96.2%	66.9%	85.5%	71.6%	100.0%	97.2%	85.6%

Source: Household Survey Data

Rubkona and Fashoda present mixed results; 14.5% and 28.4% of beneficiaries, respectively, feel confident in their local governments, yet the majority – 85.5% in Rubkona and 71.6% in Fashoda – do not share this confidence. This discrepancy emphasizes the ongoing infrastructural deficits and the need for enhanced governance and resource allocation. In Panyikang, the situation is particularly dire, as 100% of respondents indicated that the local government lacks the necessary capacity and finance for infrastructure management. Similarly, Renk and Ulang reveal troubling statistics, with 97.2% and 85.6% of beneficiaries, respectively, reporting a lack of government capacity. The pervasive lack of confidence in local government ability to manage infrastructure highlights an urgent call for external support and resources to foster development and improve living conditions for communities throughout the region.

The data regarding the perceptions of various age groups in GUN about local government capacity and financial resources to manage and maintain infrastructure reveals significant disparities (see Figure 46). **Among the youngest age group, those aged 15-17 years, 38.5% believe that their local government has the necessary capacity and financial means.** This contrasts sharply with older age groups, where confidence dwindles significantly; only 12.6% of individuals aged 18-35 share this belief, followed by 17.3% in the 36-65 age bracket and 15.4% among those over 65 years.

Figure 46: Capacity and finance of local government to manage and maintain infrastructure by Age of Respondent

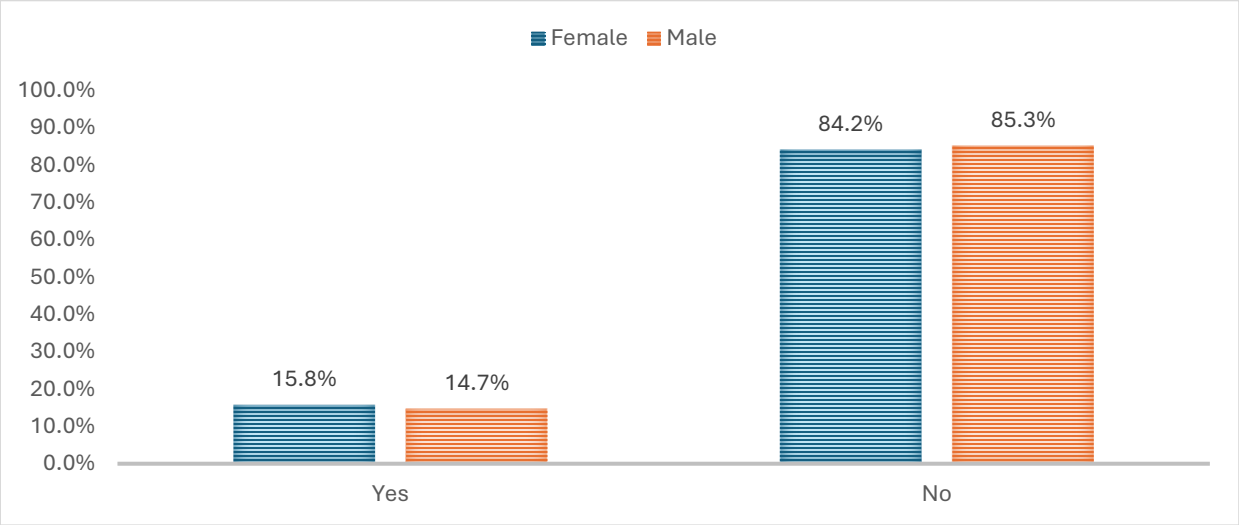


Source: Household Survey Data

The overwhelming majority of respondents across all age groups express skepticism regarding local government capabilities. **Notably, 61.5% of the 15-17 age group, 87.4% of the 18-35 group, 82.7% of those aged 36-65, and 84.6% of respondents over 65 indicate that local governments lack the necessary resources and capacity.** This pervasive lack of confidence highlights a critical issue in the GUN region governance landscape, revealing a widespread perception of inadequacy in infrastructure management. The stark contrast between the younger and older demographics suggests that younger individuals may possess a more optimistic view of potential improvements or have different expectations regarding local governance. In contrast, older individuals, who may have experienced prolonged infrastructural challenges, demonstrate greater disillusionment.

Analysis by gender shows that a mere 15.8% of females and 14.7% of males believe the local government possesses the necessary capabilities to effectively handle infrastructure management (see Figure 47). Conversely, an overwhelming majority, consisting of 84.2% of females and 85.3% of males, express scepticism about local government capacity and financial stability in this regard.

Figure 47: Capacity and finance of local government to manage and maintain infrastructure by Gender of Respondent



Source: Household Survey Data

This stark contrast highlights a critical issue facing the GUN region, where the local government perceived inability to maintain infrastructure may stem from broader challenges such as limited financial resources, inadequate training, and a lack of strategic planning. The overwhelming "no" responses suggest a widespread sentiment of distrust in the government ability to address essential infrastructure needs, which could have implications for economic development and public service delivery in the region.

Analysis by marital status of respondent shows that a significant disparity exists in the affirmative responses regarding local government capacity among different marital groups (see Table 33). **Notably, only 16.7% of married individuals living with their spouse reported that local governments have the necessary capacity and finances, compared to lower percentages of 11.7% for those married but not living with their spouse, 13.8% for singles who have never married, and 15.8% for widowed individuals.**

Table 33: Capacity and finance of local government to manage and maintain infrastructure by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	0.0%	16.7%	11.7%	13.8%	15.8%
No	100.0%	83.3%	88.3%	86.2%	84.2%

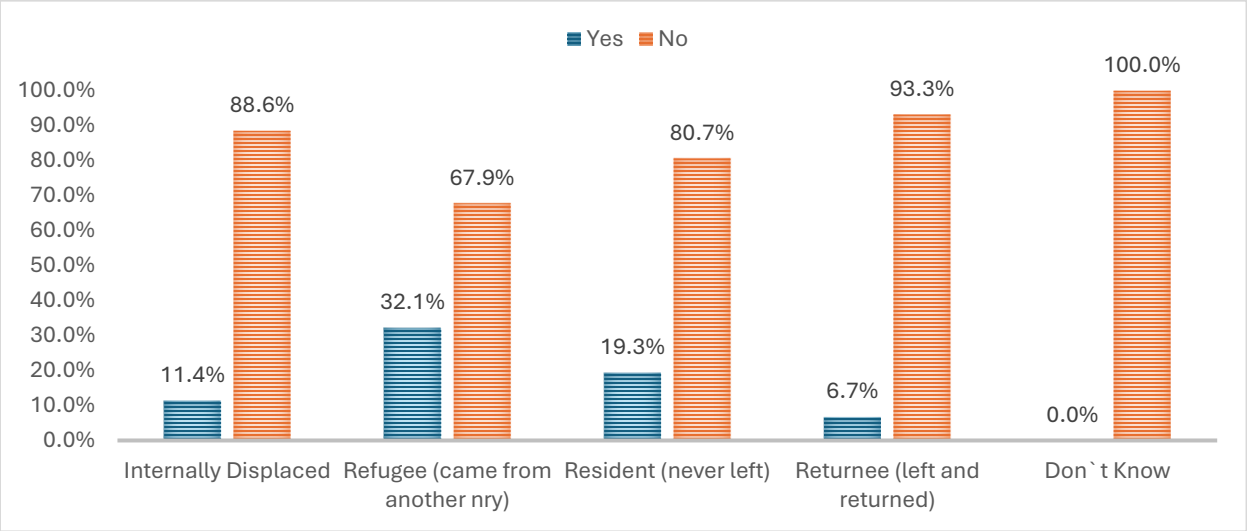
Source: Household Survey Data

Conversely, the overwhelming majority of respondents across all marital statuses expressed a lack of confidence in local government capabilities. **One hundred percent (100%) of divorced individuals indicate no capacity, alongside 83.3% of married individuals living with their spouse, 88.3% of those married but not living with their spouse, 86.2% of singles, and 84.2% of widowed individuals.** The data underscores a pervasive sentiment of scepticism regarding local government ability to effectively manage and maintain infrastructure in the GUN region, highlighting a critical area of concern that may hinder development and service delivery in the region. Such insights suggest the need for targeted interventions to enhance local government capacity, particularly in fostering trust

and financial management skills that could improve infrastructure maintenance and overall community welfare.

In the context of the GUN region, the data regarding the capacity and financial resources of the local government to manage and maintain infrastructure reveals significant challenges (see Figure 48). **Among internally displaced persons, only 11.4% believe that the local government has the necessary capacity and finance, while a staggering 88.6% disagree.** This sentiment is echoed among refugees, where only 32.1% express confidence in the government's capabilities, leaving 67.9% unconvinced. For residents who have never left their communities, only 19.3% feel that the government can effectively manage infrastructure, while 80.7% do not share this belief.

Figure 48: Capacity and finance of local government to manage and maintain infrastructure by Family Status



Source: Household Survey Data

Returnees, individuals who have left and returned to South Sudan, exhibit the least confidence, with only 6.7% affirming government capacity and a significant 93.3% indicating a lack of trust. Notably, all respondents who selected "Don't Know" reflect a complete uncertainty, emphasizing the pervasive doubts about local government ability to handle infrastructure issues. This analysis highlights a critical gap in governance and resource management, underscoring the urgent need for enhanced capacity-building and financial investment in infrastructure maintenance to support the diverse populations of the region.

The data concerning the capacity and financial resources of local government to manage and maintain infrastructure reveals a concerning trend across different levels of education (see Table 34). **Among individuals with no formal schooling, 15.1% believe that the local government possesses the necessary capacity and finance, while a significant majority of 84.9% disagree.** This pattern continues among those with primary education, where 19.7% express confidence in government capabilities, but 80.3% remain sceptical. In the secondary education category, confidence drops further, with only 10.5% affirming the government's ability to manage infrastructure, leaving 89.5% with doubts.

Table 34: Capacity and finance of local government to manage and maintain infrastructure by Level of Education

Beneficiary response	No schooling	Primary	Secondary	Tertiary
Yes	15.1%	19.7%	10.5%	0.0%

No	84.9%	80.3%	89.5%	100.0%

Source: Household Survey Data

Notably, among individuals with tertiary education, there is a complete lack of confidence, as 100% of respondents indicate that they do not believe the local government can effectively handle infrastructure management. This stark contrast in perceptions based on educational attainment underscores the broader issues of governance and resource allocation in the GUN region, highlighting the need for increased investment in both education and infrastructure management to build trust and capacity within local governments.

7.2.13 Extent to which there is alternative shelter during disasters for respondents

The results indicate that only 22.4% of the respondents across the three states reported having access to alternative shelter, while a staggering 77.6% indicated that they do not have this critical resource. This disparity highlights a pressing issue in disaster preparedness and response in the GUN region, where inadequate access to alternative shelter can exacerbate the vulnerabilities faced by affected populations. The high percentage of individuals lacking alternative shelter underscores the urgent need for enhanced disaster management strategies and the development of more resilient infrastructure to support communities during crises.

Table 35 highlights significant disparities in access to alternative shelter during disasters across the three states**. In Jonglei State, only 12.4% of respondents indicated that they have access to alternative shelter during disasters, while a staggering 87.6% reported lacking such access.** This situation reflects a critical vulnerability for the population in Jonglei, where the lack of alternative shelter can exacerbate the impact of disasters. In contrast, Unity State shows a relatively better scenario, with 23.4% of respondents affirming access to alternative shelter, leaving 76.6% without this essential resource. Similarly, Upper Nile State exhibits a slightly higher percentage, with 24.3% of respondents having access to alternative shelter, while 75.7% do not.

Table 35: Access to alternative shelter during disasters by State

Beneficiary response	Jonglei State	Unity State	Upper Nile State
Yes	12.4%	23.4%	24.3%
No	87.6%	76.6%	75.7%

Source: Household Survey Data

These figures reveal a concerning trend across all three states, indicating that a significant majority of the population in Jonglei, Unity, and Upper Nile lacks access to alternative shelter during disasters. This lack of preparedness and resilience highlights the urgent need for targeted interventions to improve shelter options, enhance disaster response strategies, and ultimately safeguard the well-being of the communities in the region.

Table 36 illustrates the access to alternative shelter during disasters across the seven counties, highlighting significant disparities in response rates among the communities surveyed. **In Akobo, only 12.4% of beneficiaries reported having access to alternative shelter during disasters, indicating a severe lack of resources or infrastructure to support displaced individuals.** Conversely, Panyijiar shows a relatively higher percentage of 34.6% of respondents affirming access to such shelters, suggesting that this county may have better provisions or emergency management plans in place.

Table 36: Access to alternative shelter during disasters by County

Beneficiary response	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	12.4%	34.6%	18.8%	24.7%	11.7%	16.9%	37.1%
No	87.6%	65.4%	81.2%	75.3%	88.3%	83.1%	62.9%

Source: Household Survey Data

Rubkona, with 18.8%, and Fashoda, at 24.7%, both reflect moderate access to alternative shelters, although still significantly below half of the population. Panyikang and Renk report even lower access rates, with 11.7% and 16.9%, respectively, emphasizing the ongoing challenges in these regions. Ulang stands out with the highest reported access at 37.1%, yet still reveals that over half of its population lacks adequate shelter alternatives, as 62.9% of respondents indicated they do not have access. The data underscores a critical need for improved disaster response strategies and infrastructure development in the GUN, particularly in counties like Akobo, Panyikang, and Renk, where access to alternative shelter remains alarmingly low. This situation calls for targeted interventions to enhance resilience and ensure safe shelter options for vulnerable populations in the face of recurring disasters.

Table 36 shows critical insights into access to alternative shelter during disasters based on the age of respondents. **Among the youngest age group, those aged 15-17 years, 23.1% reported having access to alternative shelter, indicating a somewhat precarious situation for younger individuals during disasters.** In comparison, the 18-35 age group shows a lower access rate of 18.1%, which may reflect the challenges faced by young adults in securing safe shelter amidst ongoing instability.

Table 37: Access to alternative shelter during disasters by Age of Respondent

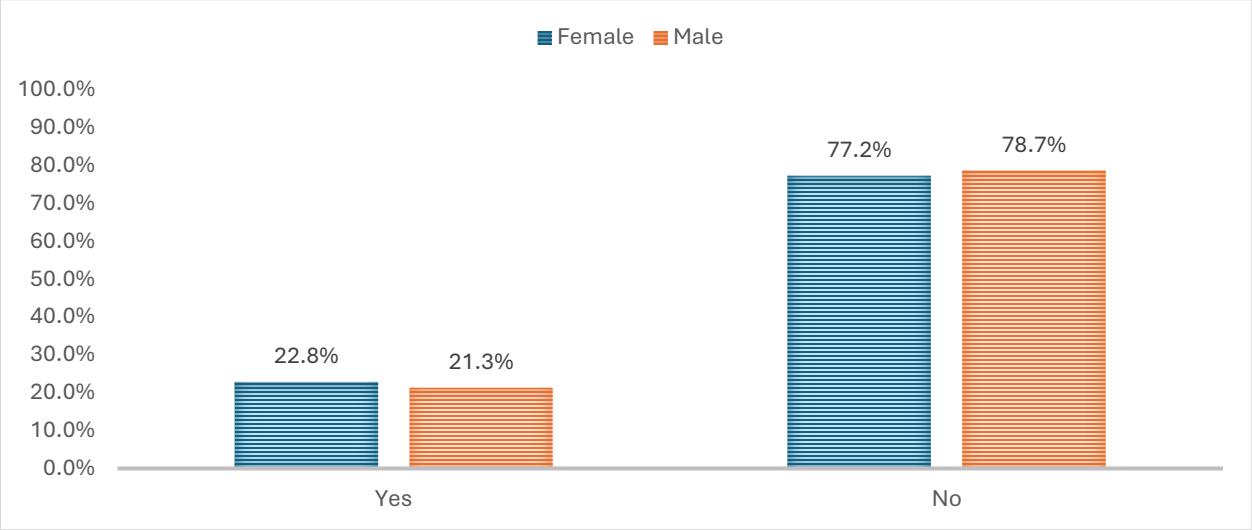
Beneficiary response	15-17 Years	18-35 Years	36-65 Years	Above 65 Years
Yes	23.1%	18.1%	25.8%	38.5%
No	76.9%	81.9%	74.2%	61.5%

Source: Household Survey Data

The middle-aged group, encompassing those aged 36-65 years, has a slightly better access rate at 25.8%. This suggests that individuals within this demographic may have more resources or social networks to rely on during times of crisis. Interestingly, the oldest age group, those over 65 years, reported the highest access rate of 38.5%. This could indicate that older individuals, who may have accumulated more resources or have established support systems, are better positioned to find alternative shelter when disasters strike. However, the overall picture remains concerning, as a significant majority of respondents across all age groups reported a lack of access to alternative shelter during disasters. Specifically, 76.9% of the 15-17 age group and 81.9% of the 18-35 group indicated they have no access, highlighting the vulnerability of younger populations. The data underscores the urgent need for targeted interventions in the GUN to enhance shelter options, particularly for younger individuals and families, to ensure their safety and resilience in the face of recurring disasters.

The data indicates significant challenges regarding access to alternative shelter during disasters (see Figure 49). **Among the females surveyed, only 22.8% reported having access to alternative shelter, while a striking 77.2% indicated they do not.** Similarly, the male respondents showed slightly better access, with 21.3% confirming availability of alternative shelter, yet a substantial 78.7% also reported lacking this critical resource.

Figure 49: Access to alternative shelter during disasters by Gender of Respondent

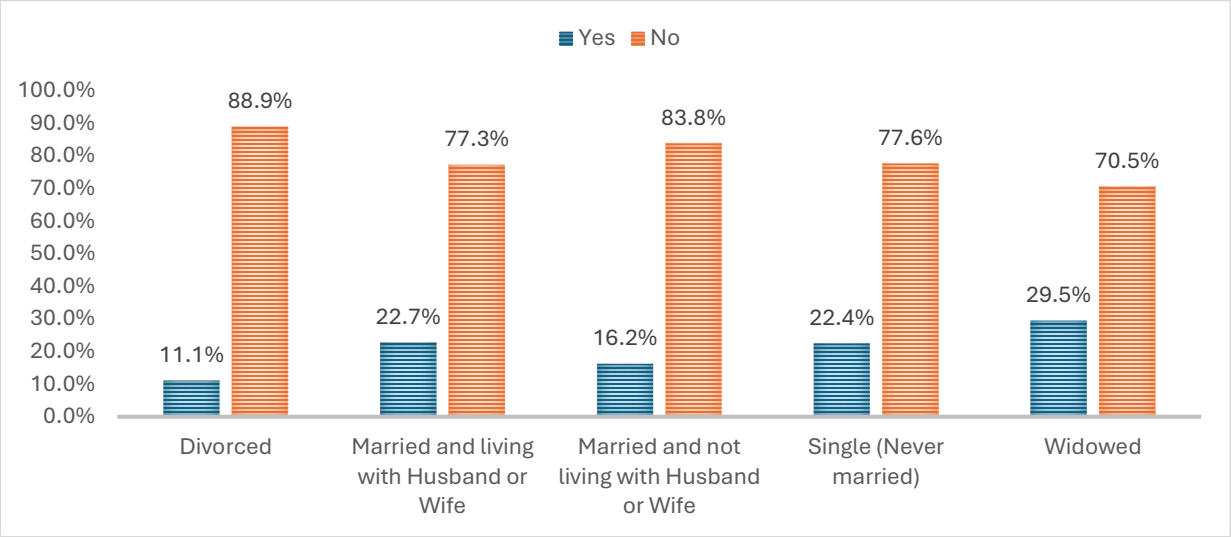


Source: Household Survey Data

This disparity highlights a pressing need for improved disaster preparedness and response strategies in GUN, as the majority of both genders are left vulnerable without alternative shelter options during emergencies. The high percentages of individuals without access suggest that enhancing infrastructure and support systems is crucial for safeguarding communities against the impacts of disasters.

In analyzing the data regarding access to alternative shelter during disasters in the context of in the GUN region, it becomes evident that there are significant differences based on marital status (see Figure 50). **Among individuals who are divorced, only 11.1% reported having access to alternative shelter, while a notable 88.9% indicated they do not.** This trend continues among those who are married and living with their spouses, where 22.7% have access, leaving 77.3% without it. Conversely, for those who are married but not living with their spouses, 16.2% reported access to alternative shelter, with 83.8% lacking it.

Figure 50: Access to alternative shelter during disasters by Marital Status



Source: Household Survey Data

Single individuals, who have never been married, show that 22.4% have access to alternative shelter, while 77.6% do not. Interestingly, widowed individuals report the highest percentage of access at 29.5%, with 70.5% lacking alternative shelter. These statistics reveal a concerning trend, where a majority of respondents across all marital statuses do not have access to alternative shelter during disasters, highlighting the need for targeted interventions to improve disaster preparedness and response, particularly for vulnerable populations such as the divorced and widowed.

Analysis by family status shows that among internally displaced individuals, 22.8% reported having access to alternative shelter, while a substantial 77.2% indicated they do not (see Table 38). This situation is slightly less favourable for refugees who have come from other countries, with only 17.9% confirming access to alternative shelter, leaving 82.1% without any options. Residents who have never left their homes report a higher rate of access, with 25.8% stating they can find alternative shelter during disasters; however, 74.2% still lack this critical resource. In stark contrast, returnees – those who left South Sudan and have since returned – show the lowest access at just 13.5%, with a significant 86.5% lacking alternative shelter. Notably, there are no individuals in the "Don't Know" category who report having access to alternative shelter, indicating a complete lack of options for this group.

Table 38: Access to alternative shelter during disasters by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	22.8%	17.9%	25.8%	13.5%	0.0%
No	77.2%	82.1%	74.2%	86.5%	100.0%

Source: Household Survey Data

Overall, the data highlights a significant vulnerability among the displaced and returnee populations in in the GUN region, underscoring the urgent need for improved disaster response mechanisms and support systems to ensure that all individuals, regardless of their status, have access to safe and secure shelter during emergencies.

The analysis of access to alternative shelter during disasters in the GUN region, categorized by educational attainment, reveals notable trends. **Among individuals with no formal schooling, 23.4% reported having access to alternative shelter, while 76.6% indicated they do not (see Table 39)**. Those with primary education showed a similar access rate of 23.2%, with 76.8% lacking alternative shelter options.

Table 39: Access to alternative shelter during disasters by Level of Education

Beneficiary response	No schooling	Primary	Secondary	Tertiary
Yes	23.4%	23.2%	16.2%	21.7%
No	76.6%	76.8%	83.8%	78.3%

Source: Household Survey Data

In contrast, individuals with secondary education reported a lower access rate of 16.2%, highlighting a concerning vulnerability within this group, as 83.8% do not have access to alternative shelter during disasters. Lastly, among those with tertiary education, 21.7% indicated access to alternative shelter, with 78.3% lacking it. The data suggests that while access to alternative shelter remains relatively consistent among those with no schooling and primary education, it decreases significantly for individuals with secondary education. This reflects a pressing need for targeted support and resources, particularly for those with higher educational attainment who may be expected to have better access to resources but are still facing substantial challenges in disaster situations.

7.2.14 Extent to which respondents have access to alternative land that the can use in case of emergencies (such as floods)

With regards to access to alternative land for emergencies in the GUN region as a whole, it is evident that a significant majority of the respondents, specifically 61.7%, do not have access to alternative land that they could utilize in the event of emergencies. This lack of alternative land poses a considerable risk to communities that may be affected by natural disasters, particularly given the region's vulnerability to flooding and other climate-related challenges. Conversely, only 38.3% of the respondents indicated that they do have access to such land. This disparity highlights a critical gap in preparedness and resilience among the population, emphasizing the need for interventions aimed at improving land access and emergency planning to better equip communities to handle future crises.

Analysis by state shows that access to alternative land for use during emergencies, such as floods and other hazards, has got some disparities (see Table 40). **In Jonglei, 40.0% of respondents reported having access to alternative land, while 60.0% indicated they do not.** Unity State shows an even greater challenge, with only 32.4% of respondents stating they have access to alternative land, leaving 67.6% without this critical resource. In Rubkona, for example, 7 out of the 8 counties with the exception being Padang County, are covered with water leaving very little land for crop farming or livestock grazing for the communities. This development has been creating land conflicts in Padang county given the rush to secure arable land by communities from the rest of Rubkona[5]. Conversely, Upper Nile stands out with the highest percentage of access, where 46.6% of respondents reported having alternative land available, while 53.4% do not.

[5] KII with a Mercy Corps Staff Member, Rubkona County

Table 40: Access to alternative land to use during disasters by State

Respondent response	Jonglei	Unity	Upper Nile
Yes	40.0%	32.4%	46.6%
No	60.0%	67.6%	53.4%

Source: Household Survey Data

The figures underscore the varying levels of preparedness among the states, with Unity State facing the most significant vulnerability due to the lack of alternative land options. This situation is particularly concerning given the GUN's susceptibility to flooding, which can devastate agricultural livelihoods and displace communities. The need for comprehensive disaster risk management strategies is paramount, especially in states like Unity and Jonglei, where the majority of the population lacks access to land that could serve as a refuge during emergencies. Enhancing access to alternative land and fostering resilience in this region is critical for safeguarding communities against the impacts of climate-related disasters.

Analysis of access to alternative land for emergencies by county reveals significant variations that reflect the vulnerability to disasters in the region (see Table 41). **In Akobo, 40.0% of respondents reported having access to alternative land, while 60.0% do not, indicating a concerning lack of resources for disaster preparedness.** Panyijiar demonstrates a more favorable situation, with 64.7% of respondents indicating access to alternative land, suggesting a better capacity for managing emergencies.

Table 41: Access to alternative land to use during disasters by County

beneficiary response	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	40.0%	64.7%	19.1%	21.0%	46.7%	25.4%	83.5%
No	60.0%	35.3%	80.9%	79.0%	53.3%	74.6%	16.5%

Source: Household Survey Data

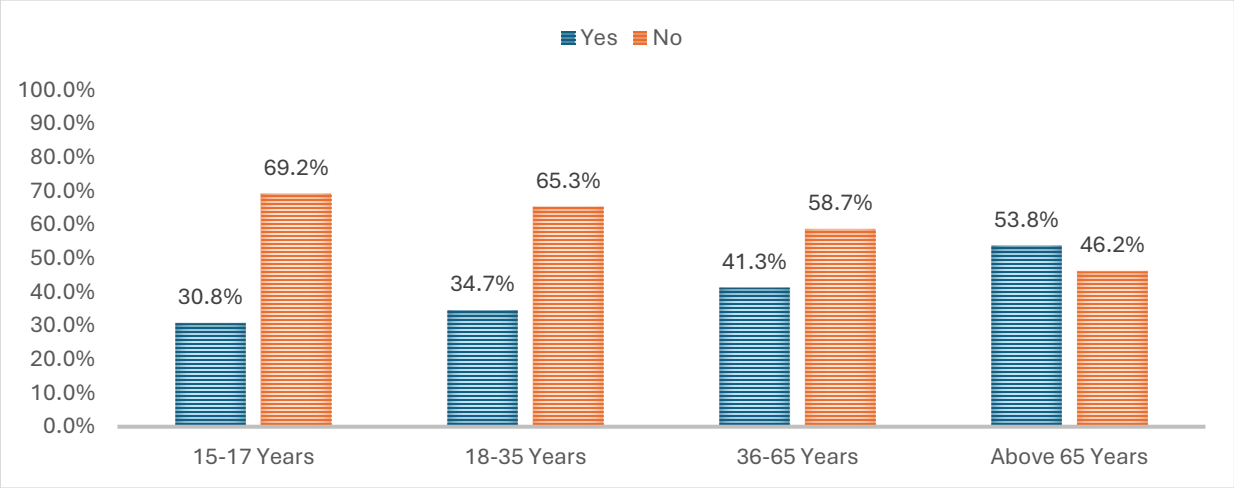
In contrast, Rubkona presents a stark challenge, where only 19.1% have access to alternative land, leaving a substantial 80.9% without this crucial resource. Similarly, Fashoda also faces significant vulnerability, with 21.0% of respondents having access compared to 79.0% without. Panyikang shows a moderate situation, with 46.7% reporting access, while 53.3% do not. Renk exhibits a low level of access as well, with only 25.4% able to utilize alternative land during emergencies. Notably, Ulang stands out with 83.5% of respondents stating they have access to alternative land, indicating a strong resilience in that area, while only 16.5% lack such resources.

These findings underscore the critical need for targeted interventions focused on enhancing access to alternative land, especially in counties like Rubkona and Fashoda, where the majority of the population lacks this essential resource. Strengthening disaster preparedness and resilience in the region is vital, given the increasing frequency and severity of climate-related events, and addressing these disparities will be crucial for safeguarding communities against future emergencies.

With regards to age of respondent, among the 15-17 years age group, only 30.8% reported having access to alternative land that could be utilized in the case of emergencies such as floods, while a significant 69.2% do not have this access (see Figure 51). The situation slightly improves

in the 18-35 years age group, where 34.7% have access, and 65.3% do not; however, the majority still lack essential resources for disaster preparedness.

Figure 51: Access to alternative land to use during disasters by Age of Respondent

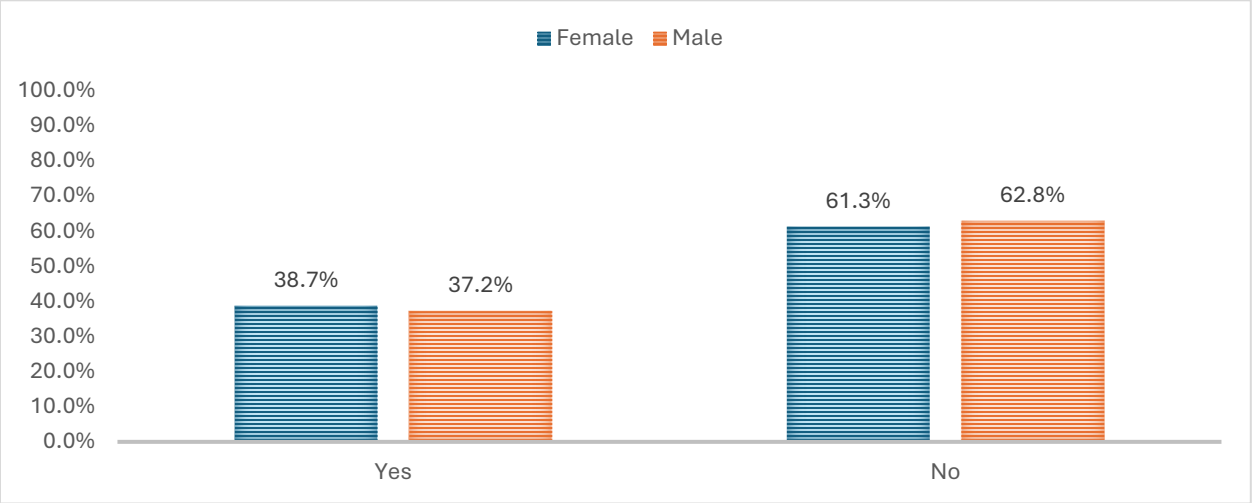


Source: Household Survey Data

In the 36-65 years age group, access increases further, with 41.3% of respondents indicating they have alternative land, leaving 58.7% without it. Notably, the most favourable situation is observed in the above 65 years category, where 53.8% reported having access to alternative land, and only 46.2% do not. This trend suggests that older individuals may have more established land use practices or relationships that provide them with better access to alternative resources during emergencies. The findings illustrate a critical gap in disaster preparedness, particularly among younger populations, who are often the most vulnerable during crises. Enhancing the capacity of younger age groups to secure alternative resources will be essential for building resilience and ensuring that all demographics are better equipped to respond to future emergencies.

Analysis of access to alternative land for emergencies be gender shows a slight difference in the proportions of males and females with access to such land (see Figure 52). Among females, 38.7% reported having access to alternative land that could be utilized in the event of emergencies like floods, while a significant 61.3% do not have this access. In comparison, 37.2% of males indicated they have access to alternative land, leaving 62.8% without this crucial resource.

Figure 52: Access to alternative land to use during disasters by Gender of Respondent

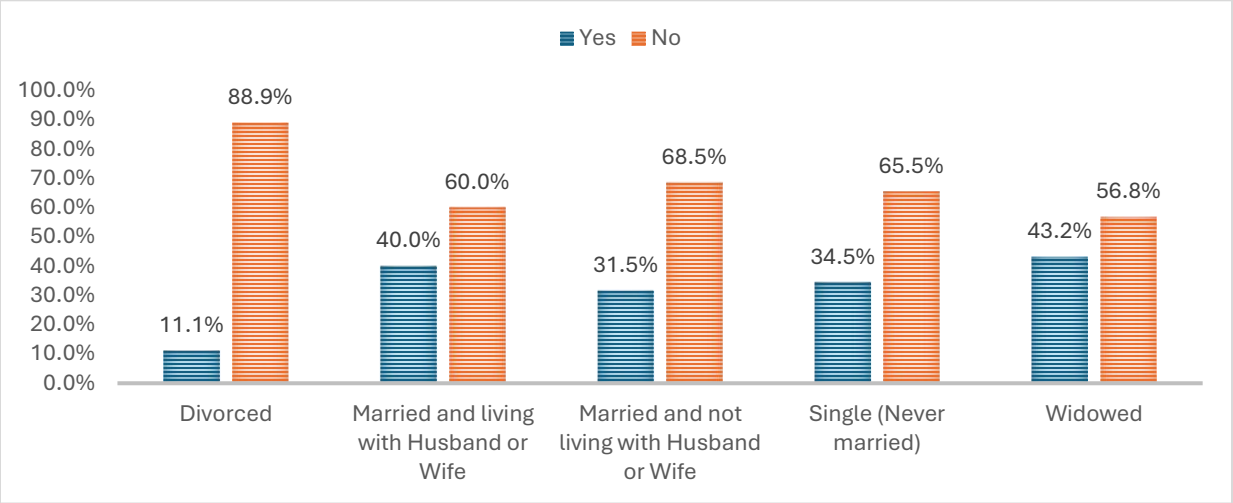


Source: Household Survey Data

The figures suggest that while both genders face challenges regarding access to alternative land, females are slightly more likely to have access than males. However, the overall statistics highlight a concerning lack of preparedness among both groups in the face of potential disasters. Addressing the disparities in access to alternative land is essential for enhancing resilience among both men and women. It is vital to implement community-based interventions that not only increase access to land but also empower both genders to effectively utilize these resources during emergencies.

Analysis by marital status shows that among divorced individuals, only 11.1% reported having access to alternative land that could be utilized in the event of emergencies, highlighting a critical vulnerability, as 88.9% do not have this resource (see Figure 53). In contrast, 40.0% of those who are married and living with their spouse indicated access to alternative land, while 60.0% lack it, suggesting a moderate level of preparedness. For those married but not living with their spouse, 31.5% reported having access, with 68.5% without alternatives. Single individuals, who have never married, showed a slightly better situation, with 34.5% indicating access and 65.5% lacking it. Notably, widowed individuals exhibited the highest level of access, with 43.2% reporting that they have alternative land available, while 56.8% do not.

Figure 53: Access to alternative land to use during disasters by Marital Status



Source: Household Survey Data

The findings indicate that marital status plays a significant role in access to emergency resources in the GUN region. While widowed individuals appear to have better access, divorced individuals face extreme challenges in this regard. Overall, the majority of all marital status categories lack access to alternative land, which is particularly concerning given region's proneness to flooding and other climate-related disasters.

Access to alternative land for emergencies based on family status in reveals significant disparities among different groups that highlight their varying capacities to cope with disasters (see Table 42). **Among internally displaced individuals, 38.9% reported having access to alternative land that could be utilized during emergencies such as floods, while 61.1% do not have this resource, indicating a concerning vulnerability.** In contrast, refugees who have come from another country showed even lower access, with only 17.9% indicating they have alternative land, while a substantial 82.1% lack this essential resource.

Table 42: Access to alternative land to use during disasters by Family Status

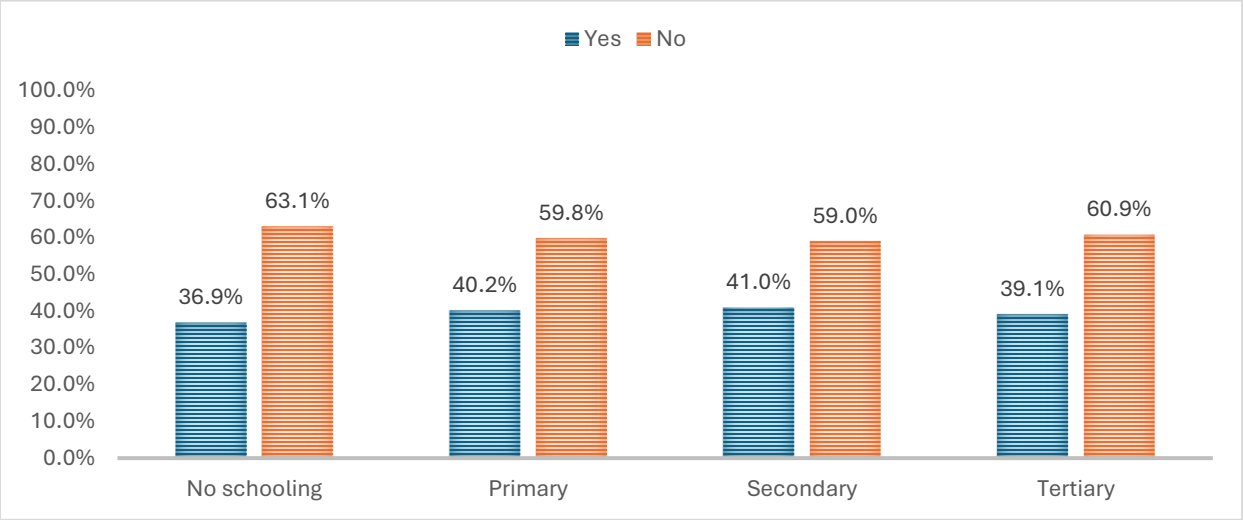
Beneficiary response	Internally Displaced	Refugee (came from another country	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	38.9%	17.9%	44.1%	25.3%	0.0%
No	61.1%	82.1%	55.9%	74.7%	100.0%

Source: Household Survey Data

Residents who have never left their communities fared better, with 44.1% reporting access to alternative land, contrasting with 55.9% who do not. Returnees, those who have left and subsequently returned, displayed a lower level of access at 25.3%, with 74.7% lacking alternatives. Alarmingly, none of the respondents who indicated "Don't Know" reported having access to alternative land, highlighting a complete absence of preparedness in that group. The findings underscore the precarious situation faced by many communities in the GUN, particularly for refugees and returnees who are often in unstable conditions. The lack of access to alternative land is a significant concern, especially in a region prone to flooding and other climate-related disasters.

The results show that among individuals with no formal schooling, 36.9% reported having access to alternative land that could be used in the event of emergencies, while 63.1% do not have this critical resource (see Figure 54). The situation improves slightly for those with primary education, where 40.2% indicated they have access, and 59.8% lack it.

Figure 54: Access to alternative land to use during disasters by Level of Education



Source: Household Survey Data

For individuals with secondary education, the percentage of those with access to alternative land rises to 41.0%, with 59.0% reporting no access. Tertiary education holders also demonstrate a comparable level of access, with 39.1% indicating they have alternative land available, while 60.9% do not. Overall, the differences in access across educational levels are relatively small, suggesting that factors beyond education, such as socioeconomic status and geographical location, may play a more significant role in determining access to alternative land. While educational attainment appears to correlate with slightly improved access, a significant proportion of individuals across all educational levels still lack the necessary resources to effectively respond to emergencies.

7.2.15 Extent to which respondents have access to alternative water that you can use in the case of emergencies (such as droughts)

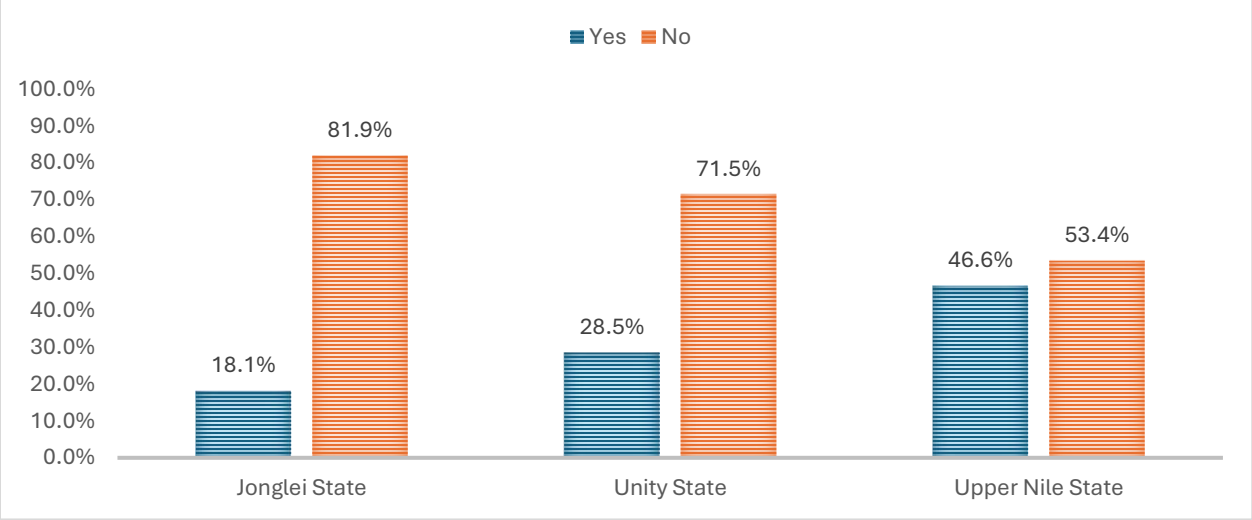
The data regarding access to alternative water sources for emergencies in the GUN region reveals a concerning trend, with only 33.6% of the whole sample indicating that they have alternative water available for use during situations such as droughts. This means that a substantial 66.4% of the population lacks access to backup water sources, which is particularly alarming given the frequent and severe droughts that the region experiences. In the context of region, where water scarcity is a critical issue exacerbated by climate change and ongoing conflict, the lack of alternative water sources significantly compromises community resilience. The inability to access emergency water sources can lead to dire consequences for health, agriculture, and overall livelihoods, as communities become increasingly vulnerable to the impacts of drought.

The findings underscore the urgent need for interventions aimed at improving water accessibility and sustainability. Strategies could include investing in rainwater harvesting systems and developing more robust infrastructure to ensure that communities are better prepared for

emergencies. Enhancing access to alternative water resources is vital for fostering resilience and ensuring the well-being of the population in the region, particularly in the face of environmental challenges.

An analysis of the data reveals that Jonglei State has only 18.1% of respondents indicating access to alternative water sources, while Unity State shows a slightly higher percentage at 28.5% (see Figure 55). In contrast, Upper Nile State demonstrates a significantly better situation, with 46.6% of respondents confirming access to alternative water supplies. This disparity highlights a critical vulnerability in Jonglei and Unity States, where the overwhelming majority of the population – 81.9% and 71.5%, respectively – do not have alternative water sources available in times of crisis. Such a lack of access could exacerbate the impacts of drought and other environmental challenges, leading to severe consequences for health, agriculture, and overall community stability.

Figure 55: Extent of access to alternative water in case of emergencies such as droughts by State

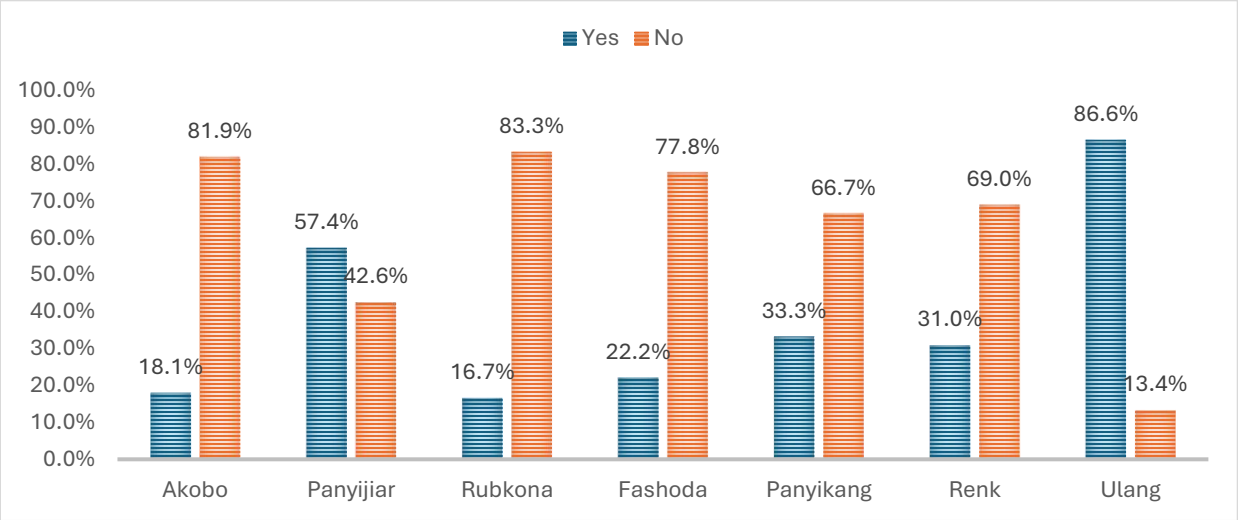


Source: Household Survey Data

Upper Nile State, while still facing challenges, is comparatively better positioned to mitigate the effects of water scarcity due to a higher percentage of access to alternative water sources. Overall, the analysis underscores the need for targeted interventions in Jonglei and Unity States to improve water resilience and ensure that communities are better equipped to handle emergencies.

Analysing the provided data reveals significant variability across the different counties. **For instance, Akobo has only 18.1% of respondents indicating access to alternative water, while Panyijiar shows a more favorable rate of 57.4% (see Figure 56)**. Conversely, Rubkona has a concerning 16.7% access, and Fashoda follows closely with 22.2%. Panyikang and Renk present a mixed scenario, with 33.3% and 31.0% access to alternative water, respectively. Notably, Ulang stands out with 86.6% of respondents affirming availability, suggesting a robust capacity to manage water scarcity during crises. This disparity indicates that while some areas like Ulang may have adequate resources to cope with emergencies, others, particularly Akobo and Rubkona, face significant vulnerabilities due to the overwhelming majority of their populations lacking alternative water sources.

Figure 56: Extent of access to alternative water in case of emergencies such as droughts by County

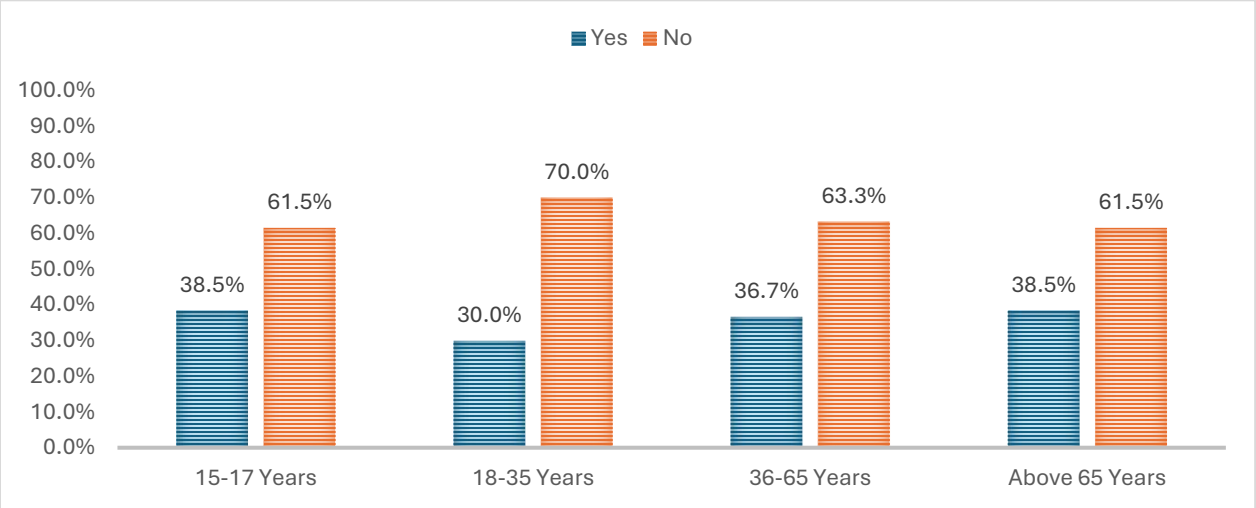


Source: Household Survey Data

The high percentage of respondents in regions like Akobo (81.9%) and Rubkona (83.3%) without access to alternative water underscores a critical need for intervention to enhance water security and resilience. This situation places these communities at heightened risk of adverse impacts during droughts, potentially affecting health, agriculture, and livelihoods. Overall, this analysis highlights the urgent need for strategic investments in water resource management across the region, focusing particularly on the most vulnerable areas to ensure that communities are better equipped to withstand environmental challenges.

The availability of alternative water sources for emergencies, such as droughts, is a pressing concern that varies across different age groups (see Figure 57). **The analysis of the data indicates that among the 15-17 years age group, 38.5% have access to alternative water sources, a figure that is mirrored by the above 65 years group, also at 38.5%.** This suggests a relatively consistent awareness and access to emergency water resources among the younger and older populations. In contrast, the age group of 18-35 years shows a lower access rate at 30.0%, indicating potential vulnerabilities in this demographic. Similarly, the 36-65 years age group has a slightly higher access rate at 36.7%, but still falls short of the levels seen in the younger and older cohorts. Notably, the majority of respondents across all age groups report a lack of access to alternative water, with 61.5% of the 15-17 years group, 70.0% of the 18-35 years group, 63.3% of the 36-65 years group, and 61.5% of the above 65 years group indicating they do not have alternative sources available.

Figure 57: Extent of access to alternative water in case of emergencies such as droughts by Age of Respondent

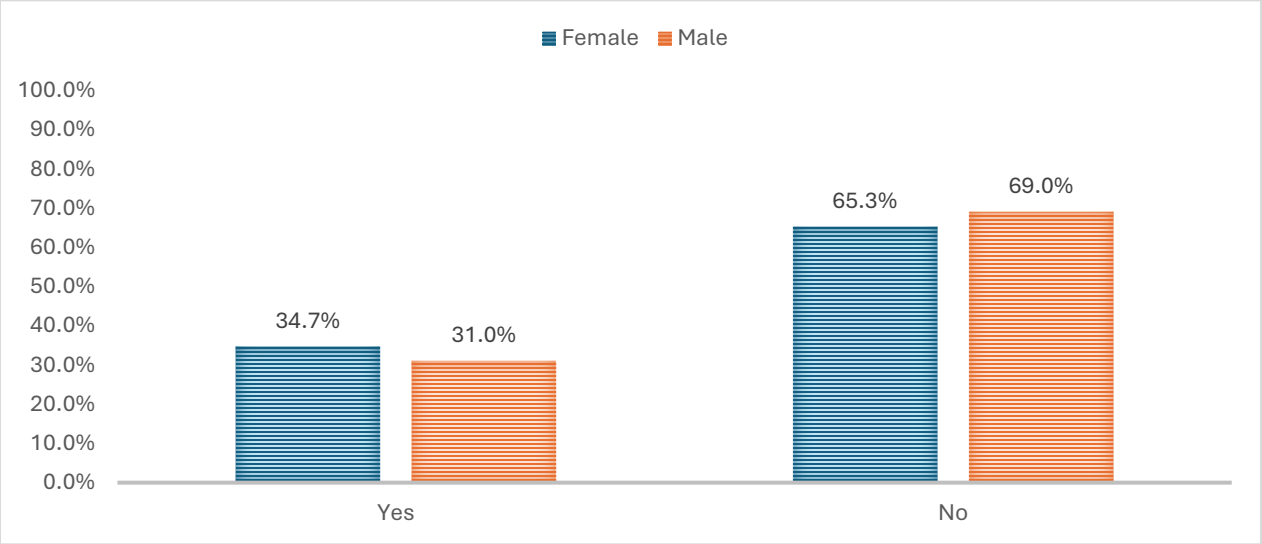


Source: Household Survey Data

The pronounced lack of access among the 18-35 years age group is particularly concerning, as this demographic is often vital for community resilience and recovery efforts. Overall, the analysis points to the urgent need for targeted interventions to improve water access across all age groups, ensuring that communities in are better equipped to handle emergencies and enhance their overall water security.

The availability of alternative water sources for emergencies, such as droughts, reveals a notable gender disparity in access (see Figure 58). **The analysis shows that 34.7% of females report having access to alternative water sources, which is slightly higher than the 31.0% of males who affirm the same.** This difference suggests that females may have a marginally better situation regarding alternative water access, which is significant given the critical role women often play in managing household water resources. However, the lack of access remains a pressing issue for both genders, with 65.3% of females and 69.0% of males indicating that they do not have alternative water sources available. This highlights a troubling reality where the majority of the population, regardless of gender, is vulnerable to water scarcity, particularly during emergencies such as droughts.

Figure 58: Extent of access to alternative water in case of emergencies such as droughts by Gender of Respondent



Source: Household Survey Data

The analysis emphasizes the urgent need for targeted interventions to enhance water security for all individuals in the region, with particular attention to gender dynamics that may influence access and resource management. By improving access to alternative water sources, communities can better withstand the challenges posed by emergencies, ultimately fostering greater resilience and stability.

Table 43 provides an analysis of access to alternative water sources in case of emergencies, such as droughts, reveals significant differences based on marital status. **The data shows that only 11.1% of divorced respondents have access to alternative water, which highlights a critical vulnerability among this group.** In contrast, 37.0% of those who are married and living with their spouse report having access, suggesting that married couples may benefit from shared resources or support systems that enhance water security.

Table 43: Extent of access to alternative water in case of emergencies such as droughts by Marital Status

Respondent response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	11.1%	37.0%	22.5%	31.0%	31.6%
No	88.9%	63.0%	77.5%	69.0%	68.4%

Source: Household Survey Data

The category of individuals who are married but not living with their spouse shows a moderate access rate of 22.5%, while single individuals (never married) have a slightly higher access rate at 31.0%. Interestingly, widowed individuals report a comparable access rate of 31.6%, indicating that this group, despite their loss, may still have mechanisms for obtaining alternative water sources. The lack of access is pronounced across all marital statuses, with divorced individuals facing the highest percentage of non-access at 88.9%, followed by married individuals living together at 63.0%. The figures for those married but not living together (77.5%), single individuals (69.0%), and widowed individuals (68.4%) further illustrate a concerning trend, as the majority in each category do not have alternative water sources available.

This analysis underscores the urgent need for targeted interventions to enhance water access,

particularly for vulnerable groups like divorced individuals. Addressing the disparities in access based on marital status is essential for improving community resilience to emergencies such as droughts. By ensuring that all individuals, regardless of their marital situation, have reliable access to alternative water sources, the GUN region can better equip its population to withstand environmental challenges and enhance overall community stability.

In analysing the data in Table 44 regarding access to alternative water sources during emergencies such as droughts in in the region, notable disparities emerge among different family statuses. **Among IDPs, only 30.1% reported having access to alternative water sources, highlighting a significant vulnerability in their situation.** Similarly, 28.6% of refugees also indicated access, suggesting that their circumstances may not be vastly different from those who are internally displaced.

Table 44: Extent of access to alternative water in case of emergencies such as droughts by Family Status

Respondent response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	30.1%	28.6%	41.6%	16.9%	0.0%
No	69.9%	71.4%	58.4%	83.1%	100.0%

Source: Household Survey Data

In contrast, residents who have never left their homes reported a more favourable situation, with 41.6% having access to alternative water sources. This may reflect better infrastructure or resource availability in areas less affected by conflict or displacement. However, returnees, those who have left and subsequently returned, showed the lowest percentage of access at 16.9%, indicating potential challenges in reintegrating and rebuilding access to essential resources. The data also shows a concerning trend among respondents who did not provide a response, with 100% of those indicating "Don't Know" being in the "No" category for access to alternative water sources. This lack of awareness or understanding of available resources may further exacerbate the challenges faced by these communities during emergencies.

All in all, the findings underscore the urgent need for targeted interventions in the GUN to enhance water access, especially for vulnerable populations such as IDPs and returnees, who are disproportionately affected by emergencies like droughts. Addressing these disparities is crucial for improving resilience and ensuring equitable access to essential resources in the region.

Table 45 presents findings regarding access to alternative water sources during emergencies, such as droughts, with regards to the education level of the respondents. **Among respondents with no formal schooling, 32.7% reported having access to alternative water sources, indicating a moderate level of resource availability despite their lack of education**. This percentage is slightly lower among those with primary education, where 35.4% indicated access, suggesting that basic education may contribute to improved awareness or resource access.

Table 45: Extent of access to alternative water in case of emergencies such as droughts by Education Level

Respondent response	No schooling	Primary	Secondary	Tertiary
Yes	32.7%	35.4%	34.3%	34.8%
No	67.3%	64.6%	65.7%	65.2%

Source: Household Survey Data

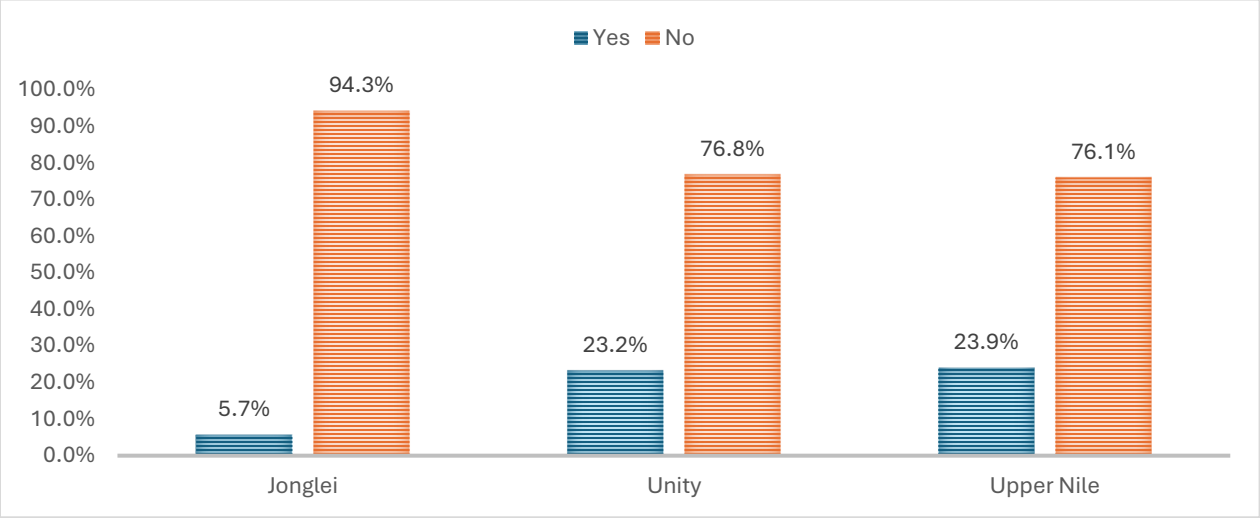
The figures for individuals with secondary and tertiary education are relatively similar, with 34.3% and 34.8% respectively reporting access to alternative water sources. This consistency across higher education levels suggests that while education may enhance overall knowledge and advocacy for water access, it does not lead to a significantly higher likelihood of having alternative water sources available during emergencies compared to those with primary education. Conversely, a substantial proportion of respondents across all education levels reported not having access to alternative water sources, with percentages ranging from 64.6% for primary education to 67.3% for those with no schooling. This highlights a pervasive issue in South Sudan, where a majority of individuals, regardless of their educational attainment, remain vulnerable to water shortages during emergencies. The data points to the critical need for interventions that not only improve educational outcomes but also enhance water infrastructure and accessibility.

7.2.16 Extent to which ecosystems in their area adequately managed

In analysing the management of ecosystems in the GUN region, the data demonstrates that a significant majority of respondents, approximately 78.6%, believe that the ecosystems in their area are not adequately managed. In contrast, only 21.4% of the respondents feel that management practices are sufficient. This disparity highlights a critical concern regarding environmental governance and sustainable practices in the region, where effective ecosystem management is vital for addressing issues such as biodiversity loss and climate change impacts. The prevailing sentiment suggests a need for improved strategies and initiatives aimed at enhancing environmental stewardship. Given the challenges faced by the GUN, including conflict, economic instability, and limited resources, it is imperative that stakeholders prioritize ecosystem management to ensure the health and resilience of natural resources. Addressing these management gaps could lead to better environmental outcomes and support the livelihoods of communities reliant on these ecosystems.

The analysis of ecosystem management perceptions in GUN, specifically across the three states of Jonglei, Unity, and Upper Nile, reveals a concerning trend regarding environmental governance (see Figure 59). In Jonglei, a mere 5.7% of respondents believe that ecosystems are adequately managed, while a staggering 94.3% feel that management practices are insufficient. This stark contrast highlights significant challenges in environmental oversight within the region. In Unity and Upper Nile, the situation is somewhat better, but still troubling. In Unity, 23.2% of respondents express confidence in ecosystem management, leaving 76.8% dissatisfied. Similarly, in Upper Nile, 23.9% feel management is adequate, with 76.1% indicating otherwise. These figures collectively underscore a widespread sentiment of inadequacy in ecosystem management across these regions.

Figure 59: Whether or not ecosystems in their area are adequately managed by State

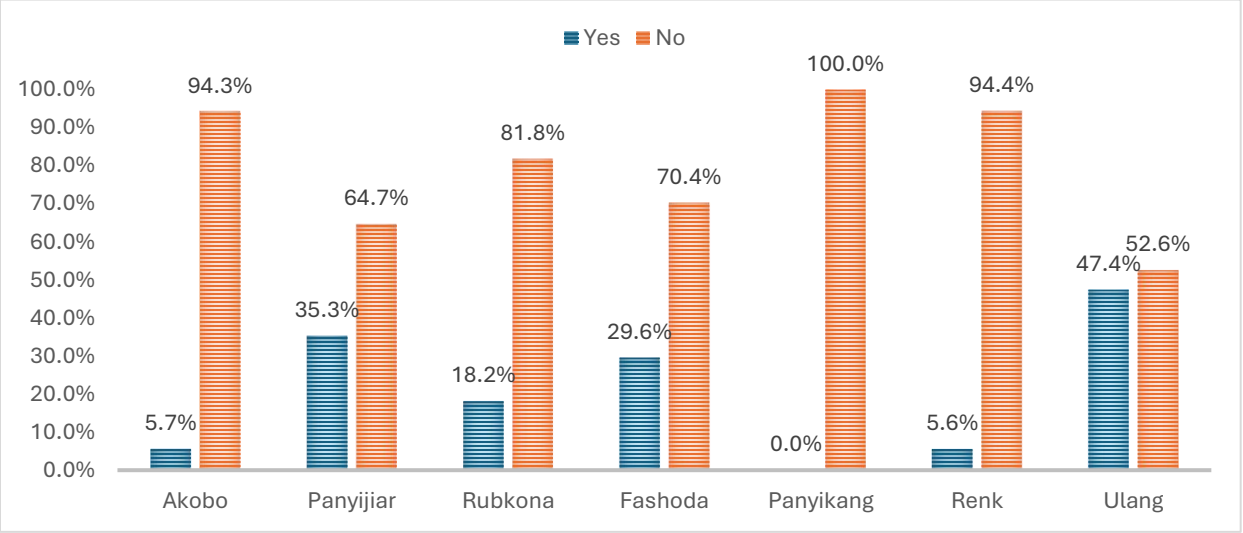


Source: Household Survey Data

The overwhelming majority expressing dissatisfaction points to urgent needs for improved environmental policies and practices in the GUN region. Given the region's struggles with conflict, economic instability, and environmental degradation, enhancing ecosystem management is critical for fostering resilience and supporting the livelihoods of communities dependent on these resources.

The analysis of ecosystem management perceptions across various counties shows significant concerns regarding environmental governance (see Figure 60). **In Akobo, only 5.7% of respondents believe ecosystems are adequately managed, while a striking 94.3% express dissatisfaction**. This trend continues in Panyikang, where no respondents feel confident in ecosystem management, indicating a complete lack of trust in existing practices. In Panyijiar, 35.3% of respondents see adequate management, yet a substantial 64.7% do not, highlighting a critical gap in effective oversight. Rubkona presents a similar situation, with only 18.2% satisfied and 81.8% dissatisfied. Fashoda shows that 29.6% of respondents feel management is sufficient, yet 70.4% disagree, while in Renk, 5.6% express confidence and 94.4% do not. Ulang stands out with 47.4% of respondents believing in adequate management, but even here, 52.6% remain dissatisfied.

Figure 60: Whether or not ecosystems in their area are adequately managed by County

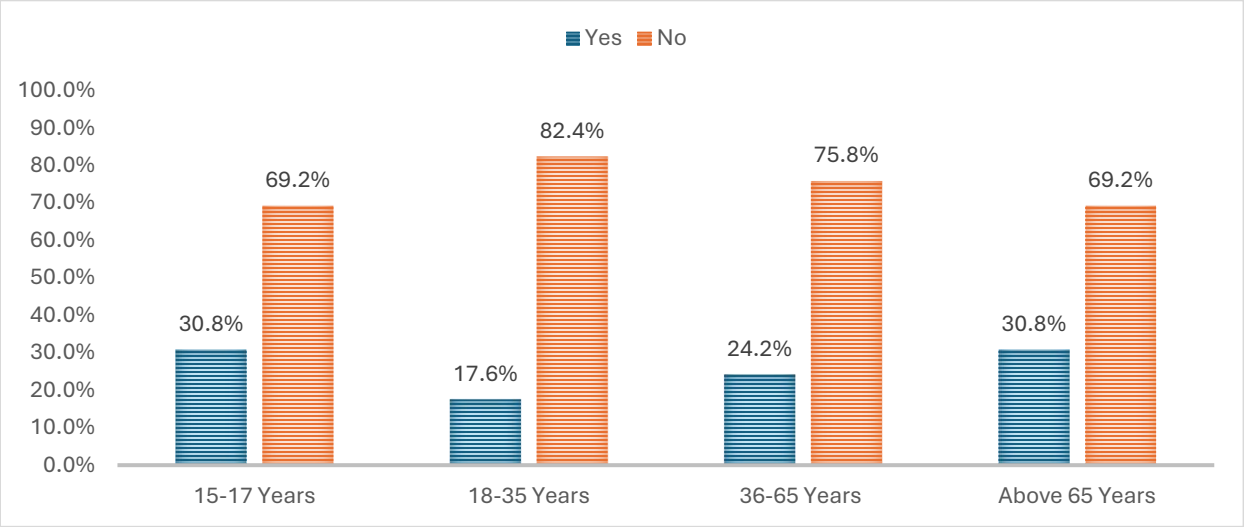


Source: Household Survey Data

Overall, the findings indicate a pervasive sentiment of inadequacy in ecosystem management across the counties surveyed. The high percentages of dissatisfaction reflect the urgent need for improved environmental policies and practices in the GUN. The analysis highlights the importance of addressing the gaps in governance to promote better environmental outcomes in the region.

The analysis of ecosystem management perceptions across different age groups in the GUN reveals significant insights into public sentiment regarding environmental governance. **Among the respondents aged 15 to 17 years, 30.8% believe that ecosystems are adequately managed, while 69.2% feel the opposite (see Figure 61).** This indicates a relatively higher level of confidence compared to older age groups. For those aged 18 to 35 years, the sentiment shifts dramatically, with only 17.6% expressing satisfaction with ecosystem management and a notable 82.4% indicating dissatisfaction. This trend continues in the 36 to 65 years age group, where 24.2% feel that management practices are sufficient, leaving a substantial 75.8% who do not. Interestingly, respondents above 65 years mirror the younger age group of 15 to 17 years, with 30.8% expressing confidence in management while 69.2% do not.

Figure 61: Whether or not ecosystems in their area are adequately managed by Age of Respondent

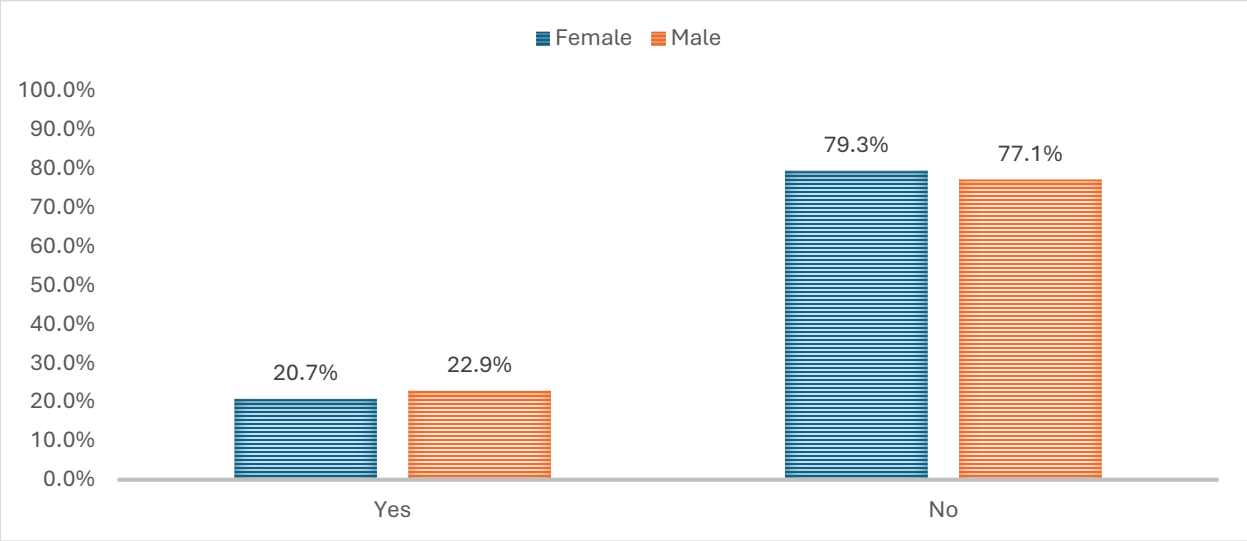


Source: Household Survey Data

The data suggests a pervasive sense of inadequacy in ecosystem management across all age groups, particularly among those aged 18 to 35 years, who exhibit the highest level of dissatisfaction. This highlights the urgent need for targeted interventions and improved environmental policies in the GUN. Addressing these management challenges is crucial for fostering sustainable practices and ensuring the well-being of communities that depend on healthy ecosystems. The findings emphasize the importance of engaging all age groups in discussions and initiatives aimed at enhancing environmental governance in the country.

The analysis of ecosystem management perceptions based on gender reveals notable insights into public sentiment regarding environmental governance (see Figure 62). **Among female respondents, 20.7% believe that ecosystems are adequately managed, while a significant majority of 79.3% feel that management practices are insufficient**. Similarly, male respondents display a comparable level of dissatisfaction, with 22.9% expressing confidence in ecosystem management and 77.1% indicating otherwise.

Figure 62: Whether or not ecosystems in their area are adequately managed by Gender of Respondent



Source: Household Survey Data

These findings suggest that both genders share a common concern regarding the inadequacy of ecosystem management in the GUN, reflecting a broader sentiment of discontent across the population. The marginal difference in perceptions between females and males indicates that dissatisfaction is a widespread issue, transcending gender lines. This pervasive sense of inadequacy underscores the urgent need for improved environmental policies and practices. The data highlights the importance of engaging both men and women in discussions and initiatives aimed at fostering sustainable practices and improving governance, ultimately contributing to better environmental outcomes for all communities in the GUN.

Analysis by marital status shows that among divorced respondents, only 16.7% believe that ecosystems in their area are adequately managed, while a substantial 83.3% express dissatisfaction (see Table 46). For those married and living with their spouse, 23.1% feel confident in ecosystem management, yet 76.9% do not share this view. In contrast, respondents who are married but not living with their spouse show a lower confidence level, with only 15.3% expressing satisfaction and 84.7% indicating inadequacy in management practices. Single (never married) individuals have a slightly higher perception of management, with 22.4% believing it is adequate and 77.6% disagreeing. Finally, among widowed respondents, 17.9% feel that ecosystems are adequately managed, while 82.1% do not.

Table 46: Whether or not ecosystems in their area are adequately managed by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	16.7%	23.1%	15.3%	22.4%	17.9%
No	83.3%	76.9%	84.7%	77.6%	82.1%

Source: Household Survey Data

The findings illustrate a pervasive sense of dissatisfaction with ecosystem management across all marital statuses, with the majority of respondents indicating that management practices are insufficient. This reflects a broader concern regarding environmental governance in the GUN region,

where effective management is crucial for addressing challenges related to biodiversity loss and resource sustainability. The data highlights the need for targeted interventions and community engagement to improve ecosystem management, fostering a collaborative approach that includes diverse perspectives from all marital statuses to enhance environmental outcomes in the country.

In analysing the data presented in Table 47 regarding ecosystem management perceptions among different family statuses, it is evident that a significant majority of respondents feel that ecosystems in their area are not adequately managed**. Among internally displaced individuals, a striking 81.9% reported dissatisfaction with ecosystem management, while this figure is even higher among refugees, where 85.7% expressed similar sentiments.** Residents, who have never left their homes, reported 71.9% dissatisfaction, indicating a slightly better perception compared to those displaced. Conversely, returnees, who have returned to region after leaving, showed the highest level of discontent, with 92.1% stating that ecosystem management is inadequate.

Table 47: Whether or not ecosystems in their area are adequately managed by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	18.1%	14.3%	28.1%	7.9%	50.0%
No	81.9%	85.7%	71.9%	92.1%	50.0%

Source: Household Survey Data

Notably, a substantial portion of respondents, 50%, indicated uncertainty about the state of ecosystem management, a factor that highlights a potential gap in awareness or information regarding environmental issues in their regions. This uncertainty is particularly pronounced among returnees, suggesting that their reintegration may be compounded by a lack of clarity about local ecosystem conditions. Overall, the findings underscore a critical concern for environmental management in the GUN, as the overwhelming perception of inadequate ecosystem management across various family statuses points to a pressing need for improved governance and resources dedicated to ecological sustainability.

The data presented in Table 48 shows major insights into perceptions of ecosystem management in the GUN, differentiated by the level of education among respondents. **Overall, a substantial majority across all educational levels believe that ecosystems in their areas are inadequately managed.** Notably, among individuals with no formal schooling, 79.6% reported dissatisfaction with ecosystem management, while this perception improves slightly for those with primary education, where 73.2% expressed similar concerns. However, dissatisfaction sharply escalates for those with secondary education, with 84.8% indicating that ecosystems are not adequately managed, and reaches its peak among tertiary-educated respondents, where 91.3% feel the same way.

Table 48: Whether or not ecosystems in their area are adequately managed by Level of Education

Beneficiary response	No schooling	Primary	Secondary	Tertiary
Yes	20.4%	26.8%	15.2%	8.7%
No	79.6%	73.2%	84.8%	91.3%

Source: Household Survey Data

Interestingly, the percentage of respondents who perceive adequate ecosystem management is relatively low across all educational categories. The highest percentage of approval comes from those with primary education at 26.8%, while this figure drops significantly to 8.7% among those with

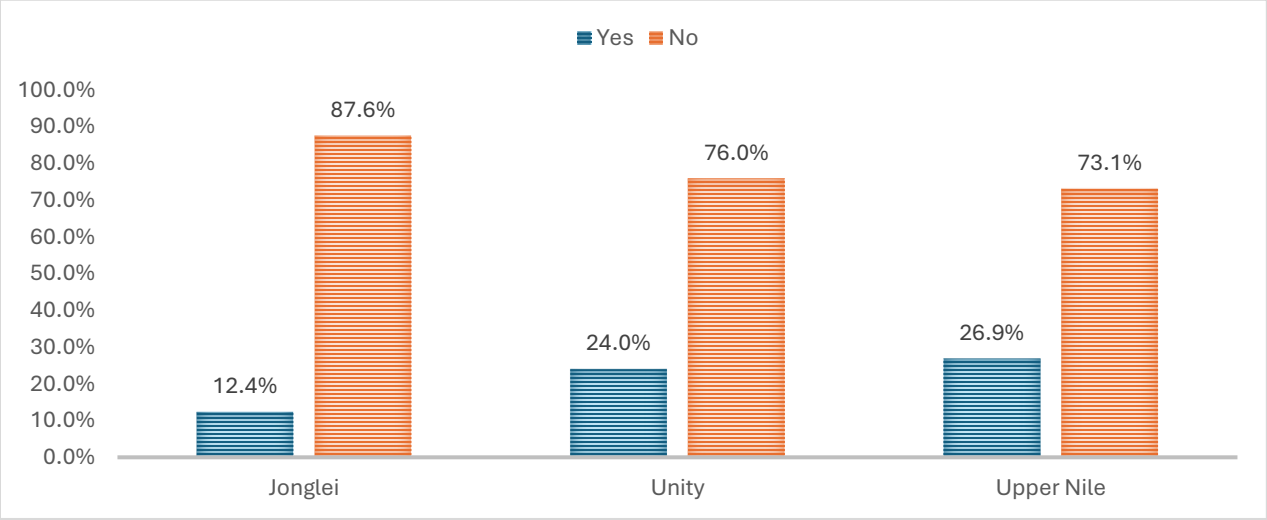
tertiary education. This trend suggests that higher education may correlate with heightened awareness or critical evaluation of environmental conditions, leading to more pronounced dissatisfaction. These findings highlight a critical challenge in the region, where educational attainment does not necessarily equate to better perceptions of environmental management. The widespread sentiment of inadequate ecosystem management underscores the urgent need for improved environmental governance and education initiatives to foster awareness and engagement in ecological sustainability.

7.2.17 Extent to which respondents have access to fertilizers, crop (seed) varieties and/or alternative livestock breeds

In the GUN region, a significant portion of the population appears to lack access to essential agricultural resources, with only 23.6% of respondents confirming availability of fertilizers, crop seed varieties, or alternative livestock breeds. This stark statistic indicates that a substantial 76.4% of the sample does not have access to these crucial inputs, which are vital for enhancing agricultural productivity and food security. The limited access to fertilizers and improved crop varieties can hinder the ability of famers to increase yields, ultimately impacting overall food availability and economic stability in the region. Addressing this gap is essential for fostering sustainable agricultural development and improving livelihoods in the region, where agriculture is a key component of the economy and community resilience.

Analysis by state (Figure 63) reveals significant disparities in access to agricultural resources across Jonglei, Unity, and Upper Nile. **In Jonglei, only 12.4% of respondents reported having access to fertilizers, crop seed varieties, or alternative livestock breeds, indicating a severe scarcity of these essential inputs.** In contrast, Unity and Upper Nile show slightly better access, with 24.0% and 26.9% of respondents affirming availability, respectively. However, the majority in each region remains without access, with 87.6% in Jonglei, 76.0% in Unity, and 73.1% in Upper Nile lacking these critical agricultural resources.

Figure 63: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by State

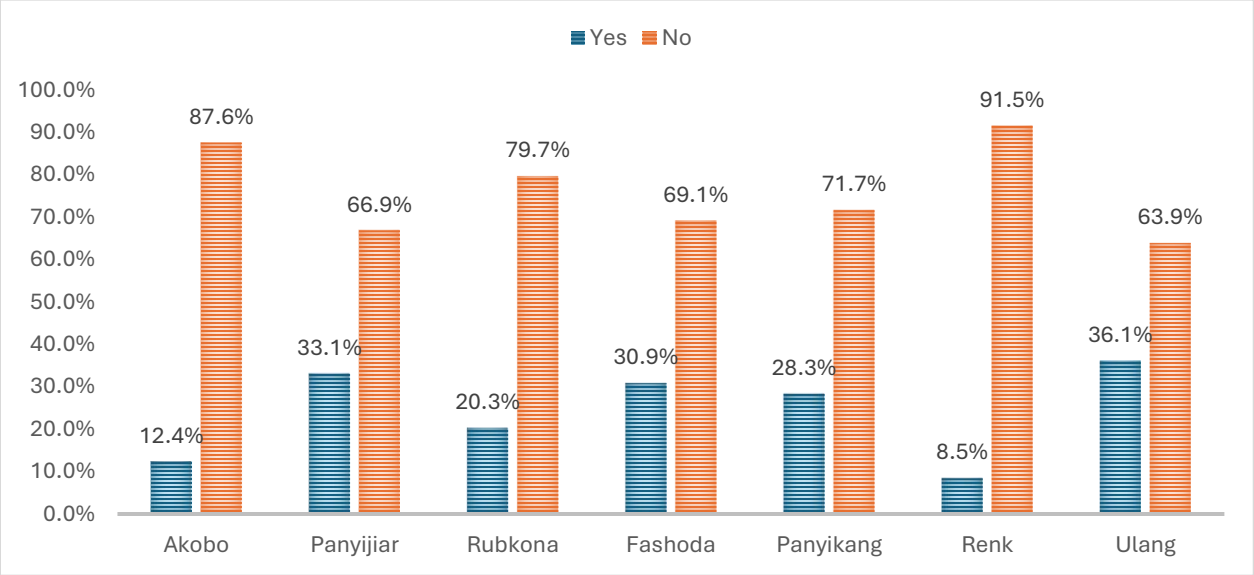


Source: Household Survey Data

The limited access not only hampers the potential for increased agricultural productivity but also threatens food security and economic development in the region. Addressing these challenges is crucial for enhancing agricultural resilience and improving the livelihoods of communities in the region, where agriculture plays a pivotal role in sustaining the population.

The analysis of access to agricultural resources across various counties in in the GUN shows significant challenges for local farmers (see Figure 64). **In Akobo, only 12.4% of respondents indicated access to fertilizers, crop seed varieties, or alternative livestock breeds, highlighting a critical gap in agricultural support. Panyijiar shows a somewhat better scenario with 33.1% access, while Rubkona and Fashoda report 20.3% and 30.9% respectively, indicating that even in these areas, the majority still lacks necessary resources**. Panyikang and Renk present concerning figures, with access at 28.3% and a notably low 8.5% in Renk, where an overwhelming 91.5% of respondents do not have access. Ulang stands out with 36.1% access, but still, a significant portion of the population remains underserved.

Figure 64: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by County

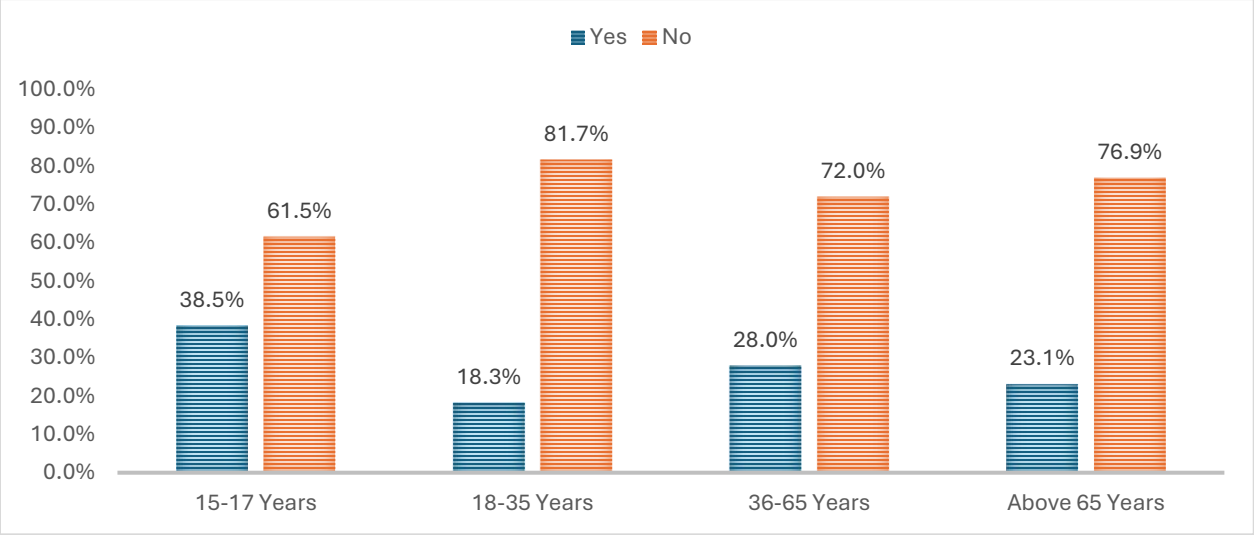


Source: Household Survey Data

Overall, the data shows that in all regions analyzed, a substantial majority of respondents – ranging from 63.9% to 91.5% – do not have access to these critical agricultural inputs. This lack of access poses severe risks to food security and agricultural productivity, which are vital for the economic stability and resilience of communities in the region. Addressing these access issues is imperative to enhance agricultural development, improve livelihoods, and foster sustainability in a country heavily reliant on its agricultural sector.

The analysis of access to agricultural resources, including fertilizers, crop seed varieties, and alternative livestock breeds, across different age groups in shows notable trends (see Figure 65). **Among the younger population aged 15-17 years, 38.5% reported having access to these essential resources, indicating a relatively better situation compared to older age groups.** However, access sharply declines in the 18-35 years bracket, where only 18.3% confirmed availability. This trend continues with the 36-65 years age group, showing a 28.0% access rate, and further extends to those above 65 years, where 23.1% reported having access.

Figure 65: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by Age of Respondent

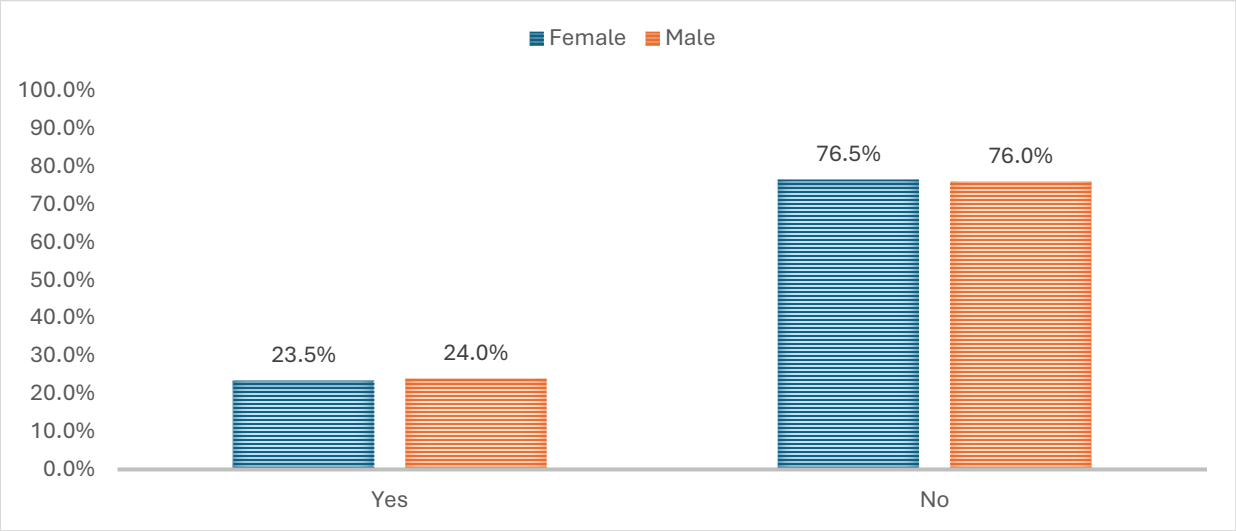


Source: Household Survey Data

Conversely, the majority of respondents across all age categories lack access to these crucial agricultural inputs, with 61.5% of the 15-17 years group, 81.7% of the 18-35 years group, 72.0% of the 36-65 years group, and a concerning 76.9% of those above 65 years indicating unavailability. This widespread lack of access poses significant challenges to agricultural productivity and food security in the region, particularly as the younger population, who could potentially innovate and enhance agricultural practices, faces barriers. Addressing these access disparities is vital for fostering a more resilient agricultural sector and improving the livelihoods of all age groups in the region, where agriculture is a cornerstone of the economy and community well-being.

The analysis of access to agricultural resources, specifically fertilizers, crop seed varieties, and alternative livestock breeds, reveals a marginal difference between genders in the GUN region (Figure 66). Among females, 23.5% reported having access to these essential inputs, while males showed a slightly higher access rate of 24.0%. This indicates that both genders face significant barriers in obtaining the necessary resources to enhance agricultural productivity.

Figure 66: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by Gender of Respondent



Source: Household Survey Data

Despite the slight variation in access, the overwhelming majority in both groups lack these critical agricultural supports, with 76.5% of females and 76.0% of males indicating that they do not have access. This uniform lack of resources underscores a broader systemic issue in the region, where agricultural productivity is severely hindered by limited availability of essential inputs. Addressing these barriers is crucial for improving food security and economic stability in the region, as both male and female farmers play vital roles in the agricultural sector. Ensuring equitable access to resources for all farmers is essential for fostering sustainable agricultural development and enhancing the livelihoods of communities across region.

The analysis of access to agricultural resources – namely fertilizers, crop seed varieties, and alternative livestock breeds – based on marital status in the GUN shows considerable disparities (see Table 49). **Among the divorced population, only 11.1% reported having access to these essential inputs, indicating a significant lack of support for this group.** In contrast, access is somewhat higher among those who are married and living with their spouses, at 23.1%, and among those married but not living together, at 21.6%.

Table 49: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	11.1%	23.1%	21.6%	27.6%	29.5%
No	88.9%	76.9%	78.4%	72.4%	70.5%

Source: Household Survey Data

Single individuals who have never married report a higher access rate of 27.6%, while widowed respondents show the highest access at 29.5%. Despite these variations, a substantial majority across all marital statuses still lack access to these critical agricultural resources, with the "no" responses ranging from 70.5% among widowed individuals to 88.9% among divorced individuals. The data underscores the challenges faced by various demographic groups in the GUN, where the lack of access to agricultural inputs significantly hampers productivity and food security. The findings highlight the need for targeted interventions that address the specific needs of each marital

status group to improve access to essential resources.

The analysis of access to agricultural resources, including fertilizers, crop seed varieties, and alternative livestock breeds, based on family status shows significant disparities among different groups (see Table 50). **IDPs report a relatively higher access rate of 28.5%, which reflects some level of support for this vulnerable population.** In contrast, refugees who have come from other countries show a much lower access rate of 14.3%, indicating challenges they face in integrating and accessing essential agricultural inputs in their new environment.

Table 50: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	28.5%	14.3%	26.6%	11.8%	50.0%
No	71.5%	85.7%	73.4%	88.2%	50.0%

Source: Household Survey Data

Residents who have never left their areas report a 26.6% access rate, while returnees have the lowest access at only 11.8%. Interestingly, there is a notable portion of respondents, 50.0%, who are uncertain about their access status, indicating a lack of clarity or awareness regarding available resources. The "no" responses highlight a concerning trend, with high percentages of individuals lacking access: 71.5% of IDPs, 85.7% of refugees, 73.4% of residents, and a staggering 88.2% of returnees indicating they do not have access to these crucial agricultural resources. This data underscores the urgent need for targeted interventions that address the specific barriers faced by each group, particularly refugees and returnees, who are at a heightened risk of food insecurity and economic instability.

The analysis of access to agricultural resources, including fertilizers, crop seed varieties, and alternative livestock breeds, based on education levels in reveals minimal variation across different educational backgrounds (see Table 51). **Among individuals with no formal schooling, 22.8% reported having access to these essential agricultural inputs, while those with primary education indicated a slightly higher access rate at 25.2%.** Secondary education holders reported 23.8% access, and individuals with tertiary education showed the lowest access rate at 21.7%.

Table 51: Access to fertilizers, crop (seed) varieties and/or alternative livestock breeds by Level of Education

Beneficiary response	No schooling	Primary	Secondary	Tertiary
Yes	22.8%	25.2%	23.8%	21.7%
No	77.2%	74.8%	76.2%	78.3%

Source: Household Survey Data

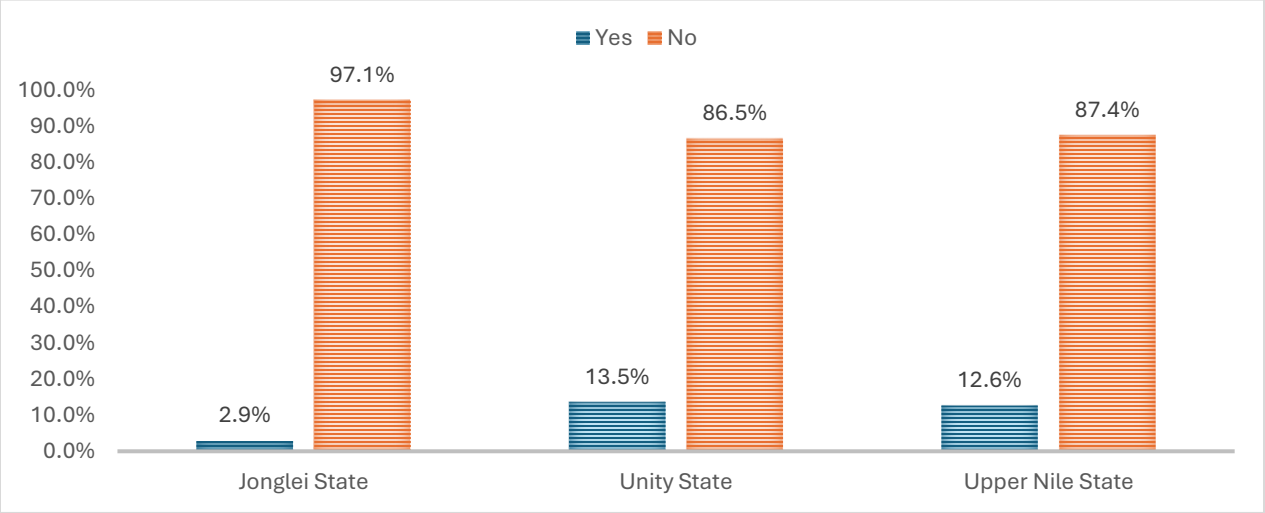
Despite these figures, a significant majority in all educational categories lack access, with "no" responses ranging from 74.8% among primary education holders to 78.3% among those with tertiary education. This indicates that education level does not appear to significantly impact access to critical agricultural resources in South Sudan. The findings highlight the systemic challenges faced by farmers across all educational levels in the country. The lack of access to fertilizers and improved seed varieties is a pressing issue that can hinder agricultural productivity and food security.

7.2.18 Extent of having access to a bank account or community fund to support their livelihood

In analysing the provided data regarding access to bank accounts or community funds in the GUN region, it is evident that a significant majority of the population, notably 88.1%, do not have access to such financial resources. This lack of access poses considerable challenges for individuals seeking to support their livelihoods, as financial stability is crucial for economic participation and personal development. Conversely, only 11.9% of respondents reported having access to a bank account or community fund, indicating that financial inclusion remains a critical issue in the country. This disparity highlights the need for targeted interventions to improve access to financial services, which could empower individuals and foster economic growth in the region.

The data shows a major disparity in access to bank accounts or community funds across Jonglei, Unity, and Upper Nile States (see Figure 67). **Jonglei State exhibits the most limited access, with only 2.9% of the population reporting access to these financial resources, while a staggering 97.1% lack such access. Unity State shows a slightly better, but still concerning, situation, where 13.5% have access and 86.5% do not.** Upper Nile State presents a similar picture to Unity State, with 12.6% having access and 87.4% lacking access. These figures underscore the critical need for increased financial inclusion initiatives across these states. The overwhelmingly high percentages of individuals without access to bank accounts or community funds suggest significant barriers to economic empowerment and livelihood improvement. Targeted interventions are necessary to address these disparities and promote sustainable development in the region.

Figure 67: Access to a bank account or community fund to support livelihood by State



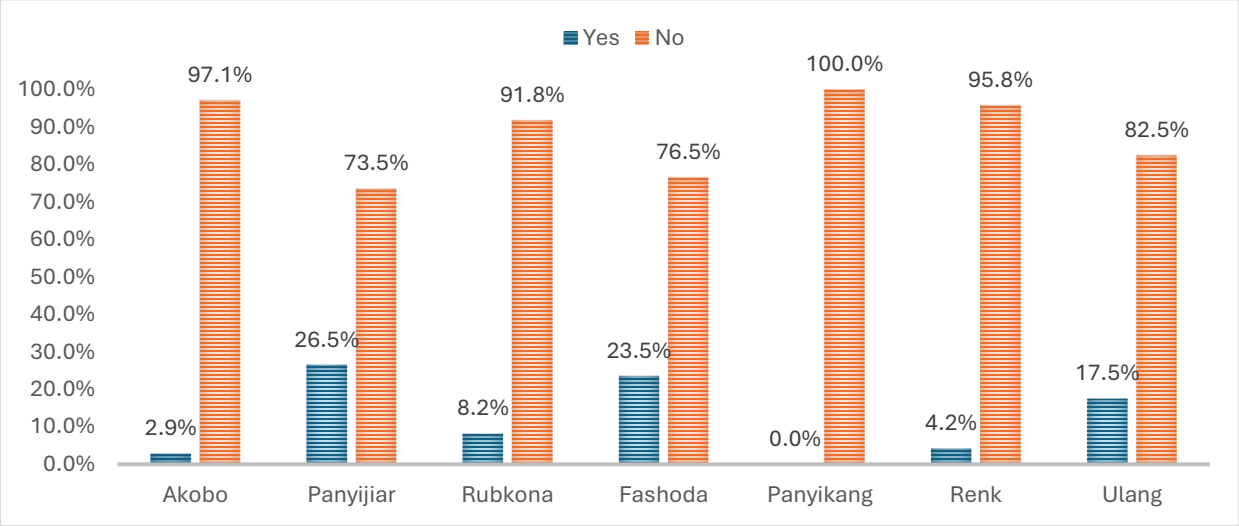
Source: Household Survey Data

To further elaborate on the analysis, it is important to consider potential factors contributing to this lack of access. These could include - limited banking infrastructure given the scarcity of bank branches and ATMs, particularly in rural areas, that hinder access to formal financial services. High levels of poverty may make it difficult for individuals to maintain bank accounts due to fees or minimum balance requirements. Insufficient understanding of financial products and services can deter people from engaging with formal banking systems. In addition, the ongoing conflict and displacement disrupt livelihoods and limit access to financial institutions. Finally, while mobile money could bridge some gaps, limited mobile network coverage in certain areas restricts its

effectiveness. Addressing these challenges requires a multi-faceted approach involving government initiatives, private sector investment, and community-based programs aimed at promoting financial literacy and inclusion.

The data highlights significant variations in financial inclusion across the counties, revealing the diverse challenges faced by communities in the region (see Figure 68). **Panyikang stands out with the most acute lack of access, where 100% of respondents reported not having access to a bank account or community fund. Akobo and Renk also show very limited access, with only 2.9% and 4.2% of their populations, respectively, having access to these financial resources. Rubkona shows a slightly better, but still concerning, situation, where 8.2% have access and 91.8% do not.** Ulang has 17.5% of people having access, while 82.5% do not. In contrast, Panyijiar and Fashoda demonstrate relatively higher access rates, with 26.5% and 23.5% of their populations, respectively, reporting access to bank accounts or community funds. However, even in these areas, a significant majority still lack access, with 73.5% in Panyijiar and 76.5% in Fashoda reporting no access.

Figure 68: Access to a bank account or community fund to support livelihood by County



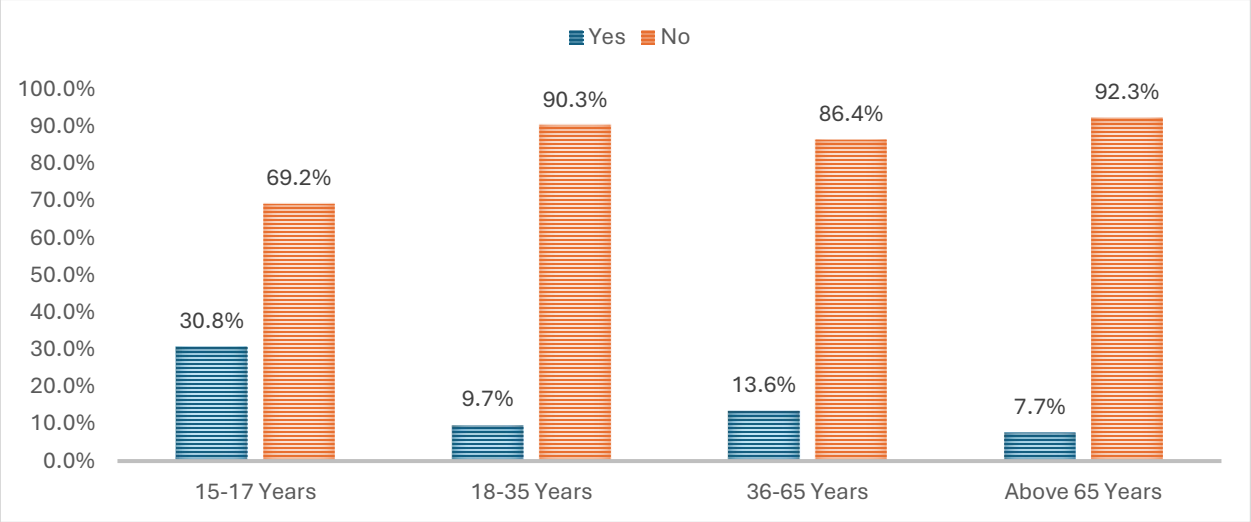
Source: Household Survey Data

These disparities underscore the complex landscape of financial inclusion in the GUN region Sudan. Factors such as infrastructure, security, economic activities, and the presence of aid organizations likely play a role in these variations. The extremely low access in Panyikang, Akobo and Renk points to a critical need for targeted interventions to expand financial services and promote economic empowerment in these particularly underserved areas. Overall, the data emphasizes the importance of tailored strategies to address the specific challenges and needs of each community in South Sudan to foster greater financial inclusion and support sustainable livelihoods.

The analysis of access to bank accounts or community funds across different age groups in the GUN region also shows significant differences that impact financial inclusion and livelihood support (see Figure 69). **Among the 15-17 age group, 30.8% of respondents reported having access to financial resources, indicating a relatively better situation compared to older age brackets. However, this positive trend sharply declines in the 18-35 age group, where only 9.7% have access, highlighting a critical gap in financial services for young adults.** In the 36-65 age group,

access remains low at 13.6%, and the situation is even more dire for those above 65, with only 7.7% reporting access to bank accounts or community funds. These figures illustrate a concerning pattern of financial exclusion across all age groups, with the majority lacking access: 69.2% of 15-17-year-olds, 90.3% of 18-35-year-olds, 86.4% of those aged 36-65, and a staggering 92.3% of individuals over 65 do not have access to essential financial resources.

Figure 69: Access to a bank account or community fund to support livelihood by Age of Respondent

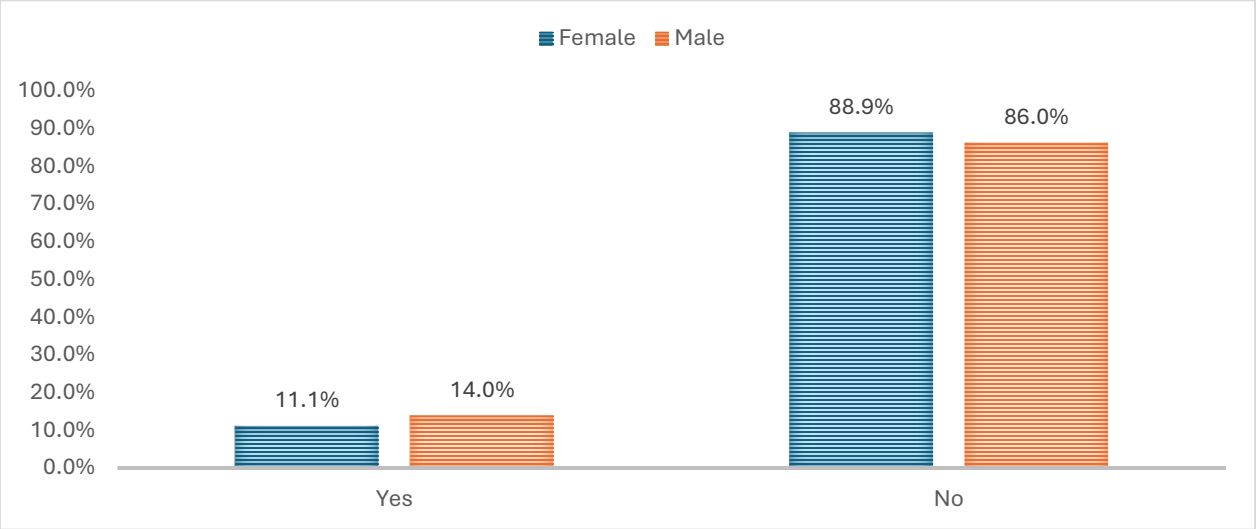


Source: Household Survey Data

This lack of access not only hampers individual livelihoods but also poses broader challenges for economic stability in the GUN. It underscores the urgent need for targeted financial inclusion initiatives tailored to different age demographics. Addressing these disparities is critical for empowering communities, fostering economic resilience, and enhancing overall development in the region. Collaborative efforts from government entities, NGOs, and community organizations are essential to improve financial literacy and accessibility, particularly for the most vulnerable populations.

The analysis of access to bank accounts or community funds in the GUN region demonstrates notable gender variations that significantly affect financial inclusion and livelihood support (see Figure 70). **Among females, only 11.1% reported having access to these financial resources, while an overwhelming 88.9% lack such access. In contrast, the situation is slightly better for males, with 14.0% indicating access, yet a substantial 86.0% still do not have access to essential financial services.** These figures highlight a concerning trend of financial exclusion that disproportionately affects women in the GUN, who face additional barriers to accessing banking services and community funds. The low access rates for both genders underscore the urgent need for targeted interventions aimed at improving financial inclusion, particularly for women, who often bear the brunt of economic challenges in developing contexts.

Figure 70: Access to a bank account or community fund to support livelihood by Gender of Respondent



Source: Household Survey Data

Addressing these disparities is critical for fostering economic empowerment and enhancing the livelihoods of individuals across the region. Strategies should focus on increasing access to financial services for women, promoting financial literacy, and creating supportive environments that enable both men and women to engage with formal banking systems. Collaborative efforts from government agencies, NGOs, and community organizations will be essential in promoting equitable access to financial resources and supporting sustainable development in the region.

Analysis of access to bank accounts or community funds in the GUN, segmented by marital status, reveals significant differences that impact financial inclusion and support for livelihoods (see Table 52). **Among the divorced respondents, none reported having access to these financial resources, indicating a complete lack of financial support for this group. In contrast, 13.7% of those who are married and living with their spouse have access, showcasing a relatively better situation, although a substantial 86.3% still do not.** For those married but not living with their spouse, access stands at 10.8%, while 10.3% of single individuals (never married) reported having access to financial resources. The widowed population exhibits the lowest access rate among all groups, with only 5.3% indicating access, leaving a staggering 94.7% without financial support.

Table 52: Access to a bank account or community fund to support livelihood by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	0.0%	13.7%	10.8%	10.3%	5.3%
No	100.0%	86.3%	89.2%	89.7%	94.7%

Source: Household Survey Data

These figures highlight a concerning trend of financial exclusion that disproportionately affects divorced and widowed individuals, who often face additional economic vulnerabilities. The high percentages of individuals lacking access to bank accounts or community funds across all marital statuses underscore the urgent need for targeted financial inclusion initiatives in the GUN. Addressing these disparities is essential for promoting economic empowerment and improving livelihoods, particularly for the most marginalized groups. Strategies should focus on enhancing

access to financial services for all marital statuses, alongside promoting financial literacy and support mechanisms that cater specifically to the unique challenges faced by each group.

Table 53 provides an analysis of access to bank accounts or community funds in the GUN, categorized by family status, and reveals major variations that impact financial inclusion and livelihood support. **Among IDPs, only 6.7% reported having access to financial resources, highlighting the extreme challenges faced by this vulnerable group. Refugees show a somewhat better situation, with 17.9% indicating access, yet 82.1% still lack the necessary financial support.** Residents who have never left their homes report a similar access rate of 17.0%, while returnees have the lowest access at just 2.8%. Notably, 50.0% of respondents indicated "Don't Know," which suggests a lack of awareness about available financial services, indicating another barrier to financial inclusion.

Table 53: Access to a bank account or community fund to support livelihood by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	6.7%	17.9%	17.0%	2.8%	50.0%
No	93.3%	82.1%	83.0%	97.2%	50.0%

Source: Household Survey Data

These figures underscore the urgent need for targeted interventions to enhance financial access across different family statuses in the GUN. The overwhelming majority of individuals, particularly the internally displaced and returnees, remain without access to essential financial services, which impedes their ability to support their livelihoods and contribute to economic stability. Addressing these disparities is crucial for promoting economic empowerment and improving overall community resilience. Strategies should focus on increasing awareness of financial services, enhancing accessibility for vulnerable groups, and implementing programs tailored to the specific needs of each family status.

7.2.19 Extent of access to insurance to assist respondents in emergencies

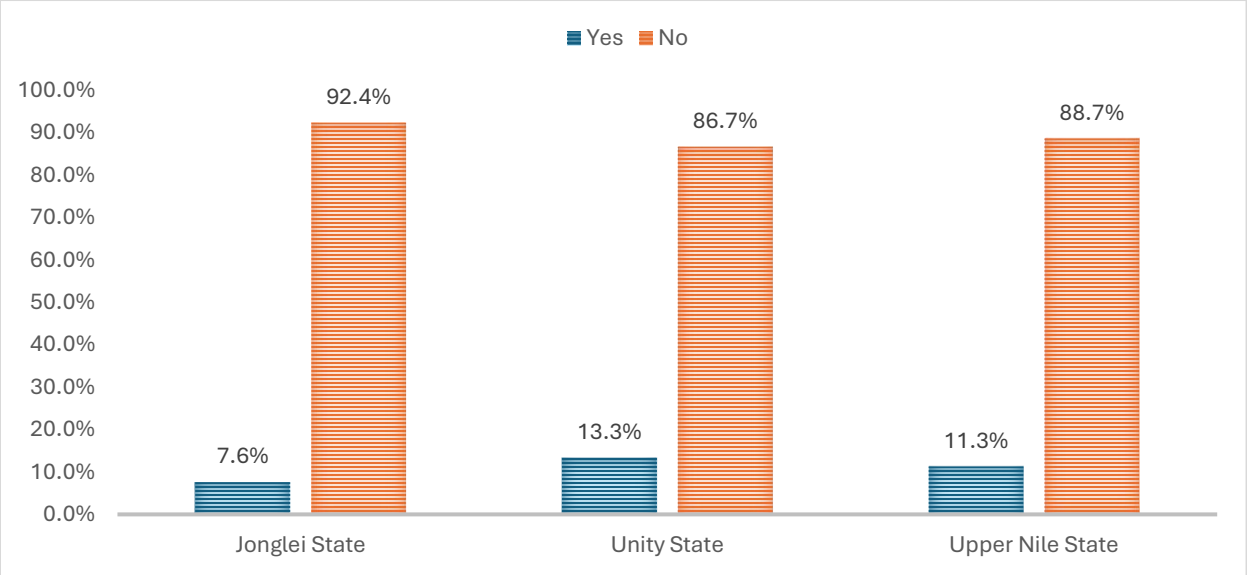
The analysis of access to insurance for emergencies in the GUN region reveals a critical gap in financial safety nets for the population. **Among the entire sample, only 11.9% of respondents reported having access to insurance that could assist them during emergencies. This figure indicates a severe lack of preparedness and protection for the majority of individuals, as a staggering 88.1% do not have any form of insurance coverage.** Key informants identified several informal insurance products in the region, including Community Savings Groups, which provide emergency funds; Livestock Insurance, where members support each other in livestock loss; Social Networks that facilitate financial assistance during crises; Crop Sharing Arrangements that distribute agricultural risks; and Traditional Healers' Support, which involves informal payments for healthcare services. The low access to insurance is particularly concerning in the context of the region, where communities frequently face crises such as conflict, natural disasters, and economic instability. Without insurance, individuals are left vulnerable to financial shocks that can arise from emergencies, further exacerbating their economic hardships and hindering recovery efforts.

The low percentage of insured individuals underscores the urgent need for initiatives aimed at improving access to insurance products tailored to the unique challenges faced by the GUN

communities. Strategies should focus on raising awareness about the importance of insurance, developing affordable and accessible insurance options, and promoting financial literacy to empower individuals to make informed decisions about their financial futures. Collaborative efforts among government agencies, NGOs, and private sector stakeholders will be essential in creating a more resilient population capable of facing emergencies with greater confidence and security.

The analysis of access to insurance for emergencies across different counties in GUN region shows huge variations that highlight a critical lack of financial protection for the population (see Figure 71). **In Jonglei State for example, only 7.6% of respondents reported having access to insurance, indicating a severe deficiency in emergency preparedness. This situation is somewhat better in Unity State, where 13.3% have access, yet it still reflects a concerning gap in coverage. Upper Nile State shows a similar scenario, with 11.3% of respondents indicating they have insurance.**

Figure 71: Access to insurance to assist them in emergencies by State

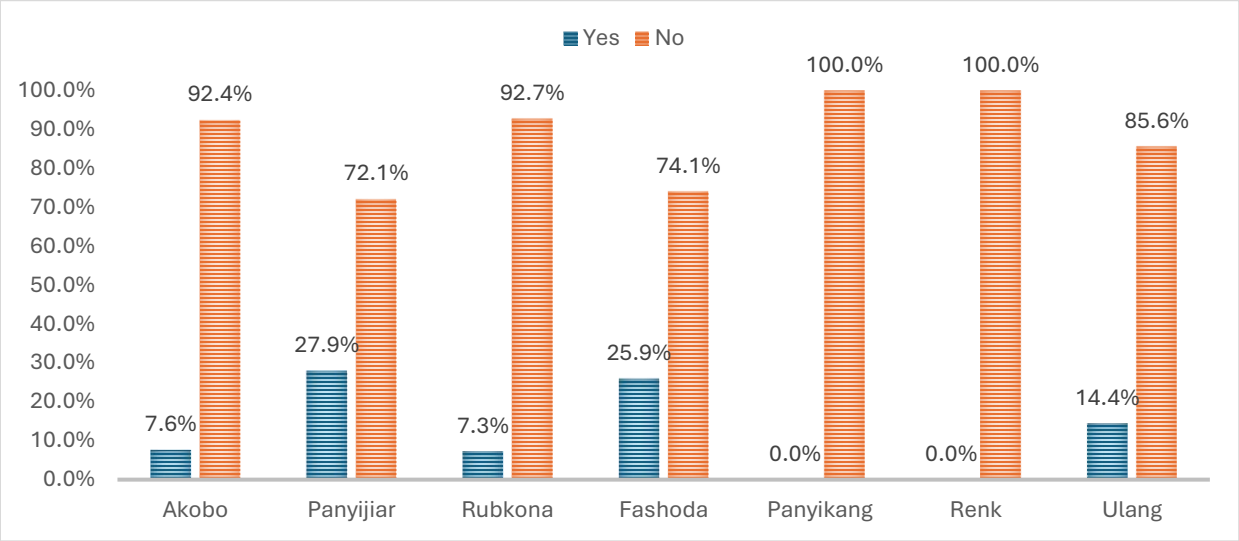


Source: Household Survey Data

Despite these slight variations, the overwhelming majority across all states lack insurance, with 92.4% in Jonglei, 86.7% in Unity, and 88.7% in Upper Nile reporting no access to emergency insurance. This widespread absence of coverage is particularly alarming given the frequent crises faced by communities in the GUN region, including conflict, natural disasters, and economic instability, which can lead to significant financial hardships. The data underscores an urgent need for targeted interventions to improve insurance accessibility and awareness in these states. Strategies should focus on developing affordable insurance products, enhancing financial literacy, and promoting the importance of insurance as a safety net for individuals and families.

Analysis of access to insurance for emergencies across various counties in GUN highlights differences that underscore a critical gap in financial protection for the population (see Figure 72). **In Akobo, only 7.6% of respondents reported having access to insurance, reflecting a stark lack of emergency preparedness. Panyijiar shows a comparatively higher access rate at 27.9%, indicating a better but still inadequate level of insurance coverage. In contrast, Rubkona reports just 7.3% access, while Fashoda has 25.9%, suggesting that even in regions with relatively higher access, the majority of the population remains uninsured**.

Figure 72: Access to insurance to assist them in emergencies by County

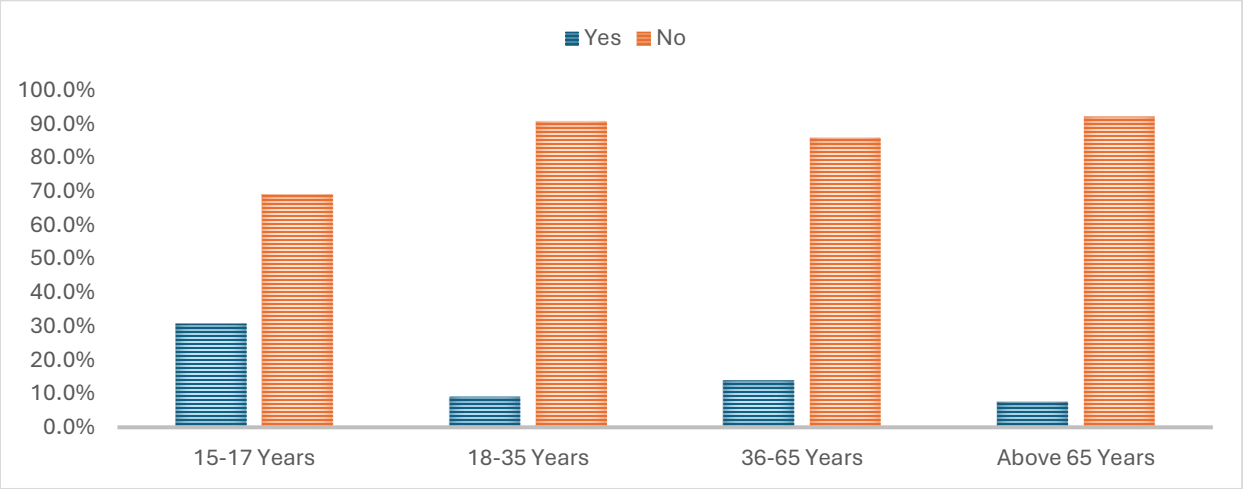


Source: Household Survey Data

Notably, Panyikang and Renk show alarming figures, with 100% of respondents in both regions lacking access to insurance, emphasizing the extreme vulnerability of these communities. Ulang offers a slightly better scenario, with 14.4% reporting access, yet still leaves a large majority without any form of insurance. The data indicates that a staggering majority of individuals across the counties lack insurance, with percentages of those uninsured ranging from 72.1% in Panyijiar to 100% in Panyikang and Renk. This widespread absence of insurance coverage is particularly concerning given the frequent emergencies that regional communities face, including conflict, natural disasters, and economic challenges. The findings underscore the urgent need for targeted efforts to improve access to insurance products tailored to the unique circumstances of each region. Strategies should focus on raising awareness about the importance of insurance, developing affordable options, and enhancing financial literacy to empower individuals to seek out and utilize insurance as a safety net.

Findings on access to insurance for emergencies among different age groups in the region reveals significant variations that highlight varying levels of financial protection across the population (see Figure 73). **Among the 15-17 age group, 30.8% reported having access to insurance, indicating a relatively better situation for younger individuals compared to older demographics. However, this positive trend sharply declines in the 18-35 age group, where only 9.2% have access to insurance, reflecting a concerning gap in coverage for young adults who are often entering the workforce and establishing their own households. In the 36-65 age group, access to insurance stands at 14.0%, which, while slightly higher than the previous group, still represents a substantial lack of coverage. The situation is even more dire for those aged above 65, with only 7.7% having access to insurance.** This demographic, often facing increased health and economic vulnerabilities, is particularly at risk due to the lack of financial safety nets.

Figure 73: Access to insurance to assist them in emergencies by Age of Respondent

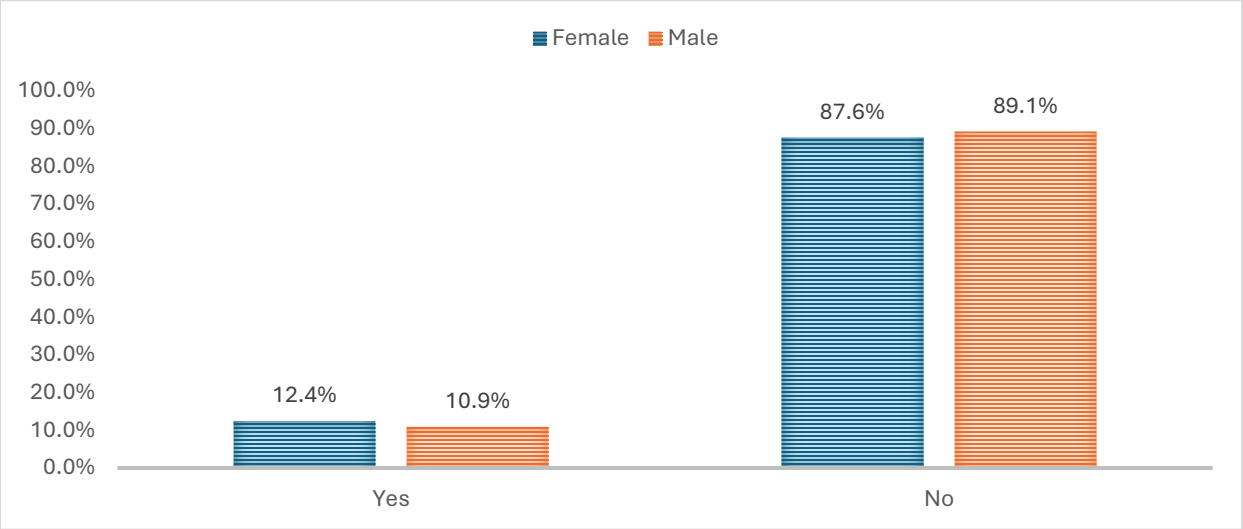


Source: Household Survey Data

The overall picture indicates that a significant majority of individuals across all age groups lack access to insurance, with 69.2% of 15-17-year-olds, 90.8% of 18-35-year-olds, 86.0% of those aged 36-65, and 92.3% of individuals over 65 reporting no access. This widespread absence of insurance is alarming, especially in a context like South Sudan, where communities frequently face emergencies due to conflict and natural disasters. **These findings highlight the urgent need for targeted initiatives to improve access to insurance, particularly for vulnerable age groups.** Strategies should focus on raising awareness about the importance of insurance, creating affordable and accessible insurance products, and promoting financial literacy.

Access to insurance for emergencies in South Sudan, segmented by gender, has notable differences in financial protection for females and males (see Figure 74). **Among females, 12.4% reported having access to insurance, which is slightly higher than the 10.9% of males who indicated the same. While this difference suggests that women may have slightly better access to insurance options, both figures remain alarmingly low, indicating a widespread lack of coverage across the population.**

Figure 74: Access to insurance to assist them in emergencies by Gender of Respondent



Source: Household Survey Data

The overwhelming majority of individuals lack insurance, with 87.6% of females and 89.1% of males reporting no access to emergency insurance. This lack of coverage is particularly concerning in the context of South Sudan, where communities frequently face crises such as conflict, economic instability, and natural disasters. The absence of a financial safety net leaves individuals, regardless of gender, vulnerable to the financial repercussions of emergencies. The findings highlight the urgent need for targeted initiatives aimed at improving access to insurance for both women and men in in the region.

The analysis of access to insurance for emergencies in in the GUN, categorized by marital status, reveals significant disparities that highlight the varying levels of financial protection among different groups (see Table 54). **Notably, among divorced individuals, there is an alarming lack of access to insurance, with 0.0% reporting any coverage. This complete absence reflects the unique vulnerabilities faced by divorced individuals, who may lack support systems compared to their married counterparts.**

Table 54: Access to insurance to assist them in emergencies by Marital Status

Beneficiary response	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Yes	0.0%	12.5%	8.1%	19.0%	10.5%
No	100.0%	87.5%	91.9%	81.0%	89.5%

Source: Household Survey Data

In contrast, 12.5% of those married and living with their spouse reported having access to insurance, indicating a somewhat better situation, although a substantial 87.5% still lack coverage. For those married but not living with their spouse, access is slightly lower at 8.1%, while 19.0% of single individuals (never married) have insurance, the highest rate among the groups analysed. Widowed individuals report 10.5% access, which, while higher than the divorced category, still leaves the majority without financial protection. Overall, the data illustrates that a significant proportion of individuals across all marital statuses lack access to insurance, ranging from 81.0% of singles to 100% of divorced individuals. This widespread absence of coverage is particularly

concerning given the frequent emergencies faced by communities in the region.

An analysis of access to insurance for emergencies in in the region, categorized by family status, shows considerable variations that highlight the critical need for financial protection among various groups. **As summarized in Table 55, among IDPs, only 6.7% reported having access to insurance, indicating a severe lack of emergency preparedness for this particularly vulnerable population.** Refugees, defined as those who have come from another country, show a somewhat better access rate at 17.9%, yet this still reflects a concerning gap in coverage.

Table 55: Access to insurance to assist them in emergencies by Family Status

Beneficiary response	Internally Displaced	Refugee (came from another nry)	Resident (never left)	Returnee (left and returned)	Don`t Know
Yes	6.7%	17.9%	16.6%	3.9%	0.0%
No	93.3%	82.1%	83.4%	96.1%	100.0%

Source: Household Survey Data

Residents who have never left their homes report a slightly higher access rate of 16.6%, suggesting that stability may correlate with better access to financial resources. However, returnees – individuals who have left and then returned – exhibit the lowest access, with only 3.9% indicating they have insurance. Alarmingly, 0.0% of respondents in the "Don't Know" category reported having insurance, emphasizing a lack of awareness about available options.

Overall, the overwhelming majority across all family statuses lack access to insurance, with 93.3% of internally displaced individuals, 82.1% of refugees, 83.4% of residents, and 96.1% of returnees reporting no coverage. This alarming absence of insurance is particularly troubling in the context of the GUN region, where communities frequently face crises such as conflict, natural disasters, and economic instability, leaving them vulnerable to significant financial hardships.

Table 56 summarizes findings on access to insurance for emergencies in the GUN, segmented by educational attainment. **Among individuals with no schooling, 11.3% reported having access to insurance, suggesting a modest level of coverage despite a lack of formal education. In comparison, those with a primary education have a slightly higher access rate of 14.6%, indicating that even basic education may improve awareness and uptake of insurance products.** However, the figures for secondary education show a decrease in access, with 11.4% of individuals reporting coverage, which raises questions about the effectiveness of educational attainment in enhancing insurance access at this level. Alarmingly, none of the individuals with tertiary education reported having access to insurance, a finding that is particularly concerning for a demographic that typically has greater resources and opportunities.

Table 56: Access to insurance to assist them in emergencies by Level of Education

Beneficiary response	No schooling	Primary	Secondary	Tertiary
Yes	11.3%	14.6%	11.4%	0.0%
No	88.7%	85.4%	88.6%	100.0%

Source: Household Survey Data

The overwhelming majority across all educational levels lack access to insurance, with 88.7% of those with no schooling, 85.4% of primary graduates, 88.6% of secondary graduates, and 100% of those with tertiary education reporting no coverage. This widespread absence of

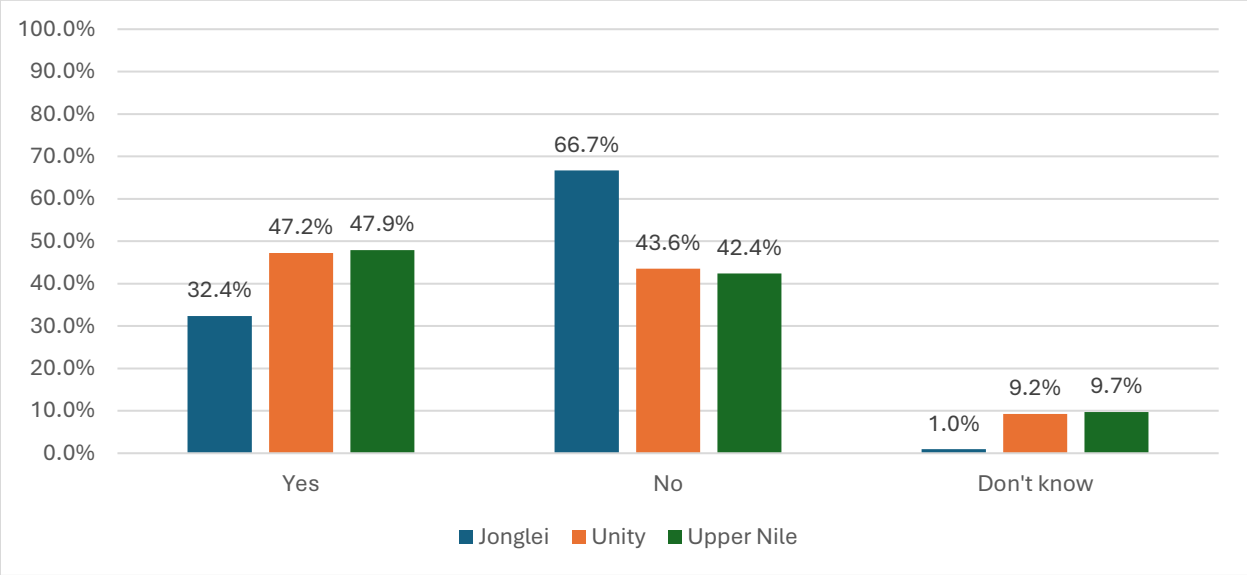
insurance is troubling, especially in a context like South Sudan, where communities are frequently exposed to emergencies due to conflict, economic instability, and natural disasters. The findings highlight the urgent need for targeted initiatives to improve access to insurance across all educational levels. Strategies should focus on raising awareness about the importance of insurance, developing affordable and accessible products, and promoting financial literacy tailored to different educational backgrounds.

7.2.20 Whether or not the communities receive information on warnings about hazards

In analysing the communication channels used to disseminate information regarding warnings on hazards, 45.7% of respondents confirmed that the community does communicate warnings, while a slightly higher percentage, 45.9%, reported that such information is not communicated. Additionally, a smaller segment of the population, comprising 8.4%, expressed uncertainty by responding with "Don't know." This distribution suggests that there is a significant divide in perceptions about warning communication within the community, highlighting potential areas for improvement in information dissemination and clarity.

Analysis by state shows that in Jonglei, only 32.4% of respondents reported that warnings are communicated, while a significant majority, 66.7%, indicated that they are not (see Figure 75). In contrast, Unity and Upper Nile show more favourable reports, with 47.2% and 47.9% of respondents, respectively, affirming that warnings are communicated.

Figure 75: Whether or not the community communicates information on warnings by State



Correspondingly, the percentage of those who reported that communication in these regions is lower, at 43.6% for Unity and 42.4% for Upper Nile. Additionally, a small proportion of respondents across all regions expressed uncertainty, with 1.0% in Jonglei, 9.2% in Unity, and 9.7% in Upper Nile indicating they do not know. This data highlights significant disparities in reports of warning communication, particularly in Jonglei, suggesting an urgent need for improved communication strategies in that region.

The analysis of community communication regarding warnings across various counties reveals significant disparities as summarised in Table 57. **In Akobo, only 32.4% of respondents believe that warnings are effectively communicated, while a notable 66.7% feel the opposite**. Panyijiar

shows a much more positive perception, with 69.9% affirming that warnings are communicated, contrasted by just 22.1% who do not.

Table 57: Whether or not the community communicates warnings by County

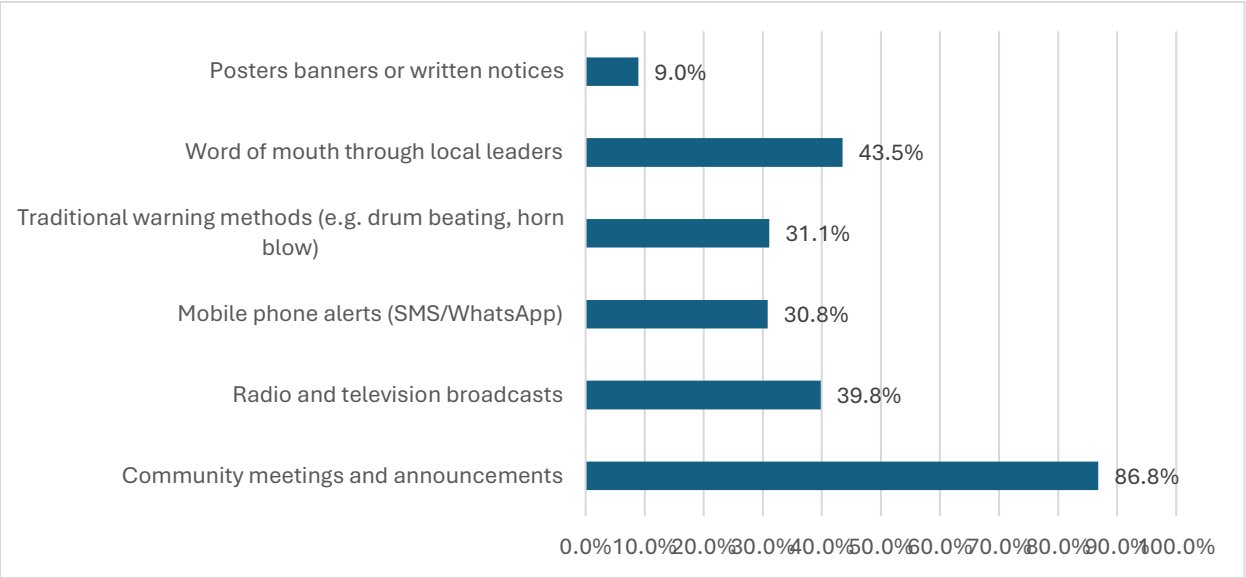
	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Yes	32.4%	69.9%	37.9%	43.2%	33.3%	12.7%	86.6%
No	66.7%	22.1%	52.4%	56.8%	30.0%	77.5%	12.4%
Don't know	1.0%	8.1%	9.7%	0.0%	36.7%	9.9%	1.0%

In Rubkona, 37.9% believe in effective communication, while 52.4% do not, indicating a similar trend. Fashoda exhibits a moderate level of confidence, with 43.2% affirming communication and 56.8% denying it. Panyikang has a lower percentage of 33.3% believing in communication, with 30.0% indicating otherwise. Renk presents a concerning situation where only 12.7% report that warnings are communicated, while a substantial 77.5% do not. Conversely, Ulang stands out significantly, as 86.6% of respondents saying that warnings are effectively communicated, with only 12.4% disagreeing. A small proportion of respondents across the counties expressed uncertainty, with the highest being 36.7% in Panyikang. The analysis underscores the varying levels of perception regarding warning communication, highlighting the need for targeted efforts to improve clarity and effectiveness in specific counties.

7.2.21 Type of communication mechanisms used in the community to communicate hazard warnings

The analysis of warning communication mechanisms within the community reveals a significant reliance on community meetings and announcements, with 86.8% of respondents identifying this as the primary method for disseminating warnings (see Figure 76). In contrast, radio and television broadcasts are utilized by 39.8%, while mobile phone alerts, including SMS and WhatsApp, account for 30.8%. Traditional methods, such as drum beating and horn blowing, are used by 31.1%, and word of mouth through local leaders is important for 43.5% of the population. However, less formal methods like posters and banners are the least utilized at 9.0%.

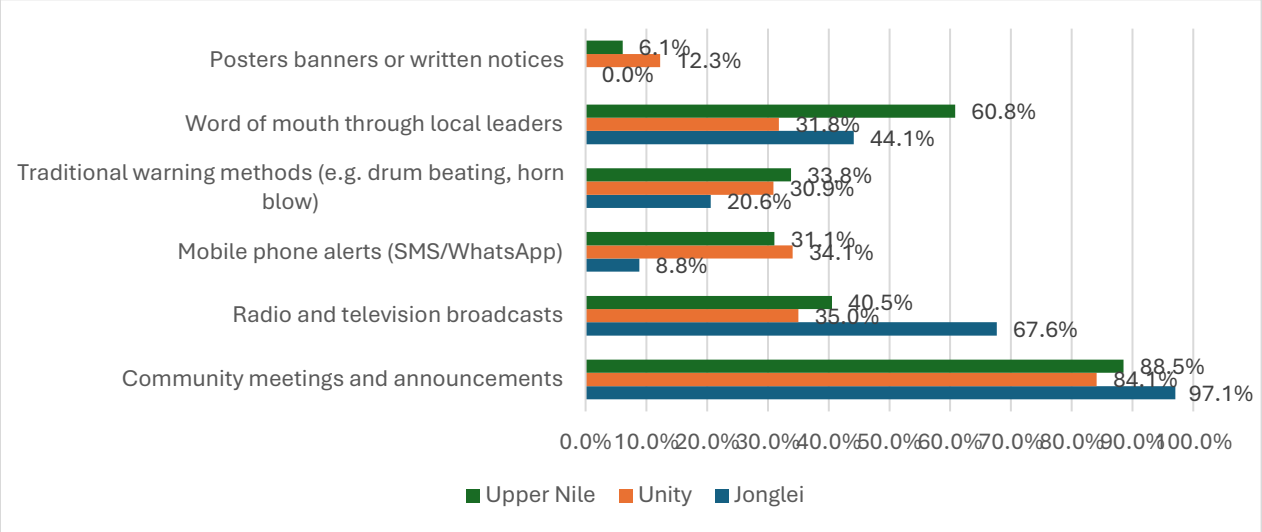
Figure 76:Type of communication mechanisms used to communicate hazards warnings overall



According to Okello (2022), the current media landscape in South Sudan presents challenges for effective communication. There are only 26 radio stations across the country, with limited reach, and the South Sudan Broadcasting Corporation (SSBC) is the sole operational television station, broadcasting primarily from Juba. Despite the availability of mainstream international news platforms through digital satellite channels, only 11% of the population has internet access, one of the lowest rates globally, and a mere 1.8% engage with social media. The few radio stations that do provide broad coverage, such as Radio Mirraya and Internews, focus on community relevance and often broadcast in local languages. Despite ongoing efforts to establish new radio stations, many communities remain underserved, and past conflicts have led to the vandalism of equipment, further complicating the communication landscape. This context suggests that while there is a strong preference for direct, community-based communication methods, the limited availability and accessibility of digital and broadcast media hinder the effectiveness of warnings in South Sudan. Thus, enhancing the infrastructure for digital communications and ensuring wider radio coverage could significantly improve information dissemination in these communities.

The analysis of warning communication mechanisms by state shows that in Jonglei, an overwhelming majority, 97.1%, rely on community meetings and announcements as their primary means of communication, indicating a strong preference for direct engagement (see Figure 77). Unity follows with 84.1%, while Upper Nile shows a slightly lower reliance at 88.5%. Radio and television broadcasts are more prominent in Jonglei, with 67.6% of respondents using these channels, compared to just 35.0% in Unity and 40.5% in Upper Nile, suggesting that Jonglei benefits from better access to media. Mobile phone alerts, including SMS and WhatsApp, are utilized by only 8.8% in Jonglei, but are more common in Unity and Upper Nile, at 34.1% and 31.1%, respectively, reflecting a growing trend in digital communication in these regions.

Figure 77: Type of communication mechanisms used to communicate hazards warnings by State



Traditional warning methods, such as drum beating and horn blowing, are used by 20.6% of respondents in Jonglei, but are more prevalent in Unity and Upper Nile, where 30.9% and 33.8% report their use. Additionally, word of mouth through local leaders plays a significant role, particularly in Upper Nile, where 60.8% of respondents rely on this method, compared to 44.1% in Jonglei and 31.8% in Unity. Finally, the use of posters, banners, or written notices is minimal across

all regions, with no respondents in Jonglei indicating their use, 12.3% in Unity, and 6.1% in Upper Nile. This data underscores the importance of community-based communication methods while highlighting the varying degrees of reliance on different channels across the regions, indicating potential areas for enhancing communication strategies, particularly in leveraging digital platforms and media accessibility.

Table 58 shows that, in the counties, community meetings and announcements are predominantly used, with Akobo reporting 97.1% reliance on this method, followed closely by Panyijiar at 92.6% and Fashoda at 94.3%. Ulang also shows a high percentage at 95.2%, while Panyikang has the lowest at 45.0%.

Table 58: Type of communication mechanisms used to communicate hazards warnings by County

Type of warning communication mechanisms	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Community meetings and announcements	97.1%	92.6%	77.6%	94.3%	45.0%	100.0%	95.2%
Radio and television broadcasts	67.6%	43.2%	28.8%	77.1%	55.0%	22.2%	23.8%
Mobile phone alerts (SMS/WhatsApp)	8.8%	51.6%	20.8%	34.3%	70.0%	22.2%	21.4%
Traditional warning methods (e.g. drum beating, horn blow)	20.6%	50.5%	16.0%	17.1%	15.0%	11.1%	47.6%
Word of mouth through local leaders	44.1%	56.8%	12.8%	42.9%	95.0%	66.7%	59.5%
Posters banners or written notices	0.0%	22.1%	4.8%	2.9%	0.0%	33.3%	6.0%

Asked on ways in which community members disseminate information in areas with limited radio coverage, a male KII respondent in the Ministry of Education in Bentiu town and Rubkona county had this to say:

> *"In areas where radio coverage is inadequate, information is passed through word of mouth, with community members visiting villages to warn others about rising water levels and the need to evacuate. The community relies on traditional rescue methods such as canoes, whereas in places like Zambia, helicopters are used for evacuations during floods, highlighting a gap in technology and resources".* **Interview with a Ministry of Education in Bentiu town and Rubkona county, 18 March 2025**

In terms of radio and television broadcasts, Akobo leads with 67.6%, while Fashoda follows at 77.1%, demonstrating a better engagement with these media in certain areas. Conversely, Rubkona shows a lower usage at 28.8%, and both Renk and Ulang exhibit minimal reliance on these channels, at 22.2% and 23.8%, respectively. Highlighting the importance of radio communication, a Ministry of Education in Bentiu town and Rubkona county had this to say:

> *"When flooding occurs, a task force is formed to communicate information over the radio, directing people to safe locations where canoes are sent to evacuate them".* **Interview with Ministry of Education in Bentiu town and Rubkona county, 18 March 2025**

Mobile phone alerts are notably popular in Panyikang, where 70.0% of respondents utilize this method, contrasting sharply with Akobo's low usage of 8.8%. Other counties, such as Fashoda and Panyijiar, report moderate usage at 34.3% and 51.6%, respectively. Traditional warning methods, such as drum beating and horn blowing, are used by 50.5% in Panyijiar and 47.6% in Ulang,

indicating a continued importance of cultural practices in these regions, while Rubkona shows a lower reliance at 16.0%. Word of mouth through local leaders plays a crucial role, especially in Panyikang, where 95.0% rely on this method, indicating the strong influence of local authority figures. Akobo and Renk also show significant engagement, at 44.1% and 66.7%, respectively. However, the use of posters, banners, or written notices is minimal across all counties, with Akobo showing no utilization and only 33.3% in Renk. This data highlights the strong preference for community-based communication methods while revealing disparities in media engagement and digital communication across the counties. Enhancing accessibility to various communication channels, particularly in areas with low usage, could significantly improve the effectiveness of warning dissemination.

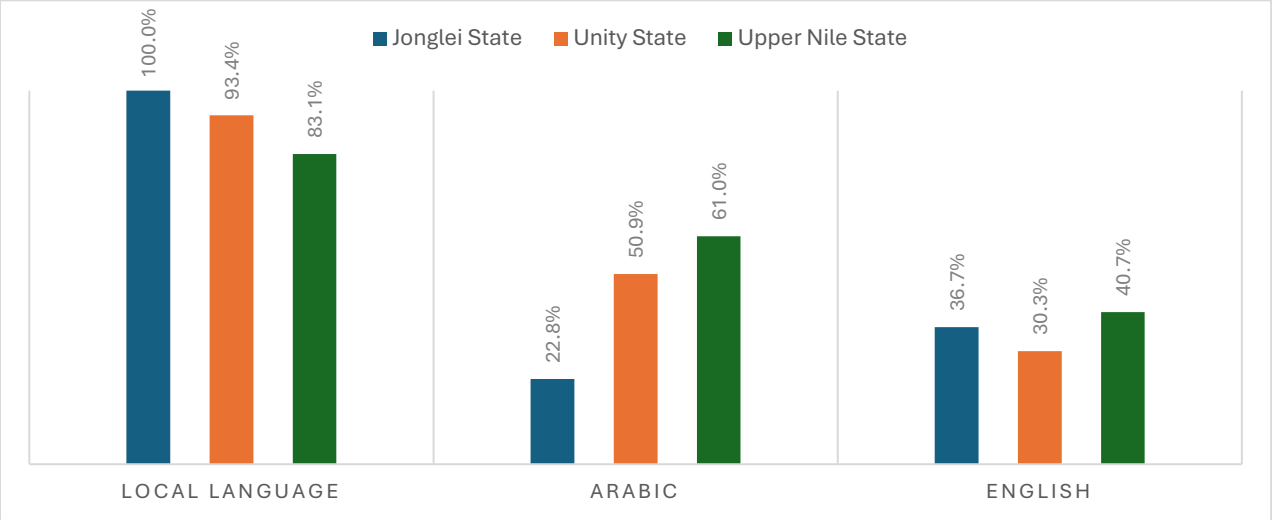
7.2.22 Language in which the respondents are receiving the warnings

The analysis of the languages through which communities in the receive warnings reveals significant preferences that reflect the linguistic diversity of the area. **A substantial majority, 90.1%, of respondents report receiving warnings in local languages, underscoring the importance of culturally relevant communication that resonates with the majority of the population.** This high percentage highlights the necessity for local language use in disseminating critical information, ensuring that messages are accessible and easily understood by the community.

In addition to local languages, Arabic is utilized by 51.2% of respondents, indicating its role as an important medium of communication, particularly among those who may have connections to broader regional or national contexts. This suggests that Arabic serves as a bridge language for many individuals, facilitating understanding among diverse groups within the region. English, while less commonly used, is reported by 35.3% of respondents as a language for receiving warnings. This reflects the influence of English as a global language and its relevance in formal or official contexts, particularly among more educated individuals or those engaged with international organizations.

State-focused analysis shows that in Jonglei State, an impressive 100.0% of respondents report receiving warnings in local languages, demonstrating a complete reliance on culturally relevant communication (Figure 78). This highlights the critical importance of local languages in effectively disseminating information and ensuring that all community members are informed, particularly in an area where traditional and local practices are deeply rooted. Unity State shows a similarly high preference for local languages, with 93.4% of respondents utilizing this medium. This indicates that local language communication is also vital in Unity, reinforcing the need for messages to be delivered in a format that resonates with the majority of the population and enhances understanding within the community.

Figure 78: Communication channels through which communities get getting the warnings by State

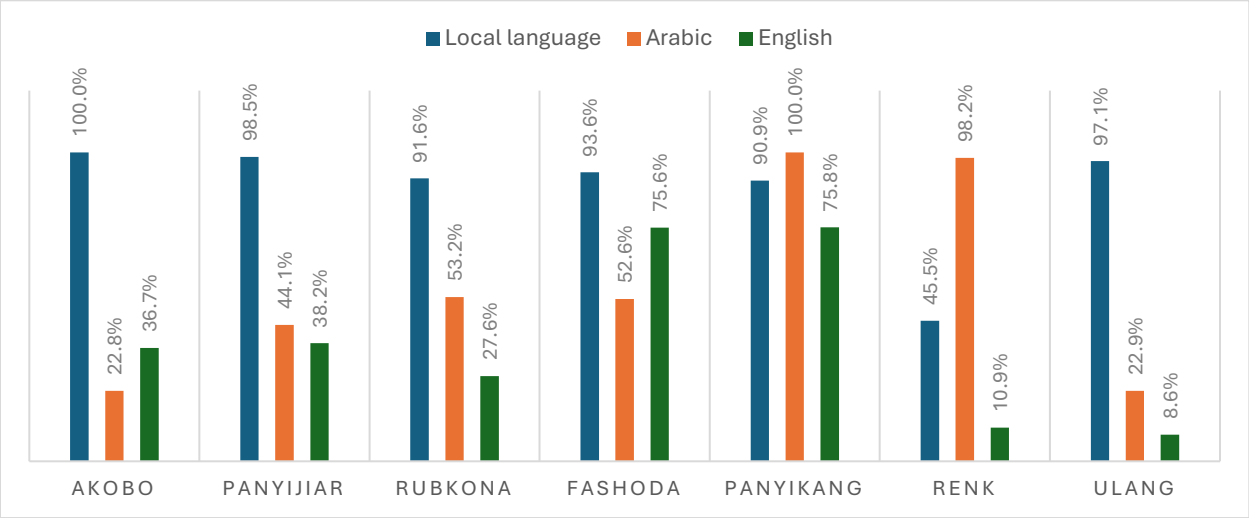


In Upper Nile State, although the figure is lower at 83.1%, the reliance on local languages remains significant. This suggests that while there may be a slightly more diverse linguistic landscape, local languages still play a predominant role in communication, reflecting the cultural heritage of the region. Arabic is used by 22.8% of respondents in Jonglei State, a figure that increases notably in Unity State to 50.9% and further rises to 61.0% in Upper Nile State. This trend indicates that Arabic serves as an important medium of communication, particularly in Unity and Upper Nile, where it may facilitate interactions among diverse groups and enhance understanding in more urban or mixed environments.

English usage varies across the states, with 36.7% of respondents in Jonglei State reporting its use, followed by 30.3% in Unity State and 40.7% in Upper Nile State. This suggests that while English is less prevalent than local languages and Arabic, it still serves as a relevant channel for communication, particularly among more educated individuals or those engaged with international organizations. Overall, the findings emphasize the critical role of local languages in the GUN region, particularly in Jonglei and Unity States, where they are the primary means of communication for warnings. The growing use of Arabic, particularly in Unity and Upper Nile, reflects the linguistic diversity of the region and the need for effective communication strategies that consider these dynamics.

Analysis by county shows that in Akobo, an impressive 100.0% of respondents report receiving warnings in local languages, indicating a complete reliance on culturally relevant communication (see Figure 79). This strong preference underscores the importance of local languages in effectively disseminating information to the community. Similarly, Panyijiar shows a high utilization of local languages at 98.5%, reinforcing the critical role these languages play in ensuring that messages are accessible to the population. Rubkona also demonstrates a substantial reliance on local languages, with 91.6% of respondents using this medium, while Fashoda reports 93.6%. Panyikang shows a slightly lower rate at 90.9%, yet still indicates a strong preference for local languages. In contrast, Renk has a notable drop, with only 45.5% of respondents relying on local languages, suggesting a more diverse linguistic landscape that may include greater exposure to other languages.

Figure 79: Communication channels through which communities get getting the warnings by County



Arabic usage varies significantly across the counties. In Panyikang, a notable 100.0% of respondents report using Arabic, highlighting its role as a vital communication medium, particularly in a more urbanized context. Renk also shows high Arabic usage at 98.2%, while Fashoda and Rubkona report 52.6% and 53.2% respectively. This trend indicates that Arabic serves as an important bridge language for many individuals, facilitating communication among diverse groups within the region.

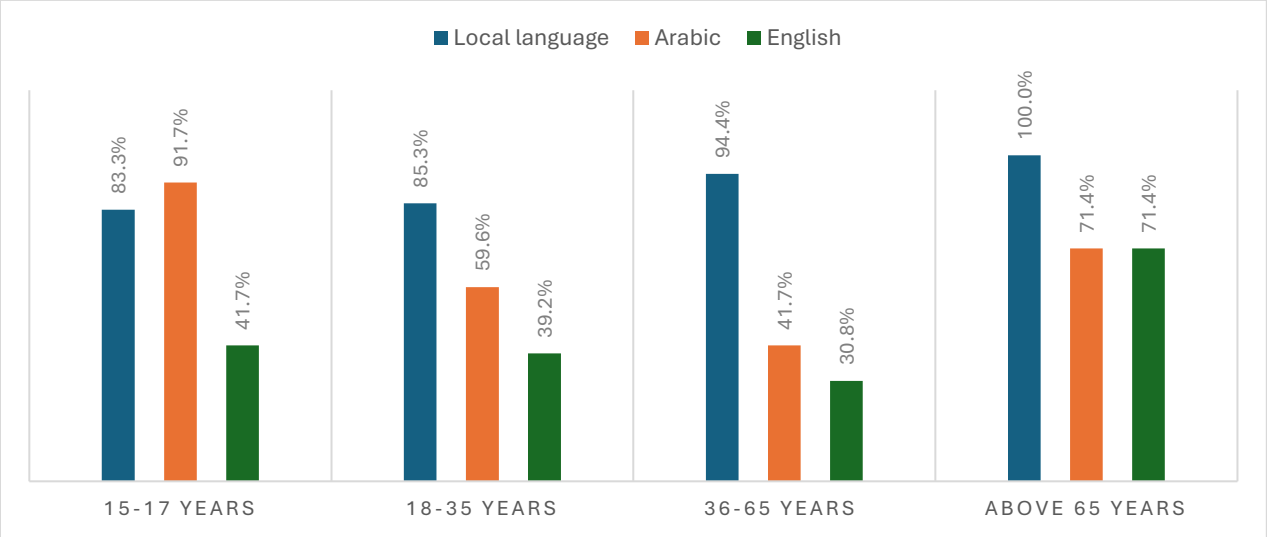
English usage reveals notable discrepancies as well. Fashoda leads with a high engagement rate of 75.6%, followed closely by Panyikang at 75.8%. This suggests that English may be more accessible in contexts where formal education and international engagement are prevalent. In contrast, Renk shows a significantly lower usage rate at 10.9%, and Ulang has an even lower engagement at 8.6%, indicating that English may not be as widely adopted in these areas. Overall, the findings highlight the critical reliance on local languages across, particularly in Akobo and Panyijiar, where these languages dominate communication channels. The varying levels of Arabic and English usage suggest a complex linguistic landscape influenced by factors such as education, urbanization, and cultural exchanges. Understanding these dynamics is essential for developing effective communication strategies that address the specific needs of each county, ultimately enhancing preparedness and response efforts across the region.

Figure 80 provides analysis by age group indicating that among the youngest age group, 15-17 years, a significant 83.3% report receiving warnings in local languages, indicating a strong reliance on culturally relevant communication. Additionally, this age group shows a high engagement with Arabic, at 91.7%, suggesting that many young individuals are proficient in this language, which may facilitate communication across diverse groups. English is also used by 41.7% of respondents in this age category, highlighting a degree of familiarity with the language, potentially due to educational exposure.

In the 18-35 years age group, the use of local languages remains high at 85.3%, which reflects a continued preference for familiar communication methods. However, the reliance on Arabic decreases significantly to 59.6%, indicating a possible shift towards local languages as individuals transition into adulthood. English usage in this group is slightly lower at 39.2%, suggesting that while

young adults may still engage with English, it is not as dominant as in the younger cohort.

Figure 80: Communication channels through which communities get getting the warnings by Age of Respondent

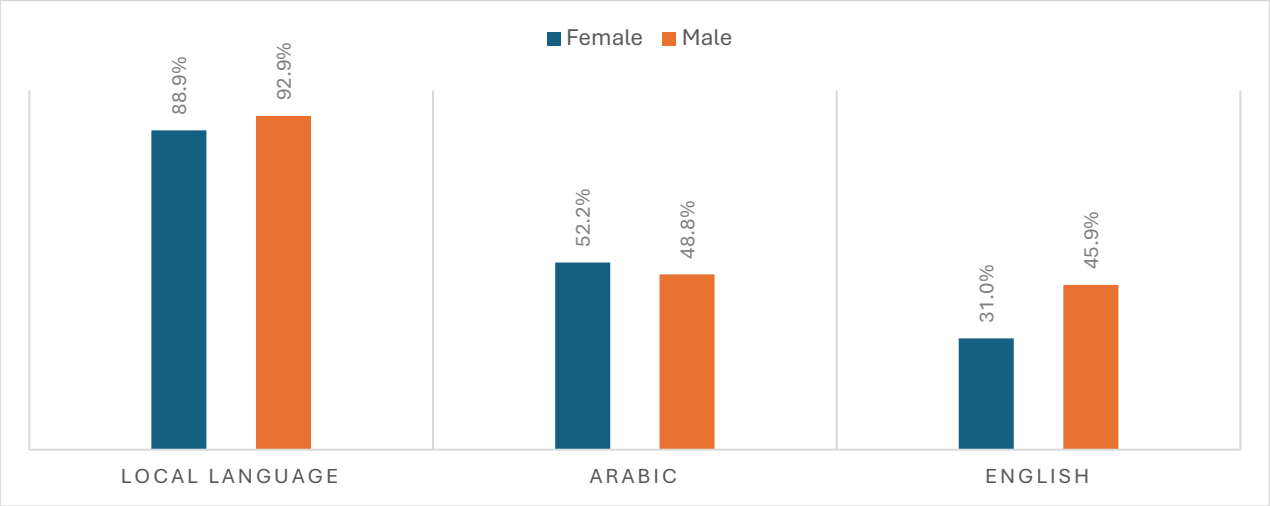


For the 36-65 years age group, local languages are predominantly used, with 94.4% of respondents reporting reliance on them. This trend underscores the importance of local languages as a primary means of communication for adults, particularly in contexts that may require clear understanding of critical information. Arabic usage further declines to 41.7%, suggesting that older adults may be less reliant on Arabic than younger cohorts. English usage in this age group is lower at 30.8%, indicating that while some individuals are familiar with the language, it is not a primary mode of communication.

Among those above 65 years, a complete reliance on local languages is observed, with 100.0% reporting their use for receiving warnings. This highlights the critical role of local languages in ensuring that older adults receive essential information in a familiar context. Interestingly, Arabic usage increases to 71.4% in this age group, indicating that some older individuals may prefer Arabic for communication, possibly due to historical or cultural ties. English usage among this demographic is consistent with the previous age group at 71.4%, suggesting that older adults with education may still engage with English, although it is less prevalent than local languages.

The analysis of the languages disaggregated by gender, reveals some notable differences in communication preferences between females and males (see Figure 81). **Among females, 88.9% report receiving warnings in local languages, indicating a strong reliance on culturally relevant forms of communication.** This high percentage underscores the critical role local languages play in ensuring that women, who may have limited access to other forms of communication, can understand vital information. In contrast, males show an even higher reliance on local languages at 92.9%, suggesting that local languages serve as the predominant medium for both genders in this context.

Figure 81: The language through which the warnings were received by Gender of Respondent



When it comes to Arabic, 52.2% of females utilize this language for receiving warnings, which is slightly higher than the 48.8% of males. This indicates that Arabic serves as an important communication channel for women, potentially reflecting their engagement with broader social networks where Arabic may be more prevalent. In terms of English usage, males report a significantly higher engagement at 45.9%, compared to 31.0% among females. This disparity may suggest that males have greater access to educational opportunities or resources that facilitate the learning of English, thus enabling them to receive warnings in this language more frequently than their female counterparts.

Overall, the findings illustrate a strong preference for local languages among both genders with males showing slightly higher engagement. The use of Arabic is relatively balanced between genders, while English is notably more prevalent among males. Understanding these gender-based differences in language preferences is vital for developing effective communication strategies that ensure all community members, regardless of gender, receive timely and comprehensible information, thereby enhancing preparedness and response efforts.

Analysis by marital status shows that among divorced individuals, there is a complete reliance on local languages, with 100.0% reporting this as their medium for receiving warnings (seen Table 68). This highlights the critical importance of local languages in ensuring that all demographic groups can access vital information effectively. In comparison, married individuals living with their spouses show a substantial reliance at 90.0%, while those married but not living with their spouses report a slightly lower rate of 88.9%. Single individuals (never married) utilize local languages at a rate of 87.2%, and widowed individuals show a high preference at 92.5%. This consistent reliance on local languages across marital statuses underscores their significance in communication within the region.

Table 59: The language through which the warnings were received by Marital Status

Language of receiving the warnings	Divorced	Married and living with Husband or Wife	Married and not living with Husband or Wife	Single (Never married)	Widowed
Local language	100.0%	90.0%	88.9%	87.2%	92.5%

Arabic	44.4%	53.2%	42.9%	43.6%	52.2%
English	11.1%	36.3%	30.2%	56.4%	25.4%

Arabic is used by 44.4% of divorced individuals, indicating that while local languages dominate, Arabic also serves as an important communication channel for this group. Married individuals living with their spouses have a slightly higher usage at 53.2%, while those married but not living together report 42.9%. Single individuals show a similar rate at 43.6%, and widowed individuals have the highest engagement with Arabic at 52.2%. This suggests that Arabic serves as a viable medium for many, particularly among those who may engage with broader social networks.

English usage varies significantly across marital statuses. **Only 11.1% of divorced individuals report using English for receiving warnings, reflecting limited access or familiarity with the language. In contrast, married individuals living with their spouses show a higher usage rate of 36.3%, while those married but not living together report 30.2%.** Single individuals exhibit the highest engagement with English at 56.4%, indicating that younger or never-married individuals may have better access to educational resources that facilitate English proficiency. Widowed individuals report a lower usage at 25.4%, suggesting that English is less prevalent among this demographic.

With regards to family status, among IDPs, a substantial 94.3% report receiving warnings in local languages, highlighting the critical role of culturally relevant communication in ensuring that this vulnerable population can access vital information (see Table 69). In contrast, refugees show a lower reliance on local languages at 69.2%. This may suggest that their experiences and the languages spoken in their countries of origin influence their communication preferences. Residents, who have never left, exhibit a high preference for local languages at 90.7%, while returnees, who have left and returned, also show significant reliance at 84.5%. Notably, those who are uncertain of their status report only 50.0% reliance on local languages, indicating a potential gap in effective communication for this group.

Table 60: The language through which the warnings were received by Family Status

Language of receiving the warning	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Local language	94.3%	69.2%	90.7%	84.5%	50.0%
Arabic	50.4%	53.8%	49.9%	56.7%	50.0%
English	27.7%	23.1%	36.4%	44.3%	0.0%

Arabic is utilized by 50.4% of IDPs, which is comparable to the 53.8% of refugees who report using this language. This suggests that Arabic serves as an important medium of communication, particularly for those who may have connections to broader networks or communities. Residents report a slightly lower usage at 49.9%, while returnees show a higher rate of 56.7%, indicating that Arabic may be a bridge language for individuals who have transitioned between different environments. Those uncertain of their status also report a 50.0% reliance on Arabic, highlighting its relevance in their communication landscape.

English usage shows notable variation across family statuses. IDPs report a usage rate of 27.7%, while refugees show a lower rate of 23.1%. In contrast, residents exhibit a higher engagement with English at 36.4%, and returnees report an even greater usage of 44.3%. This suggests that individuals who have returned may have better access to educational opportunities or international resources that facilitate English proficiency. Notably, individuals who do not know their

status report no usage of English, indicating that this group may lack the necessary resources or exposure to engage with the language effectively. The findings illustrate a strong preference for local languages among all family statuses in the region, particularly among IDPs. The varying reliance on Arabic and English underscores the need for tailored communication strategies that consider the specific contexts and experiences of each group.

Analysis by level of education indicates that among individuals with no schooling, a substantial 92.6% report receiving warnings in local languages, underscoring the importance of culturally relevant communication for this demographic (see Table 70). This high reliance on local languages indicates that individuals without formal education are likely to depend on familiar linguistic frameworks to understand vital information. In contrast, those with primary education show a slightly lower reliance on local languages at 87.8%, while individuals with secondary education report an even lower rate of 86.7%. However, individuals with tertiary education demonstrate a complete reliance on local languages at 100.0%, suggesting that even those with higher educational backgrounds appreciate the clarity and accessibility of local language communication.

Table 61: The language through which the warnings were received by Level of Education

Language of receiving the warning	No schooling	Primary	Secondary	Tertiary
Local language	92.6%	87.8%	86.7%	100.0%
Arabic	46.5%	52.2%	60.2%	83.3%
English	27.8%	39.0%	50.6%	50.0%

Arabic usage varies across educational levels, with individuals holding no schooling reporting a usage rate of 46.5%. This percentage increases with educational attainment, as primary education holders utilize Arabic at a rate of 52.2%, secondary education holders at 60.2%, and those with tertiary education at 83.3%. This trend indicates that as individuals attain higher levels of education, they may also engage more with Arabic, which could be attributed to exposure to broader social networks and formal education settings where Arabic is used.

English usage also reveals notable disparities. Among individuals with no schooling, only 27.8% report using English for receiving warnings, reflecting limited access to resources or educational opportunities. This figure rises to 39.0% among primary education holders and further increases to 50.6% for those with secondary education, indicating a growing familiarity with the language as educational levels increase. Interestingly, individuals with tertiary education show a slight decrease in English usage at 50.0%, suggesting that while they may be proficient, other languages, particularly local languages, may still be preferred for immediate communication needs.

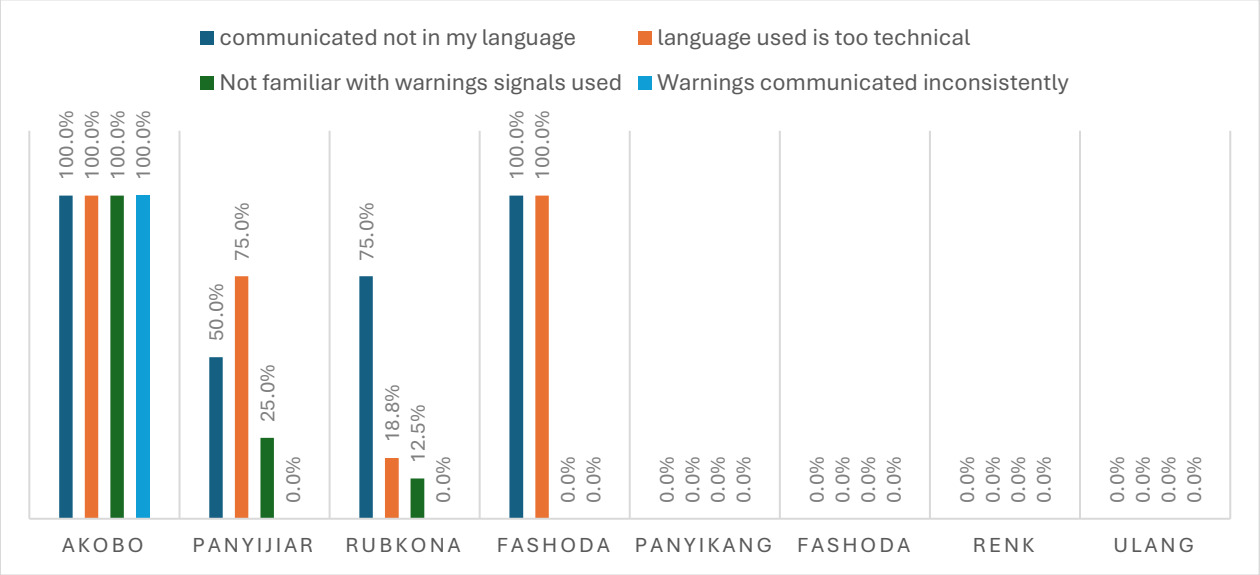
7.2.23 Reasons for respondents not understand the warnings

Among the respondents who indicated a lack of understanding, a substantial 72.7% reported that the warnings were communicated in a language that they did not comprehend. This highlights a critical issue, as language barriers can severely hinder effective communication, particularly in a region characterized by diverse linguistic backgrounds. Additionally, 36.4% of respondents noted that the language used in the warnings was too technical, suggesting that even when information is provided in a familiar language, the complexity of the terminology may prevent effective understanding. This finding indicates a need for simplification and clarity in communication strategies to ensure that all community members can grasp essential information.

Moreover, 18.2% of individuals stated that they were not familiar with the warning signals used, which points to a gap in education or awareness about the types of signals that should be recognized as alerts. Lastly, 4.5% mentioned that warnings were communicated inconsistently, further complicating their ability to understand and respond appropriately to the warnings. Overall, the data highlights the importance of addressing these communication challenges in the GUN region. To enhance community resilience and safety, it is crucial to implement strategies that consider language diversity, simplify technical jargon, and ensure consistent messaging regarding warning signals.

The analysis of the reasons for not understanding warnings across various locations – Akobo, Panyijiar, Rubkona, Fashoda, Panyikang, Renk, and Ulang – reveals significant disparities in communication challenges (see Figure 82). **Notably, Akobo and Fashoda report a concerning 100% of respondents stating that warnings were communicated in a language they did not understand.** This finding underscores a critical language barrier that severely limits the effectiveness of warning systems in these areas.

Figure 82: Reasons for not understand the warnings by County



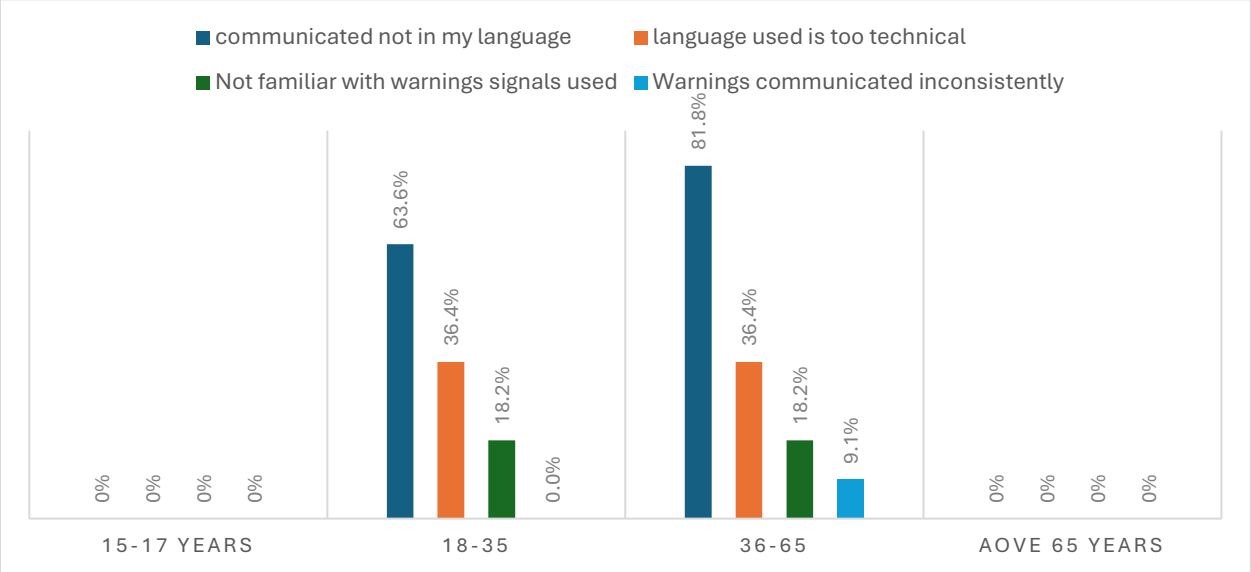
In Panyijiar, 50% of respondents also faced language issues, indicating that while the situation is somewhat better, there remains a substantial portion of the population that struggles with understanding warnings. Rubkona presents a mixed picture, with 75% of respondents indicating language barriers, suggesting that efforts to improve communication are still needed. In contrast, Panyikang, Renk, and Ulang report no language issues, which may suggest better alignment between warning communications and the local languages spoken.

The complexity of the language used in warnings is another major concern, particularly in Akobo and Fashoda, where 100% of respondents indicated that the terminology was too technical. This complexity further exacerbates the communication problem, making it difficult for residents to respond appropriately to warnings. In Panyijiar, 75% of individuals also reported this issue, while Rubkona significantly lowers this figure to 18.8%, pointing to a need for simplified communication in the other areas.

Familiarity with warning signals is a critical aspect of understanding that varies widely among the locations. **In Akobo, 100% of respondents claimed they were not familiar with the warning signals, highlighting a severe gap in awareness. Panyijiar follows with 25%, and Rubkona with 12.5%, indicating that education regarding warning signals is essential for improving community response. Notably, Fashoda, Panyikang, Renk, and Ulang reported no issues with familiarity, suggesting these areas may have better-established communication practices**. Lastly, the issue of inconsistent communication of warnings is prevalent in Akobo, where 100% of respondents noted this inconsistency, reflecting a critical gap in reliable information dissemination. In contrast, no respondents from other locations reported a similar concern, indicating that while some areas face severe communication issues, others may have more stable and consistent messaging strategies.

As represented in Figure 83, analysis of the reasons for not understanding warnings across different age groups shows that among the youngest age group (15-17 years), there were no respondents indicating a lack of understanding due to language barriers or technical jargon, suggesting that this demographic may have a better grasp of the warnings communicated. **In contrast, the 18-35 age group presents a concerning picture, with 63.6% reporting that warnings were communicated in a language they did not understand.** This figure rises to 81.8% among those aged 36-65, indicating that older adults face significant challenges in comprehending warnings due to language barriers. The absence of reported issues in the younger demographic contrasts sharply with the older age groups, highlighting a critical need for tailored communication strategies that address the specific needs of these populations.

Figure 83: Reasons for not understand the warnings by Age of Respondent



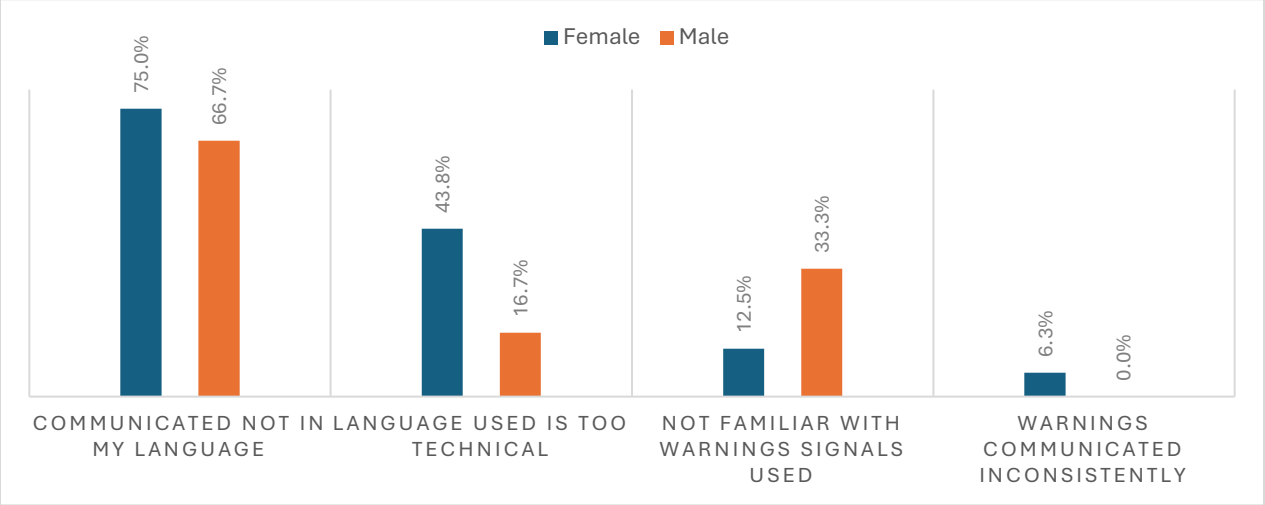
The complexity of the language used in warnings was also a concern, with 36.4% of individuals aged 18-35 and the same percentage for those aged 36-65 indicating that the terminology was too technical. This suggests that while younger individuals may understand the language, the technicality of the content poses a barrier for older adults. Interestingly, there were no reports of technical language issues among the youngest and oldest age groups, indicating a potential area for improvement in communication for middle-aged individuals. Familiarity with warning signals was similarly low among the 18-35 and 36-65 age groups, with 18.2% of respondents from both groups

reporting a lack of awareness about the signals. In contrast, the youngest and oldest groups again showed no issues in this regard, suggesting a potential generational gap in knowledge regarding warning signals.

Lastly, the issue of inconsistent communication was largely absent across all age groups, with only 9.1% of individuals aged 36-65 reporting this concern. This suggests that while inconsistency may not be a widespread issue, it does affect a small portion of the older demographic. To enhance the effectiveness of warnings, it is essential to implement communication strategies that are age-appropriate, simplify terminology, and improve awareness of warning signals, thereby fostering better understanding and response across all age groups in the community.

Analysis by gender are summarised in Figure 84 shows that among females, 75.0% reported that warnings were communicated in a language they did not understand, indicating that language barriers significantly hinder their ability to respond effectively to critical information. In contrast, 66.7% of males reported similar issues, suggesting that while both genders face challenges, females experience this barrier to a greater extent.

Figure 84: Reasons for not understand the warnings by Gender of Respondent



The complexity of the language used in warnings also presents a significant concern, particularly for females, with 43.8% indicating that the terminology was too technical. This contrasts sharply with only 16.7% of males who reported similar difficulties, indicating that women may require more accessible language to comprehend warnings effectively. This disparity highlights the importance of tailoring communication to better suit the needs of female community members.

In terms of familiarity with warning signals, 12.5% of females reported being unfamiliar with the signals, while a higher percentage of males, 33.3%, acknowledged the same issue. This suggests that males may have a greater gap in knowledge regarding warning signals, which could impact their responsiveness to warnings. Lastly, the issue of inconsistent communication was reported by 6.3% of females, while no males indicated this concern. This finding suggests that while inconsistency in messaging affects a small portion of females, it does not appear to be a significant issue for males in the GUN region.

Therefore, while both genders face challenges in understanding warnings, females experience

higher levels of language barriers and technical jargon, whereas males show greater unfamiliarity with warning signals. Addressing these disparities through targeted communication strategies that simplify language and enhance awareness of warning signals is essential for improving overall understanding and responsiveness within the communities in the region.

Table 71 reveals significant insights into the reasons for not understanding warnings based on marital status – divorced, married and living with spouse, married and not living with spouse, single (never married), and widowed. **The data indicates that 100% of divorced individuals and those who are single reported that warnings were communicated in a language they did not understand, highlighting a critical language barrier that prevents effective comprehension and response to warnings in these groups.** For married individuals, both those living with their spouse and those not living with their spouse reported a lower incidence of language barriers, at 66.7%. This suggests that while language remains an issue, it is less pronounced for those in stable marital situations compared to the divorced and single populations. Among widowed respondents, 80% also indicated language barriers, which signifies that this demographic faces substantial challenges similar to the divorced and single groups.

Table 62: Reasons for not understand the warnings by Marital Status

If No, Why did you not understand the warnings?	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
communicated not in my language	100.0%	66.7%	66.7%	100.0%	80.0%
language used is too technical	0.0%	50.0%	33.3%	0.0%	20.0%
Not familiar with warnings signals used	0.0%	33.3%	0.0%	0.0%	0.0%
Warnings communicated inconsistently	0.0%	8.3%	0.0%	0.0%	0.0%

When it comes to the complexity of language used in warnings, none of the divorced or single individuals reported issues with technical jargon, while 50% of married individuals living with their spouse and 33.3% of those not living with their spouse expressed difficulties in this area. This suggests that the technicality of language may disproportionately affect those in stable relationships, emphasizing the need for clearer communication tailored to their needs. Familiarity with warning signals was noted by 33.3% of married individuals living with their spouse, while no respondents from other categories reported this issue. This finding suggests that married individuals may require more education and awareness regarding warning signals compared to other groups, who appear to be more familiar with them. Finally, the issue of inconsistent communication was reported by 8.3% of married individuals living with their spouse, while divorced, single, and widowed individuals did not indicate this concern. This suggests that inconsistency may be a minor but relevant issue for certain marital statuses, particularly among those in stable relationships.

Table 72 shows that 70.0% of IDPs reported that warnings were communicated in a language they did not understand, which underscores a significant barrier to effective communication in a population that is already vulnerable due to displacement. Residents who have never left reported a slightly lower incidence of language barriers, with 57.1% indicating that warnings were not communicated in a language they understood. However, this still highlights a considerable challenge in ensuring effective communication across different demographic groups. **In contrast, 100% of returnees reported issues with language comprehension, suggesting that this group faces particularly acute challenges in understanding warnings upon their return, which may hinder their ability to respond effectively to potential threats.**

Table 63: Reasons for not understand the warnings by Family Status

If No, Why did you not understand the warnings?	Internally Displaced	Resident (never left)	Returnee (left and returned)	Don`t Know
communicated not in my language	70.0%	57.1%	100.0%	0.0%
language used is too technical	30.0%	57.1%	20.0%	100.0%
Not familiar with warnings signals used	10.0%	28.6%	20.0%	0.0%
Warnings communicated inconsistently	0.0%	0.0%	20.0%	0.0%

When examining the complexity of the language used in warnings, 30.0% of internally displaced persons and 57.1% of residents noted that the language was overly technical. This suggests that while some individuals may understand the general language, the technicality of the content impedes comprehension, particularly for residents. Interestingly, only 20.0% of returnees reported this issue, indicating that they may have had better access to clearer communication or different experiences that mitigate the impact of technical jargon. However, 100% of those who do not know indicated that the language was too technical, which points to a significant gap in understanding within this group.

Familiarity with warning signals varied among the groups, with 10.0% of internally displaced individuals, 28.6% of residents, and 20.0% of returnees reporting that they were not familiar with the signals. This indicates a need for increased education and awareness efforts, particularly aimed at residents and internally displaced persons, to enhance their understanding of crucial warning signals. The issue of inconsistent communication was noted only by 20.0% of returnees, while no individuals from the other groups reported this concern. This suggests that while inconsistency may be a relatively minor issue, it still affects certain populations and could undermine trust in the warning systems.

With regards to levels of education of respondents, the data indicates that 84.6% of individuals with primary education reported that warnings were communicated in a language they did not understand, highlighting a critical language barrier that significantly impacts this demographic (see Table 73). In addition, 100% of individuals with secondary education expressed similar concerns, suggesting that even those with a moderate level of education struggle to comprehend warnings due to language issues. Conversely, 40.0% of individuals with no formal schooling also reported language barriers, indicating that while they face challenges, those with some education experience even greater difficulties. Interestingly, none of the individuals with tertiary education reported issues with language comprehension, suggesting that higher educational attainment equips individuals with better skills to understand and process warnings effectively.

Table 64: Reasons for not understand the warnings by Level of Education

If No, Why did you not understand the warnings?	No schooling	Primary	Secondary	Tertiary
communicated not in my language	40.0%	84.6%	100.0%	0.0%
language used is too technical	100.0%	15.4%	0.0%	0.0%
Not familiar with warnings signals used	60.0%	7.7%	0.0%	0.0%
Warnings communicated inconsistently	20.0%	0.0%	0.0%	0.0%

When considering the complexity of the language used in warnings, the data reveals that 100% of individuals with no schooling felt the language was too technical, creating a significant barrier to understanding. In contrast, only 15.4% of those with primary education reported this

issue, and none of the secondary or tertiary-educated individuals indicated difficulties with technical jargon. This stark difference highlights the need for simplified communication tailored to lower educational levels to ensure effective understanding.

Familiarity with warning signals also varies significantly by education level. **Among those with no schooling, 60.0% reported being unfamiliar with warning signals, which underscores the necessity of educational initiatives aimed at increasing awareness. I**n contrast, only 7.7% of individuals with primary education and none with secondary or tertiary education indicated a lack of familiarity with warning signals, suggesting that education improves awareness of critical safety information.

Lastly, the issue of inconsistent communication was noted by 20.0% of individuals with no schooling, while no respondents from other educational levels reported this concern. This could indicate that those with lower education levels may experience greater variability in the messages they receive, further complicating their ability to respond effectively to warnings. The findings emphasize the significant impact of educational attainment on the understanding of warnings in the GUN region. Language barriers and technical jargon are particularly problematic for individuals with lower educational levels, while those with tertiary education are better equipped to understand warnings. To enhance the effectiveness of communication, it is essential to implement targeted strategies that simplify language, improve familiarity with warning signals, and ensure consistency in messaging across all educational levels.

7.2.24 Frequency with which respondents are regularly updated on hazards

In analysing the data regarding awareness of hazards among the communities in the GUN region the findings point to the fact that a significant portion of the respondents lacks consistent access to hazard updates. **Across the region, only 15.3% of the whole sample reported being regularly updated on hazards, indicating a low level of reliable information dissemination. Furthermore, 28.8% of respondents stated that they never receive updates, which raises concerns about the preparedness of communities in the region to respond to potential disasters**.

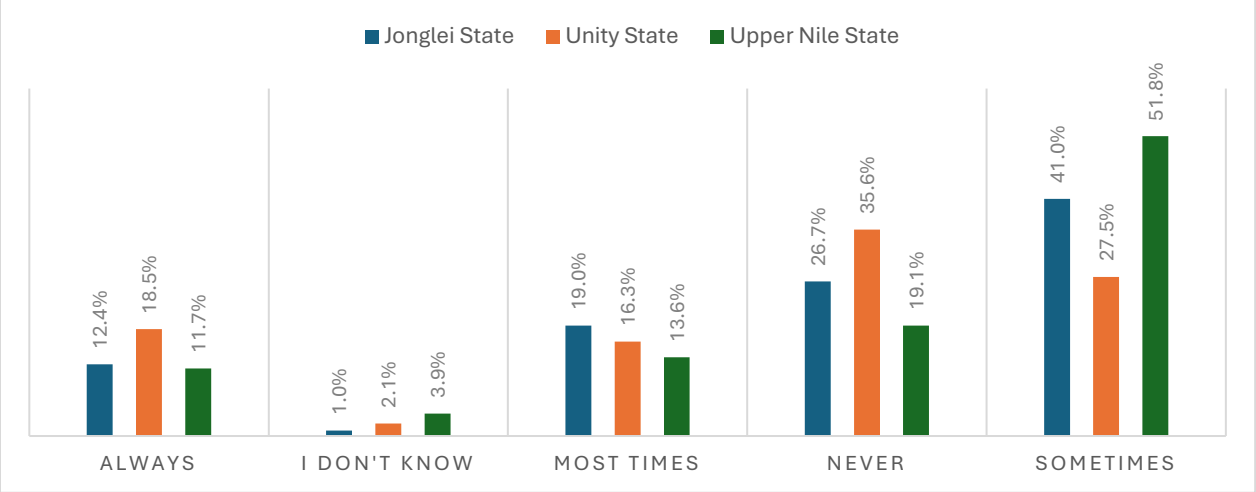
Additionally, 37.6% of the respondents reported that they sometimes receive updates, while 15.7% indicated that they most times are informed. The category of "I don't know," which accounted for 2.6%, suggests uncertainty among a small segment of the population regarding their access to hazard information. This variability in awareness points to the need for improved communication strategies and educational outreach in the GUN region to enhance community resilience against hazards, given the region's vulnerability to various environmental and social challenges. Asked on the issue of frequency of information provision a representative of the Meteorological Department had this to say:

> *"We provide climate forecasts on a regular basis, specifically every three to four months. These forecasts include detailed information regarding rainfall patterns, temperature predictions, and potential climate hazards, such as floods or droughts. The most recent forecast, covering the March to May period, was issued last month, while the upcoming forecast for June to September will be prepared in May. Our goal is to equip stakeholders, including farmers and government ministries, with the necessary data to make informed decisions regarding agricultural practices and disaster preparedness. While we can also provide more frequent updates based on specific requests, the foundational climate information remains crucial for long-term planning and adaptation efforts".*

The commitment to providing regular climate forecasts underscores the importance of timely and relevant data for stakeholders. Through the offering of detailed information every few months, the Meteorological Department plays a vital role in empowering farmers and government ministries to make informed decisions regarding agricultural practices and disaster preparedness. Moreover, the willingness to accommodate more frequent updates upon request demonstrates a responsive approach to the evolving needs of the community, ultimately enhancing resilience and adaptive capacity in the face of climate challenges.

The analysis of hazard awareness across the three states shows that in Jonglei State, only 12.4% of respondents indicated they are always updated, while in Unity State, this figure is slightly higher at 18.5% (see Figure 85). However, Upper Nile shows the lowest percentage of regular updates at 11.7%. The "I don't know" responses were relatively low across all states, with Jonglei at 1.0%, Unity at 2.1%, and Upper Nile at 3.9%, indicating that most residents have some awareness of their information status. In terms of receiving updates most times, Jonglei leads with 19.0%, followed by Unity at 16.3% and Upper Nile at 13.6%.

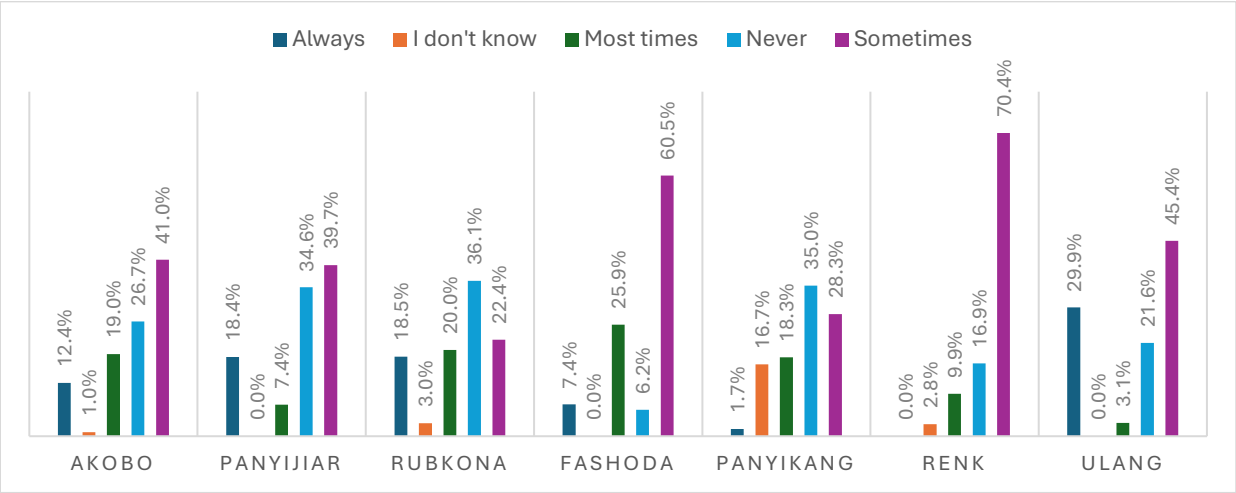
Figure 85: Whether or not communities are regularly updated on hazards by State



The data highlights a concerning trend regarding the frequency of updates, particularly in Unity State, where 35.6% reported never receiving updates – this is the highest among the states, suggesting a critical gap in communication and preparedness. In contrast, Jonglei has the highest percentage of respondents (41.0%) who sometimes receive updates, indicating a somewhat better flow of information compared to Unity and Upper Nile, where these figures stand at 27.5% and 51.8%, respectively. Overall, the findings emphasize the need for enhanced hazard communication strategies tailored to each state within the GUN region, particularly focusing on Unity State, to ensure that communities are adequately prepared for potential hazards.

The analysis of hazard awareness across various counties is summarised in Figure 86 and shows notable differences in how frequently residents receive updates on hazards. **In Akobo, 12.4% of respondents indicated they are always updated, while Panyijiar and Rubkona report slightly higher figures at 18.4% and 18.5%, respectively. However, Fashoda and Panyikang show concerningly low percentages of 7.4% and 1.7%, indicating a significant lack of regular information flow**. Renk stands out with no respondents reporting regular updates, while Ulang shows a comparatively higher percentage at 29.9%.

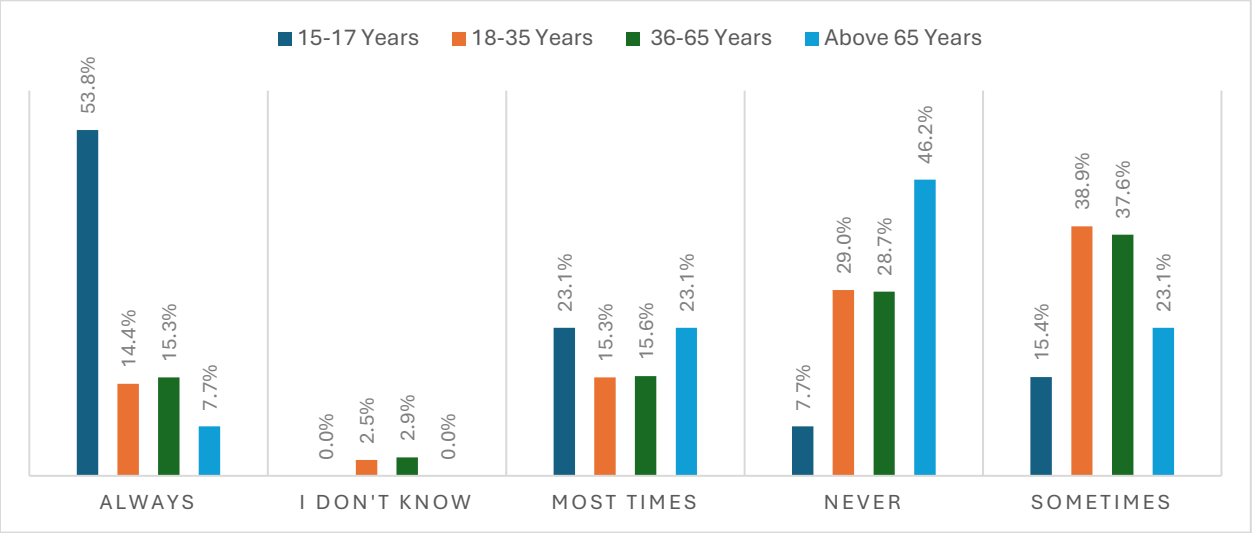
Figure 86: Whether or not communities are regularly updated on hazards by County



The "I don't know" responses varied across the counties, with Panyijiar and Fashoda reporting none, suggesting certainty about their information status, while Panyikang had a notable 16.7%, indicating uncertainty among some residents. Regarding updates received most times, Rubkona leads with 20.0%, followed closely by Fashoda at 25.9%, whereas Akobo has a higher engagement at 19.0%. Conversely, the data highlights a troubling trend in the "never" category, where Rubkona (36.1%) and Panyijiar (34.6%) report the highest percentages, suggesting a severe gap in communication. On a more positive note, the percentage of residents who sometimes receive updates is significant, especially in Renk (70.4%) and Fashoda (60.5%), indicating that while some residents lack consistent updates, there is a considerable segment that does receive information at least occasionally. Therefore, the findings underline the urgent need for improved hazard communication strategies tailored to each county. Special attention should be directed toward enhancing information dissemination in counties like Fashoda and Panyijiar, where residents face significant barriers to receiving timely updates about hazards.

The analysis of hazard awareness across different age groups also shows significant variations in how often individuals receive updates on hazards (see Figure 87). **In particular, the age group of 15-17 years stands out, with a remarkable 53.8% indicating that they are always updated on hazards. This contrasts sharply with older age groups, where only 14.4% of those aged 18-35, 15.3% of those aged 36-65, and a mere 7.7% of individuals above 65 report being consistently informed.**

Figure 87: Whether or not communities are regularly updated on hazards by Age of Respondent

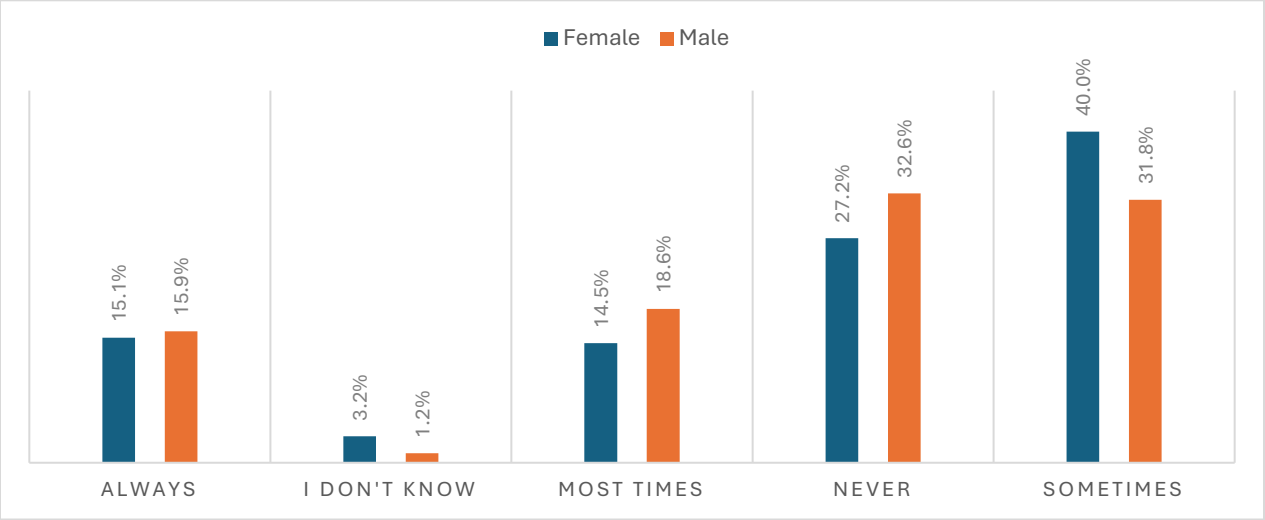


The data shows that none of the respondents aged 15-17 reported uncertainty about their information status, while 2.5% of the 18-35 age group and 2.9% of those aged 36-65 expressed that they do not know if they receive updates, indicating some ambiguity among older respondents. In terms of receiving updates most times, the 15-17 age group is again more engaged at 23.1%, while the older groups, particularly those aged 36-65 and above 65, show lower engagement levels at 15.6% and 23.1%, respectively.

The "never" category highlights a concerning trend, particularly among older adults, where 46.2% of those above 65 report that they never receive updates, compared to 29.0% of the 18-35 age group and 28.7% of the 36-65 age group. This suggests that older populations in the GUN region may be at a greater risk due to a lack of information about hazards. Conversely, 15.4% of the 15-17 age group and 38.9% of those aged 18-35 reported sometimes receiving updates, indicating that while younger individuals are more informed, there remains a substantial portion of the population across all age groups that does not receive consistent information. Overall, these findings highlight the necessity for targeted hazard communication strategies in the GUN region, particularly aimed at older populations who are disproportionately affected by a lack of information. Enhancing awareness and ensuring that all age groups, especially the elderly, have access to timely updates on hazards is crucial for improving community resilience in the region and the success of the THRIVE programme.

The analysis of hazard awareness among females and males shows that both genders have similar proportions of respondents who report being updated "always," with females at 15.1% and males slightly higher at 15.9% (see Figure 88). This suggests a relatively equal level of consistent information access between genders at this level. However, the uncertainty regarding updates varies, with 3.2% of females indicating they do not know if they receive updates, compared to only 1.2% of males. This may reflect a slightly higher confidence among males regarding their awareness of hazards. When examining the "most times" category, males have a higher percentage (18.6%) compared to females (14.5%), indicating that men may be more frequently informed about hazards in this context.

Figure 88: Whether or not communities are regularly updated on hazards by Gender of Respondent



The "never" category is concerning, as 32.6% of males report never receiving updates, which is higher than the 27.2% of females. This disparity highlights a significant gap in hazard communication that affects men more severely in the GUN region. Conversely, the "sometimes" category shows that 40.0% of females receive updates occasionally, while only 31.8% of males do, suggesting that while women may not receive consistent information, they are more likely to receive updates at least intermittently. The findings signify the necessity for improved hazard communication strategies that ensure both genders have equitable access to information. Given the higher percentage of males reporting never receiving updates, tailored efforts should focus on increasing awareness and providing consistent hazard information, particularly for vulnerable populations in the region.

The analysis of hazard awareness among communities categorized by marital status, as summarised in Table 74, shows that among respondents, those who are widowed demonstrate the highest percentage (20.0%) of individuals indicating they are always updated on hazards, which contrasts sharply with divorced individuals, who report the lowest at 5.6%. This suggests that widowed individuals may have better access to information compared to other marital statuses. The data also shows that uncertainty regarding hazard updates is notably higher among divorced individuals, with 11.1% indicating they do not know if they receive updates. This is significantly higher than the 1.7% of single individuals and 2.1% of widowed individuals who expressed uncertainty, indicating a lack of clarity for divorced respondents about their information status.

Table 65: Whether or not communities are regularly updated on hazards by Marital Status

Are you regularly updated on hazards?	Divorced	Married and living with Husband/Wife	Married and not living with Husband/ Wife	Single (Never married)	Widowed
Always	5.6%	17.1%	8.1%	6.9%	20.0%
I don't know	11.1%	2.3%	3.6%	1.7%	2.1%
Most times	16.7%	16.4%	17.1%	12.1%	11.6%
Never	38.9%	26.4%	37.8%	34.5%	27.4%
Sometimes	27.8%	37.8%	33.3%	44.8%	38.9%

In terms of receiving updates most times, the percentages are relatively similar across the

categories, with married individuals living with their spouse at 16.4%, and those married but not living with their spouse at 17.1%. However, the never category highlights a troubling trend, particularly among divorced (38.9%) and married individuals not living with their spouse (37.8%), where a substantial proportion report never receiving updates. In comparison, only 26.4% of married individuals living together and 27.4% of widowed individuals report the same.

The "sometimes" category indicates a more positive engagement, particularly among single individuals, with 44.8% stating they sometimes receive updates. This is the highest among all categories, suggesting that single individuals may have varying channels of information that allow them to stay informed more sporadically. Therefore, the findings show the need for enhanced hazard communication strategies tailored to address the differing needs based on marital status in the GUN region. Special attention should be given to divorced and married individuals not living with their spouses, as they show higher percentages of not receiving regular updates. Improving access to timely and accurate information about hazards is crucial for fostering community resilience across all marital statuses in the region.

An analysis of the situation of the various groups, residents who have never left their homes demonstrate the highest percentage of consistent updates, with 19.3% reporting they are always informed (see Table 75). In contrast, refugees show the lowest percentage at 7.1%, highlighting a potential vulnerability in this population regarding access to hazard information. Notably, a substantial portion of IDPs (12.4%) also report being always updated, indicating some level of communication despite their precarious circumstances. The "I don't know" category reveals that refugees have no uncertainty about their information status, while 5.2% of IDPs and 1.2% of residents express a lack of clarity, suggesting that most populations have some awareness of their situation.

Table 66: Whether or not communities are regularly updated on hazards by Family Status

Are you regularly updated on hazards?	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Always	12.4%	7.1%	19.3%	9.0%	50.0%
I don't know	5.2%	0.0%	1.2%	3.9%	0.0%
Most times	21.2%	10.7%	14.3%	14.0%	50.0%
Never	21.8%	46.4%	24.7%	44.4%	0.0%
Sometimes	39.4%	35.7%	40.3%	28.7%	0.0%

In terms of receiving updates most times, internally displaced individuals lead with 21.2%, while refugees report 10.7%. Residents and returnees report lower figures, with 14.3% and 14.0%, respectively. This indicates that internally displaced persons may have more reliable channels for hazard information. However, the "never" category presents a concerning trend, particularly among refugees, where 46.4% report never receiving updates, the highest of any group. Returnees also face significant challenges in this area, with 44.4% indicating they never receive updates, suggesting that both groups may be at increased risk due to lack of information.

Conversely, the "sometimes" category shows that a significant number of internally displaced individuals (39.4%) and residents (40.3%) receive updates at least occasionally, which provides a glimmer of hope for these communities. In stark contrast, refugees and returnees report lower percentages in this category, indicating a gap in information access. The findings emphasize the urgent need for targeted hazard communication strategies in the GUN region, particularly aimed at refugees and returnees who are disproportionately affected by a lack of information.

The analysis of hazard awareness among communities based on level of education, reveals significant trends in how regularly individuals receive updates on hazards as summarized in Table 76. **Among those with no formal schooling, only 11.3% report being always updated, indicating a lower level of consistent information access compared to other educational categories.** In contrast, individuals with primary education report a higher percentage of 22.0% who are always informed, while those with secondary education have a similar figure of 19.0%. However, individuals with tertiary education show the lowest percentage at 8.7%, suggesting that higher educational attainment does not necessarily correlate with more consistent hazard updates.

Table 67: Whether or not communities are regularly updated on hazards by Level of Education

Are you regularly updated on hazards?	No schooling	Primary	Secondary	Tertiary
Always	11.3%	22.0%	19.0%	8.7%
I don't know	3.0%	1.6%	2.9%	4.3%
Most times	15.7%	15.7%	16.2%	8.7%
Never	35.5%	20.1%	15.2%	43.5%
Sometimes	34.5%	40.6%	46.7%	34.8%

The "I don't know" category indicates some uncertainty, particularly among those with tertiary education, where 4.3% express uncertainty about their information status. This is higher than the percentages for other educational levels, indicating a potential gap in awareness among more educated individuals. When examining those who receive updates most times, secondary education holders report the highest at 16.2%, while primary and tertiary education holders both report 15.7% and 8.7%, respectively. This suggests that secondary education may provide better access to hazard information.

The "never" category reveals alarming trends, especially among those with no schooling and tertiary education, where 35.5% and 43.5%, respectively, report never receiving updates. This highlights a critical gap in communication for educated individuals, which is counterintuitive and suggests that even those with higher education may be disconnected from hazard information networks. Conversely, the "sometimes" category shows that individuals with secondary education have the highest percentage (46.7%) of occasionally receiving updates, indicating that this group may have more access to intermittent information.

3.2.24 Ways in which respondents obtain information on hazards

The analysis of the frequency with which individuals receive information about hazards reveals important insights into community preparedness and awareness. **Among the whole sample, a significant portion, 35.4%, reports receiving updates on a monthly basis, indicating that many individuals are dependent on periodic information rather than consistent daily updates.** Conversely, 24.0% of respondents indicated they receive this information daily, suggesting that a notable segment of the population has access to timely updates that could enhance their preparedness for hazards. A representative of the Meteorological Services Department highlighted the role of the institution in disseminating relevant warnings at the national level:

> *"Our work at the South Sudan Meteorological Service involves generating a range of climate information crucial for various sectors, including agriculture and disaster management. We provide daily, weekly, monthly, and seasonal forecasts that include temperature, rainfall, and humidity data. This information is disseminated through multiple channels, including our*

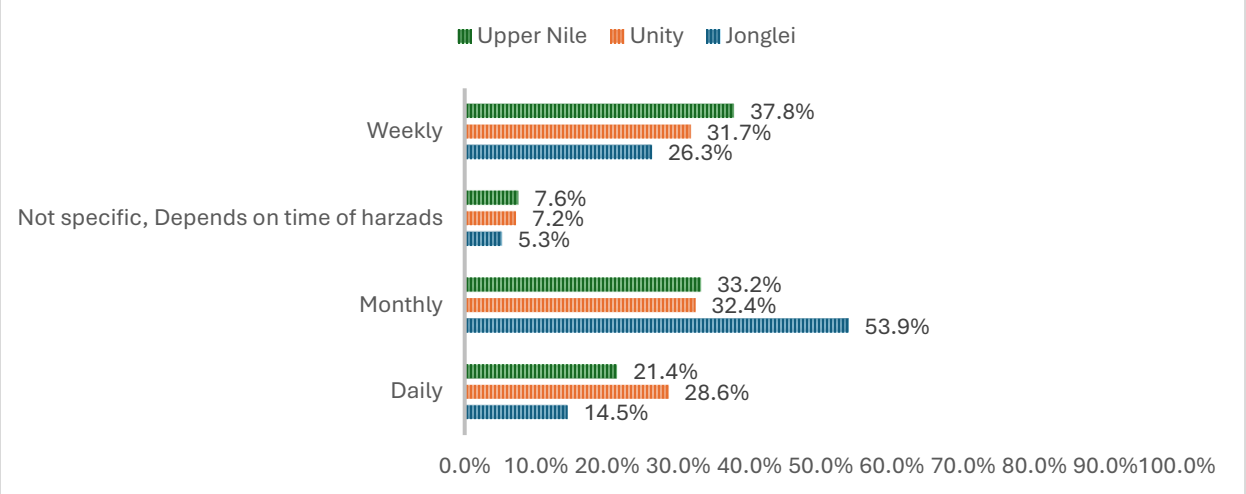
website and bulletins shared with relevant ministries. We actively engage with stakeholders through forums and training programs to ensure they understand how to interpret and utilize climate data. Sharing information is critical, and we strive to foster collaboration among different institutions to enhance climate resilience in South Sudan". **Interview with Meteorological Services Department, Juba, 21 March 2025.**

Analysis of survey data shows that weekly updates are reported by 33.4% of the respondents, demonstrating that a substantial number of individuals engage with hazard information on a regular, albeit not daily, basis. Additionally, 7.1% of respondents indicated that the frequency of updates depends on the timing and nature of hazards, reflecting a more situational approach to information dissemination. This variability in update frequency suggests a mixed landscape of awareness, where some individuals are consistently informed while others may experience gaps in communication depending on the hazard context.

Overall, these findings highlight the need for improved and more consistent information dissemination strategies in the GUN region. Ensuring that all community members receive regular updates, ideally on a daily or weekly basis, could significantly enhance resilience and preparedness against potential hazards. Tailoring communication efforts to provide timely information in a structured manner can help mitigate the risks faced by communities in this vulnerable region.

Analysis by state shows that in Jonglei, only 14.5% of respondents report receiving updates daily, which contrasts with Unity, where a higher percentage of 28.6% receive daily updates (see Figure 89). Upper Nile falls in between with 21.4% of respondents indicating they get information on a daily basis. This discrepancy points to a stronger communication network in Unity compared to Jonglei. Monthly updates are most prevalent in Jonglei, with 53.9% of respondents receiving information at this frequency. This is significantly higher than Unity, where 32.4% report monthly updates, and Upper Nile, where the figure is slightly lower at 33.2%. This trend suggests that Jonglei residents may be more reliant on periodic information rather than more regular updates.

Figure 89: Regularity with which communities receive information on hazards by State



In terms of weekly communication, Upper Nile respondents have the highest percentage at 37.8%, followed closely by Unity at 31.7%, while Jonglei shows a lower figure of 26.3%. This indicates that residents in Upper Nile are more likely to receive regular updates on a weekly basis

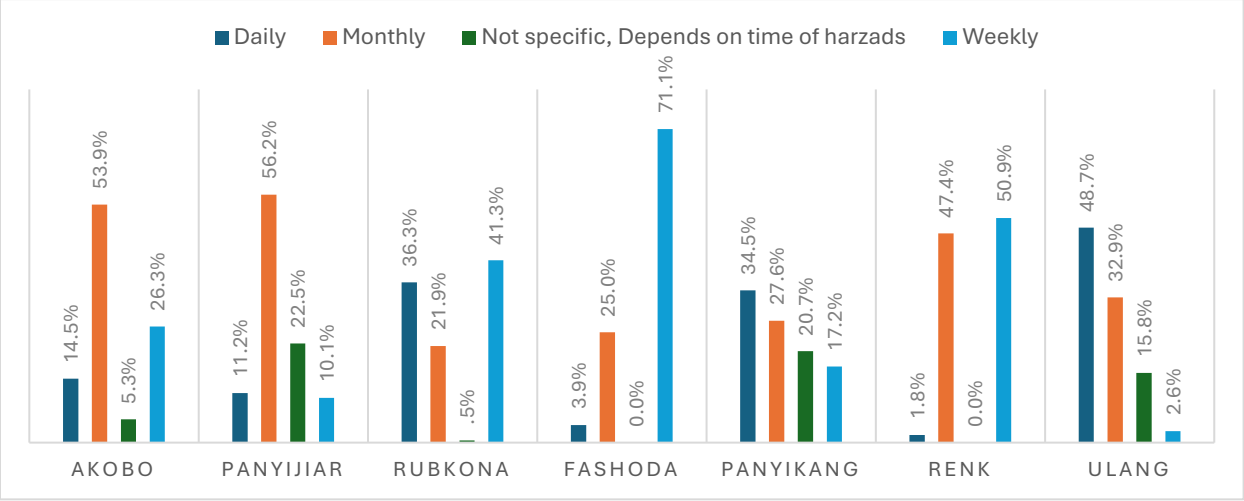
compared to those in other states.

Additionally, a small percentage of respondents across all states indicated that the frequency of updates is not specific and depends on the timing of hazards, with Jonglei at 5.3%, Unity at 7.2%, and Upper Nile at 7.6%. This reflects some variability in information availability based on the nature of hazards, suggesting that communities may not have consistent access to updates during quieter periods. The findings highlight the need for enhanced and more uniform information dissemination strategies across the GUN region. While Unity shows a stronger capacity for daily updates, the reliance on monthly information in Jonglei shows a potential gap in timely hazard awareness. Improving communication channels to ensure regular updates – ideally on a daily or weekly basis – can significantly bolster community preparedness and resilience to hazards.

Analysis of the frequency with which individuals in various counties of the GUN region receive hazard information shows major variations (see Figure 90). **Among the 7 counties, Ulang stands out with the highest percentage of individuals receiving information daily at 48.7%, indicating a robust communication network in that area.** Conversely, Fashoda has the lowest daily update percentage at just 3.9%, suggesting a concerning gap in timely information access. In Akobo, the study was informed that the County office actively seeks information from various sources, including the Department of Meteorology and the Ministry of Water and Irrigation. They also monitor water levels and weather updates online to stay informed about potential hazards.

> *"This information is crucial for preparing the community for adverse conditions. By consolidating what we learn from these agencies, we aim to provide timely and relevant updates to our county, ensuring that the community is adequately informed about impending risks".* **Interview with Akobo Country Office Representative, 17 March 2025**

Figure 90: Regularity with which communities receive information on hazards by County



Monthly updates are most prevalent in Panyijiar, where 56.2% of respondents report receiving information at this frequency, followed closely by Akobo at 53.9%. This reliance on monthly information indicates that many residents may not have consistent access to critical hazard updates. In contrast, Rubkona shows a significantly lower monthly update rate of 21.9%, indicating potential vulnerabilities in hazard communication. In Akobo, the Department of Water and Irrigation

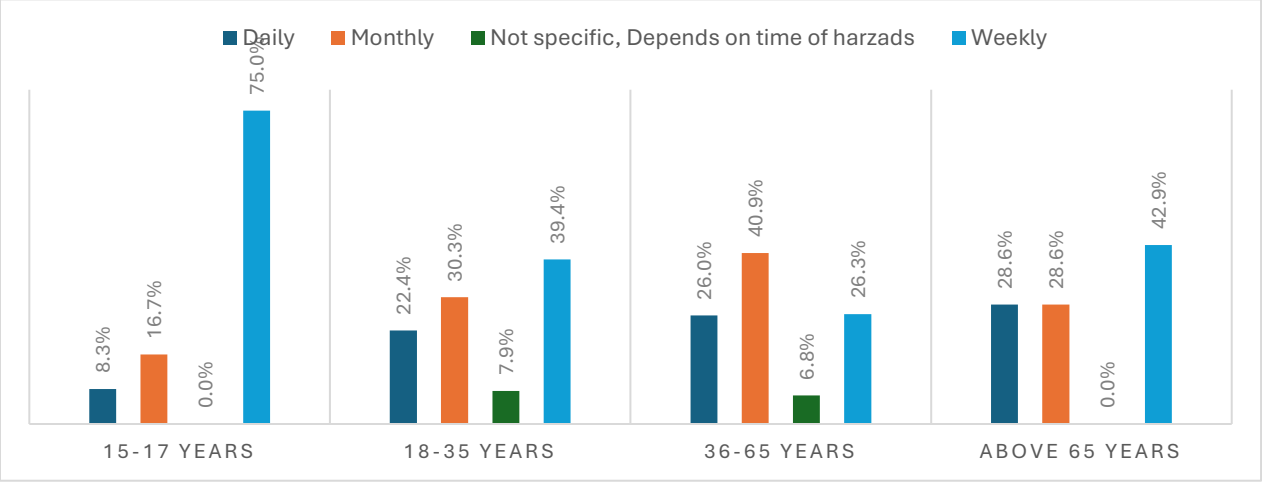
previously installed a water gauge in Akobo to monitor river levels. This gauge is critical for understanding current conditions and anticipating flooding. The County Office is therefore responsible for collecting daily reports from this gauge and relaying the data to the ministry. This local monitoring effort is essential to provide accurate and timely information regarding water levels, which can significantly influence community preparedness for flooding events.

Weekly updates vary significantly, with Fashoda reporting an exceptionally high 71.1%, suggesting that residents in this region are more engaged with frequent updates. Rubkona also shows a high weekly update percentage at 41.3%, while Ulang has the lowest at 2.6%. This disparity highlights the uneven distribution of information access across the counties, with some areas benefiting from more frequent communications than others. Additionally, 22.5% of respondents in Panyijiar indicated that their information updates are not specific and depend on the timing of hazards, which is the highest proportion among the counties. This variability emphasizes the need for improved communication strategies that can provide timely and consistent updates regardless of hazard conditions.

All in all, these findings underscore the necessity for enhanced hazard communication strategies tailored to the unique needs of each county within the GUN region. While Ulang demonstrates a strong capacity for daily updates, the reliance on monthly information in Panyijiar and Akobo, alongside the high weekly update rate in Fashoda, suggests that targeted efforts are needed to ensure all communities have equitable access to timely hazard information.

Figure 91 provides an analysis of hazard information reception across different age groups and shows that among the youngest cohort, those aged 15-17 years, a notable 75.0% report receiving information weekly, which is the highest percentage across all age groups. This suggests that younger individuals are actively engaged with hazard information, potentially reflecting greater access to communication channels or more proactive information-seeking behavior.

Figure 91: Regularity with which communities receive information on hazards by Age of Respondent



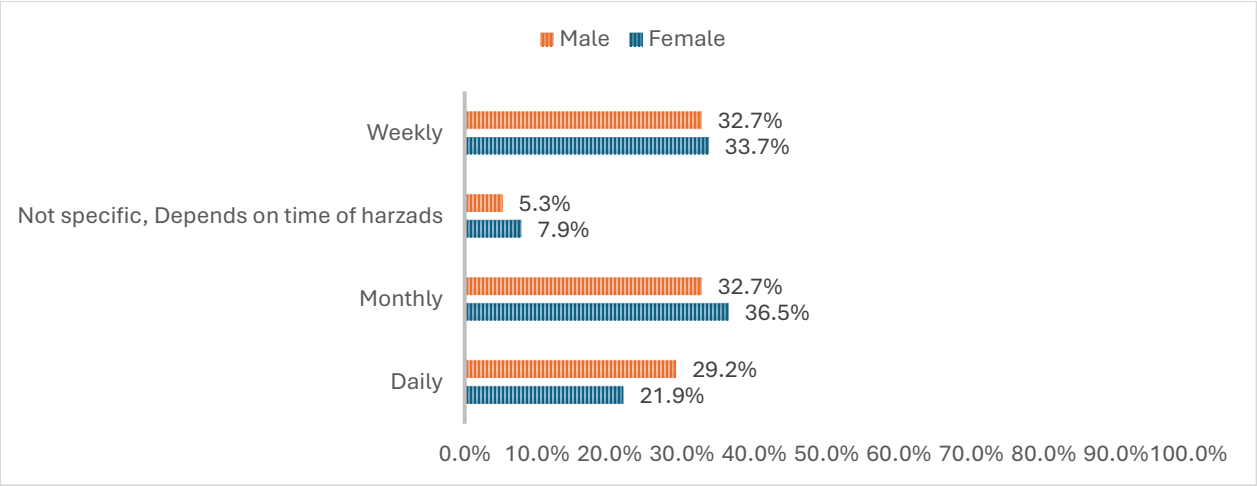
In contrast, the 18-35 age group shows a lower weekly update percentage at 39.4%, indicating that while many are still receiving information regularly, there may be gaps in communication compared to the younger demographic. The 36-65 age group and those above 65 report even lower weekly update rates at 26.3% and 42.9%, respectively, suggesting that older adults may be less connected to frequent updates, which could impact their preparedness for hazards. The daily update

percentages are also telling, with 28.6% of individuals above 65 reporting they receive information daily, the highest among the age groups, while only 8.3% of those aged 15-17 report the same. This indicates that while older adults may be receiving updates more consistently, younger individuals are primarily reliant on weekly communications.

Monthly updates are reported by 40.9% of the 36-65 age group, the highest percentage for this frequency across all age groups, suggesting that this demographic may be more engaged with periodic information but potentially at the cost of timely updates. The percentages for those who indicate that their information is "not specific" and depends on the timing of hazards are minimal, with 0.0% in the 15-17 and above 65 categories, suggesting that these groups generally have clearer access to information. These findings highlight the need for targeted hazard communication strategies in the GUN region that take into account the varying needs and information-seeking behaviours of different age groups.

Analysis by gender shows that among females, 21.9% report receiving information daily, whereas a higher percentage of males, 29.2%, receive daily updates (see Figure 92). This disparity indicates that men may have better access to timely hazard information compared to women, which could impact their respective levels of preparedness and response to hazards. Monthly updates are reported by 36.5% of females and 32.7% of males, suggesting that while both genders rely on periodic information, females have a slightly higher engagement with monthly updates. This trend reflects a common reliance on less frequent information that may not be sufficient for effective hazard preparedness.

Figure 92: Regularity with which communities receive information on hazards by Gender of Respondent



The category of "not specific, depends on time of hazards" shows that 7.9% of females express uncertainty about their information status, compared to only 5.3% of males. This indicates that a greater proportion of women may feel less informed about the dynamics of hazard communications, which could affect their ability to respond adequately during emergencies. In terms of weekly updates, both genders are nearly equal, with females at 33.7% and males at 32.7%. This suggests that while there is parity in weekly information access, the overall trend indicates that males have a slight edge in daily updates, which are crucial for maintaining awareness and readiness in the face of potential hazards. The findings highlight the importance of addressing gender disparities in hazard communication within the GUN region. Ensuring that women have equal access

to timely and consistent information is essential for enhancing their preparedness and resilience against hazards. Tailored communication strategies that specifically target women's needs could significantly improve their engagement with hazard information and overall community resilience.

Analysis by marital status shows that those who are married and not living with their spouse report the highest percentage of daily updates at 29.2%, suggesting that this group may have more access to timely information (see Table 77). In comparison, married individuals living with their spouse and divorced individuals report daily update percentages of 24.9% and 22.2%, respectively, indicating a relatively strong but slightly lower engagement with daily information.

Table 68: Regularity with which communities receive information on hazards by Marital Status

Regularly of receiving information on hazards	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Daily	22.2%	24.9%	29.2%	8.1%	22.4%
Monthly	33.3%	33.1%	43.1%	27.0%	47.8%
Not specific, Depends on time of hazards	0.0%	7.3%	6.2%	18.9%	1.5%
Weekly	44.4%	34.7%	21.5%	45.9%	28.4%

Single individuals, who have never married, demonstrate a notably lower percentage of daily updates at just 8.1%, highlighting a potential vulnerability in this group regarding access to crucial hazard information. This trend continues with the monthly update category, where widowed individuals report the highest percentage at 47.8%, indicating a reliance on less frequent information, while those married and not living with their spouse again lead with 43.1%. This suggests that widowed individuals may be particularly dependent on periodic updates, which might not provide sufficient timely information for effective preparedness.

The "not specific, depends on time of hazards" category shows that single individuals express significant uncertainty, with 18.9% indicating that their information status varies with hazard conditions. This is the highest percentage among the marital status groups, suggesting that single individuals may lack consistent access to information, which could hinder their ability to respond effectively in emergencies. Weekly updates show varied engagement, with divorced individuals reporting the highest percentage at 44.4%, while those married and not living with their spouse report a much lower 21.5%. This disparity indicates that divorced individuals may have more consistent channels for receiving information compared to others. The results highlight the need for tailored hazard communication strategies that address the specific needs of different marital status groups in the GUN region. While married individuals and those who are divorced show relatively good access to information, single individuals may require targeted efforts to enhance their awareness and preparedness.

The analysis of hazard information reception by family status shows that IDPs report the highest percentage of daily updates at 36.9%, indicating that this group has relatively good access to timely hazard information, which is crucial for their safety and preparedness (see Table 76). In contrast, refugees who have come from another country show a markedly lower daily update percentage at only 6.7%, highlighting a concerning gap in communication that could leave this vulnerable population at increased risk during emergencies. Residents, who have never left their homes, report daily updates at 21.1%, while returnees indicate an even lower percentage of 18.5%.

This suggests that both residents and returnees may experience challenges in accessing consistent hazard information.

Table 69: Regularity with which communities receive information on hazards by Family Status

Regularly of receiving information on hazards	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Daily	36.9%	6.7%	21.1%	18.5%	0.0%
Monthly	31.9%	40.0%	37.9%	30.4%	50.0%
Not specific, Depends on time of hazards	5.0%	0.0%	8.4%	6.5%	0.0%
Weekly	26.2%	53.3%	32.6%	44.6%	50.0%

Monthly updates reflect a different trend, with refugees reporting the highest percentage at 40.0%, suggesting they rely heavily on less frequent updates. In comparison, 31.9% of internally displaced individuals and 37.9% of residents receive information monthly, indicating that while some populations have access to consistent updates, refugees may still have the least reliable information flow. Returnees report 30.4% for monthly updates, further illustrating the variability in communication access across different family statuses.

The category for "not specific, depends on the time of hazards" shows no uncertainty among refugees, internally displaced individuals, or those who don't know their status, indicating a clearer perception of their information access. However, 50.0% of individuals who don't know their status report that their information availability depends on the timing of hazards, which points to a significant gap in awareness.
Weekly updates show that refugees have the highest percentage at 53.3%, which is notable given their lower daily update rate, suggesting that while they may not receive information consistently, when they do, it occurs more frequently. Internally displaced individuals report weekly updates at 26.2%, while returnees and residents report 44.6% and 32.6%, respectively.

Overall, these findings signify the need for targeted hazard communication strategies in the GUN region that address the unique needs of each family status group. While IDPs demonstrate a strong capacity for daily updates, the significant gaps in communication for refugees and other groups underscore the necessity for improved information dissemination efforts to enhance community resilience and preparedness in this vulnerable region.

The analysis of hazard information reception by level of education, summarized in Table 79, shows that individuals with no formal schooling report the highest percentage of daily updates at 26.9%. This suggests that this group may have established communication channels that effectively disseminate timely hazard information. In contrast, those with tertiary education report the lowest daily update rate at 16.7%, indicating a potential disconnect in information flow for more educated individuals.

Table 70: Regularity with which communities receive information on hazards by Level of Education

Regularly of receiving information on hazards	No schooling	Primary	Secondary	Tertiary
Daily	26.9%	21.1%	22.1%	16.7%
Monthly	36.4%	33.2%	34.9%	50.0%

Not specific, Depends on time of hazards	10.8%	1.5%	7.0%	8.3%
Weekly	25.9%	44.2%	36.0%	25.0%

Monthly updates show a different pattern, with individuals holding tertiary education receiving the highest percentage at 50.0%. This suggests that while those with higher education may not receive daily updates frequently, they are more likely to rely on monthly communications. In comparison, the percentages for monthly updates among those with no schooling, primary, and secondary education are relatively close, ranging from 33.2% to 36.4%. This indicates that individuals with lower educational attainment also depend on periodic information, which may not be sufficient for effective preparedness.
The "not specific, depends on time of hazards" category reveals that individuals with no schooling express uncertainty about their information access more than any other group, with 10.8% indicating variability based on hazard timing. This is significantly higher than the percentages for those with primary (1.5%), secondary (7.0%), and tertiary education (8.3%), suggesting that less educated individuals may feel less informed about their hazard communication status.

In terms of weekly updates, primary education holders lead with 44.2%, indicating that this group has relatively good access to regular information. In contrast, the percentages for weekly updates among individuals with no schooling (25.9%), secondary (36.0%), and tertiary education (25.0%) suggest that while there is some engagement with weekly information, it is less consistent across these groups. The analysis highlights the need for targeted hazard communication strategies that consider the educational background of community members. While individuals with no schooling exhibit a strong capacity for daily updates, the reliance on monthly information among those with tertiary education suggests that communication efforts must be improved to ensure all educational levels have equitable access to timely hazard information.

7.2.25 Action taken by respondents when hazards occurred

In the GUN region analysis of community responses to hazards reveal significant adaptive strategies among local populations. **A majority of respondents, specifically 73.8%, indicated that they moved to upland areas when faced with hazards, suggesting a reliance on geographical elevation as a primary mitigation strategy.** This movement likely reflects an understanding of the risks associated with flooding and other environmental challenges prevalent in the region. Additionally, 33.6% of the community members reported diversifying their crops as a proactive measure. This action highlights an important adaptive strategy that not only aims to ensure food security but also enhances resilience against the impacts of climate variability and economic uncertainties. A DRR officer in Rubkona highlighted that:

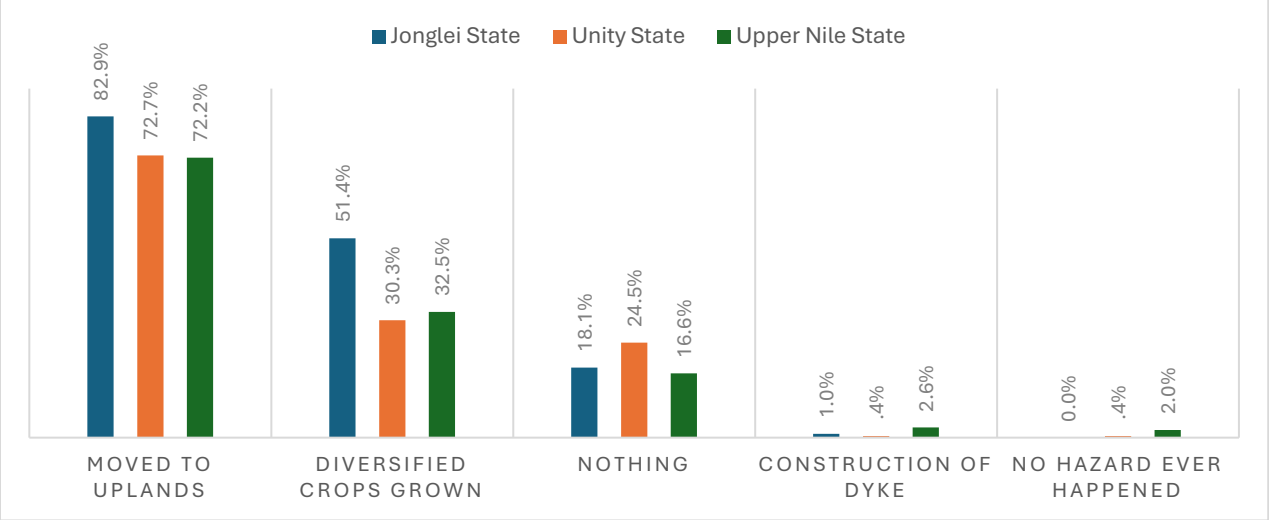
> *"In response to frequent disasters, local communities have developed various coping mechanisms, such as moving to higher ground and migrating livestock to safer areas. While these strategies demonstrate resilience, they may not adequately address the magnitude of current and future risks posed by climate change and extreme weather events. Sustainable solutions are needed to enhance their effectiveness".* **Interview with a THRIVE program DRR officer in Rubkona 16 March, 2025**

Conversely, 21.0% of respondents reported taking no action in the face of hazards, which raises concerns about awareness and preparedness within certain segments of the community.

Notably, only 1.3% of the population engaged in the construction of dykes, a more infrastructure-focused response that could be pivotal in managing flood risks. Lastly, a small percentage, 0.9%, indicated that they had never experienced a hazard, which may suggest either a lack of exposure to extreme events or a potential underreporting of risks. Overall, the data underscores the varying levels of adaptability and resilience within communities in the GUN region, pointing to the need for enhanced awareness and infrastructure development to better prepare for future hazards.

Analysis of the findings by state shows that in Jonglei State, a significant 82.9% of community members reported moving to upland areas when hazards occurred, indicating a strong reliance on geographic elevation for safety (see Figure 93). This proactive approach contrasts with Unity State, where 72.7% of respondents also moved to uplands, and Upper Nile State, which showed a similar trend with 72.2%, but with slightly lower percentages.

Figure 93: Actions community members took when a hazard occurred by State

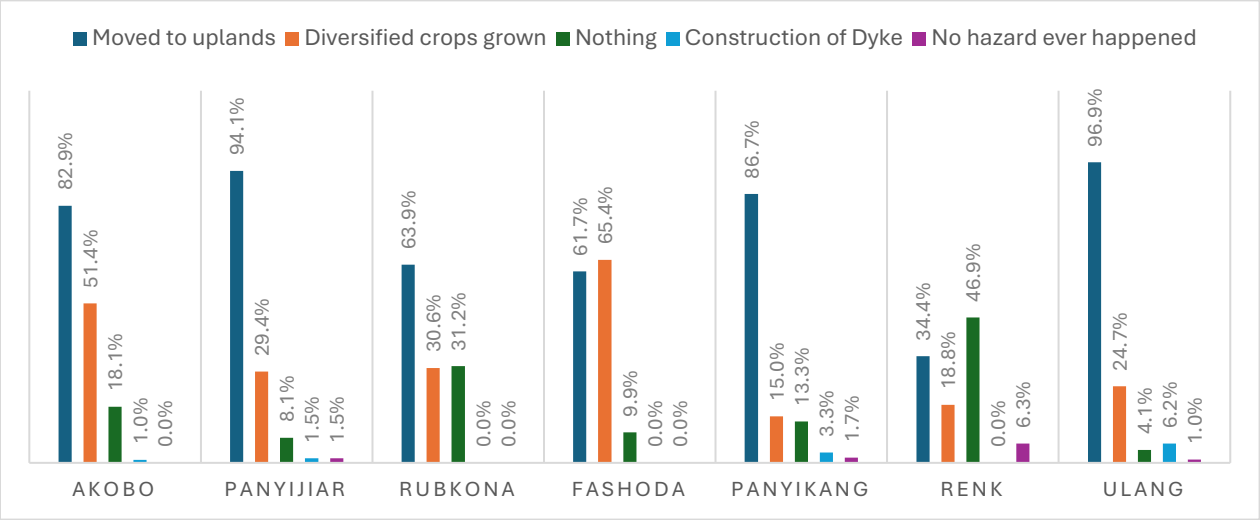


Crop diversification emerged as another key adaptive strategy, particularly in Jonglei State, where 51.4% of community members reported growing a variety of crops. This is notably higher than Unity State, where only 30.3% engaged in diversification, and Upper Nile State, at 32.5%. The higher rate in Jonglei suggests a greater emphasis on enhancing food security and resilience against environmental uncertainties in that area. Conversely, there is a concerning percentage of individuals taking no action in response to hazards. **In Unity State, 24.5% reported doing nothing, compared to 18.1% in Jonglei and 16.6% in Upper Nile. This variation highlights potential gaps in awareness and preparedness that could leave certain communities vulnerable to hazards.**

Furthermore, the construction of dykes, a critical infrastructural response, was reported by only 1.0% of respondents in Jonglei, 0.4% in Unity, and 2.6% in Upper Nile, indicating a low level of investment in such protective measures across the region. Lastly, the data shows that very few respondents claimed to have never encountered a hazard, particularly in Jonglei State, where none reported such an experience, suggesting that hazards are a consistent challenge for these communities. Overall, the findings highlight the diverse adaptive strategies employed across the GUN region, emphasizing the need for targeted interventions to improve awareness, preparedness, and infrastructure development to enhance community resilience against future hazards.

Community responses to hazards show varying patterns across the various localities (see Figure 94). **A majority of respondents demonstrated a proactive approach by moving to upland areas when hazards occurred, with Panyijiar leading at 94.1%, followed closely by Ulang at 96.9%. In contrast, Renk showed a significantly lower percentage at 34.4%, indicating varying levels of reliance on geographical elevation among these communities.**

Figure 94: Actions community members took when a hazard occurred by County



Crop diversification emerged as an essential adaptive strategy, particularly in Fashoda, where 65.4% of respondents reported growing different crops. This contrasts sharply with Panyikang, where only 15.0% engaged in diversification, suggesting that certain communities may be more vulnerable to food insecurity due to a lack of agricultural variety. Akobo had a relatively high rate of diversification at 51.4%, reflecting a proactive approach to enhance resilience against environmental challenges.

Interestingly, the percentage of individuals taking no action in response to hazards varied significantly; Renk had the highest at 46.9%, indicating a critical gap in preparedness and awareness. On the other hand, Panyijiar had only 8.1% reporting no action, suggesting a more engaged and responsive community.

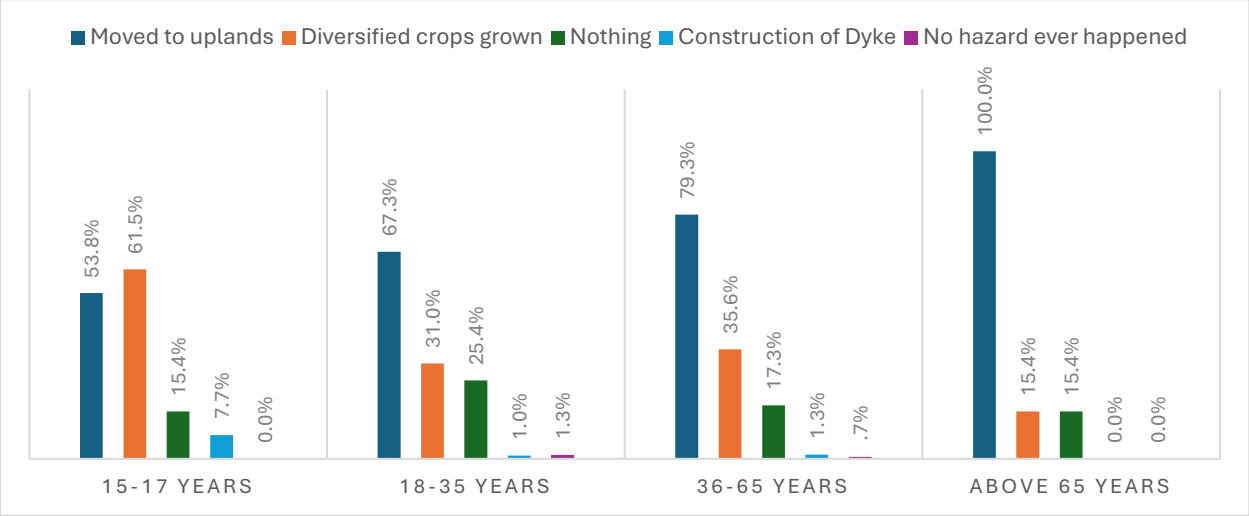
The construction of dykes, essential for flood management, was reported by a minimal number of respondents across the region, with Ulang showing the highest at 6.2% and Rubkona having no reported instances. This low engagement in infrastructure development reflects a potential area for improvement in community resilience initiatives.

Lastly, the data reveals that very few respondents across these localities reported never having experienced a hazard, with Renk showing the highest at 6.3%, indicating that hazards are a persistent challenge in the region. All in all, the findings highlight the varied adaptive strategies employed by communities in the GUN region, underscoring the need for enhanced awareness, infrastructure development, and targeted support to bolster resilience against future hazards. In Renk County the study was informed that although communities employ traditional coping mechanisms, such as seed preservation and mutual aid networks, these strategies are largely reactive. A participant in an all-male FGD highlighted that:

"The mechanisms are insufficient to address the intensifying climate shocks, revealing a need for more proactive and sustainable resilience-building measures. Current support from NGOs is inadequate, with limited food aid and delayed responses to crises. There is a lack of long-term adaptation programs that could help communities build resilience against climate risks". **A participant in an all-male FGD, Renk County, 17 March 2025.**

The findings show that among the young individuals, aged 15-17 years, 53.8% reported moving to upland areas when faced with hazards (see Figure 95). This percentage increases with age, culminating in 100% of individuals above 65 years opting for uplands, highlighting a growing reliance on geographical elevation as a safety strategy among older populations. In terms of crop diversification, the youngest age group again leads with 61.5% actively growing a variety of crops, indicating a proactive approach to enhancing food security. In contrast, only 31.0% of individuals aged 18-35 and 35.6% of those aged 36- 65 reported similar actions, while just 15.4% of individuals above 65 engaged in crop diversification. This suggests that younger individuals are more adaptable and willing to implement agricultural strategies to mitigate risks.

Figure 95: Actions community members took when a hazard occurred by Age of Respondent

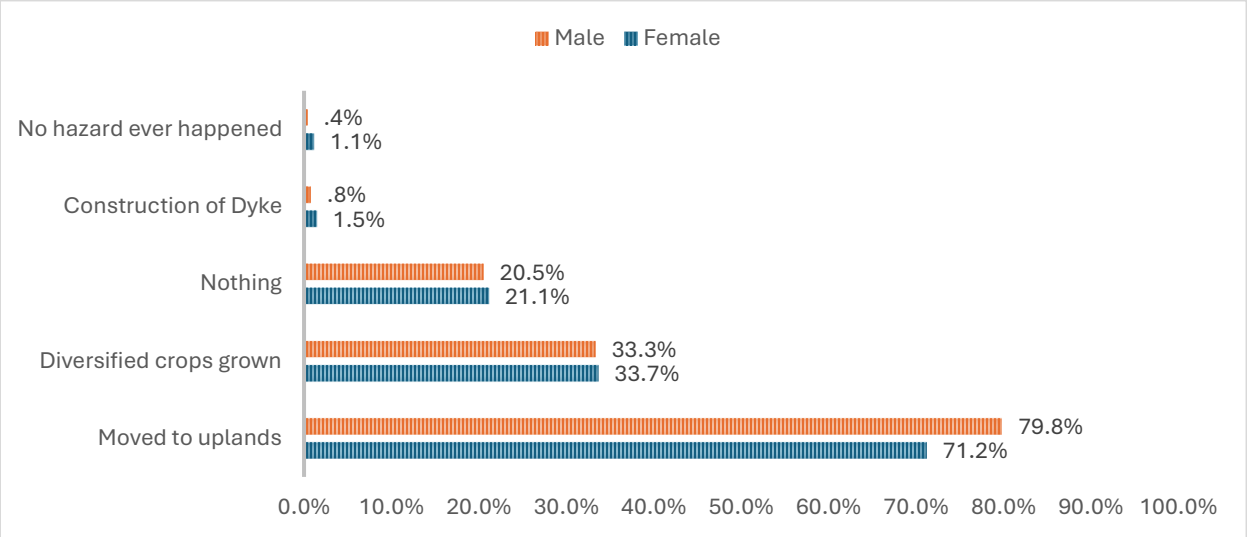


The percentage of respondents taking no action when hazards occurred shows a varied response across age groups**. Notably, 25.4% of the 18 -35 age group reported doing nothing, which raises concerns about awareness and preparedness in this demographic. Conversely, 15.4% of both the 15-17 and above 65 age groups indicated no action, while 17.3% of the 36 to 65 age group did the same, suggesting a moderate level of inaction among older adults.**

The construction of dykes, a critical infrastructure response to flooding, was notably low across all age groups, with only 7.7% of the 15-17 age group reporting involvement, and a mere 1.0% and 1.3% for the 18-35 and 36-65 age groups, respectively. No individuals above 65 reported engaging in dyke construction, pointing to a significant gap in proactive infrastructural investments. Lastly, the data indicates that very few respondents across all age groups reported never having experienced a hazard, reinforcing the notion that hazards are a persistent challenge in the GUN region. Overall, these findings emphasize the need for targeted interventions tailored to different age demographics to improve awareness, preparedness, and resilience against future hazards.

The responses of female and male community members to hazards reflect both similarities and notable differences (see Figure 96). **A significant proportion of both genders reported moving to upland areas as a primary response, with 71.2% of females and 79.8% of males indicating this action.** This trend underscores a shared understanding of the importance of geographic elevation in mitigating risks associated with environmental hazards. When it comes to crop diversification, the figures for both genders are quite similar, with 33.7% of females and 33.3% of males actively engaging in growing a variety of crops. This suggests a collective effort towards enhancing food security, although the overall percentages indicate that there may be room for improvement in promoting agricultural adaptability among both women and men.

Figure 96: Actions community members took when a hazard occurred by Gender of Respondent



The levels of inaction in response to hazards are also comparable, with 21.1% of females and 20.5% of males reporting that they took no action. This relatively high percentage of individuals not responding to hazards raises concerns about awareness and preparedness within the community, highlighting the need for targeted educational initiatives. In terms of infrastructure engagement, the construction of dykes was reported by 1.5% of females and 0.8% of males, indicating a low level of proactive investment in flood management strategies across both demographics. This minimal involvement reflects a critical gap in community resilience efforts and suggests that infrastructure development should be prioritized.

The data also shows that very few individuals from both genders claimed to have never experienced a hazard, with 1.1% of females and 0.4% of males reporting such. This reinforces the fact that environmental hazards are a continual challenge in the GUN region. Therefore, the findings highlight the need for enhanced community engagement and targeted interventions, particularly in promoting infrastructure development and increasing awareness of adaptive strategies among both women and men in the GUN region.

Table 80 demonstrates that majority of community members across different marital statuses reported moving to upland areas when hazards occurred, with divorced individuals at 77.8% and married individuals living with their spouses at 76.9%. In contrast, single individuals (never married) reported a lower rate of 60.3%, while widowed individuals had 74.5%, indicating a generally

high reliance on geographical elevation for safety among these groups.

Table 71: Actions community members took when a hazard occurred by Marital Status

Actions community members took when a hazard occurred	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Moved to uplands	77.8%	76.9%	63.1%	60.3%	74.5%
Diversified crops grown	33.3%	32.8%	27.9%	44.8%	38.3%
Nothing	22.2%	18.8%	30.6%	25.9%	20.2%
Construction of Dyke	5.6%	1.0%	2.7%	1.7%	0.0%
No hazard ever happened	5.6%	1.0%	0.9%	0.0%	0.0%

When examining crop diversification efforts, single individuals demonstrated the highest engagement, with 44.8% actively diversifying their crops, compared to 33.3% of divorced individuals and 32.8% of married individuals living with their spouses. This suggests that single individuals may be more proactive in managing food security risks. In comparison, married individuals not living with their spouses had the lowest rate of diversification at 27.9%, highlighting potential vulnerabilities in this demographic.

The percentage of individuals taking no action in response to hazards varied by marital status, with divorced individuals reporting the highest at 22.2%. This contrasts with married individuals living with their spouses at 18.8% and widowed individuals at 20.2%. The relatively high rates of inaction among these groups indicate a need for increased awareness and preparedness efforts within the community. Construction of dykes, a crucial infrastructure response to flooding, was reported by 5.6% of divorced individuals, which is significantly higher than the 1.0% of married individuals living with their spouses and the 0.0% of widowed individuals. This low engagement across all groups points to a critical gap in proactive infrastructure development, which is essential for enhancing resilience against environmental hazards.

The data indicates that very few individuals across all marital statuses reported never having experienced a hazard, with 5.6% of divorced individuals and only 1.0% of married individuals living with their spouses indicating such. Overall, the findings highlight the need for targeted interventions that consider marital status, particularly in promoting infrastructure development, increasing awareness, and enhancing adaptive strategies.

Table 81 summarizes findings with regards to assessment by family status. **A high percentage of IDPs, at 81.3%, reported moving to upland areas as a primary response to hazards, reflecting a strong reliance on geographical elevation for safety.** This is followed by refugees at 75.0% and residents at 74.2%, indicating a collective understanding of the need for elevation to mitigate risks. However, returnees showed a lower percentage at 64.0%, which may suggest different levels of adaptation to their post-return environment.

Table 72: Actions community members took when a hazard occurred by Family Status

Actions community members take when a hazard has occurred	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Moved to uplands	81.3%	75.0%	74.2%	64.0%	0.0%
Diversified crops grown	28.5%	32.1%	37.9%	27.4%	50.0%
Nothing	10.9%	17.9%	18.7%	38.9%	50.0%
Construction of Dyke	0.5%	0.0%	1.5%	1.7%	0.0%

No hazard ever happened	1.0%	0.0%	1.0%	0.6%	0.0%

In terms of crop diversification, long-term residents exhibited the highest engagement at 37.9%, while refugees reported 32.1% and returnees had 27.4%. Internally displaced individuals had a lower rate of 28.5%, indicating that those who have been displaced may face challenges in implementing diverse agricultural practices. Interestingly, half of the respondents who indicated "don't know" reported diversifying crops, suggesting a lack of awareness or clarity about their agricultural practices.

The data on inaction reveals concerning trends, with 38.9% of returnees reporting that they took no action in response to hazards, the highest among the groups. This contrasts with IDPs at 10.9% and refugees at 17.9%. The higher rate of inaction among returnees underscores potential vulnerabilities and a need for improved awareness and preparedness within this demographic.

Construction of dykes, a vital infrastructure response to flooding, was notably low across all groups, with only 0.5% of internally displaced individuals and 1.7% of returnees participating in such efforts. This lack of engagement in infrastructure development points to a significant gap in community resilience initiatives, which is critical for enhancing safety against environmental hazards. The data indicates that very few individuals across all family statuses reported never having experienced a hazard, with only 1.0% of internally displaced individuals and 0.6% of returnees indicating such, reinforcing the notion that hazards are a persistent challenge in the GUN region. The findings highlight the need for targeted interventions that address the specific challenges faced by different family statuses, particularly in promoting infrastructure development, increasing awareness, and enhancing adaptive strategies among community members.

A significant majority of respondents across all education levels reported moving to upland areas as a primary response, with the highest percentage among those with tertiary education at 82.6% (see Table 82). This suggests that higher educational attainment may correlate with a more proactive approach to mitigating risks associated with environmental hazards. Conversely, those with no schooling reported a robust 76.9% movement to uplands, while individuals with primary and secondary education recorded lower rates of 69.0% and 69.6%, respectively.

Table 73: Actions community members took when a hazard occurred by Level of Education

Actions community members take when a hazard has occurred	No schooling	Primary	Secondary	Tertiary
Moved to uplands	76.9%	69.0%	69.6%	82.6%
Diversified crops grown	30.6%	39.3%	38.2%	13.0%
Nothing	21.9%	17.1%	22.5%	34.8%
Construction of Dyke	1.0%	1.6%	2.0%	0.0%
No hazard ever happened	1.0%	1.2%	0.0%	0.0%

When examining crop diversification, individuals with primary education demonstrated the highest engagement at 39.3%, followed closely by those with secondary education at 38.2%. In stark contrast, only 13.0% of individuals with tertiary education reported diversifying crops, which may indicate a reliance on other strategies or resources that limit their engagement in agricultural practices. Individuals with no schooling reported a diversification rate of 30.6%, showing a moderate level of activity in this area. The data reveals concerning levels of inaction in response to hazards,

particularly among those with tertiary education, where 34.8% indicated that they took no action. This is significantly higher than the rates for individuals with no schooling at 21.9%, primary education at 17.1%, and secondary education at 22.5%. The increased inaction among the more educated demographic may suggest a disconnect between knowledge and practical engagement in risk management strategies.

Construction of dykes, an essential infrastructure response to flooding, was reported by only a small number of individuals across all education levels, with the highest being 2.0% for those with secondary education. Notably, none of the individuals with tertiary education reported engaging in dyke construction, indicating a gap in proactive infrastructure development that is crucial for enhancing community resilience. Lastly, the data indicates that very few individuals across all education levels reported never having experienced a hazard, with only 1.0% of those with no schooling and 0.0% of those with secondary or tertiary education stating so. This reinforces the persistent threat of environmental hazards in the GUN region.

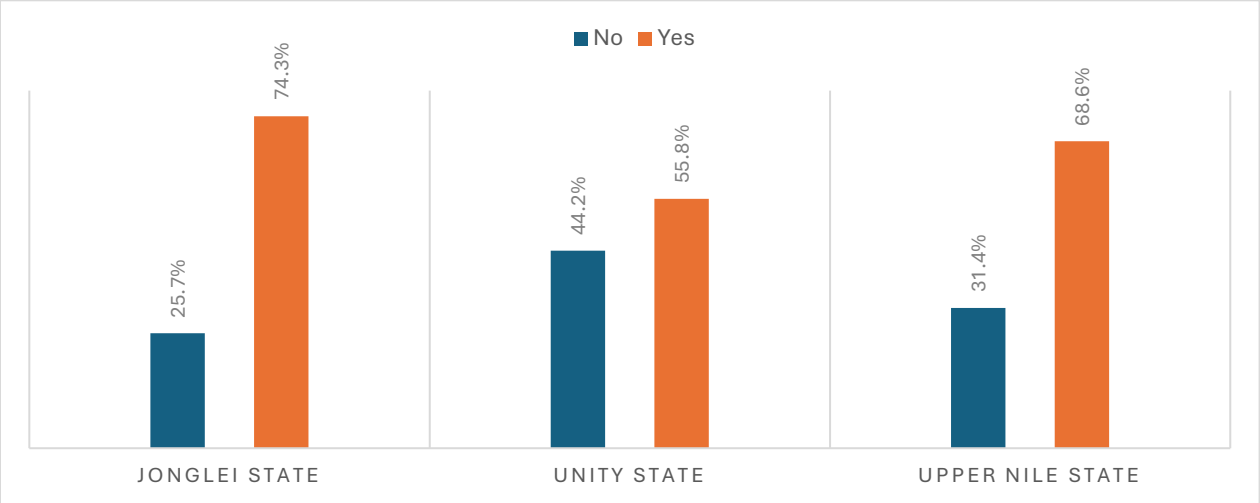
7.2.26 Extent to which the action reduced their losses when hazards occurred

The responses from community members regarding the effectiveness of their actions in reducing losses during hazards indicate a generally positive outlook. **A substantial 62.5% of respondents reported that the actions they took did indeed lead to a reduction in their losses.** This suggests that many individuals recognize the benefits of their adaptive strategies, which may include moving to upland areas, diversifying crops, or other proactive measures aimed at mitigating the impacts of environmental hazards.

Conversely, 37.5% of community members indicated that their actions did not result in reduced losses. This significant portion highlights the ongoing challenges and limitations faced by these communities, potentially pointing to factors such as inadequate resources, lack of infrastructure, or insufficient knowledge about effective risk management strategies. The disparity between those who felt their actions were effective and those who did not underscores the need for continued support and education focused on enhancing adaptive measures. It is crucial for development programs to assess and address the barriers that prevent a significant number of community members from achieving the desired outcomes in loss reduction.

Analysis by state, presented in Figure 97, shows that in Jonglei State, a notable 74.3% of community members reported that their actions were effective in minimizing losses, reflecting a strong sense of efficacy in their adaptive strategies. This contrasts with Unity State, where only 55.8% felt that their actions had led to a reduction in losses, indicating that community members in Unity may face more challenges or limitations in their efforts to manage hazards effectively. Upper Nile State showed a middle ground, with 68.6% of respondents affirming that their actions were successful in reducing losses. This suggests that while many individuals in Upper Nile are employing effective strategies, there is still a significant portion who may not be experiencing the same level of success as those in Jonglei.

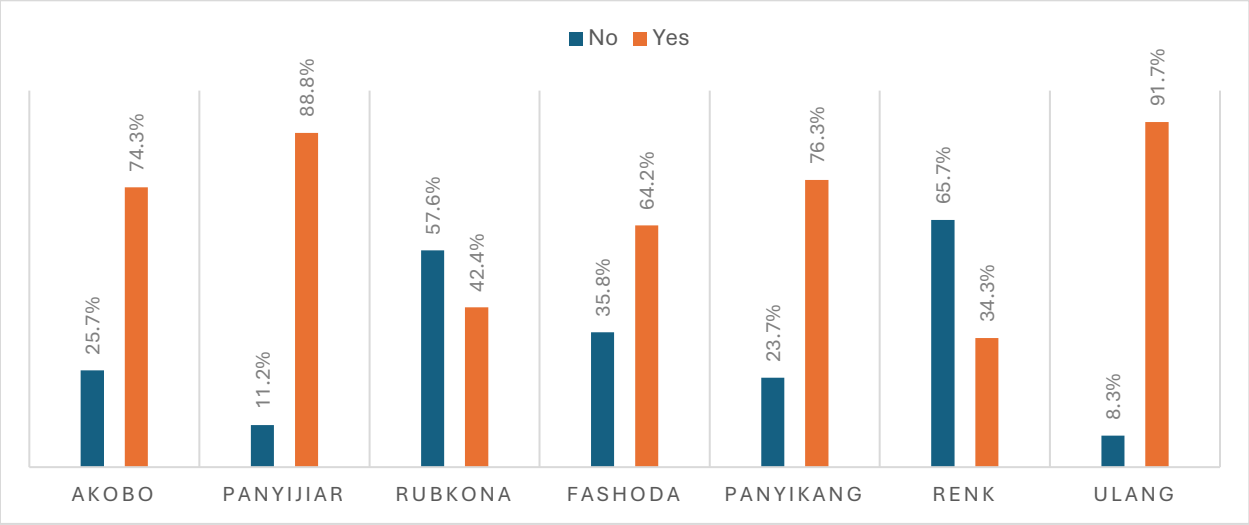
Figure 97: Whether or not action taken by community members reduced their losses by State



The percentage of individuals who reported that their actions did not reduce losses also varies considerably among the states. In Unity State, 44.2% of respondents indicated that their efforts were ineffective, the highest rate among the three regions. This finding raises concerns about the specific challenges faced by communities in Unity, which may include a lack of resources, infrastructure, or knowledge about effective risk management practices. In contrast, Jonglei and Upper Nile exhibited lower rates of inaction, with 25.7% and 31.4%, respectively, suggesting that these communities may be better equipped or more knowledgeable in their adaptive responses.

County-based analysis of the data as shown in Figure 98, highlights that in Ulang, a substantial 97.7% of respondents reported that their actions were effective in minimizing losses, indicating a strong belief in the success of their adaptive strategies. Similarly, Panyijiar had an even higher rate of 88.8%, suggesting a particularly effective approach to managing hazards in that area. Conversely, Rubkona showed a concerning trend, with 57.6% of community members indicating that their efforts were ineffective in reducing losses. This contrasts sharply with Fashoda, where 64.2% reported success, and Panyikang, where 76.3% felt their actions were beneficial. In Renk, however, only 34.3% reported effectiveness, highlighting a significant challenge for this community in achieving desired outcomes. Akobo stands out with a remarkable 74.3% of respondents affirming that their actions effectively reduced losses, indicating a strong adaptive capacity in this locality.

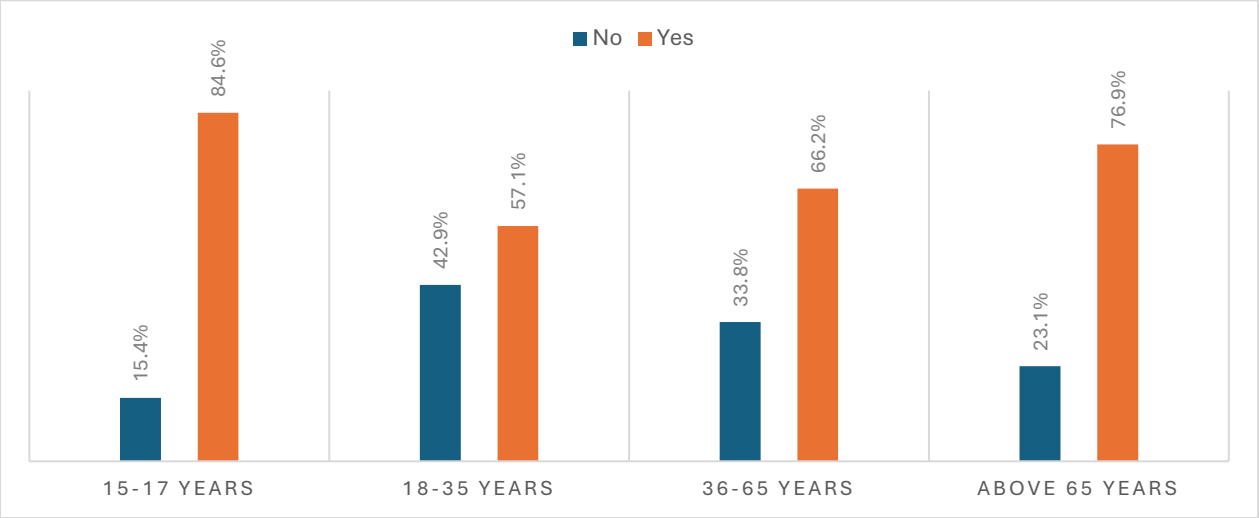
Figure 98: Whether or not action taken by community members reduced their losses by County



The percentage of individuals who felt their actions did not reduce losses varies widely, with Renk facing the highest rate at 65.7%, which raises concerns about the specific challenges this community encounters. Rubkona also had a high percentage of inaction at 57.6%, suggesting that residents may be struggling with inadequate resources or knowledge to effectively manage hazards. In contrast, Panyijiar and Ulang reported the lowest rates of perceived ineffectiveness, at 11.2% and 8.3%, respectively, indicating a greater confidence in the efficacy of their responses. The findings highlight the diverse experiences of communities across the GUN region regarding the effectiveness of their actions in reducing losses from hazards. They underscore the necessity for targeted interventions to address the unique challenges faced by communities like Renk and Rubkona while building on the successful strategies observed in Panyijiar and Ulang.

The findings show that among the youngest cohort, aged 15 to 17 years, a remarkable 84.6% reported that their actions were effective in minimizing losses (see Figure 99). This high percentage indicates a strong sense of agency and adaptability among younger individuals, suggesting that they are actively engaging in strategies to mitigate the impacts of hazards. In contrast, the 18 to 35 age group demonstrated a significantly lower rate of perceived effectiveness, with only 57.1% affirming that their actions reduced losses. This decline may reflect challenges faced by this demographic, including potential barriers related to resources, experience, or awareness of effective risk management strategies. The middle-aged group, aged 36 to 65 years, had a slightly higher rate of effectiveness at 66.2%, suggesting that while many are employing successful strategies, there remains a notable portion who feel their efforts are insufficient.

Figure 99: Whether or not action taken by community members reduced their losses by Age of Respondent

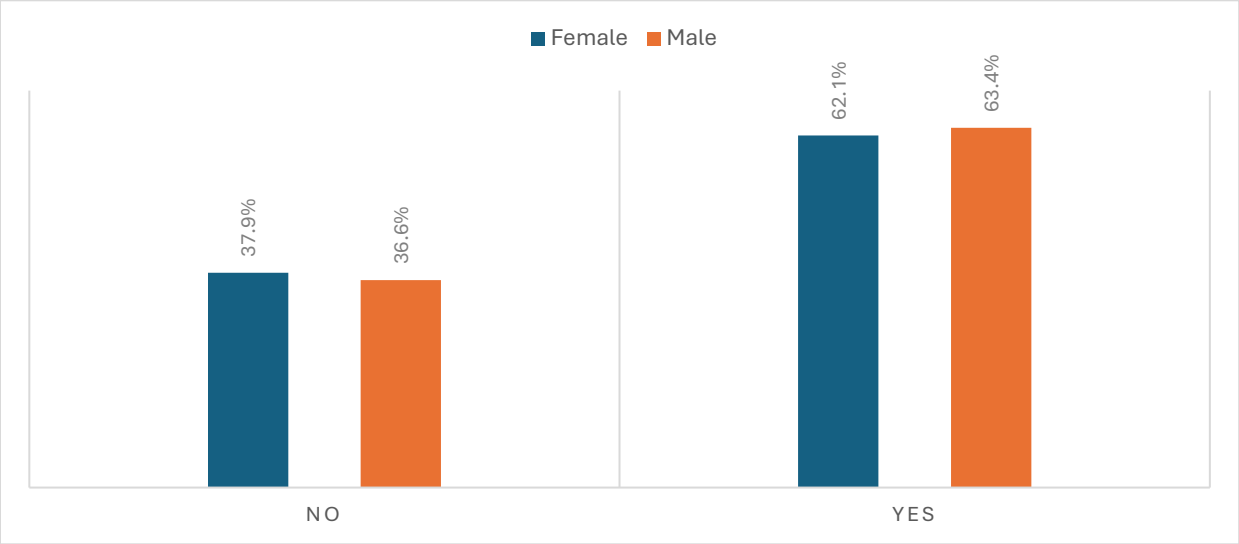


For individuals above 65 years, 76.9% reported that their actions were effective, indicating a strong reliance on their experience and knowledge to navigate hazards. This group, which often possesses a wealth of life experience, appears to apply their understanding effectively to reduce losses, similar to the younger cohort. The percentage of individuals reporting that their actions did not reduce losses varied significantly across age groups, with the highest rate found among the 18 to 35 age group at 42.9%. This figure raises concerns about the level of preparedness and effectiveness of strategies employed by younger adults, highlighting a potential need for targeted support and education for this demographic. The 15 to 17 age group exhibited the lowest rate of inaction at 15.4%, suggesting a proactive attitude, while the older age groups, including those above 65 years, also reported low levels of perceived ineffectiveness at 23.1%.

Overall, these findings highlight the diverse experiences of different age groups in the GUN region regarding the effectiveness of their actions in reducing losses from hazards. They highlight the need for tailored interventions that address the specific challenges faced by the 18 to 35 age group while leveraging the strengths observed in both younger and older populations.

An analysis of the responses from male and female community members regarding the effectiveness of their actions in reducing losses from hazards reveals a relatively similar outlook between the two genders (see Figure 100). **Among female respondents, 62.1% reported that their actions were effective in minimizing losses, while a slightly higher percentage of male respondents, at 63.4%, affirmed the effectiveness of their strategies.** This close alignment suggests that both genders are actively engaging in adaptive measures to cope with environmental challenges, reflecting a shared understanding of the importance of proactive risk management.

Figure 100: Whether or not action taken by community members reduced their losses by Gender of Respondent



The percentage of individuals who felt their actions did not lead to reduced losses was also comparable, with 37.9% of females indicating ineffectiveness compared to 36.6% of males. These figures highlight a significant portion of the community that may be facing challenges in implementing effective strategies or may lack the necessary resources and support to mitigate the impacts of hazards successfully.

The relatively balanced perspectives between genders in the Great Upper Nile region could indicate a collaborative approach to addressing the challenges posed by environmental hazards, where both men and women contribute to community resilience. However, the findings also emphasize the need for targeted interventions to enhance the effectiveness of actions taken by both genders, ensuring that all community members are equipped with the knowledge and resources necessary to improve their adaptive strategies. While both female and male community members express confidence in the effectiveness of their actions, there remains a notable percentage who do not perceive the same level of success. This underscores the importance of continued efforts to strengthen community resilience in the GUN region through education, resource allocation, and support systems that empower all individuals to effectively reduce losses in the face of ongoing environmental hazards.

The analysis of the effectiveness of actions taken by community members to reduce losses from hazards reveals significant variations based on marital status is summarized in **Table 83**. **Among divorced individuals, a substantial 58.8% reported that their actions did not lead to reduced losses, indicating a greater sense of ineffectiveness within this demographic.** This contrasts sharply with married individuals living with their spouses, of whom 64.9% affirmed that their actions were effective in minimizing losses, suggesting that collaboration and support within a partnership may enhance adaptive strategies.

Table 74: Whether or not action taken by community members reduced their losses by Marital Status

Whether or not action taken by community members reduced their losses	Divorced	Married and living with Husband or Wife	Married and not living with Husband or Wife	Single (Never married)

No	58.8%	35.1%	44.5%	43.1%
Yes	41.2%	64.9%	55.5%	56.9%

For married individuals not living with their spouses, 55.5% reported successful actions, which is notably lower than their counterparts living together, yet still indicates a majority who feel their efforts have been fruitful. Single individuals, who have never married, showed a similar level of effectiveness with 56.9% reporting that their actions reduced losses, which highlights their engagement in proactive measures despite lacking a marital partnership.

The data also reveals that the percentage of individuals reporting ineffectiveness varies considerably among marital statuses. The divorced group, with 58.8% indicating that their actions were ineffective, represents a significant challenge for these individuals, possibly reflecting isolation or a lack of resources to implement effective strategies. In contrast, the rates of ineffectiveness among married individuals living together (35.1%), those not living with their spouses (44.5%), and single individuals (43.1%) are considerably lower, suggesting that these groups may have better access to support systems and collaborative resources.

Overall, these findings underscore the importance of marital status in shaping community members' experiences and perceptions of the effectiveness of their actions in the GUN region. They highlight the need for tailored interventions that address the unique challenges faced by divorced individuals while reinforcing the successful strategies employed by married and single individuals. Enhancing support networks and resources for all marital statuses will be crucial in improving community resilience and ensuring that all members can effectively reduce losses in the face of the ongoing environmental hazards.

Table 75: Whether or not action taken by community members reduced their losses by Family Status

Whether or not action taken by community members reduced their losses	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
No	45.0%	42.9%	27.3%	55.9%	100.0%
Yes	55.0%	57.1%	72.7%	44.1%	0.0%

Analysis by family status shows that among IDPs, 55.0% reported that their actions were effective in minimizing losses, while 45.0% felt that their efforts did not yield positive results (Table 84). This suggests a mixed experience, indicating that while many have found ways to adapt, a substantial portion still faces challenges. Refugees demonstrated a slightly higher rate of perceived effectiveness, with 57.1% affirming that their actions helped reduce losses. Conversely, 42.9% of refugees reported ineffectiveness, highlighting the obstacles they encounter in their new environment. Residents, who have never left their homes, exhibited the highest level of confidence, with 72.7% indicating that their actions were successful in minimizing losses, while only 27.3% reported ineffectiveness. This reflects a strong sense of stability and resilience among long-term residents.

Returnees, those who have left and subsequently returned to their communities, reported a lower success rate, with only 44.1% feeling their actions were effective, while 55.9% indicated ineffectiveness. This suggests that returnees may be struggling to adapt to their previous environments after displacement, facing unique challenges that hinder their ability to effectively

manage hazards. Notably, the category of individuals who indicated "Don't Know" represents a significant concern, as 100.0% of respondents in this group reported that their actions did not reduce losses. This lack of awareness or understanding about the effectiveness of their strategies may point to a critical gap in information or support that could empower these individuals to take more effective actions.

Overall, these findings highlight the diverse experiences of different family statuses in the GUN region regarding the effectiveness of their actions in reducing losses from hazards. They underscore the need for targeted interventions that address the specific challenges faced by IDPs and returnees while building on the successful strategies of residents.

Analysis based of the educational background of the respondent shows that among individuals with no formal schooling, 61.7% reported that their actions were effective in minimizing losses, suggesting that despite a lack of formal education, many are able to engage in successful adaptive strategies (Table 85). Conversely, 38.3% of this group felt that their efforts did not yield positive results, indicating challenges in effective hazard management.

Table 76: Whether or not action taken by community members reduced their losses by Level of Education

Whether or not action taken by community members reduced their losses	No schooling	Primary	Secondary	Tertiary
No	38.3%	32.3%	42.9%	47.8%
Yes	61.7%	67.7%	57.1%	52.2%

In contrast, individuals with primary education showed a higher success rate, with 67.7% affirming that their actions were effective, while only 32.3% reported ineffectiveness. This improvement may reflect the benefits of basic education in enhancing awareness and skills necessary for effective risk management. However, among those with secondary education, 57.1% indicated that their actions were successful, while 42.9% felt they were not, suggesting a decline in perceived effectiveness compared to those with primary education.

The tertiary education group had the lowest rate of perceived effectiveness, with 52.2% reporting that their actions reduced losses and 47.8% indicating ineffectiveness. This notable percentage of perceived ineffectiveness among the more educated demographic raises questions about potential barriers they may face, such as over-reliance on theoretical knowledge rather than practical applications in their immediate environment.

All in all, the findings highlight the complex relationship between education and the perceived effectiveness of actions taken to reduce losses in the GUN region. While higher levels of education generally correlate with improved adaptive strategies, the data also reveal a concerning trend among those with secondary and tertiary education who report higher rates of ineffectiveness. This underscores the need for targeted educational interventions that not only enhance knowledge but also focus on practical skills and community engagement to empower all individuals to effectively mitigate the impacts of hazards in the Great Upper Nile region.

7.2.27 Extent to which respondents trust the warnings received for hazards

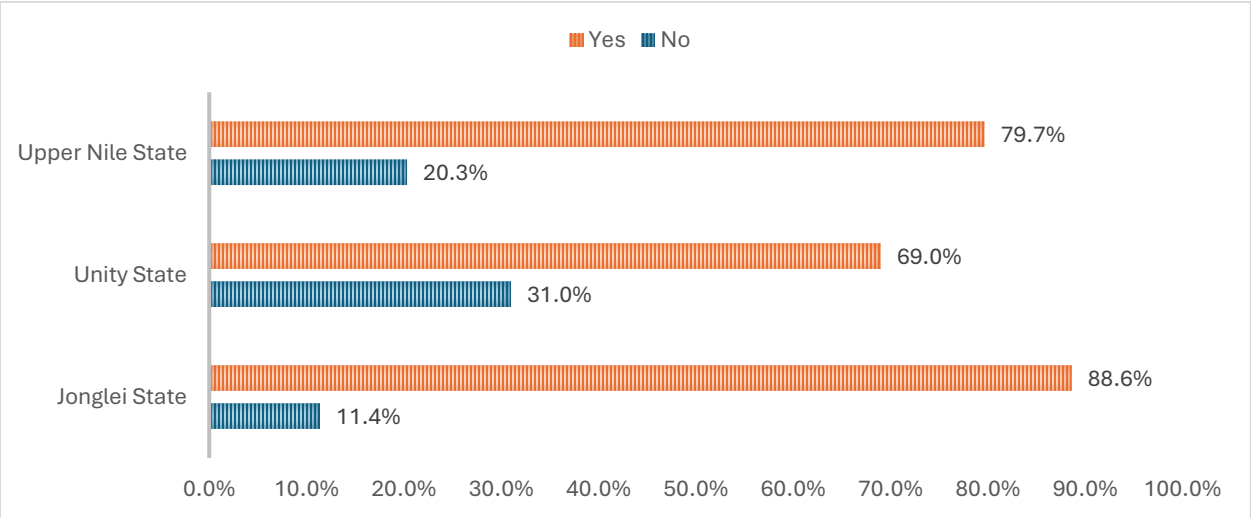
Analysis of community trust in warnings received about hazards reveals a predominantly positive perception, with 75.9% of respondents expressing confidence in the effectiveness of these warnings. This high level of trust suggests that the majority of community members believe in the validity and reliability of the information provided regarding environmental risks, which is crucial for timely and effective responses to hazards.

Conversely, 24.1% of respondents indicated a lack of trust in the warnings they receive. This significant minority raises important concerns about the potential barriers to effective hazard management within the GUN communities. Distrust in warnings can lead to delayed responses or inadequate preparations, increasing vulnerability to environmental risks. The findings highlight the importance of enhancing communication strategies and ensuring that warnings are clear, consistent, and credible. Building trust in hazard warnings is essential for fostering community resilience, as it encourages individuals to take proactive measures in response to potential threats.

In general, while the majority of the GUN region residents demonstrate a strong trust in hazard warnings, addressing the concerns of the minority who are skeptical is critical. Targeted efforts to improve communication and strengthen the relationship between communities and those issuing warnings will be vital in ensuring that all members are adequately prepared to mitigate the impacts of the hazards.

Analysis by state as shown in Figure 101 shows the in Jonglei State, an impressive 88.6% of respondents expressed confidence in the warnings they receive, indicating a strong belief in the reliability and effectiveness of hazard communication. This high level of trust is crucial for encouraging proactive measures within the community to mitigate the impacts of environmental risks. Conversely, Unity State showcases a marked contrast, with only 69.0% of respondents affirming their trust in hazard warnings. This still represents a majority, but the 31.0% of individuals expressing distrust is notable and may indicate underlying issues related to the credibility of the information being disseminated or a lack of effective communication strategies in the region.

Figure 101: Whether or not communities trust the warmings received on hazards by State

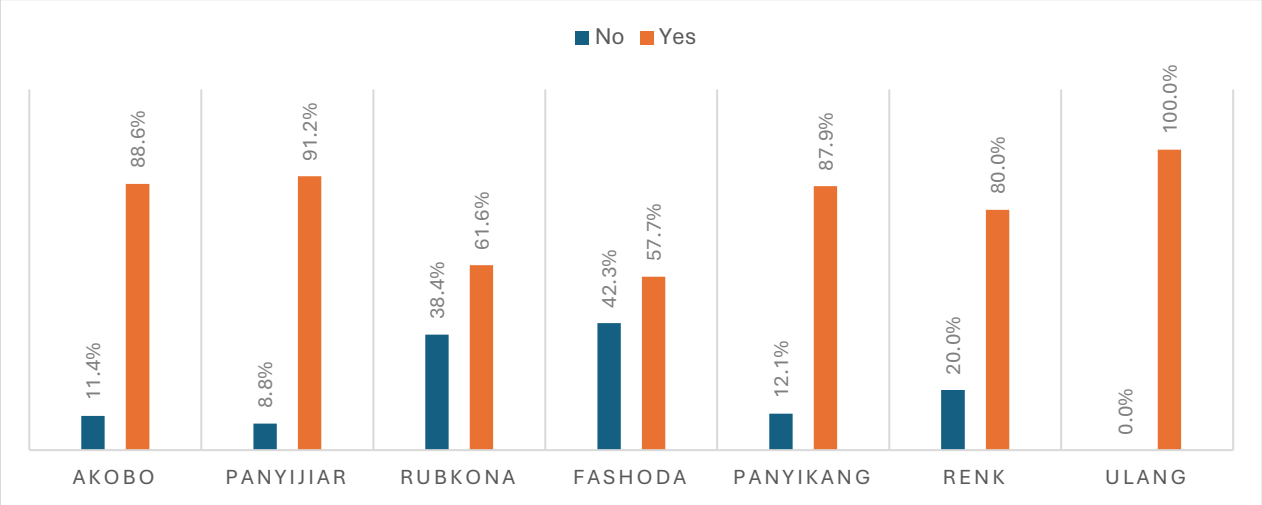


Upper Nile State falls in between the two, with 79.7% of respondents indicating trust in

warnings, while 20.3% reported a lack of confidence. This percentage of skepticism may suggest that there are specific challenges faced by communities in Upper Nile that could benefit from improved engagement and communication around hazard information. The findings highlight the varying levels of trust in hazard warnings across the GUN region, emphasizing the need for targeted interventions to address the concerns of the minority who do not trust these warnings, particularly in Unity State.

Further analysis by county shows that in Akobo, an impressive 88.6% of respondents expressed confidence in the warnings they receive, reflecting a strong belief in the effectiveness of hazard communication (Figure 102). Similarly, Panyijiar demonstrated even greater trust, with 91.2% of community members affirming their confidence in these warnings. In contrast, Rubkona and Fashoda exhibited higher levels of skepticism, with 38.4% and 42.3% of respondents, respectively, indicating a lack of trust in the warnings they receive. This significant level of distrust could point to communication challenges or doubts about the credibility of the information, which may hinder effective response actions during hazards. Panyikang also showed a moderate level of distrust at 12.1%, while Renk had 20.0% of respondents expressing skepticism.

Figure 102: Whether or not communities trust the warmings received on hazards by County

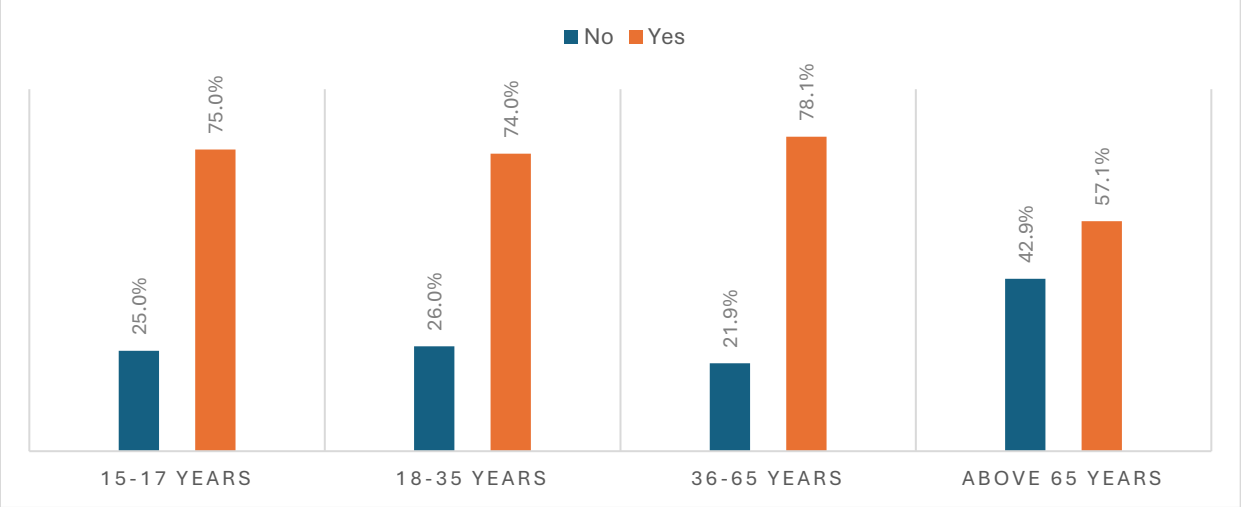


Notably, Ulang stands out with a remarkable 100.0% of respondents affirming their trust in hazard warnings, indicating a robust confidence in hazard communication within this community. This complete trust may suggest effective local systems for disseminating information and engaging the community in hazard preparedness. Overall, the findings highlight the diverse levels of trust in hazard warnings across different parts of the GUN region. While most communities exhibit high levels of confidence, the notable skepticism observed in Rubkona and Fashoda indicates the need for improved communication strategies and community engagement to enhance the credibility of hazard information.

Analysis of community trust in warnings received about hazards reveals significant differences across various age groups (see Figure 103). **Among the youngest demographic, aged 15 to 17 years, 75.0% expressed confidence in the hazard warnings, indicating a strong belief in the reliability of the information. Similarly, the 18 to 35 years age group demonstrated a comparable level of trust at 74.0%, suggesting that younger adults are generally confident in the warnings they receive.**

In contrast, the 36 to 65 years age group exhibited a higher level of trust, with 78.1% affirming their confidence in hazard warnings, which may reflect accumulated experiences and a greater understanding of the importance of such communications. However, among those aged above 65 years, trust significantly declines, with only 57.1% indicating confidence in the warnings, while 42.9% expressed skepticism. This higher percentage of distrust in the older demographic may suggest challenges related to communication effectiveness or a lack of engagement with the channels through which hazard information is disseminated.

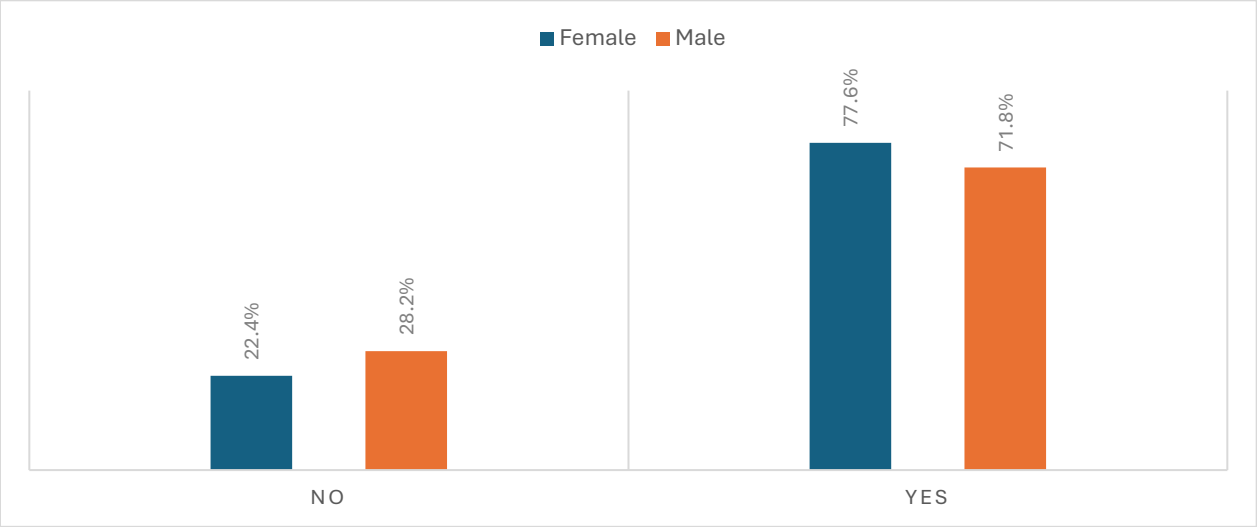
Figure 103: Whether or not communities trust the warmings received on hazards by Age of Respondent



The analysis highlights the varying levels of trust in hazard warnings among different age groups in the GUN region. While younger individuals tend to trust the information more, the notable skepticism among the elderly underscores the need for targeted communication strategies that address their specific concerns and enhance their engagement with hazard preparedness efforts.

Gender focused analysis in Figure 104 shows that among female respondents, 77.6% expressed confidence in the hazard warnings they receive, indicating a strong belief in the reliability of information disseminated regarding environmental risks. In contrast, male respondents exhibited a lower level of trust, with 71.8% affirming their confidence in these warnings. The percentage of individuals who reported distrust also varies, with 22.4% of females indicating skepticism compared to 28.2% of males. This suggests that while both genders generally exhibit a high level of trust, males are more likely to question the credibility of the warnings they receive. This disparity may reflect different experiences, access to information, or communication styles between genders that could influence perceptions of hazard information.

Figure 104: Whether or not communities trust the warmings received on hazards by Gender of Respondent



The findings highlight the importance of addressing the unique concerns and communication needs of both female and male community members in the GUN region. While a significant majority of both genders trust hazard warnings, the higher level of skepticism among males indicates a need for targeted engagement strategies to enhance their confidence in hazard communications. Building trust across both genders is essential for fostering community resilience and ensuring that all individuals are adequately prepared to respond to environmental threats in the region.

Marital status-based analysis shows that among divorced individuals, 44.4% reported a lack of trust in the warnings, indicating a notable level of skepticism that may stem from feelings of isolation or a diminished support network (see Table 86). This contrasts sharply with married individuals who live with their spouses, where only 22.8% expressed distrust, suggesting that the support and collaboration inherent in these partnerships likely contribute to a stronger belief in the reliability of hazard communications.

Table 77: Whether or not communities trust the warmings received on hazards by Marital Status

Whether or not communities trust the warmings received on hazards	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
No	44.4%	22.8%	25.4%	35.9%	20.9%
Yes	55.6%	77.2%	74.6%	64.1%	79.1%

For those who are married but not living with their spouses, 25.4% reported skepticism, which is higher than the married couples living together but still reflects a majority who trust the warnings. Single individuals, who have never married, showed a significant level of trust as well, with 64.1% affirming their confidence in the warnings, although 35.9% expressed doubt, highlighting some challenges in information accessibility or credibility. Widowed individuals displayed the highest level of trust, with 79.1% indicating confidence in hazard warnings and only 20.9% expressing skepticism. This may suggest that widowed individuals, possibly drawing from their life experiences, have developed a robust reliance on available information sources regarding hazards.

Overall, the findings highlight the diverse experiences of trust in hazard warnings across

different marital statuses in the GUN region. While the majority of married individuals and widowed persons exhibit strong trust in hazard communications, the higher levels of skepticism among divorced and single individuals point to the need for targeted strategies to address their specific concerns. Enhancing the credibility and accessibility of hazard information for all marital statuses is crucial for fostering resilience and ensuring that every community member is adequately prepared to respond to the environmental threats that they are likely to face in the future.

An examination of community trust in warnings about hazards reveals significant differences based on family status (Table 87). **Among IDPs, 66.7% reported confidence in the hazard warnings they receive, yet a notable 33.3% expressed distrust.** This level of skepticism may reflect the challenges faced by displaced persons who often contend with instability and uncertainty in their environments. **Refugees with 92.3% affirming their confidence in hazard communications.** This strong trust suggests that refugees may have access to reliable information sources or support networks that enhance their belief in the warnings they receive. In contrast, residents who have never left their homes showed a trust level of 79.4%, indicating a solid belief in the effectiveness of hazard warnings, although 20.6% expressed skepticism.

Table 78: Whether or not communities trust the warmings received on hazards by Family Status

Whether or not communities trust the warmings received on hazards	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
No	33.3%	7.7%	20.6%	24.7%	50.0%
Yes	66.7%	92.3%	79.4%	75.3%	50.0%

Returnees, individuals who have left and subsequently returned to their communities, reported a trust level of 75.3%, with 24.7% indicating distrust. This skepticism may highlight the difficulties returnees face as they attempt to reintegrate into their communities and navigate new challenges. Notably, the "Don't Know" category presents a unique concern, with 50.0% of respondents expressing uncertainty regarding their trust in hazard warnings, which indicates a significant gap in awareness or understanding that must be addressed. The results illustrate the varying levels of trust in hazard warnings across different family statuses in the region. While refugees display remarkable confidence, the skepticism among IDPs and returnees highlights the need for enhanced communication strategies and support systems.

The data shows that among individuals with no formal schooling, a significant 78.9% expressed confidence in the hazard warnings they receive, indicating a strong belief in the reliability of the information despite their lack of formal education (Table 88). In contrast, the percentage of skepticism is relatively low at 21.1%, suggesting that these individuals may rely on experiential knowledge or community networks for information regarding hazards.

Table 79: Whether or not communities trust the warmings received on hazards by Level of Education

Whether or not communities trust the warmings received on hazards	No schooling	Primary	Secondary	Tertiary
No	21.1%	25.9%	27.7%	33.3%
Yes	78.9%	74.1%	72.3%	66.7%

As education levels increase, the trust in hazard warnings appears to decline slightly. Among

those with primary education, 74.1% reported confidence in the warnings, while 25.9% expressed distrust. This trend continues with secondary education, where 72.3% affirmed their trust and 27.7% indicated skepticism. Notably, individuals with tertiary education showed the lowest level of trust, with 66.7% expressing confidence and 33.3% reporting skepticism. This decline in trust among more educated individuals could suggest that they may have higher expectations for the quality and credibility of information, leading to greater scrutiny of the warnings they receive.

Overall, these data highlight the complex relationship between education and trust in hazard warnings in the GUN region. While a significant majority across all educational levels demonstrate trust, the increasing skepticism among those with higher education levels emphasizes the need for effective communication strategies that address the concerns and expectations of educated individuals. Fostering trust in hazard warnings will be essential for ensuring that all community members, regardless of their educational background, are adequately prepared to respond to environmental threats in the Great Upper Nile region.

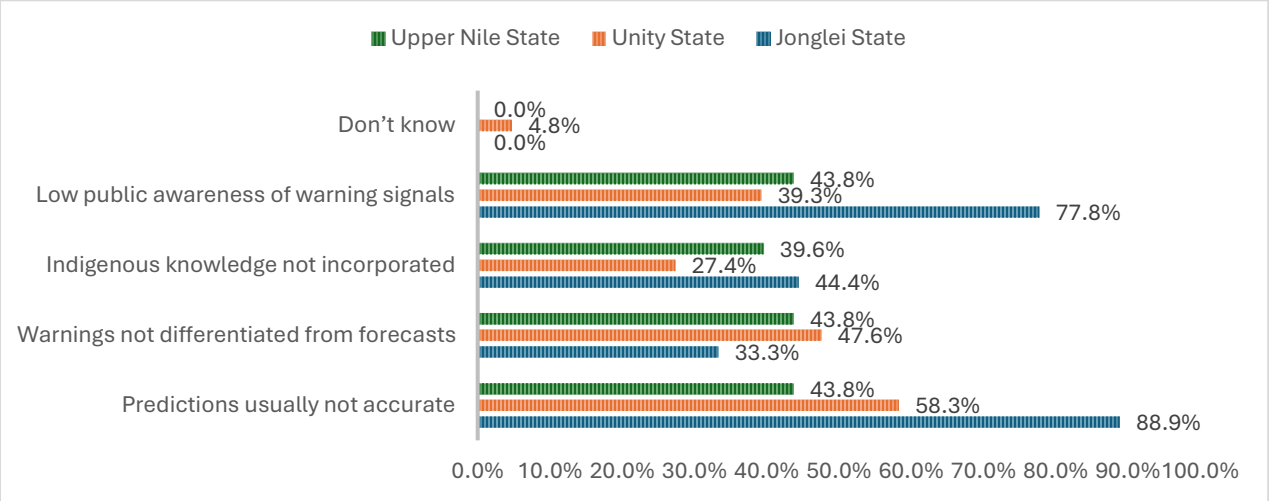
7.2.28 Extent that respondents trust the warnings that they receive on hazards

An examination of the reasons for mistrust in warnings received about hazards reveals several critical factors impacting community confidence. **At the regional level, significant 55.3% of respondents indicated that they find predictions to be usually inaccurate, suggesting that past experiences with unreliable forecasts have led to skepticism regarding current warnings**. This perception of inaccuracy can undermine the willingness of the community to act on hazard information, potentially increasing vulnerability to environmental threats. **Furthermore, 45.4% of individuals expressed concerns that warnings are not clearly differentiated from general forecasts, indicating a need for more precise and actionable communication.** This lack of clarity may contribute to confusion and diminish the perceived urgency of hazard warnings, making it harder for community members to understand the risks and take appropriate action.

Additionally, 32.6% of respondents noted that indigenous knowledge is not incorporated into hazard warnings. This points to a potential disconnect between formal warning systems and traditional practices that local communities may rely on for understanding environmental changes. Recognizing and integrating indigenous knowledge could enhance the credibility and relevance of hazard communications.
Low public awareness of warning signals was cited by 43.3% of respondents as a reason for mistrust, highlighting the necessity for educational initiatives that inform community members about effective warning systems and their significance. Finally, a small percentage, 2.8%, reported not knowing the reasons for their distrust, indicating a potential area for further investigation to understand underlying issues.

Analysis by state shows that in Jonglei State, a staggering 88.9% of respondents cited predictions as usually inaccurate, indicating a profound skepticism that may stem from past experiences with unreliable hazard information (see Figure 105). This high level of doubt suggests that many community members in Jonglei are reluctant to act on warnings, potentially increasing their vulnerability to environmental threats.

Figure 105: Reasons for not trusting the warnings received by State



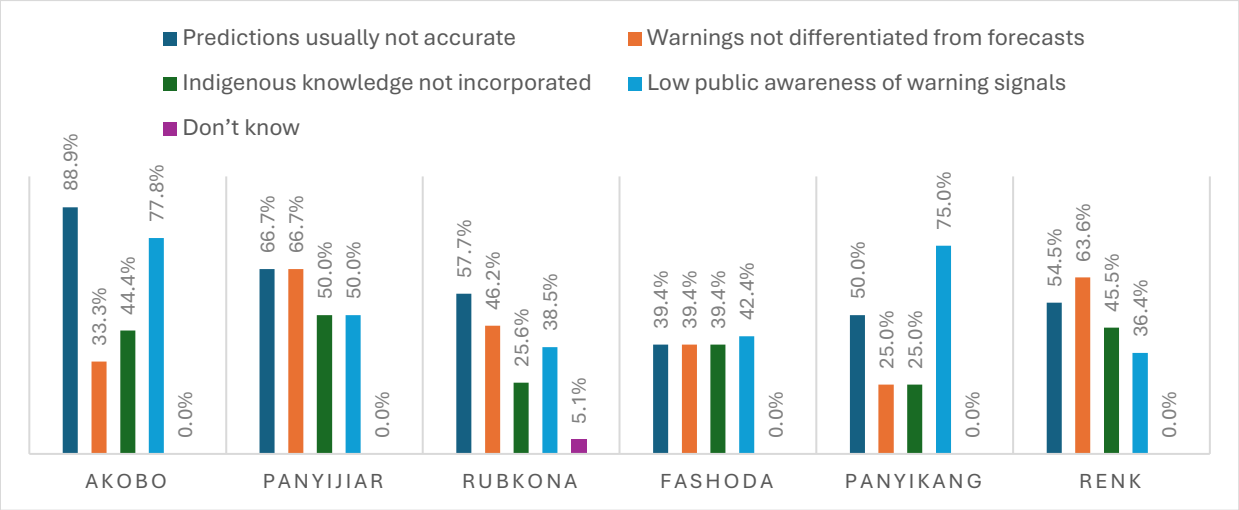
In Unity State, 58.3% of respondents echoed concerns about the accuracy of predictions, but this figure is notably lower than that in Jonglei. This indicates that while skepticism exists, it may not be as deeply ingrained, suggesting a different experience or level of trust in hazard communication. Meanwhile, in Upper Nile State, the percentage of individuals questioning the accuracy of predictions drops to 43.8%, reflecting a relatively higher level of confidence in hazard warnings compared to the other two states.

Concerns regarding the differentiation of warnings from general forecasts were noted by 33.3% of respondents in Jonglei, while 47.6% in Unity and 43.8% in Upper Nile expressed similar doubts. This suggests that clarity in communication remains an issue across all states, but is particularly pronounced in Unity State. Additionally, the incorporation of indigenous knowledge into hazard communications was cited by 44.4% of those in Jonglei, 27.4% in Unity, and 39.6% in Upper Nile, indicating varying levels of recognition of traditional practices in hazard management.

The issue of low public awareness of warning signals was particularly pronounced in Jonglei, with 77.8% of respondents identifying it as a concern. In Unity State, this figure drops to 39.3%, and in Upper Nile, it remains at 43.8%. This discrepancy underscores the urgent need for targeted educational initiatives in Jonglei to enhance community understanding of warning systems. The findings highlight the critical challenges faced by communities in the GUN region regarding trust in hazard warnings. Addressing the specific concerns related to prediction accuracy, communication clarity, and public awareness, particularly in Jonglei, is essential.

Analysis by county, see Figure 106, shows that in Akobo, a massive 88.9% of respondents indicated that they believe predictions are usually inaccurate, highlighting a significant level of skepticism that may stem from historical experiences with unreliable hazard information. This pervasive doubt is likely to hinder effective community response to environmental threats. In Panyijiar, 66.7% of individuals echoed concerns about the accuracy of predictions, reflecting a strong sense of mistrust, although not as pronounced as in Akobo. Rubkona showed a moderate skepticism with 57.7% expressing doubts about prediction accuracy, while in Fashoda, this concern dropped to 39.4%, indicating a comparatively higher level of confidence in hazard communications. Panyikang and Renk reported 50.0% and 54.5% respectively, suggesting that skepticism in these areas is also significant but varies depending on local experiences and information sources.

Figure 106: Reasons for not trusting the warnings received by County

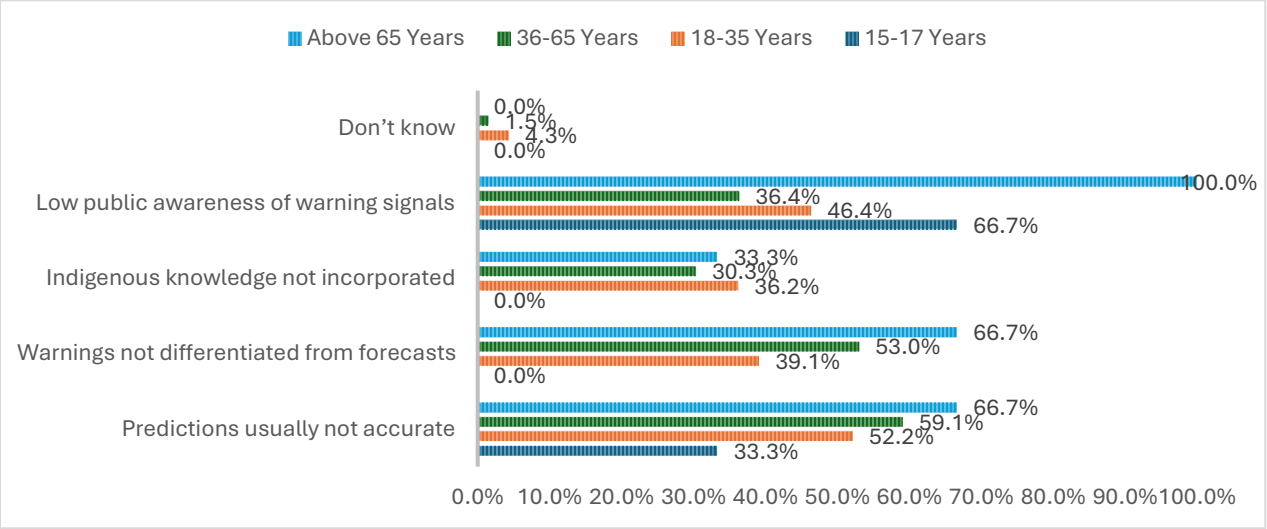


Regarding the differentiation of warnings from general forecasts, Panyijiar exhibited the highest percentage at 66.7%, indicating that residents struggle to distinguish between routine weather forecasts and urgent hazard warnings. This concern is echoed in Renk, where 63.6% expressed similar doubts, while Rubkona reported 46.2%, Fashoda 39.4%, and Panyikang 25.0%. Akobo, with 33.3%, shows a relatively lower concern in this regard, though the need for clear communication remains critical across all counties. The incorporation of indigenous knowledge into hazard warnings was cited by 44.4% of Akobo respondents, while Panyijiar and Renk reported 50.0% and 45.5%, respectively. In contrast, Rubkona showed only 25.6%, suggesting that some counties may overlook valuable traditional insights that could enhance the relevance and credibility of hazard warnings.

Low public awareness of warning signals was particularly acute in Akobo, where 77.8% of individuals identified this as a major concern. Panyikang followed closely with 75.0%, while Panyijiar and Rubkona reported 50.0% and 38.5%, respectively. Fashoda and Renk indicated lower concerns at 42.4% and 36.4%. This discrepancy signify the pressing need for targeted educational initiatives, particularly in Akobo and Panyikang, to improve community understanding of hazard communication. The further highlight the diverse challenges faced by communities across the GUN region regarding trust in hazard warnings. Addressing issues related to prediction accuracy, the clarity of communication, the incorporation of indigenous knowledge, and public awareness is essential for fostering greater trust and ensuring that all community members are adequately prepared to respond to environmental hazards.

Analysis by age shows that among the youngest age group, 33.3% expressed concerns about the accuracy of predictions, indicating a relatively lower level of skepticism compared to older age cohorts (see Figure 107). However, as age increases, skepticism about prediction accuracy rises sharply, with 52.2% of individuals aged 18-35 expressing doubts, 59.1% in the 36-65 age group, and 66.7% of those above 65 years indicating similar concerns. This trend suggests that older individuals may have more experience with inaccurate predictions, leading to heightened skepticism regarding current hazard communications.

Figure 107: Reasons for not trusting the warnings received by Age of Respondent

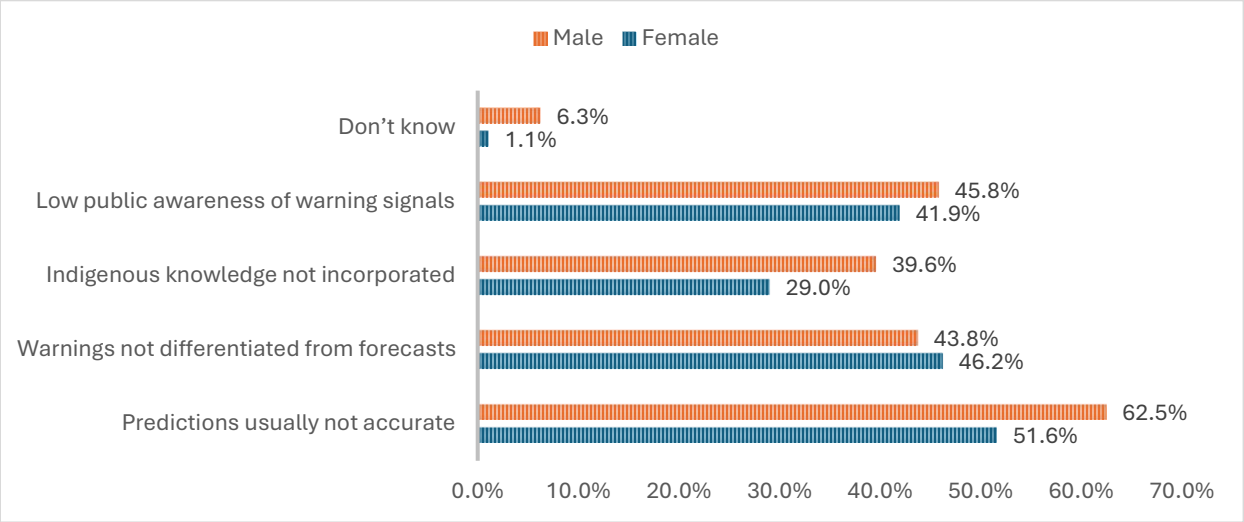


When examining the differentiation of warnings from general forecasts, none of the respondents aged 15-17 reported this as a concern, highlighting a potential lack of awareness about the importance of distinguishing between routine weather forecasts and urgent hazard warnings. In contrast, 39.1% of the 18-35 age group expressed doubts, escalating to 53.0% for those aged 36-65, and reaching 66.7% among individuals over 65. This pattern signifies a growing awareness of the need for clearer communication as individuals age and gain more exposure to hazard information. Regarding the incorporation of indigenous knowledge into hazard warnings, the youngest group again indicated no concerns, while 36.2% of those aged 18-35, 30.3% of the 36-65 age group, and 33.3% of individuals above 65 expressed similar sentiments. This suggests that older respondents may value the integration of traditional knowledge more than the younger cohort, who may rely more on formal education or information sources.

Public awareness of warning signals presents a significant challenge, particularly among older individuals, with 100% of those above 65 identifying this as a concern. Among the 15-17 age group, 66.7% noted low public awareness, followed by 46.4% of those aged 18-35 and 36.4% in the 36-65 age group. This disparity underscores the critical need for targeted educational initiatives focused on improving awareness of hazard communications, especially for older populations who may be less familiar with contemporary warning systems. Therefore, the findings highlight the diverse challenges faced by different age groups in the GUN region regarding trust in hazard warnings.

Analysis of the reasons for mistrust in hazard warnings reveals notable differences between female and male respondents (see Figure 108). **Among females, 51.6% expressed concerns that predictions are usually inaccurate, while a higher percentage of males, at 62.5%, echoed similar doubts**. This indicates that men may be more inclined to question the reliability of hazard communications, potentially reflecting different experiences or expectations regarding the accuracy of information. When it comes to the differentiation of warnings from general forecasts, 46.2% of female respondents indicated this as a concern, slightly higher than the 43.8% of males who expressed similar doubts. This suggests that both genders recognize the importance of clear communication regarding hazards but may differ in their levels of concern about this issue.

Figure 108: Reasons for not trusting the warnings received by Gender of Respondent



Regarding the incorporation of indigenous knowledge into hazard warnings, 29.0% of females reported this as a concern, compared to 39.6% of males. This disparity highlights a greater recognition among men of the value of integrating traditional knowledge into formal warning systems, which could enhance the credibility and relevance of hazard communications. Low public awareness of warning signals was noted by 41.9% of females and 45.8% of males. This indicates that while both genders acknowledge the challenge of public awareness, men are slightly more likely to express concern about this issue. Additionally, only 1.1% of females and 6.3% of males reported not knowing the reasons for their distrust, suggesting that overall awareness of the issues at hand is relatively high among respondents. Overall, these findings highlight the need for tailored communication strategies that address the specific concerns of both female and male community members.

Analysis of marital status of respondent shows that among divorced individuals, a massive 75.0% expressed the belief that predictions are usually inaccurate, indicating a high level of skepticism that may stem from past experiences (see Table 89). This perception of inaccuracy is crucial, as it suggests that divorced individuals may feel particularly vulnerable and less likely to act on hazard warnings. In contrast, married individuals living with their spouses exhibited a lower level of skepticism, with 57.0% doubting the accuracy of predictions. Similarly, 56.3% of those married but not living with their spouses expressed concerns, suggesting that the support and collaboration found in marital relationships may contribute to a greater degree of trust in hazard communications. Single individuals (never married) reported the lowest level of skepticism regarding prediction accuracy at 35.7%, indicating a more optimistic perspective on the reliability of hazard warnings.

Table 80: Reasons for not trusting the warnings received by Marital Status

Reasons for not trusting the warnings received	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
Predictions usually not accurate	75.0%	57.0%	56.3%	35.7%	57.1%
Warnings not differentiated from forecasts	100.0%	49.5%	25.0%	28.6%	42.9%
Indigenous knowledge not incorporated	25.0%	31.2%	25.0%	57.1%	28.6%

Low public awareness of warning signals	50.0%	48.4%	31.3%	28.6%	35.7%
Don't know	0.0%	3.2%	6.3%	0.0%	0.0%

Concerns about the differentiation of warnings from general forecasts were particularly pronounced among divorced individuals, with 100.0% stating this as a reason for their mistrust. This stark figure highlights the urgent need for clearer communication strategies tailored to this demographic. In comparison, only 49.5% of married individuals living together, 25.0% of those married but living apart, 28.6% of singles, and 42.9% of widows expressed similar concerns, indicating a significant variation in awareness of this issue.

Regarding the incorporation of indigenous knowledge into hazard warnings, attitudes also differed by marital status. A smaller proportion of divorced individuals (25.0%) expressed concerns about this integration, compared to 31.2% of married individuals living together, 25.0% of those married but not living with their spouses, and 57.1% of singles. This suggests that single individuals may place a higher value on incorporating traditional knowledge, which could enhance the credibility of hazard communications.

Low public awareness of warning signals was cited by 50.0% of divorced individuals, showing that they recognize this challenge. In contrast, 48.4% of married individuals living together, 31.3% of those married but living apart, 28.6% of singles, and 35.7% of widows also noted this issue, indicating a relatively consistent concern across marital statuses. Finally, the percentage of respondents indicating "Don't know" reasons for their distrust was notably low, particularly among divorced individuals (0.0%), reflecting a strong awareness of the issues at hand.

Analysis of the reasons for mistrust in hazard warnings based on family status reveals critical insights into community perceptions and concerns (Table 90). **Among IDPs, 55.3% expressed skepticism regarding the accuracy of predictions, reflecting their experiences of instability and uncertainty in their environments.** This level of distrust indicates a potential barrier to effective response, as those who feel that predictions are unreliable may be less likely to heed warnings.

Table 81: Reasons for not trusting the warnings received by Family Status

Reasons for not trusting the warnings received	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
Predictions usually not accurate	55.3%	100.0%	47.8%	75.0%	0.0%
Warnings not differentiated from forecasts	46.8%	100.0%	47.8%	33.3%	100.0%
Indigenous knowledge not incorporated	17.0%	0.0%	44.9%	29.2%	0.0%
Low public awareness of warning signals	36.2%	100.0%	46.4%	45.8%	100.0%
Don't know	2.1%	0.0%	0.0%	12.5%	0.0%

In contrast, 100.0% of refugees reported concerns about the accuracy of predictions. This absolute skepticism suggests that refugees may have faced significant challenges in obtaining reliable information in their new context, leading to a complete lack of confidence in hazard communications. Residents who have never left their homes showed a lower level of distrust, with 47.8% questioning the accuracy of predictions, while returnees exhibited a higher skepticism at 75.0%. This variability indicates that returnees may still be grappling with the complexities of

reintegration and may have heightened sensitivity to the reliability of information.

When it comes to the differentiation of warnings from general forecasts, 46.8% of internally displaced individuals noted this concern, but this figure drastically increases to 100.0% among refugees, highlighting a critical need for clearer communication tailored to this group. In contrast, 47.8% of residents and 33.3% of returnees also expressed similar doubts, indicating varying levels of awareness about the importance of distinguishing between routine forecasts and urgent warnings. The incorporation of indigenous knowledge into hazard warnings was a concern for 17.0% of internally displaced individuals, while 44.9% of residents highlighted this issue. Interestingly, refugees reported no concerns regarding indigenous knowledge, suggesting that their experiences may have led them to prioritize other aspects of hazard communication. Additionally, 29.2% of returnees expressed concerns about the lack of traditional knowledge integration, indicating a recognition of the value of local practices in understanding environmental risks.

Low public awareness of warning signals emerged as a significant issue, particularly among refugees, with 100.0% citing this as a reason for their mistrust. Internally displaced individuals followed with 36.2%, while residents reported 46.4% and returnees indicated 45.8%. The high percentage of refugees expressing concerns about public awareness underscores the need for targeted educational initiatives to improve understanding of warning systems in this population. Lastly, the "Don't know" category showed minimal responses among the various groups, with only 2.1% of internally displaced individuals and 12.5% of returnees expressing uncertainty about the reasons for their distrust. This indicates a generally high level of awareness about the issues surrounding hazard warnings, particularly among residents and refugees.

Education-focused analysis shows that among individuals with no formal schooling, a notable 63.3% expressed concerns that predictions are usually inaccurate (Table 91). This high level of skepticism may reflect a lack of access to reliable information and formal education, resulting in greater vulnerability to misinformation about hazards. In contrast, among those with primary education, the percentage doubting the accuracy of predictions decreases to 47.2%. This suggests that even basic educational attainment may help to mitigate some skepticism, providing individuals with a framework to better assess information. However, skepticism remains present, as 56.5% of those with secondary education indicated similar concerns. For individuals with tertiary education, the level of distrust stabilizes at 50.0%, indicating that while higher education does not completely eliminate skepticism, it may foster more critical evaluation of information sources.

Table 82: Reasons for not trusting the warnings received by Level of Education

Reasons for not trusting the warnings received	No schooling	Primary	Secondary	Tertiary
Predictions usually not accurate	63.3%	47.2%	56.5%	50.0%
Warnings not differentiated from forecasts	53.3%	41.5%	30.4%	50.0%
Indigenous knowledge not incorporated	35.0%	28.3%	39.1%	25.0%
Low public awareness of warning signals	45.0%	43.4%	34.8%	50.0%
Don't know	5.0%	0.0%	4.3%	0.0%

When examining the issue of warnings not being differentiated from forecasts, 53.3% of individuals with no schooling expressed this concern, which is higher than the 41.5% of those with primary education. Among secondary education holders, the percentage drops further to 30.4%, suggesting improved awareness of the importance of clear communication regarding hazard

warnings. Interestingly, individuals with tertiary education reported a return to 50.0%, indicating that despite their advanced education, some still struggle with the distinction between general forecasts and urgent hazard warnings. Regarding the incorporation of indigenous knowledge into hazard communications, 35.0% of individuals with no schooling noted this as a concern, while 28.3% of those with primary education expressed similar sentiments. The percentage increases among secondary education holders to 39.1%, indicating a recognition of the value of traditional knowledge in understanding environmental risks. In contrast, only 25.0% of those with tertiary education expressed concerns about this integration, which may reflect a reliance on more formal, scientific approaches to hazard communication.

Low public awareness of warning signals was a significant issue across all educational levels, with 45.0% of individuals with no schooling and 43.4% of primary education holders identifying this concern. Among those with secondary education, the figure drops to 34.8%, while 50.0% of individuals with tertiary education also recognized this challenge. This indicates that while public awareness is a concern across the board, it is particularly pronounced among those without formal schooling. The "Don't know" category showed minimal responses, with 5.0% of individuals with no schooling and 4.3% of those with secondary education expressing uncertainty about the reasons for their distrust. Notably, none of the primary or tertiary education holders reported uncertainty, suggesting a generally high level of awareness about the issues surrounding hazard warnings.

7.2.29 Extent to which there are hazard maps for each hazard prevalent for the community

The analysis of community access to hazard maps reveals significant gaps in preparedness and awareness regarding environmental risks. **Across the board, substantial 63.0% of respondents indicated that hazard maps for various hazards are not available to their communities**. This lack of access to critical information highlights a major barrier to effective disaster preparedness and response, as hazard maps are essential tools for understanding risks and planning appropriate actions. **Conversely, only 27.6% of individuals reported that hazard maps are available in their communities. This relatively low percentage suggests that while some progress may have been made in disseminating information about environmental threats, widespread access remains limited.** The absence of these resources can lead to increased vulnerability, as community members may lack the necessary guidance to navigate potential hazards effectively.

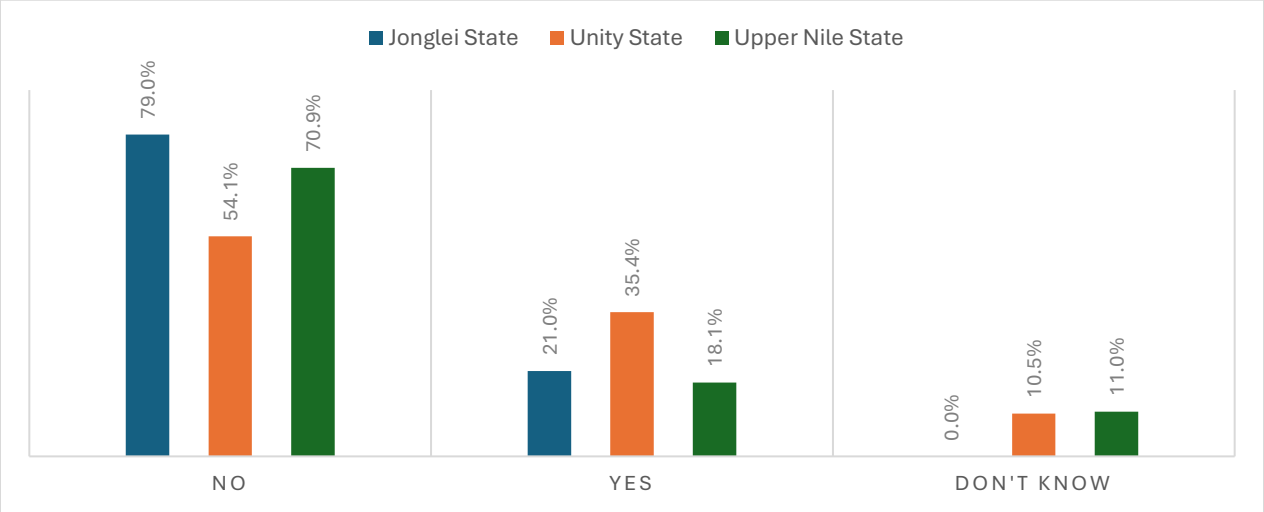
Additionally, 9.4% of respondents indicated that they do not know whether hazard maps are available, which points to a concerning level of uncertainty within the community regarding the resources at their disposal. This uncertainty may further exacerbate the challenges of preparedness, as individuals who are unaware of available hazard maps may be less likely to engage in proactive measures to safeguard themselves and their families.

All in all, the overall findings point to the urgent need for improved access to hazard maps in the GUN region. Enhancing the availability and dissemination of these critical resources will be vital for fostering community resilience and ensuring that all members are adequately informed and prepared to respond to environmental threats.

Analysis by state shows that in Jonglei State, a concerning 79.0% of respondents reported that hazard maps for various hazards are not available to their communities (see Figure 109). This

high percentage indicates a substantial gap in essential resources that could inform and guide local populations in disaster preparedness and risk management. In Unity State, the situation is somewhat better, with 54.1% of individuals stating that hazard maps are unavailable. While this figure is lower than in Jonglei State, it still reflects a significant lack of access to crucial hazard information. Conversely, 35.4% of respondents in Unity State reported that hazard maps are available, suggesting some progress in disseminating information relevant to environmental threats. However, this availability may not be sufficient to ensure comprehensive community preparedness.

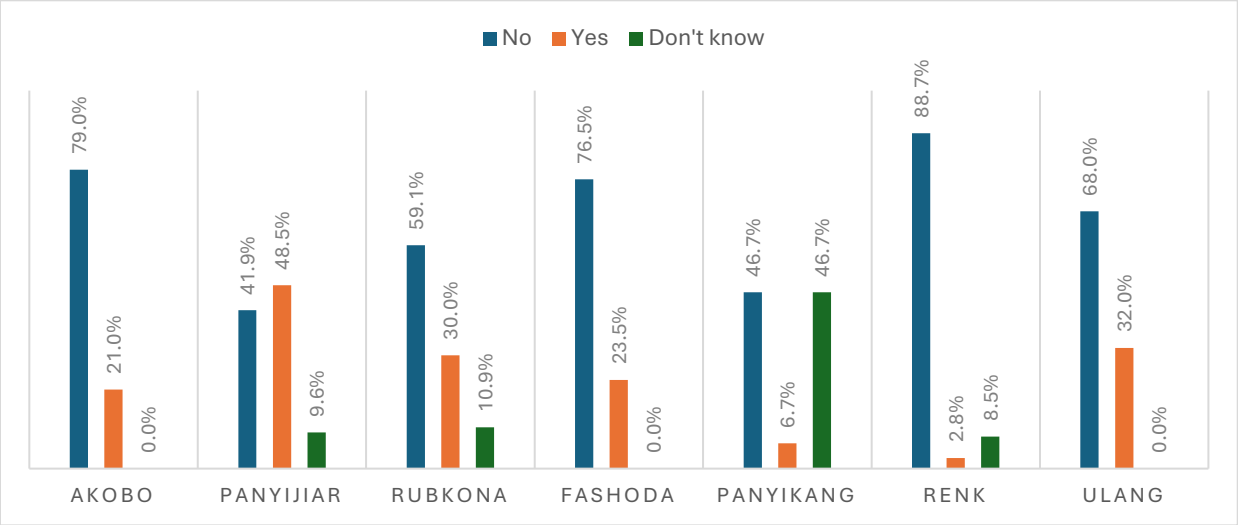
Figure 109: Whether or not hazard maps for each hazard are available for the community by State



Upper Nile State presents a mixed scenario, with 70.9% of respondents indicating that hazard maps are not available. This figure indicates a substantial gap similar to Jonglei State, where access to hazard information remains limited. Only 18.1% of individuals in Upper Nile State reported the availability of hazard maps, further emphasizing the need for improved communication and distribution of these vital resources. Additionally, the responses indicating "Don't know" were particularly notable in Unity State and Upper Nile State, with 10.5% and 11.0% of respondents respectively expressing uncertainty regarding the availability of hazard maps. This uncertainty underscores a critical issue in community awareness about available resources, which may hinder effective responses to environmental hazards. The findings highlight the urgent need for increased availability and dissemination of hazard maps across the GUN region, particularly in Jonglei and Upper Nile States.

The study found that the availability of hazard maps varies significantly among different localities, revealing critical disparities in community preparedness and access to essential information (see Figure 110). **In Akobo county, a striking 79.0% of respondents indicated that hazard maps are not available, reflecting a significant gap in resources that could aid in disaster preparedness and risk management. Similarly, in Fashoda, 76.5% reported the absence of hazard maps, underscoring the urgent need for improved access to information regarding environmental threats**.

Figure 110: Whether or not hazard maps for each hazard are available for the community by County



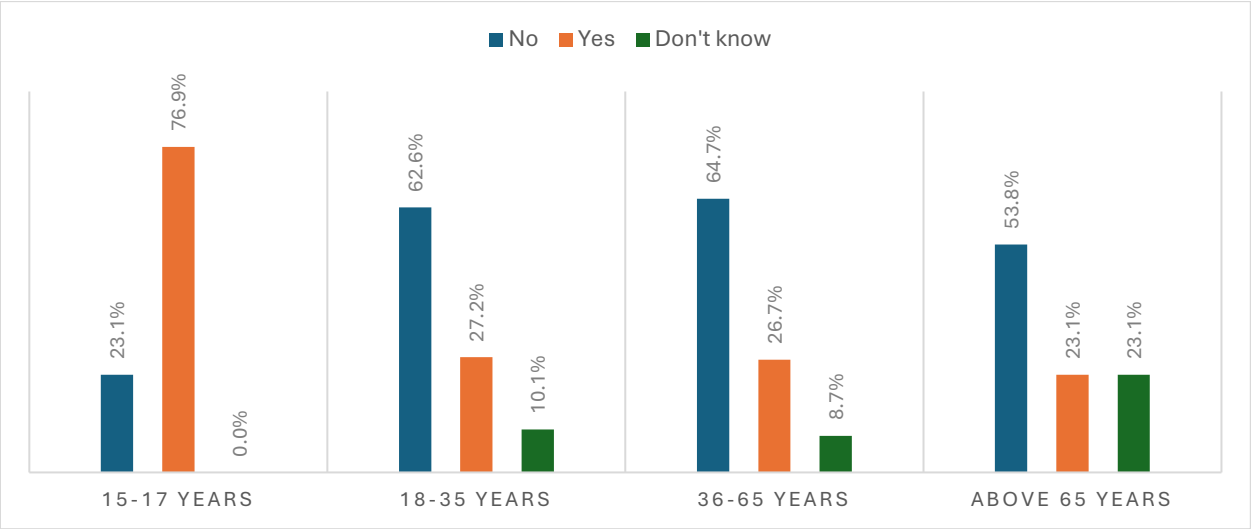
Panyijiar presents a more positive scenario, with only 41.9% of respondents stating that hazard maps are unavailable, while 48.5% reported their availability. This relatively higher percentage of access suggests that some progress has been made in disseminating critical hazard information in this area. Rubkona also shows a notable availability rate, with 30.0% of respondents confirming the presence of hazard maps, although 59.1% still reported that these resources are lacking. In Panyikang, the situation is concerning, as only 6.7% of individuals reported access to hazard maps, while 46.7% expressed uncertainty about their availability. This level of uncertainty may hinder effective disaster response and preparation efforts. Renk exhibited the lowest availability of hazard maps, with only 2.8% of respondents indicating access, while a significant 88.7% reported that these maps are not available. This highlights a critical information gap that could leave communities vulnerable to environmental hazards.

Lastly, in Ulang, 68.0% of respondents stated that hazard maps are unavailable, although 32.0% reported their presence. The lack of certainty regarding hazard maps is also evident, with no respondents indicating "Don't know," suggesting a degree of awareness about available resources, albeit limited. Overall, the findings illustrate the pressing need for increased availability and dissemination of hazard maps across various localities in the GUN region. Enhancing access to these vital resources is essential for improving community resilience and preparedness against environmental threats.

The study also found that the availability of hazard maps shows significant differences across age groups, highlighting varying levels of access to critical information for disaster preparedness (see Figure 111). **Among the youngest age group, 15-17 years, a notable 76.9% reported that hazard maps are available to their community.** This high percentage suggests that younger individuals may have better access to resources that can inform them about environmental risks, potentially due to educational initiatives or outreach programs targeting youth. In contrast, the 18-35 age group exhibits a stark decrease in reported availability, with only 27.2% indicating access to hazard maps. This decline in access may reflect the challenges faced by young adults as they transition into more independent roles, possibly facing barriers in obtaining crucial information. Similarly, the 36-65 age group shows further reduced access, with only 26.7% confirming the presence of hazard maps in their communities. This trend suggests that as individuals age, they may encounter increasing

difficulties in accessing timely and relevant hazard information.

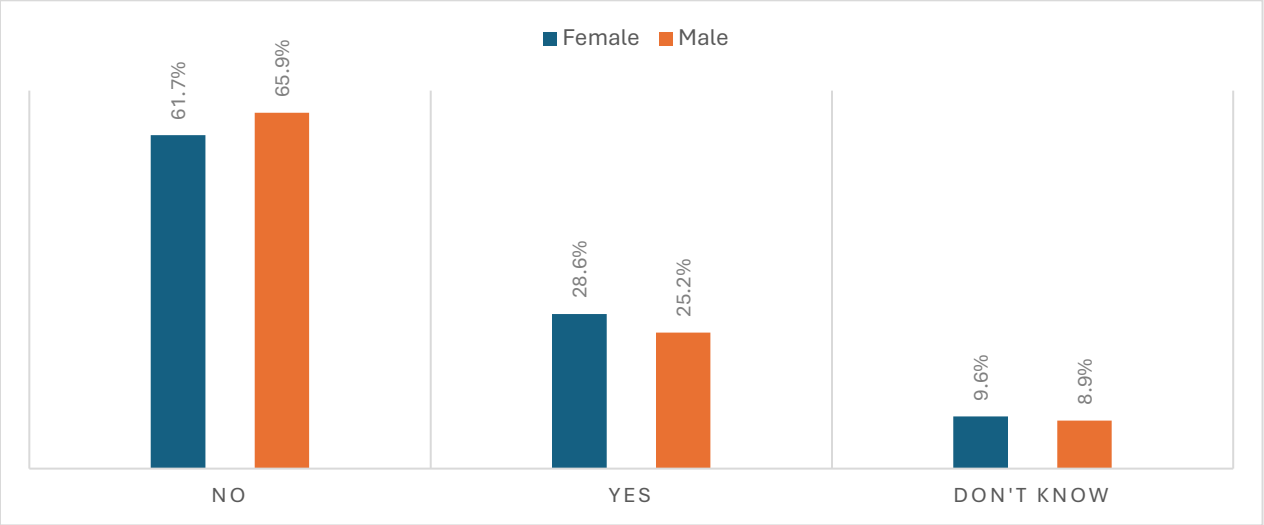
Figure 111: Whether or not hazard maps for each hazard are available for the community by Age of Respondent



Among those aged above 65 years, 23.1% reported that hazard maps are available, indicating that older individuals face significant challenges in accessing important resources that could aid in disaster preparedness. Additionally, this age group has the highest percentage of respondents indicating uncertainty, with 23.1% stating "Don't know" regarding the availability of hazard maps. This uncertainty highlights a critical gap in awareness, which could hinder effective responses to environmental hazards among older community members. Therefore, the findings point to a concerning trend in the availability of hazard maps across different age groups in the GUN region. While younger individuals appear to have better access to these resources, older age groups face significant barriers, which may result in increased vulnerability of this group during environmental crises.

Analysis by gender shows that among female respondents, 61.7% indicated that hazard maps are not available in their communities, which is slightly lower than the 65.9% of male respondents who reported the same concern (see Figure 112). This suggests that both genders face substantial barriers to accessing crucial information that could help them manage and respond to environmental hazards effectively. **Conversely, the percentage of individuals reporting access to hazard maps is relatively low across both genders, with 28.6% of females and 25.2% of males confirming that such maps are available.** This indicates a critical lack of resources that could enhance disaster preparedness and response efforts in the region, underscoring the need for improved information dissemination and access to hazard-related resources.

Figure 112: Whether or not hazard maps for each hazard are available for the community by Gender of Respondent



Additionally, the responses indicating "Don't know" were slightly higher among females at 9.6%, compared to 8.9% of males. This higher level of uncertainty among women may reflect broader issues of awareness and access to information, which could hinder their ability to respond effectively to environmental threats. The results highlight the pressing need for targeted initiatives aimed at increasing the availability and accessibility of hazard maps, particularly for both female and male community members.

In the GUN region the availability of hazard maps varies significantly by marital status, revealing critical insights into community preparedness and access to essential information (see Table 92). **Among divorced individuals, a substantial 77.8% reported that hazard maps are not available in their communities, indicating a significant gap in resources that could aid in disaster preparedness**. This high percentage suggests that divorced individuals may feel particularly vulnerable and less equipped to respond to environmental hazards. **In contrast, among those married and living with their spouses, 61.0% expressed that hazard maps are unavailable, a lower percentage than that of divorced individuals but still indicative of a lack of crucial information.** Those who are married but not living with their spouses reported a similar concern, with 69.4% stating that hazard maps are not accessible. This suggests that marital status may influence access to information, with those in stable partnerships potentially having better access to resources.

Table 83: Whether or not hazard maps for each hazard are available for the community by Marital Status

Whether or not hazard maps for each hazard are available for the community	Divorced	Married and living with Husband/Wife	Married and not living with Husband/Wife	Single (Never married)	Widowed
No	77.8%	61.0%	69.4%	65.5%	63.2%
Yes	22.2%	30.4%	11.7%	29.3%	28.4%
Don't know	0.0%	8.5%	18.9%	5.2%	8.4%

For singles (never married), 65.5% reported that hazard maps are unavailable, while 63.2% of widowed individuals expressed the same concern. These figures indicate that the lack of access

to hazard maps is a widespread issue across various marital statuses, highlighting a critical need for improved communication and dissemination of hazard-related information. The availability of hazard maps is relatively low across all groups, with 22.2% of divorced individuals indicating access, compared to 30.4% of those married and living together, and only 11.7% of those married but living apart. Single individuals reported a slightly higher access rate at 29.3%, while 28.4% of widowed respondents confirmed the presence of hazard maps. These figures reflect a concerning trend, as the majority of individuals across all marital statuses lack access to important resources that could enhance their preparedness for environmental risks.

Additionally, the "Don't know" responses highlight varying levels of awareness among different groups, with 0.0% of divorced individuals expressing uncertainty about the availability of hazard maps, while 8.5% of married individuals living together and 18.9% of those married but not living with their spouses reported uncertainty. This uncertainty may hinder effective disaster response and preparedness efforts, particularly among those who are less informed about available resources. The findings underscore the urgent need for targeted initiatives to improve the availability and dissemination of hazard maps across different marital statuses in the region.

The availability of hazard maps also varies based on family status, highlighting critical disparities in access to essential resources for disaster preparedness (see Table 93). **Among IDPs, 59.1% reported that hazard maps are not available in their communities, indicating a substantial gap in information that could aid in managing environmental risks.** This lack of access is concerning, as internally displaced persons often face heightened vulnerabilities due to their precarious living situations. Refugees reported an even higher percentage of unavailability, with 71.4% indicating that hazard maps are not accessible. This figure suggests that refugees may encounter additional barriers to obtaining crucial information, potentially exacerbating their challenges in adapting to new environments. In contrast, residents who have never left their communities reported a lower rate of unavailability at 58.8%, yet this still reflects a significant lack of access to hazard-related resources.

Table 84: Whether or not hazard maps for each hazard are available for the community by Family Status

Whether or not hazard maps for each hazard are available for the community	Internally Displaced	Refugee (came from another country)	Resident (never left)	Returnee (left and returned)	Don`t Know
No	59.1%	71.4%	58.8%	77.0%	50.0%
Yes	25.9%	17.9%	34.1%	13.5%	0.0%
Don't know	15.0%	10.7%	7.1%	9.6%	50.0%

Returnees exhibited the highest level of unavailability, with 77.0% stating that hazard maps are not available. This finding underscores the difficulties faced by returnees in reintegrating into their communities and accessing vital information that could support their safety and preparedness. On the other hand, the percentage of individuals reporting access to hazard maps varied, with 25.9% of IDPs affirming availability, compared to only 17.9% of refugees. Residents showed a higher access rate at 34.1%, while just 13.5% of returnees indicated that hazard maps are available. Notably, none of the respondents in the "Don't know" category reported access to hazard maps, reflecting a concerning level of uncertainty particularly among returnees and IDPs.

Additionally, the uncertainty regarding the availability of hazard maps is highlighted by 15.0% of internally displaced persons and 10.7% of refugees expressing "Don't know" responses,

while only 7.1% of residents reported uncertainty. This lack of awareness among various family statuses could hinder effective disaster response efforts, as individuals may not be able to act without adequate information.

The availability of hazard maps is significantly influenced by the level of education, which plays a crucial role in community preparedness for environmental risks (see Table 94**). Among individuals with no formal schooling, 64.5% reported that hazard maps are not available in their communities.** This high percentage highlights a critical gap in access to essential information that is vital for disaster preparedness, suggesting that those without formal education may be at a heightened risk during environmental crises. For individuals with primary education, the situation shows some improvement, with 60.2% indicating that hazard maps are unavailable. Although this figure is slightly lower, it still reflects a concerning lack of access to important resources. In the secondary education category, 59.0% reported the unavailability of hazard maps, indicating that even as educational attainment increases, access to critical information remains limited.

Table 85: Whether or not hazard maps for each hazard are available for the community by Level of Education

Whether or not hazard maps for each hazard are available for the community	No schooling	Primary	Secondary	Tertiary
No	64.5%	60.2%	59.0%	78.3%
Yes	27.2%	31.9%	23.8%	8.7%
Don't know	8.3%	7.9%	17.1%	13.0%

Conversely, individuals with tertiary education faced the highest percentage of unavailability, with 78.3% stating that hazard maps are not accessible in their communities. This surprising statistic suggests that higher education does not necessarily equate to better access to vital hazard information, which may be due to systemic issues in information dissemination or resource allocation. The availability of hazard maps also varies among educational levels, as 27.2% of those with no schooling reported access, compared to 31.9% of individuals with primary education. However, the percentage of individuals with secondary education who indicated access dropped to 23.8%, while only 8.7% of those with tertiary education reported that hazard maps are available. These figures highlight a concerning trend where individuals with higher levels of education may have less access to crucial hazard-related resources.

The uncertainty surrounding the availability of hazard maps is evident, particularly among those with secondary education, where 17.1% expressed "Don't know" responses. This level of uncertainty reflects a significant gap in awareness that could hinder effective disaster response efforts. Additionally, the "Don't know" responses were lower for individuals with no schooling and primary education at 8.3% and 7.9%, respectively, indicating that those with less formal education may have a clearer understanding of the resources of their community, albeit limited. Therefore, the findings reveal the urgent need for enhanced availability and dissemination of hazard maps across all educational levels in the GUN region.

7.2.30 Whether or not beneficiaries make use of hazard maps

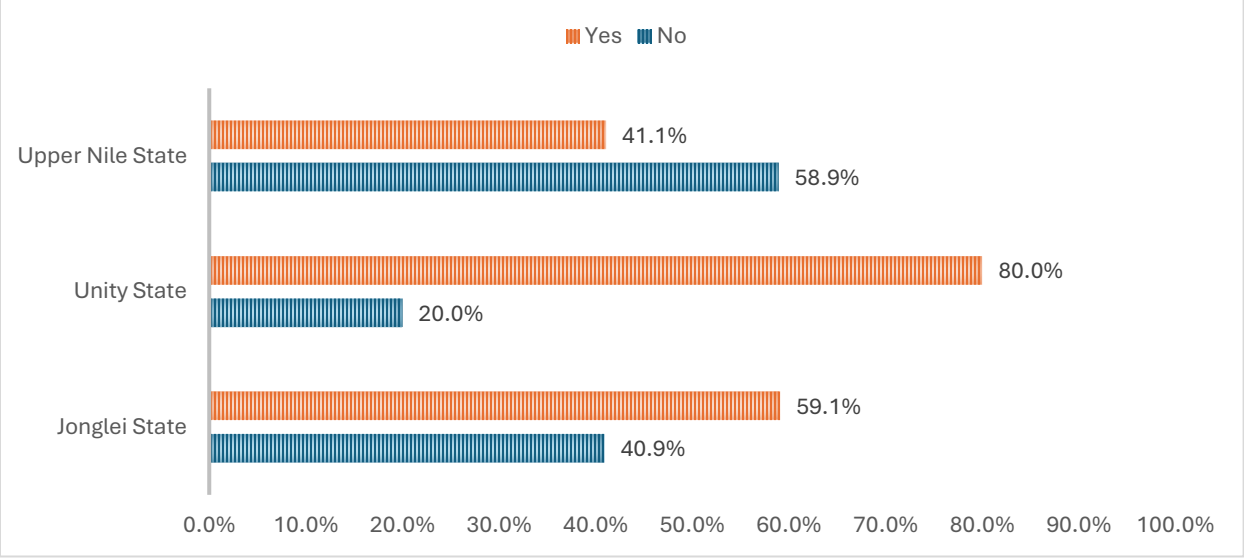
The study found that the utilization of hazard maps among communities presents a significant aspect of disaster preparedness and response efforts. **According to the data, 69.1% of the whole sample indicated that their communities actively make use of hazard maps, suggesting a positive trend toward utilizing available resources to inform residents about environmental**

risks. This high percentage of utilization reflects an increasing awareness of the importance of hazard maps in enhancing community resilience and preparedness against potential disasters. **Conversely, 30.9% of respondents reported that their communities do not make use of these hazard maps. This notable minority raises concerns about the barriers that may exist, preventing certain segments of the population from engaging with critical hazard information.** Factors contributing to this lack of utilization could include insufficient awareness about the existence of the maps, limited understanding of how to apply the information effectively, or challenges related to access, particularly in remote or underserved areas of the GUN region.

The overall trend of 69.1% indicates that, while a majority of communities are leveraging hazard maps to enhance their preparedness, there remains a significant portion of the population that is not benefiting from these resources. This gap highlights the need for targeted educational initiatives aimed at increasing awareness and understanding of hazard maps, ensuring that all community members can effectively utilize these tools to mitigate risks associated with environmental hazards.

The usage of hazard maps varies significantly across different states, highlighting disparities in ommunity engagement with critical resources for disaster preparedness (see Figure 113). **In Jonglei State, 40.9% of respondents reported that their communities do not make use of hazard maps, indicating a substantial portion of the population that is potentially unaware of or unable to access these vital resources.** Conversely, 59.1% of respondents in Jonglei indicated that their communities do utilize hazard maps, suggesting a notable level of engagement among those who are aware of the maps. Unity State presents a more positive scenario, with only 20.0% of respondents stating that their communities do not make use of hazard maps. This lower percentage indicates a higher level of engagement, as 80.0% of respondents reported that their communities actively utilize these critical resources. The high utilization rate in Unity State suggests effective communication and awareness efforts that may be contributing to better preparedness against environmental hazards.

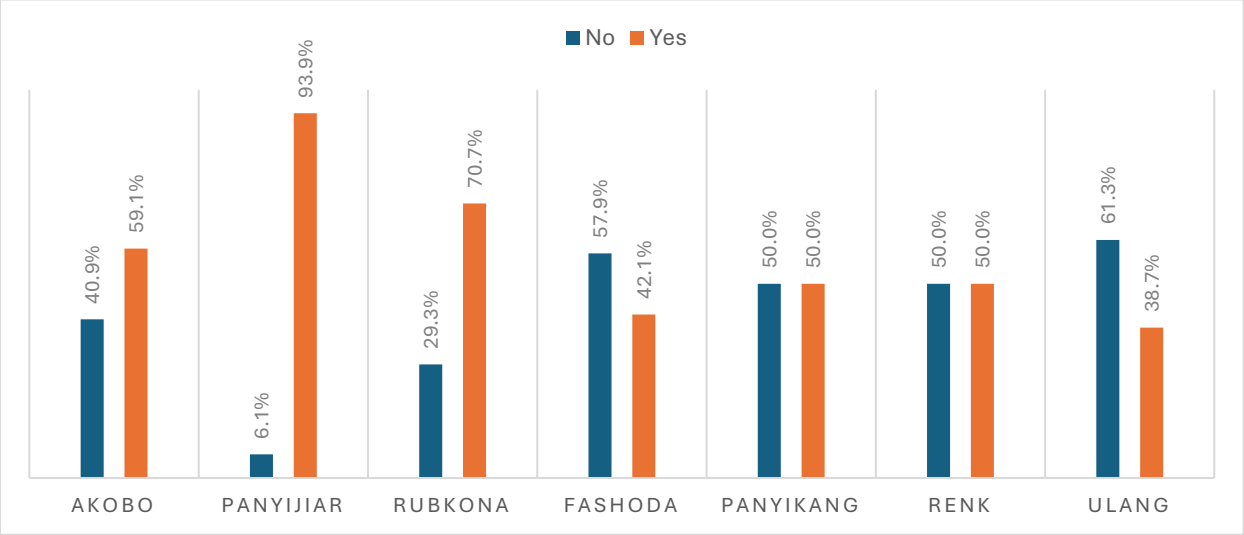
Figure 113: Whether or not communities make use of the hazard maps by State



In Upper Nile State, however, the situation appears more challenging, as 58.9% of respondents reported that their communities do not make use of hazard maps. This high percentage highlights a significant gap in engagement and suggests that many individuals may be missing out on important information that could enhance their ability to respond to environmental risks. Only 41.1% of respondents in Upper Nile indicated that their communities utilize hazard maps, reflecting a need for improved outreach and education efforts to ensure that community members are aware of and can effectively use these resources. Overall, these findings underscore the varying levels of engagement with hazard maps across the GUN region, with Unity State demonstrating the highest level of utilization and Upper Nile State facing considerable challenges. To enhance disaster preparedness across all states, it is essential to address the barriers preventing communities from making use of hazard maps, particularly in areas like Upper Nile.

Analysis of use hazard maps by county (see Figure 114) shows that in Akobo, 40.9% of respondents indicated that their communities do not make use of hazard maps, while 59.1% reported active utilization. This suggests a moderate level of engagement, though nearly half of the population remains disconnected from these critical resources. Panyijiar stands out with an impressive 93.9% of respondents confirming that their communities utilize hazard maps, while only 6.1% reported non-utilization. This high level of engagement indicates effective communication and awareness strategies that have likely contributed to enhanced community preparedness and resilience against environmental hazards.

Figure 114: Whether or not communities make use of the hazard maps by County



In Rubkona, 29.3% of respondents stated that their communities do not make use of hazard maps, which is relatively low compared to other localities, and 70.7% reported usage. This indicates a strong commitment to leveraging available resources for disaster preparedness. Conversely, in Fashoda, 57.9% of respondents reported that their communities do not engage with hazard maps, highlighting a significant gap in awareness and utilization, as only 42.1% indicated that they actively use the maps. Panyikang and Renk both reported that 50.0% of respondents do not utilize hazard maps, demonstrating a concerning trend of disengagement in these areas. However, the same percentage also indicated usage, reflecting a divided community that could benefit from increased outreach and education efforts to boost awareness and utilization of these vital resources.

Ulang presents the highest percentage of non-utilization, with 61.3% of respondents stating that their communities do not make use of hazard maps, while only 38.7% reported active utilization. This significant gap underscores a critical need for targeted initiatives to raise awareness and facilitate access to hazard maps in this area. Generally, these findings show the varying levels of engagement with hazard maps across the GUN region, with Panyijiar demonstrating the most effective utilization, while Ulang and Fashoda face notable challenges. To improve disaster preparedness across all localities, it is essential to address the barriers preventing communities from making use of hazard maps, particularly in areas with high non-utilization rates. Enhanced educational initiatives and targeted outreach programs are vital for fostering a more informed population capable of effectively utilizing hazard maps to mitigate the impacts of environmental hazards in the Great Upper Nile region.

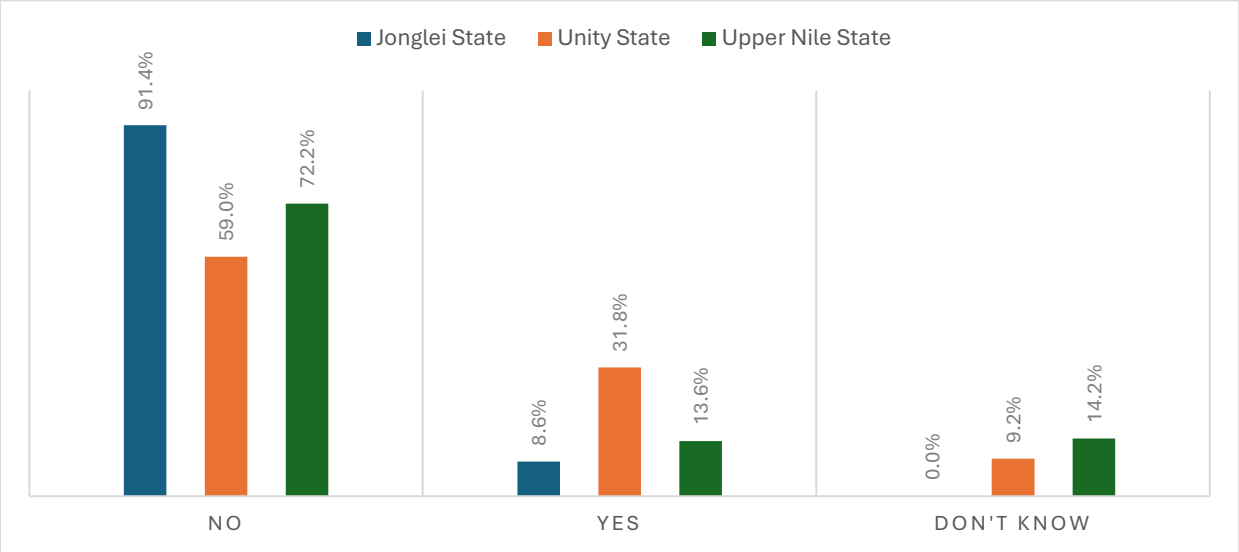
7.2.31 Extent that there is an integrated hazard map in the community

The results show that the availability of integrated hazard maps that encompasses all hazards within communities is notably limited, as indicated by the responses from the whole sample. **A significant 67.5% of respondents reported that there is no integrated hazard map available, suggesting a critical gap in resources that could facilitate effective disaster preparedness and response.** This lack of comprehensive mapping may leave communities vulnerable to various environmental risks, as residents may not have access to the necessary information to mitigate potential hazards effectively. **Conversely, only 22.6% of respondents indicated that their communities do have an integrated hazard map for all hazards**. This relatively low percentage underscores the need for enhanced efforts to develop comprehensive hazard mapping initiatives that could serve as vital tools for community safety and resilience.

Furthermore, 9.9% of respondents expressed uncertainty, answering "Don't know" regarding the existence of such a map. This indicates a lack of awareness or communication about available resources, further emphasizing the need for improved outreach and education concerning hazard preparedness in the region. The findings highlight a significant challenge in the GUN region, where the absence of an integrated hazard map may hinder the ability of communities to prepare for and respond to environmental threats. To bolster disaster resilience, it is essential to prioritize the development and dissemination of comprehensive hazard maps, alongside educational initiatives that raise awareness about their importance.

State level analysis shows that in Jonglei State, a staggering 91.4% of respondents reported that there is no integrated hazard map available for all hazards, indicating a critical lack of resources that could help communities effectively prepare for and respond to various environmental threats (Figure 115). This high percentage of non-availability highlights a pressing need for targeted interventions to develop and implement comprehensive hazard mapping in the state. In Unity State, the situation is somewhat more favorable, with 59.0% of respondents indicating that there is no integrated hazard map, while 31.8% reported that such a map does exist. This suggests that Unity State has made some progress in enhancing community awareness and preparedness, although a significant portion of the population still lacks access to essential hazard information.

Figure 115: Whether or not there is an integrated hazard map for all hazards in community by State

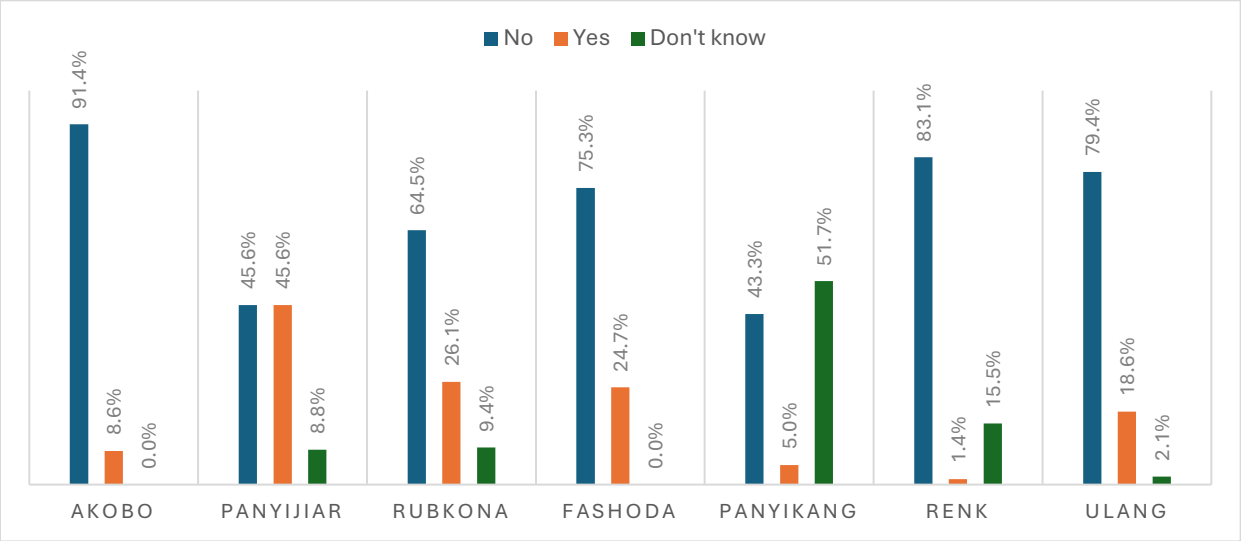


Upper Nile State reflects a similar trend, with 72.2% of respondents stating that there is no integrated hazard map available, while only 13.6% affirmed its existence. The percentage of individuals who are uncertain, answering "Don't know," is also noteworthy, with 14.2% in Upper Nile and 9.2% in Unity State expressing uncertainty. This indicates a lack of awareness about available resources, which could hinder community engagement in disaster preparedness efforts. Overall, these findings underscore a critical challenge across the GUN region, especially in Jonglei State, where the absence of integrated hazard maps may leave communities highly vulnerable to environmental hazards.

The study also found that the availability of integrated hazard maps varies significantly across different counties, reflecting critical disparities in community preparedness for climatic hazards (see Figure 116). **In Akobo, a striking 91.4% of respondents reported that there is no integrated hazard map available for all hazards, indicating a severe lack of resources that could assist the community in preparing for and responding to potential threats.** This overwhelming absence of mapping highlights a pressing need for targeted interventions to enhance disaster readiness in Akobo.

P**anyijiar presents a more balanced scenario, with 45.6% of respondents stating that there is no integrated hazard map, while an equal 45.6% confirmed its existence.** This equal distribution suggests that Panyijiar may have made strides in developing hazard maps, though the high percentage of non-availability still indicates room for improvement in ensuring all community members are aware of these resources. In Rubkona, 64.5% of respondents indicated that no integrated hazard map exists, with only 26.1% affirming that such a map is available. This reflects a significant gap in hazard preparedness, as many individuals lack access to essential information about environmental risks. Similarly, in Fashoda, 75.3% of respondents reported the absence of an integrated hazard map, while only 24.7% indicated that such a resource is available, emphasizing the need for increased focus on hazard mapping initiatives in this area.

Figure 116: Whether or not there is an integrated hazard map for all hazards in community by County



Panyikang shows a concerning trend, with only 5.0% of respondents reporting the existence of an integrated hazard map, while 43.3% stated that there is none. This alarming lack of resources may leave the community particularly vulnerable to various hazards. In Renk, the situation is slightly better, with 83.1% indicating no availability of integrated hazard maps, and a mere 1.4% affirming their existence. This highlights a critical need for focused efforts to develop hazard mapping resources in Renk. Ulang also exhibits challenges, as 79.4% of respondents reported no integrated hazard map available, while 18.6% indicated that such a map exists. The uncertainty expressed by some respondents, particularly in Panyikang where 51.7% reported "Don't know," underscores a significant gap in awareness and information dissemination regarding hazard preparedness in the region. The study reveals a critical lack of integrated hazard maps across multiple localities in the GUN region, with Akobo and Panyikang facing the most significant challenges.

7.2.32 In the past three years, if there has been a vulnerability assessment in the community for hazards

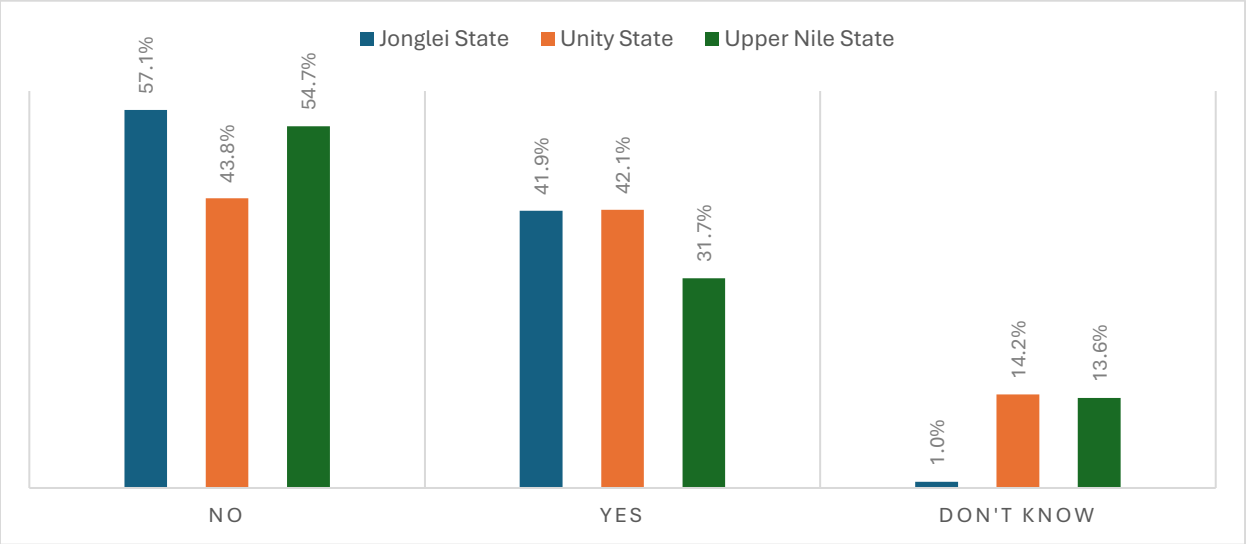
The results regarding the occurrence of vulnerability assessments for hazards over the past three years reveal significant gaps in community preparedness and awareness. **Among the entire sample, 49.2% of respondents reported that no vulnerability assessments have been conducted, indicating a concerning lack of systematic evaluation of hazards that could inform disaster preparedness strategies**. This high percentage suggests that many communities may remain unaware of their specific vulnerabilities, which could impede their ability to effectively respond to environmental risks. Conversely, only 38.4% of respondents indicated that vulnerability assessments have indeed taken place within the last three years. While this figure reflects some level of proactive engagement in assessing hazards, it remains alarmingly low, highlighting the need for improved efforts to conduct comprehensive assessments that can guide community planning and response initiatives.

Additionally, 12.4% of respondents expressed uncertainty by selecting "Don't know," which further underscores the critical need for better communication and information dissemination regarding hazard assessments. This level of uncertainty indicates that a portion of the population

may not be fully informed about the processes and outcomes related to vulnerability assessments, which can affect their preparedness and resilience. The findings emphasize an urgent need for enhanced vulnerability assessment efforts in the region. With nearly half of the respondents reporting no assessments conducted in the past three years, it is essential to prioritize systematic evaluations of hazards to better understand community vulnerabilities. Implementing regular assessments and improving public awareness about their importance will be vital for fostering resilience and ensuring that communities are equipped to effectively respond to environmental hazards.

The data concerning vulnerability assessments for hazards conducted over the past three years shows variations among the three states: Jonglei, Unity, and Upper Nile. **In Jonglei State, a substantial 57.1% of respondents reported that no vulnerability assessments have taken place, indicating a critical lack of systematic evaluation of hazards that could inform disaster preparedness efforts (Figure 117).** This high percentage suggests that many communities in Jonglei may be inadequately prepared for environmental risks due to the absence of crucial assessments.

Figure 117: Whether or not there been vulnerability assessment for hazards in past 3 years by State



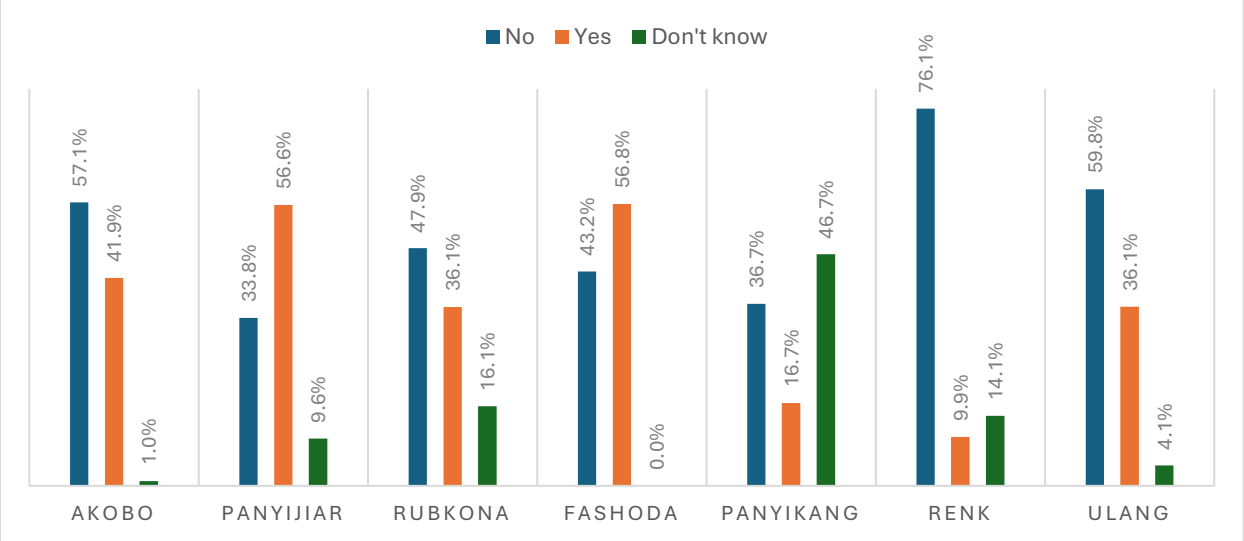
In contrast, Unity State shows a lower percentage of non-utilization at 43.8%, which is encouraging; however, it still highlights that nearly half of the respondents believe assessments have not been conducted. Meanwhile, only 42.1% of Unity State respondents indicated that vulnerability assessments have occurred, which is a slight improvement compared to Jonglei but still reflects a need for increased efforts in this area. Upper Nile State presents a mixed picture, with 54.7% of respondents reporting that no vulnerability assessments have been conducted, a percentage quite similar to that of Jonglei. Only 31.7% of respondents in Upper Nile affirmed that assessments took place, marking the lowest engagement of the three states. This low level of assessment activity underscores a crucial gap in understanding community vulnerabilities and preparing for potential hazards.

The category of "Don't know" reflects varying levels of awareness across the states, with only 1.0% of respondents in Jonglei expressing uncertainty, while 14.2% in Unity and 13.6% in Upper Nile reported not knowing about the assessments. This uncertainty in Unity and Upper Nile

indicates a need for better communication and public awareness regarding the importance of vulnerability assessments and their outcomes. The high percentages of non-assessment in Jonglei and Upper Nile, along with significant uncertainty in Unity, suggest that communities may be ill-equipped to respond to environmental hazards effectively.

County analysis shows that in Akobo, a striking 57.1% of respondents reported that no vulnerability assessments have taken place, highlighting a substantial gap in hazard evaluation that could hinder community preparedness (see Figure 118). Conversely, 41.9% indicated that assessments have been conducted, suggesting some level of proactive engagement with disaster preparedness efforts. Panyijiar presents a more favorable scenario, with only 33.8% of respondents stating that no assessments have occurred, while 56.6% reported that such evaluations have taken place. This indicates a positive trend in assessing vulnerabilities within this community, which can enhance their preparedness against environmental risks.

Figure 118: Whether or not there been vulnerability assessment for hazards in past 3 years by County



Rubkona shows a mixed picture, as 47.9% of respondents reported no vulnerability assessments, with only 36.1% affirming that assessments have been conducted. This indicates a need for increased efforts to improve community awareness and engagement in hazard assessments. In Fashoda, the situation is somewhat balanced, with 43.2% indicating no assessments and 56.8% affirming their occurrence. This reflects a similar trend to Panyijiar, suggesting an encouraging level of engagement in hazard evaluation. Panyikang presents a concerning scenario, with 36.7% reporting no assessments, while only 16.7% indicated that assessments have taken place. This low engagement is troubling and indicates a critical need for more systematic evaluations of vulnerabilities in this area.

Renk stands out with a very high percentage of non-assessment at 76.1%, with only 9.9% of respondents stating that vulnerability assessments have been conducted. This alarming statistic underscores a significant gap in hazard preparedness, suggesting that the community may be particularly vulnerable to environmental risks due to the absence of necessary assessments. Ulang reflects a similar concern, with 59.8% of respondents reporting no assessments and 36.1% indicating that assessments have been conducted. This indicates that while there has been some engagement, a majority of the community remains uninformed about potential vulnerabilities.

Additionally, the "Don't know" responses varied significantly across the localities, with Panyikang showing the highest uncertainty at 46.7%, indicating a lack of awareness regarding the existence of vulnerability assessments. This underscores the need for improved communication and education regarding hazard assessments to ensure that all community members are informed and prepared. Overall, these findings highlight a critical need for enhanced vulnerability assessment efforts across the various localities in the GUN region. The high percentages of non-assessment, particularly in Renk and Akobo, along with significant uncertainty in Panyikang, underscore that many communities may be ill-prepared to respond to environmental hazards. To foster resilience and preparedness, it is essential to prioritize systematic assessments and improve public awareness of their significance throughout the GUN region.

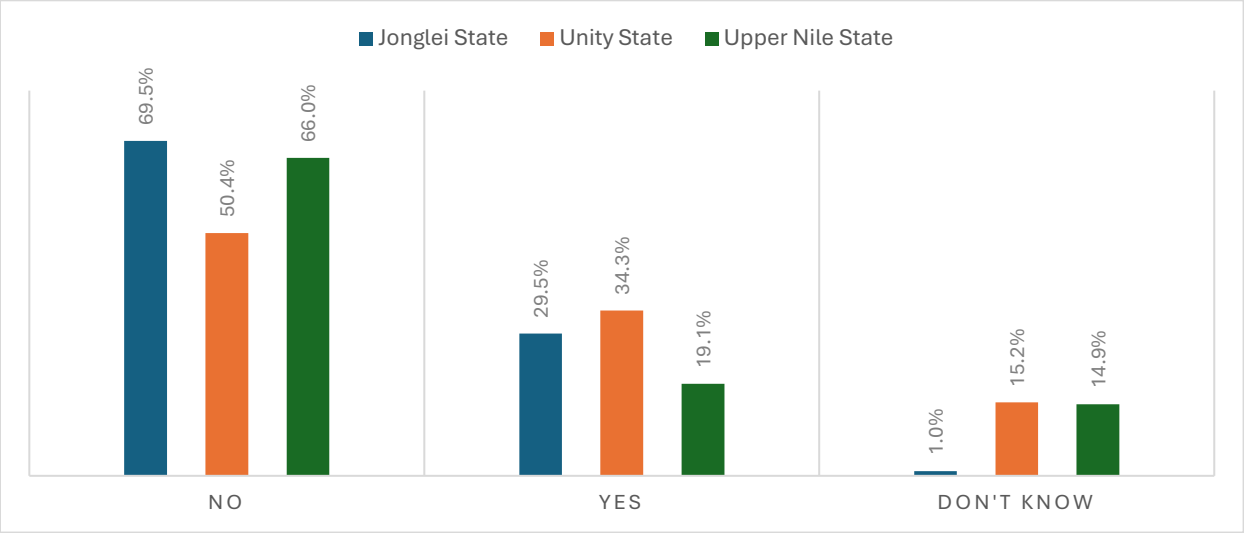
7.2.33 Availability of vulnerability maps in the community for hazards

The analysis of the availability of vulnerability maps within communities reveals a concerning landscape regarding preparedness for hazards. **The data indicates that a substantial majority, 58.2%, of respondents reported that there are no vulnerability maps available in their communities**. This lack of mapping significantly limits the ability of residents to understand and mitigate risks associated with potential hazards, highlighting a critical gap in community resilience. **Conversely, only 28.4% of respondents affirmed the existence of vulnerability maps, suggesting that even among those who are aware of risk management tools, access remains limited.** The absence of these maps can hinder effective planning and response strategies, as communities may lack crucial information about their vulnerabilities.

Additionally, a notable 13.4% of respondents indicated uncertainty regarding the existence of vulnerability maps, reflecting possible gaps in communication or awareness within the community. This uncertainty may further complicate efforts to engage residents in disaster preparedness initiatives, as individuals may not fully understand the resources available to them. The findings emphasize the urgent need for the development and dissemination of vulnerability maps in the GUN region. Enhancing access to such critical information is essential for empowering communities to identify risks, make informed decisions, and improve overall disaster preparedness and resilience in the face of ongoing challenges.

An analysis of the availability of vulnerability maps across the three states shows that in Jonglei State, a staggering 69.5% of respondents reported that there are no vulnerability maps available in their communities (see Figure 119). This figure underscores a critical lack of resources and information that could assist residents in understanding and mitigating risks. In Unity State, the situation is slightly more favorable, with 50.4% of respondents indicating the absence of vulnerability maps; however, this still represents a significant gap. Conversely, 34.3% of Unity State respondents reported the existence of such maps, suggesting a relatively better awareness and accessibility of risk management tools compared to Jonglei.

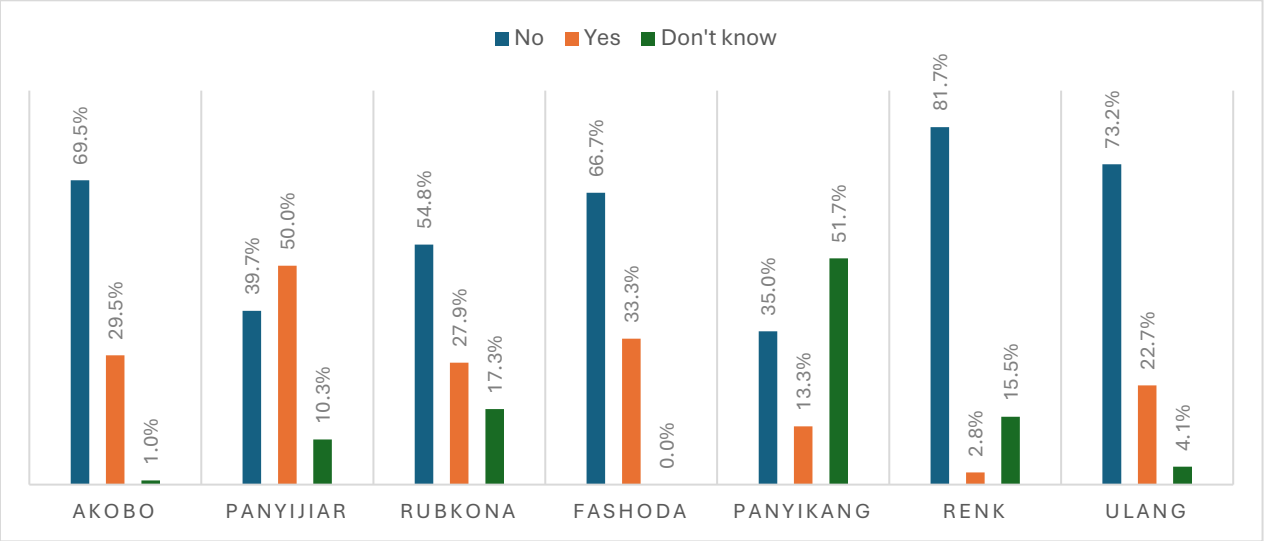
Figure 119: Whether or not there are vulnerability maps in the community by State



Upper Nile State also faces challenges, as 66.0% of respondents indicated that no vulnerability maps are available, closely mirroring the situation in Jonglei. Notably, only 19.1% of respondents from Upper Nile State confirmed the presence of vulnerability maps, highlighting a concerning deficiency in resources that could inform community planning and disaster response. Additionally, the "Don't know" category showed some variation, with 1.0% in Jonglei, a significant 15.2% in Unity, and 14.9% in Upper Nile expressing uncertainty about the existence of vulnerability maps. This uncertainty points to a lack of communication and engagement regarding essential resources within these communities.

Further analysis using county level data summarized in Figure 120 shows that in Akobo, a high percentage of 69.5% of respondents indicated that no vulnerability maps are available, reflecting a critical gap in resources essential for risk mitigation. Panyijiar presents a more favourable situation, with 39.7% reporting the absence of maps and 50.0% acknowledging their existence. This suggests that Panyijiar may have a relatively better awareness and access to tools that can aid in disaster preparedness compared to other areas. In Rubkona, 54.8% of respondents reported no maps, while 27.9% confirmed their presence, indicating a need for increased efforts to enhance awareness and availability.

Figure 120: Whether or not there are vulnerability maps in the community by County



Fashoda shows a concerning 66.7% of respondents stating that no vulnerability maps are available, similar to Akobo. Meanwhile, Panyikang stands out with 35.0% of respondents reporting no maps, but notably, 51.7% are uncertain about their existence, highlighting a significant communication gap that could hinder proactive disaster management efforts. Renk is particularly alarming, with 81.7% indicating no access to vulnerability maps. This deficiency severely limits the ability of the communities to prepare for hazards. Conversely, only 2.8% of respondents from Renk county confirmed the existence of maps, emphasizing the dire need for improved resources in this area. Ulang also faces challenges, with 73.2% reporting no maps, while 22.7% acknowledged their presence.

The "Don't know" responses varied significantly across counties, with Panyikang demonstrating the highest uncertainty at 51.7%, which suggests a lack of engagement and communication regarding available resources. The findings signify the urgent need for targeted initiatives to develop and disseminate vulnerability maps in the GUN region, particularly in counties like Akobo, Renk, and Ulang, where the absence of such tools is most acute.

7.2.34 Factors that increase the risk of your community for climate hazards

An analysis of the factors that increase community risk to climate hazards reveals significant vulnerabilities that threaten local livelihoods and safety. **Among the various factors identified, farming along river banks is the most prevalent risk, with 65.2% of respondents indicating that this practice heightens vulnerability**. This situation is particularly concerning, as reliance on riverbank farming can expose crops to flooding and erosion, exacerbating the impacts of climate change. Late planting is another critical factor, reported by 49.5% of the sample, which can lead to reduced yields and increased susceptibility to adverse weather conditions. The reliance on less drought-resistant crop varieties, noted by 27.0% of respondents, further compounds the risk, as these varieties struggle to thrive in increasingly erratic climatic conditions. Additionally, the lack of crop diversification, indicated by 43.5%, limits resilience to climate shocks, as communities may be overly dependent on a narrow range of crops.

Settling close to rivers, reported by 39.2% of respondents, poses additional risks, particularly in terms of flooding and waterborne diseases. Substandard dwelling places, identified by 14.8%, further exacerbate vulnerability, as inadequate housing may not withstand extreme weather events. Urbanization, with 14.4% of respondents noting this as a risk factor, can lead to increased pressure on resources and infrastructure, making communities more susceptible to climate hazards. Deforestation, highlighted by 36.0% of respondents, is a significant environmental concern, as it reduces natural barriers against climate impacts and disrupts local ecosystems. Finally, the lack of lightning protectors, noted by 15.8%, presents a safety risk, particularly in regions prone to thunderstorms.

Overall, these findings underscore the urgent need for targeted interventions to address these vulnerabilities in the GUN region. Strategies such as promoting sustainable agricultural practices, enhancing crop diversification, improving housing standards, and increasing community awareness of climate risks are essential for building resilience. By addressing these factors, communities in the Great Upper Nile can better prepare for and adapt to the challenges posed by climate change, ultimately safeguarding their livelihoods and well-being.

Analysis of these factor by county shows variations and significant vulnerabilities that need to be addressed for effective community resilience (see Table 95). **Farming along river banks is a predominant risk factor, with Panyikang leading at 86.7% of respondents indicating this vulnerability, followed closely by Akobo at 77.1% and Panyijiar at 77.9%.** In contrast, Rubkona and Ulang reported lower rates of 45.2% and 47.4%, respectively, suggesting that while riverbank farming is common, its prevalence varies significantly across counties, with Panyikang experiencing the highest risk.

Table 86: Factors that increase risk of community to climate hazards by County

Factors that increase risk of community to climate hazards	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Farming in river banks	77.1%	77.9%	45.2%	58.0%	86.7%	73.2%	47.4%
Late planting	56.2%	73.5%	24.2%	55.6%	75.0%	33.8%	85.6%
Use of less drought resistant varieties	40.0%	27.9%	15.5%	33.3%	23.3%	22.5%	51.5%
Lack of crop diversification	37.1%	47.8%	43.9%	44.4%	41.7%	25.4%	56.7%
Settling close river	56.2%	51.5%	22.7%	32.1%	91.7%	52.1%	23.7%
Substandard dwelling places	10.5%	13.2%	13.6%	4.9%	11.7%	45.1%	13.4%
Urbanization	7.6%	13.2%	25.8%	16.0%	1.7%	2.8%	0.0%
Deforestation	30.5%	65.4%	29.1%	17.3%	3.3%	50.7%	49.5%
Lack lightening protectors	21.9%	30.1%	9.1%	18.5%	8.3%	7.0%	20.6%

Late planting also poses a considerable challenge, particularly in Ulang, where 85.6% of respondents reported this issue, followed by Panyikang at 75.0% and Panyijiar at 73.5%. In contrast, Rubkona reported a much lower rate of 24.2%, indicating that agricultural practices and timing may vary widely, affecting crop yields and vulnerability to climate hazards.The use of less drought-resistant varieties is a concern across the region, with Ulang reporting the highest rate at 51.5%, while Akobo stands at 40.0%. Rubkona, however, shows a significantly lower percentage at 15.5%, indicating potential differences in agricultural education and resource availability among the counties. Similarly, the lack of crop diversification is a pressing issue, with Panyikang at 56.7% and

Panyijiar at 47.8% showing the highest levels of concern, highlighting the need for broader agricultural strategies to enhance resilience.

Settling close to rivers poses significant risks, particularly in Panyikang where 91.7% of respondents indicated this vulnerability. Akobo follows with 56.2%, while Rubkona and Ulang reported much lower percentages at 22.7% and 23.7%, respectively. This indicates a critical risk of flooding and environmental hazards in areas where communities are concentrated near water bodies. Substandard dwelling places are notably less of a concern in Fashoda, where only 4.9% of respondents reported this issue, while Renk shows a high rate of 45.1%. This disparity suggests varying levels of infrastructure development and housing quality across the counties, which can significantly impact community resilience to climate threats.

Urbanization appears to have a minimal impact as a risk factor, with Panyijiar reporting the highest at 13.2%. However, most counties, including Ulang, reported rates of 0.0%, indicating that urban pressures may not yet be a significant concern in these areas. Deforestation is a significant environmental challenge, particularly in Panyijiar at 65.4%, which is notably higher than other counties like Fashoda at 17.3%. This highlights urgent concerns about environmental degradation and its implications for climate resilience. Lastly, the lack of lightning protectors is reported by 21.9% in Akobo and 30.1% in Panyijiar, suggesting safety risks from severe weather events. The findings emphasize the need for targeted interventions in each county to address these vulnerabilities effectively. This should include a strong focus on sustainable agricultural practices, improving infrastructure, and enhancing community awareness of climate risks, the GUN region can better prepare for and adapt to the challenges posed by climate change, ultimately ensuring the safety and well-being of its communities.

7.2.35 Extent of involvement of community in monitoring Climate hazards

The extent of community involvement in monitoring climate hazards reveals significant gaps in engagement and awareness. **According to the data, only 10.8% of the respondents reported that they are always involved in monitoring climate hazards, suggesting that consistent participation in this critical activity is low**. **Meanwhile, 14.0% indicated that they are involved most of the time, which still reflects a limited level of proactive engagement among community members.**

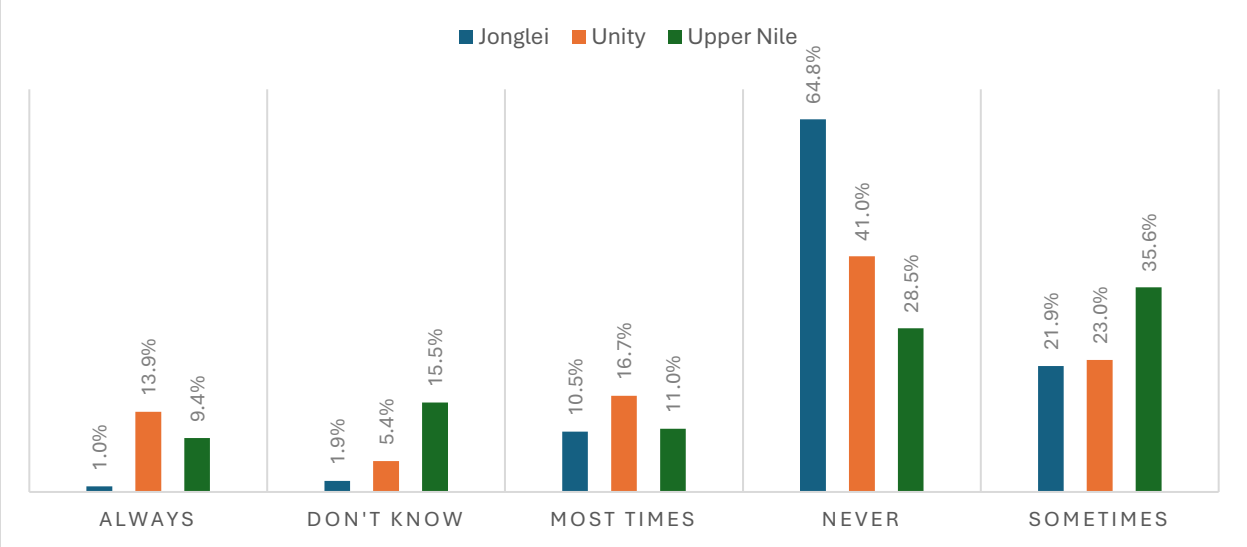
A concerning 39.4% of respondents stated that they never participate in monitoring climate hazards, indicating a substantial portion of the population is not actively involved in this essential aspect of climate resilience. This lack of involvement may contribute to a heightened vulnerability to climate impacts, as communities that do not engage in monitoring are less likely to be aware of emerging threats and can miss opportunities for timely interventions.

Additionally, 27.3% of respondents reported that they sometimes engage in monitoring activities, highlighting a moderate level of sporadic participation. However, the presence of 8.5% of respondents who indicated "don't know" reflects a significant gap in knowledge and awareness regarding climate hazard monitoring, which could hinder efforts to build community resilience.

Analysis by state shows that in Jonglei, only 1.0% of respondents reported that they always participate in monitoring climate hazards, which is markedly lower compared to 13.9% in Unity and 9.4% in Upper Nile (see Figure 121). This indicates that Jonglei residents are particularly

disengaged from consistent monitoring efforts. The data also highlights that 64.8% of respondents in Jonglei indicated that they never participate in monitoring activities, which is alarmingly high and suggests a critical gap in climate awareness and engagement in this state. In Unity, 41.0% of respondents reported never participating, while Upper Nile shows a lower percentage at 28.5%. The lower figures in Upper Nile may suggest a slightly higher level of awareness or involvement compared to the other regions.

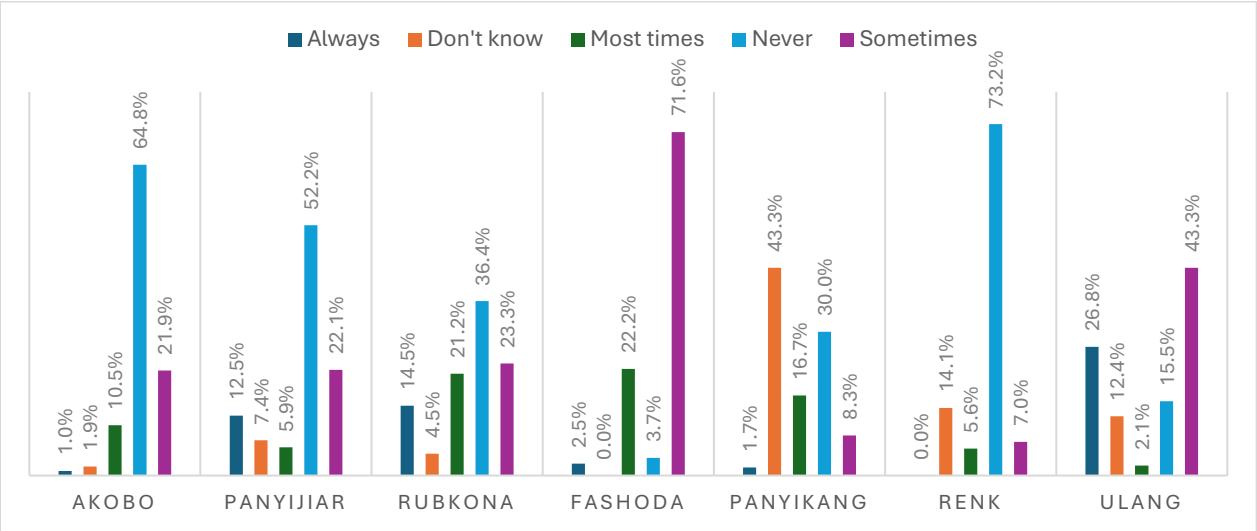
Figure 121: Extent of community involvement in monitoring climate hazards by State



Moreover, the percentage of individuals who reported being unsure, or "don't know," about their involvement in monitoring is particularly concerning in Upper Nile, where 15.5% expressed uncertainty, contrasting with 1.9% in Jonglei and 5.4% in Unity. This uncertainty may reflect a lack of information or understanding regarding climate monitoring processes, which can hinder community resilience efforts. In terms of occasional engagement, 21.9% of respondents in Jonglei reported that they sometimes monitor climate hazards, while this figure is 23.0% in Unity and rises significantly to 35.6% in Upper Nile. The higher percentage in Upper Nile suggests that while overall involvement may still be low, there is a greater propensity for sporadic participation in climate monitoring activities compared to the other regions. Finally, 10.5% of respondents in Jonglei indicated that they monitor most of the time, compared to 16.7% in Unity and 11.0% in Upper Nile, highlighting a trend of increased engagement in Unity.

Among the counties, Ulang stands out with the highest percentage of individuals reporting that they always participate in monitoring climate hazards at 26.8%. In contrast, Akobo has the lowest at just 1.0%, indicating a severe lack of consistent engagement in this critical area (see Figure 122). The data also highlights a concerning trend in Akobo, where a staggering 64.8% of respondents indicated that they never participate in monitoring activities. This is the highest percentage of non-participation among all the counties, suggesting a critical gap in climate awareness. Renk follows closely with 73.2% of respondents reporting that they never engage in monitoring, further emphasizing the need for targeted initiatives in these areas.

Figure 122: Extent of community involvement in monitoring climate hazards by County



In terms of uncertainty regarding involvement, Panyikang has the highest percentage of individuals (43.3%) who responded "don't know," which indicates a significant lack of awareness or information about climate monitoring processes. This is particularly troubling as it may hinder proactive measures against climate hazards. Other counties, such as Renk and Ulang, also reported notable percentages of uncertainty at 14.1% and 12.4%, respectively, highlighting a broader issue across the region. When examining respondents who reported being involved most of the time, Rubkona leads with 21.2%, followed closely by Fashoda at 22.2%. However, this level of consistent engagement remains low overall and is overshadowed by the high rates of non-participation.

The category of "sometimes" reveals varying levels of sporadic engagement, with Fashoda reporting a remarkably high 71.6%. This suggests that while many community members may not engage consistently, there is potential for increased participation if awareness and educational initiatives are implemented. Panyijiar and Rubkona also show moderate levels of sporadic involvement at 22.1% and 23.3%, respectively, indicating some community interest in climate monitoring. The findings highlight the urgent need for comprehensive educational and outreach programs in the GUN region to enhance community involvement in monitoring climate hazards. Through addressing the specific gaps in awareness and participation across the counties, particularly in Akobo and Renk where non-participation is highest, local initiatives can empower residents to take proactive steps in managing climate risks, ultimately improving their resilience and safety in the face of climate change.

7.2.36 Tools that communities use to monitor Climate hazards

An analysis of the tools used for monitoring climate hazards reveals varying levels of reliance on different types of equipment among the community. Among the tools surveyed, manual weather

stations are the most utilized, with 55.2% of respondents indicating their use, closely followed by automatic weather stations at 51.5%. This suggests a strong preference for manual methods, possibly due to their accessibility and ease of operation within local contexts. Hydrological stations, which are crucial for monitoring water resources and their fluctuations, are used by 16.6% of the respondents, indicating a moderate level of engagement with water monitoring tools. River gauges, which provide essential data on river levels and flood risks, are utilized by 27.5% of the sample, reflecting a recognition of the importance of understanding local water dynamics in an area prone to flooding.

Rainfall logging stations, another vital tool for assessing precipitation patterns, are employed by 32.1% of respondents, highlighting a significant interest in tracking rainfall, which is critical for agricultural planning and climate adaptation. In contrast, satellite technology, which can provide comprehensive data over larger areas, is used by only 14.6% of the participants, suggesting potential barriers to access or understanding of satellite data among local communities. Radar technology, utilized by a mere 6.1% of respondents, and agrometeorological stations, used by 6.3%, represent the least utilized tools in climate monitoring, indicating a gap in sophisticated monitoring capabilities. Weather buoys and lightning sensors each have a usage rate of 10.3%, revealing limited engagement with these advanced tools, which could enhance understanding of climate phenomena in the region.

Overall, these findings highlight the need for improved access to and training on advanced climate monitoring technologies in the GUN region. While there is a solid foundation in the use of manual and automatic weather stations, enhancing the capacity to utilize more sophisticated tools like satellites and radars could significantly improve the community's ability to monitor and respond to climate hazards. By investing in education and resources, local initiatives can better equip communities to address the challenges posed by climate change and improve their resilience to its impacts.

7.2.37 Use indigenous knowledge in predicting hazards

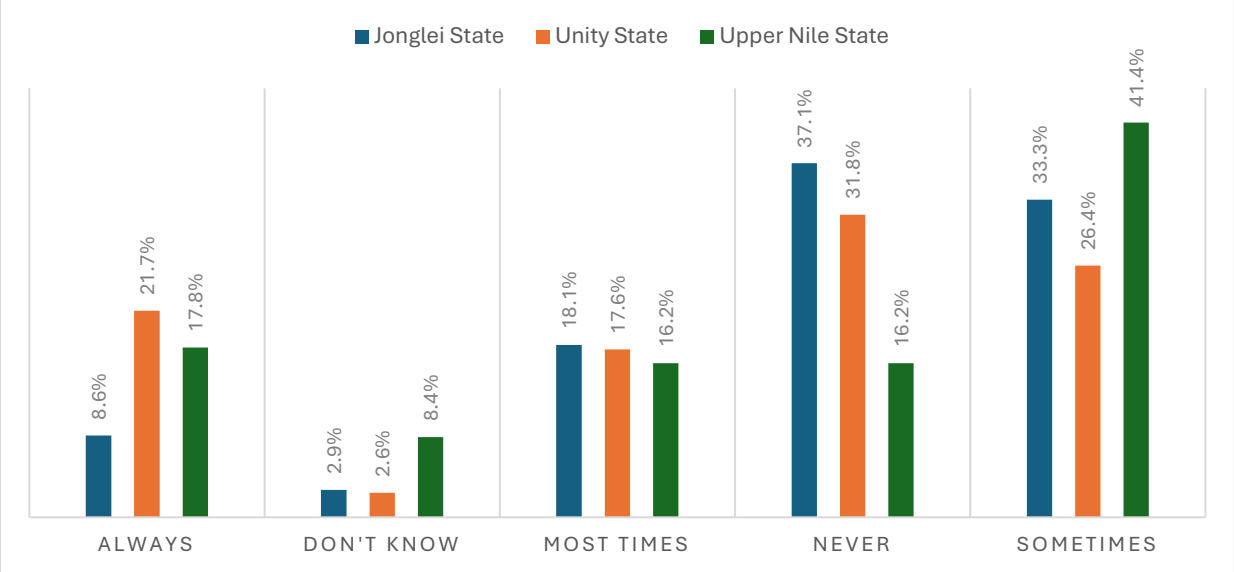
Analysis of the extent of use of indigenous knowledge in predicting hazards reveals a diverse range of engagement among the communities. **At the GUN level, 18.8% of respondents indicated that they always utilize indigenous knowledge for hazard prediction, reflecting a strong recognition of traditional practices in understanding environmental changes and risks**. However, a significant portion of the population, 32.5%, reported using this knowledge sometimes, suggesting that while there is an appreciation for indigenous methods, it may not be consistently applied in all situations.

Conversely, 26.9% of respondents stated that they never use indigenous knowledge for predicting hazards, indicating a notable gap in engagement with traditional practices that could enhance local resilience to climate-related risks. Additionally, 17.2% of individuals reported using indigenous knowledge most of the time, further emphasizing that, while some community members actively rely on these practices, a considerable number do not incorporate them into their hazard assessment strategies. The 4.7% of respondents who indicated that they do not know whether or not they use indigenous knowledge highlights a potential area for improvement in awareness and education regarding the value of traditional knowledge systems. This finding suggests that further efforts are needed to educate the community about the benefits of integrating indigenous knowledge with modern scientific approaches to hazard prediction.

The insights highlight the importance of fostering greater recognition and application of indigenous knowledge in the GUN region. Through the promotion of the integration of traditional practices with contemporary methods, local initiatives can enhance the capacity of the community to effectively predict and respond to hazards, ultimately improving resilience in the face of climate change and other environmental challenges.

Analysis by state shows that in Jonglei State, only 8.6% of respondents indicated that they always utilize indigenous knowledge for hazard prediction, which is considerably lower than Unity State, where 21.7% reported consistent use of traditional practices (see Figure 123). Upper Nile State falls in between, with 17.8% of respondents affirming that they always rely on indigenous knowledge. The level of uncertainty about the use of indigenous knowledge is also noteworthy, with 2.9% of respondents in Jonglei and 2.6% in Unity State indicating they do not know if they use it. However, Upper Nile State shows a higher percentage of uncertainty at 8.4%, suggesting a potential gap in awareness or understanding of the value of traditional knowledge systems in that area.

Figure 123: Extent of use of indigenous knowledge in predicting hazards by State



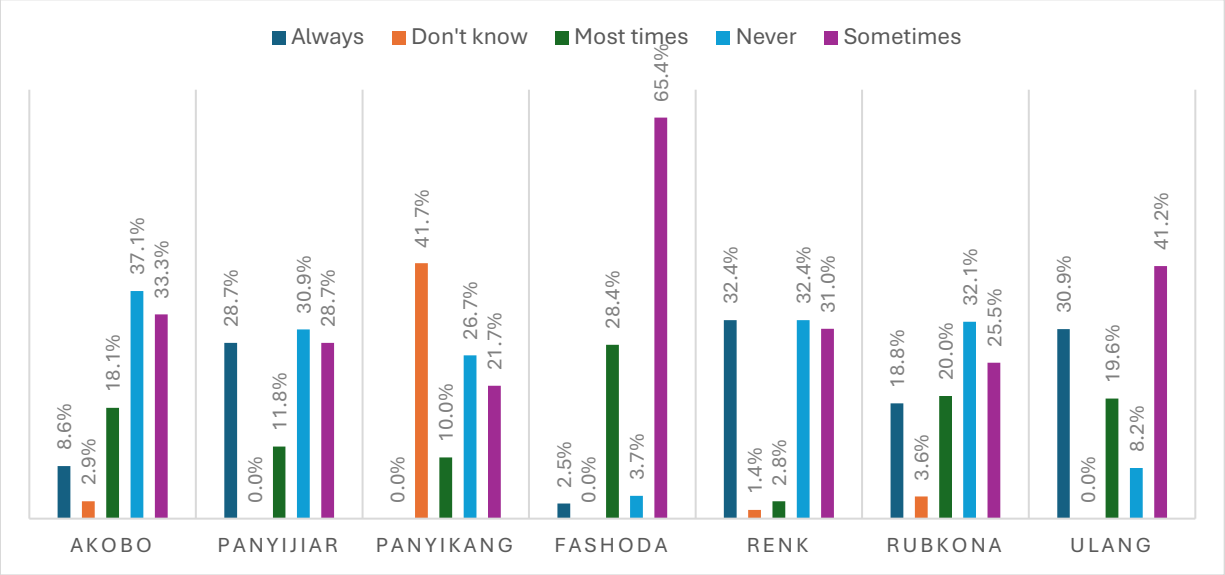
Regarding the frequency of use, 18.1% of respondents in Jonglei State reported using indigenous knowledge most of the time, which is slightly higher than the percentages in Unity State (17.6%) and Upper Nile State (16.2%). This indicates a relatively stable reliance on traditional practices across the states, but still highlights the need for increased awareness and integration of such knowledge in hazard prediction.

A significant concern arises from the percentage of respondents who reported never using indigenous knowledge, with Jonglei State exhibiting the highest figure at 37.1%. In Unity State, 31.8% indicated they never use indigenous methods, while only 16.2% of respondents in Upper Nile State reported the same. This disparity underscores a critical area for improvement, as the lack of engagement with indigenous knowledge can limit communities' ability to effectively predict and respond to environmental hazards. Conversely, the category of "sometimes" reveals that 33.3% of respondents in Jonglei and 26.4% in Unity State utilize indigenous knowledge occasionally, while

Upper Nile State shows a higher engagement at 41.4%. This suggests that while some community members recognize the value of traditional practices, they may not consistently apply them in their hazard assessment strategies.

Analysis by county shows that In Akobo, only 8.6% of respondents reported always using indigenous knowledge for hazard prediction, while Panyijiar shows a much higher engagement at 28.7% (see Figure 124). However, Panyikang stands out with no reported usage of indigenous knowledge at all, indicating a critical gap in traditional practices that could enhance hazard prediction in that area.

Figure 124: Extent of use of indigenous knowledge in predicting hazards by County



Interestingly, Fashoda has a low rate of consistent use at just 2.5%, while Renk shows a more substantial reliance with 32.4% of respondents indicating they always use indigenous knowledge. Rubkona and Ulang also demonstrate notable engagement, with 18.8% and 30.9% of respondents, respectively, affirming their consistent reliance on traditional knowledge. In Rubkona county the study was informed that traditionally, community members consult local indigenous weather experts who provide forecasts based on observed weather conditions, such as water levels and the colour of the water. If sea creatures appear or if the water colour changes, it indicates rising flood levels, prompting evacuation[6]. The level of uncertainty regarding the use of indigenous knowledge was found to vary significantly across the counties. Panyikang has a striking 41.7% of respondents who do not know if they utilize such knowledge, suggesting a lack of awareness or understanding of its importance in hazard prediction. In contrast, other counties like Panyijiar and Fashoda report no uncertainty, indicating clearer recognition of traditional practices.

In terms of frequency, 18.1% of respondents in Akobo reported using indigenous knowledge most of the time, while Panyijiar shows a lower engagement at 11.8%. Fashoda demonstrates a higher reliance at 28.4%, while Renk reports only 2.8%, suggesting that traditional knowledge may not be as frequently consulted in certain areas. Rubkona and Ulang show similar rates of 20.0% and 19.6%, respectively, indicating a moderate engagement with indigenous practices. A significant

[6] Interview with a male Director in Ministry of Education in Bentiu town and Rubkona County

concern arises from the percentage of respondents who reported never using indigenous knowledge. Akobo shows the highest figure at 37.1%, while Panyijiar reports 30.9%, and Renk and Rubkona both indicate around 32.4%. In contrast, Ulang has a notably lower rate at 8.2%, suggesting that residents in this area may be more open to incorporating traditional practices into their hazard prediction strategies.

Conversely, the category of "sometimes" highlights a diverse engagement, with 33.3% of respondents in Akobo and 28.7% in Panyijiar indicating occasional use of indigenous knowledge. Remarkably, Fashoda shows a high rate of 65.4% for this category, suggesting that while many may not consistently apply traditional knowledge, a significant portion recognizes its value in certain contexts. Ulang again stands out with 41.2%, indicating a strong occasional reliance on indigenous practices. Overall, the findings emphasize the need for targeted educational and outreach initiatives in the GUN region that promote the integration of indigenous knowledge with modern scientific approaches to hazard prediction.

7.2.38 Specific indigenous knowledge or signs used to predict hazards

The analysis of the indigenous knowledge or signs used to predict hazards across various at county level reveals some variations in community reliance on different environmental indicators (see Table 96). **In Akobo for instance, 33.3% of respondents reported using changes in animal behaviour as a predictor, which is notably lower than Panyijiar and Fashoda, where 79.8% and 76.9%, respectively, indicated similar reliance.** This suggests that communities in Panyijiar and Fashoda have a strong connection to animal behaviour as an indicator of environmental changes, while Akobo may not utilize this sign as frequently.

Table 87: Indigenous knowledge or signs used to predict hazards by County

Indigenous knowledge or signs used to predict hazards	Akobo	Panyijiar	Rubkona	Fashoda	Panyikang	Renk	Ulang
Changes in animal behaviour	33.3%	79.8%	58.0%	76.9%	15.8%	61.7%	70.8%
Cloud patterns and wind direction	88.9%	78.7%	34.4%	47.4%	21.1%	59.6%	61.8%
Temperature and humidity changes	31.7%	83.0%	49.5%	76.9%	84.2%	68.1%	66.3%
Unusual plant behaviour (early flowering or shedding)	14.3%	73.4%	24.1%	23.1%	57.9%	74.5%	28.1%
Water levels in rivers or wells	38.1%	83.0%	19.8%	50.0%	94.7%	63.8%	36.0%
Traditional community wisdom and folklore	74.6%	78.7%	5.2%	39.7%	26.3%	17.0%	57.3%

Cloud patterns and wind direction are prominently recognized in Akobo, with 88.9% of

respondents relying on these atmospheric signs. This contrasts sharply with Rubkona, where only 34.4% reported using this indicator, indicating a significant difference in the importance placed on meteorological signs across the counties. In Panyijiar and Ulang, 78.7% and 61.8% of respondents, respectively, reported using cloud patterns, showing that these communities also value atmospheric indicators. Temperature and humidity changes demonstrate another interesting trend, with Panyikang reporting the highest usage at 84.2%, followed closely by Panyijiar at 83.0%. In contrast, Akobo has a much lower reliance at 31.7%. This highlights a potential gap in awareness or understanding of climatic factors among Akobo's residents compared to those in Panyikang and Panyijiar.

Unusual plant behaviour, such as early flowering or shedding, is acknowledged by 14.3% of respondents in Akobo, which is significantly lower than the 73.4% in Panyijiar. This indicates that while some communities are attuned to botanical signs, Akobo may not prioritize these indicators as much as others.
Water levels in rivers or wells are particularly important in Panyikang, where an impressive 94.7% of respondents reported using this information for hazard prediction. This figure contrasts with Rubkona, where only 19.8% indicated reliance on water levels, suggesting that Panyikang's community may face greater concerns related to water management, possibly due to flooding or drought conditions.

Traditional community wisdom and folklore are also significant, with 74.6% of respondents in Akobo indicating reliance on these cultural practices for hazard prediction. This is notably higher than the 5.2% in Rubkona, highlighting a substantial difference in the use of folklore across the counties. Panyijiar and Ulang both show moderate reliance at 78.7% and 57.3%, respectively. The findings underscore the diverse ways in which communities across the GUN region utilize indigenous knowledge to predict hazards. By recognizing and promoting these traditional practices, local initiatives can enhance community resilience to climate-related risks and improve overall preparedness for environmental challenges, tailoring strategies to the unique strengths and knowledge bases of each county.

A community leader in Bentiu Town, Rubkona County shared several insights on some of the traditional knowledge that communities possess regarding environmental indicators, particularly in relation to flooding. For instance, observing the **colour of water** or the behaviour of local wildlife can provide early warnings about rising water levels. This traditional ecological knowledge has been passed down through generations, reflecting a deep understanding of the local environment and its rhythms. He indicated that:

> *"Such indicators serve as a form of early warning system, enabling communities to prepare for potential flooding before official alerts are issued. The ability to recognize these signs not only demonstrates the value of indigenous knowledge but also emphasizes the importance of integrating traditional practices with modern scientific approaches. This integration can enhance community resilience by providing multiple layers of understanding and response strategies".* **Interview with a Community Leader, Bentiu Town, Rubkona County, 17 March 2025**

Moreover, the discussions highlighted the need to preserve and respect traditional knowledge systems, especially as communities face the challenges posed by climate change. As modern technologies advance, it is vital to recognize the contributions of local knowledge and ensure that

these practices are not lost. Through valuing and incorporating traditional wisdom into contemporary disaster management strategies, communities can create more effective and culturally relevant responses to environmental challenges.

7.2.39 Existence of a disaster preparedness and response plan for hazards in communities

At the regional level, the study found that a significant majority, 59.3%, of respondents reported that there is no disaster preparedness and response plan in place within their community. This lack of formal planning underscores a critical gap in the community's ability to effectively manage and respond to environmental hazards, which are increasingly prevalent in the region. Conversely, only 33.2% of respondents indicated that their community does have a disaster preparedness and response plan. This relatively low percentage suggests that while some communities may be taking proactive steps to address hazards, the overall readiness across the GUN region remains insufficient. The presence of such plans is vital for enhancing community resilience and ensuring that residents are equipped to handle potential disasters.

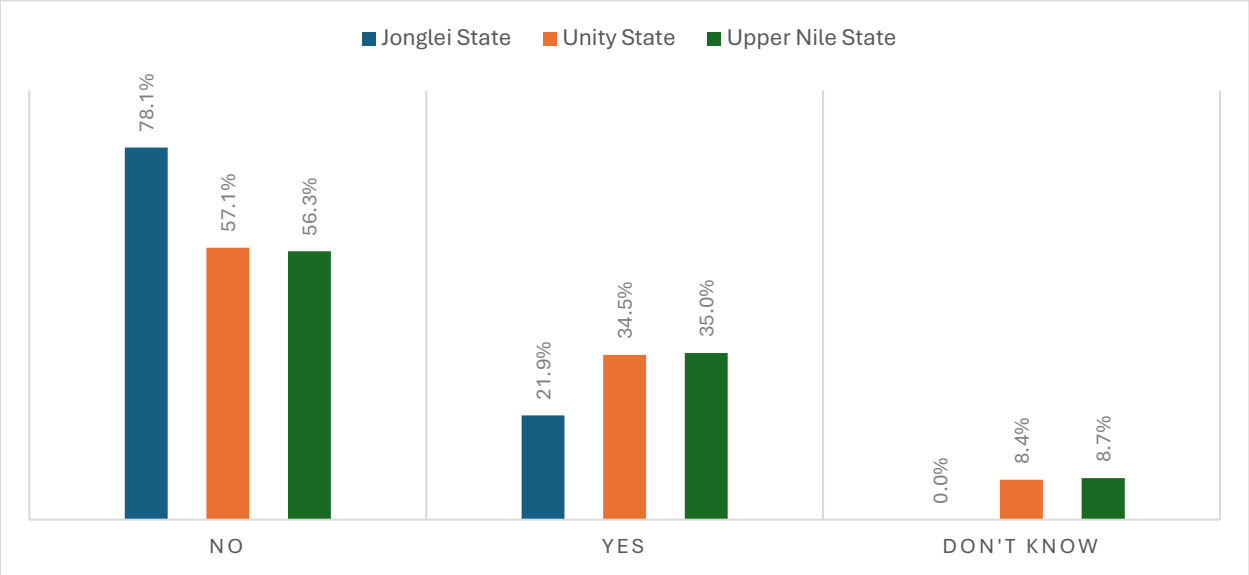
Additionally, 7.5% of respondents expressed uncertainty by stating they do not know whether a disaster preparedness and response plan exists. This figure highlights a lack of awareness or communication regarding disaster management strategies, which can further complicate efforts to prepare for and respond to hazards. In a conversation with a community leader in Bentiu town, the emphasis was the need for communities to be proactive in their approach to disaster management, integrating both modern technology and traditional knowledge to enhance their ability to respond effectively to emergencies. He highlighted that;

> *"Building resilience involves not only preparing for immediate threats but also addressing the underlying vulnerabilities that may exacerbate the impact of disasters. This can include investing in infrastructure improvements, promoting public awareness and education, and fostering strong social networks within the community. When individuals feel connected and supported, they are more likely to engage in preparedness activities and respond effectively during crises".* **Interview with a Community Leader in Bentiu Town, Rubkona County, 17 March 2025,**

The discussions emphasized the critical importance of evacuation procedures during emergencies, particularly in the context of flooding which is one of the major hazards in Rubkona. This included the urgency of having clear and effective plans in place to ensure that individuals can evacuate safely and efficiently when faced with rising water levels. This urgency is underscored by the potential dangers posed by floods, which can quickly escalate and leave little time for preparation. Effective evacuation procedures require thorough planning and communication to ensure that all community members are aware of their options and understand the steps they need to take. Mention was made of the use of **canoes** for evacuation, illustrating how communities often rely on localized methods to respond to emergencies. This practical approach demonstrates the adaptability of communities, using available resources to ensure that individuals can reach safety. Additionally, the discussions highlighted the importance of educating the public about evacuation routes and procedures. When residents are informed about where to go and how to evacuate, they can respond more quickly and effectively in times of crisis. This education may include community drills, informational sessions, and the dissemination of materials outlining evacuation plans.

Analysis by state shows that in Jonglei State, a staggering 78.1% of respondents reported that there is no disaster preparedness and response plan in place (see Figure 125). This indicates a severe deficiency in proactive measures to manage and mitigate the impacts of environmental hazards, which are critical in a region prone to such challenges.

Figure 125: Existence of disaster preparedness and response by State

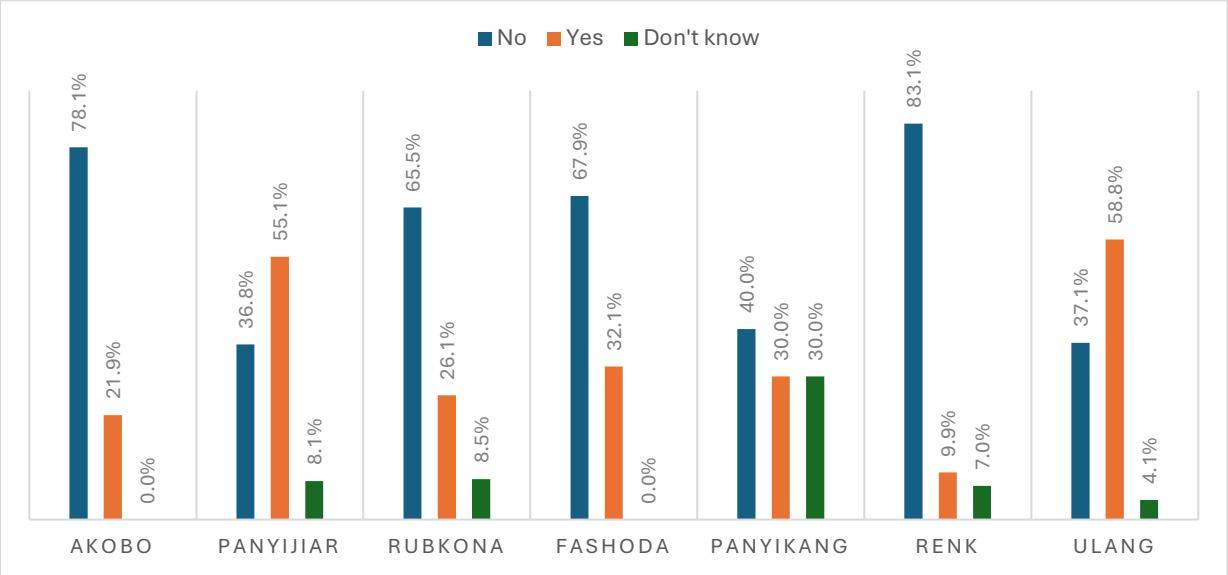


In contrast, Unity State shows a somewhat better situation, with 57.1% of respondents indicating the absence of a disaster preparedness plan. Upper Nile State reflects a similar trend, with 56.3% of individuals reporting no existing plan. While these figures are lower than those in Jonglei, they still represent a majority of the population without formal preparedness strategies, highlighting a widespread vulnerability across these regions.

To the contrary, the percentage of respondents who reported having a disaster preparedness and response plan is 21.9% in Jonglei State, which is significantly lower than Unity State, where 34.5% indicated the existence of such a plan. Upper Nile State shows a similar figure at 35.0%. These results suggest that while some communities are taking steps toward preparedness, the overall numbers remain inadequate, indicating that many are still unprepared for potential hazards. Additionally, it is noteworthy that 0.0% of respondents in Jonglei State expressed uncertainty about the existence of a preparedness plan, while 8.4% and 8.7% of respondents in Unity and Upper Nile States, respectively, indicated that they do not know whether such plans exist. This uncertainty can hinder community engagement and awareness, further complicating efforts to enhance disaster preparedness.

Further analysis by county shows that In Akobo, a staggering 78.1% of respondents reported that there is no disaster preparedness and response plan in place, indicating a critical vulnerability in this community's ability to manage environmental hazards effectively (Figure 126). This alarming figure is contrasted by Panyijiar, where only 36.8% indicated the absence of such a plan, suggesting that this county has made more progress in developing preparedness strategies.

Figure 126: Existence of disaster preparedness and response by County



Rubkona and Fashoda present concerning statistics as well, with 65.5% and 67.9% of respondents, respectively, reporting no existing disaster preparedness plan. Panyikang reflects a better situation with 40.0% reporting no plan, while Renk shows the highest lack of preparedness with 83.1% indicating that no plan exists. In Rubkona county a DRR officer highlighted that there is a critical need for enhanced disaster preparedness at both the state and county levels[7]. Communities must implement comprehensive plans that include risk assessments, resource allocation, and training initiatives. Through fostering a culture of preparedness, communities can better equip themselves to respond effectively to disasters, minimizing loss of life and property in the face of unpredictable climate-related events.

Ulang stands out with 37.1% of respondents reporting no plan, marking it as one of the counties more engaged in preparedness efforts compared to others. On the positive side, the percentage of respondents who reported having a disaster preparedness and response plan varies significantly across the counties. Panyijiar leads with 55.1% indicating the existence of such a plan, showcasing a proactive approach to disaster management. This is followed by Panyikang at 30.0% and Fashoda at 32.1%. In contrast, Akobo has only 21.9% reporting the presence of a plan, while Rubkona shows an even lower figure at 26.1%. Renk has the least preparedness with only 9.9% indicating that a plan exists, which highlights a critical area of concern for future disaster management efforts. FGD participants in Renk county indicated that with regards to EWS, the communities rely on informal networks such as community messengers. This results in challenges such as delayed alerts, limited reach to remote areas, and also lack of tailored messaging for persons with disabilities. In a boys-only FGD in Panyijiar County, the team was informed of traditional practices that enhance community resilience, such as visiting spiritual leaders for blessings before the rainfall and preparing the land by creating water stretches on farmlands.

Furthermore, the data reveals that there are very few individuals who are uncertain about the existence of a preparedness plan; notably, 0.0% in Akobo and Fashoda reported uncertainty, while

[7] Interview with THRIVE program DRR Officer, Rubkona County, 16 March 2025

Panyijiar and Ulang have 8.1% and 4.1%, respectively. In Fashoda, the study was informed in an all-female FGD that while there are evacuation plans and emergency supplies in place, there are significant gaps in evacuation routes, supply adequacy, and first-aid training[8]. There is therefore a critical need for funding, training, technical expertise, weather data, communication infrastructure, and volunteers, highlighting the importance of partnerships with agencies and NGOs in this county. Panyikang county also stands out with 30.0% of respondents indicating they do not know whether a plan exists, which could hinder efforts to engage the community in disaster preparedness initiatives. However, according to a county officials in Akobo:

> *"Our mandate includes preparing the community for potential flooding. We have identified high-prone areas for evacuation and communicated these strategies to community members. During floods, we encourage residents to utilize alternative houses or shelters for their livestock. We have been proactive in informing the community about these strategies, particularly in areas like Chang and Kau, which are frequently affected. Through the fostering of awareness and preparedness, we aim to mitigate the impact of flooding and ensure that community members know where to go in emergencies".* **Interview with Akobo County Office representative, 17 March 2025**

Overall, the findings emphasize the urgent need for enhanced disaster preparedness initiatives in the GUN region. With a significant portion of the population lacking formal response plans, particularly in counties like Akobo and Renk, local authorities and organizations must prioritize the development and dissemination of comprehensive strategies to improve community resilience. It is crucial to engage all stakeholders and ensure that communities are informed about disaster management to foster a more prepared and resilient population in the face of environmental hazards.

7.2.40 Presence or otherwise of Civil protection committee/ Disaster Risk Reduction Committees

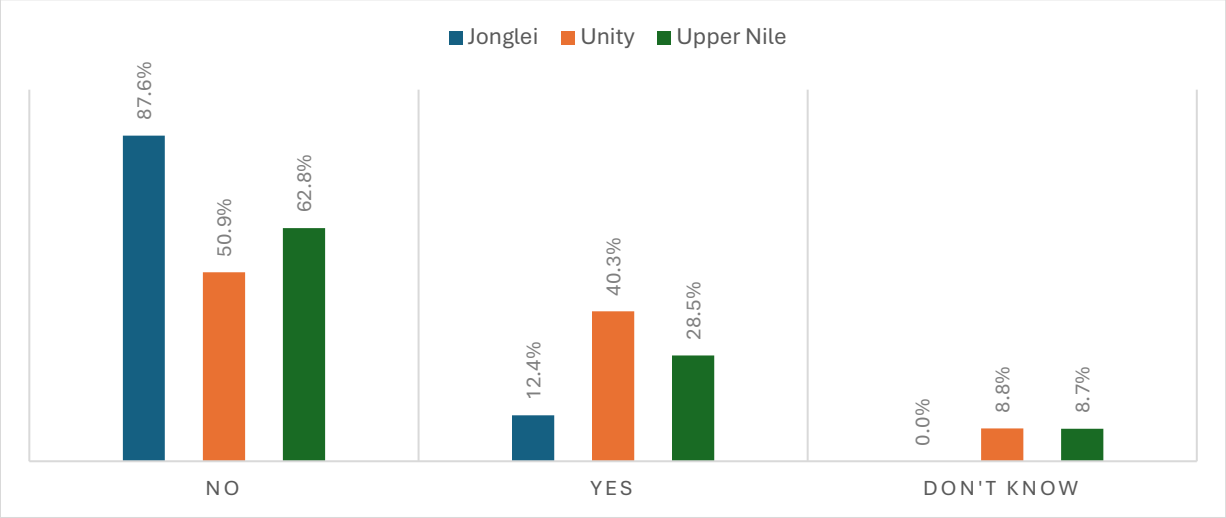
Regional level analysis found that, the presence of Civil Protection Committees or Disaster Risk Reduction (DRR) Committees remains limited, with only 32.8% of the surveyed population confirming their existence in their communities. A significant 59.4% reported that no such committees are in place, indicating a gap in structured disaster preparedness and response mechanisms. Additionally, 7.7% of respondents were uncertain about the presence of these committees, suggesting a lack of awareness or communication regarding disaster management structures. The low presence of formal DRR committees highlights a critical need for strengthened institutional frameworks and community engagement in disaster preparedness. Enhancing awareness, establishing more committees, and ensuring their visibility and effectiveness could significantly improve disaster resilience in the GUN region.

At state level, in Jonglei State, a staggering 87.6% of respondents indicate that there are no Civil Protection or DRR Committees in their communities (see Figure 127). This high percentage suggests a critical gap in organized efforts to manage disaster risks, which could undermine the state's resilience to natural and human-made crises. In contrast, Unity State shows a more balanced

[8] FGD respondents in an all-female group in Fashoda County, Hai Ochuj Boma, 19 March 2025

situation, with 50.9% of respondents stating that such committees are absent while 40.3% report their presence. This indicates a more proactive approach to disaster risk management, but it also highlights that nearly half of the communities still lack organized structures for effective disaster response.

Figure 127: Distribution of Civil Protection Committees by State



Upper Nile State presents a similar scenario, with 62.8% of respondents indicating the absence of Civil Protection or DRR Committees, while 28.5% affirm their existence. This suggests that while some communities are taking initiative in disaster planning, a significant majority remain unorganized, which could impede their preparedness and response capabilities in the face of disasters. The low percentage of individuals reporting uncertainty about the presence of these committees—0.0% in Jonglei and a modest 8.8% in Unity and 8.7% in Upper Nile—indicates that community members are generally aware of the disaster management structures within their areas.

The presence of CPCs or DRR committees across the GUN region varies significantly among the assessed counties, indicating disparities in community preparedness and risk mitigation structures. **In Akobo, an overwhelming 87.6% of respondents reported the absence of such committees, with only 12.4% confirming their presence, highlighting a critical gap in local disaster management capacity (see Figure 128).** According to Akobo County office official, there exists a DRR at the County level which consists of various departments mandated to work collaboratively on flood response and management. This includes members from the RRC, health, agriculture, livestock and fisheries, education, the town council, and various humanitarian organizations. He also highlighted that:

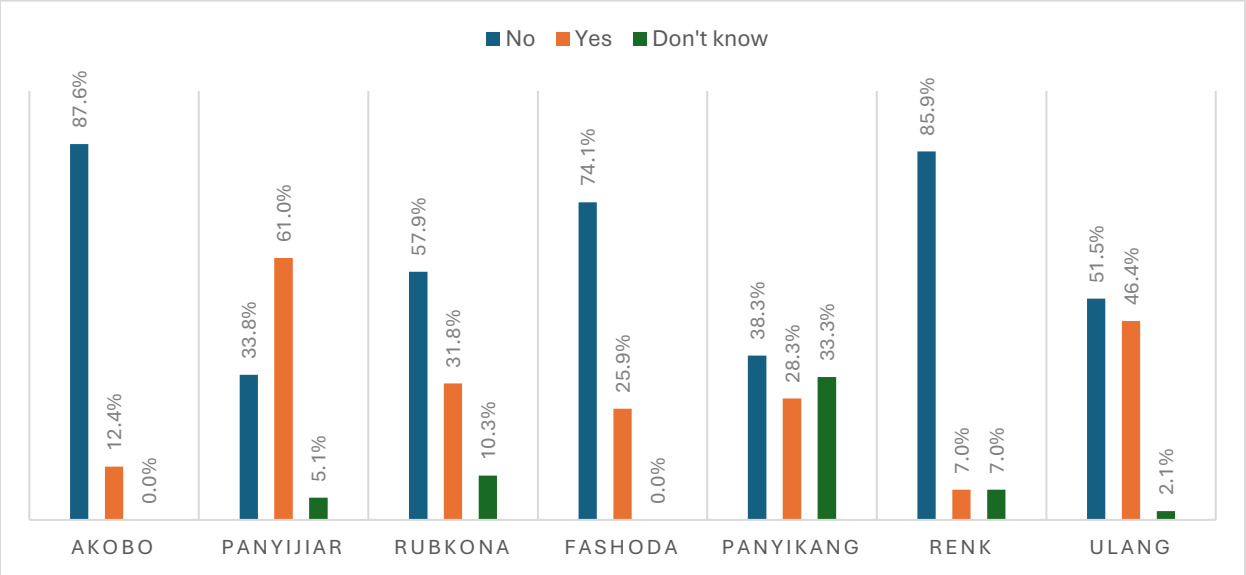
> *"Together, we aim to sensitize the community about disaster preparedness and coordinate responses. This diverse composition allows us to address multiple aspects of disaster management comprehensively and effectively, leveraging the strengths of each department for better community resilience".* **Interview with Akobo County Office representative, 17 March 2025**

It was further indicated that after forming the county committee, the County officials facilitated the

establishment of similar committees at the Payam level to enhance collaboration and information sharing. These Payam committees are vital for collecting data specific to their areas and relay important information back to the county level. When a warning system is needed, they collaborate with humanitarian partners to facilitate outreach to these Payams. This interlinking structure ensures that community members receive timely information and can act accordingly to protect themselves from hazards.

Renk county shows a high rate of absence at 85.9%, suggesting that formal community protection structures are largely lacking.

Figure 128: Distribution of Civil Protection Committees by County



Panyijiar and Panyikang present mixed findings, with 61.0% and 28.3% respectively confirming the existence of CPCs/DRR Committees, while 33.8% and 38.3% indicate their absence, reflecting partial institutional presence in these areas. In Rubkona, 57.9% of respondents reported no committees, whereas 31.8% confirmed their presence, showing a moderate level of community engagement in risk reduction but still leaving a significant proportion unserved. The data from Fashoda reveals a relatively strong absence rate of 74.1%, with only 25.9% acknowledging the presence of CPCs/DRR Committees, signalling a substantial gap in disaster preparedness.

On the other hand, Ulang demonstrates a relatively balanced distribution, where 51.5% of respondents stated that no committees exist, while 46.4% acknowledged their presence, indicating a more active but still inconsistent risk management system. Notably, the level of uncertainty regarding the existence of these committees is highest in Panyikang, where 33.3% of respondents were unaware of their status, suggesting a need for greater awareness and engagement. Similarly, Rubkona and Renk have uncertainty rates of 10.3% and 7.0%, respectively, further emphasizing the need for improved community outreach and education on disaster preparedness. In an FGD with chiefs in Rubkona county, the study team was informed that traditional structures primarily focus on disaster response and support, particularly during events of flooding. While specific names of committees were not recalled during the discussion, it was clear that community members recognized the importance of collective action in times of crisis. The primary mechanism for support appears to be informal networks where villagers assist each other, especially during severe flooding

events.

However, the lack of formalized committees at higher administrative levels, such as the county or state, indicates a gap in organized disaster management. While there are local efforts to form committees, the effectiveness of these groups is often limited by resources and lack of training. The community relies heavily on face-to-face communication for disseminating information and coordinating assistance, which may not be sufficient during large-scale disasters. This informal system, although valuable, underscores the need for stronger, more structured community responses to disasters that can enhance collective resilience and support individuals who are most affected by flooding and other climate hazards. Overall, the findings indicate that while some counties within the GUN region have active CPCs/DRR Committees, their presence remains inconsistent, with certain areas showing substantial gaps in disaster risk reduction mechanisms. Strengthening these committees and increasing community awareness in regions with low recognition and high absence rates is crucial to improving resilience against natural disasters and conflict-related risks in South Sudan.

7.3 Stakeholder Analysis for the THRIVE Project focused EWS

The success of the THRIVE project, aiming at enhancing economic and food security while building resilience in the Greater Upper Nile Region, hinges on the active engagement and collaboration of a diverse array of stakeholders. This analysis delves into the key actors involved in the multi-hazard early warning system, highlighting their roles, interests, and levels of influence. By understanding the dynamics among government ministries, international and local NGOs, community leaders, and target households, this section provides a comprehensive overview of how these stakeholders can collectively contribute to achieving the objectives of the project. Recognizing their unique contributions and fostering effective partnerships will be essential for mitigating the impacts of climate shocks and conflicts, ultimately leading to sustainable development and improved livelihoods in the region.

7.3.1 Ministry of Humanitarian Services and Disaster Management

The Ministry of Humanitarian Services and Disaster Management (MoHSDM) plays a pivotal role in leading the Technical Working Group (TWG), which oversees disaster management and response initiatives across South Sudan. They are responsible for coordinating the efforts of various government agencies and NGOs involved in disaster risk reduction and management. Their leadership ensures that disaster preparedness and response mechanisms are effectively implemented. Therefore, the MoHSDM is **primarily interested in enhancing the capacity of the country to respond to disasters and improving the resilience of communities**. By fostering effective disaster management strategies, the Ministry aims aim to safeguard vulnerable populations from the impacts of climate shocks and conflicts. Their focus also includes ensuring that policies align with international standards and best practices in disaster risk management. **The influence of the Ministry is significant, as they have the authority to set national policies and allocate resources for disaster management.** Their decisions directly impact the operational capabilities of the TWG and the overall effectiveness of the manner in which the THRIVE project EWS evolves. Their leadership role also positions them as a critical link between international organizations and local communities.

7.3.2 Ministry of Agriculture

The Ministry of Agriculture (MoA) is tasked with promoting food security and agricultural resilience. They oversee agricultural policies, programs, and initiatives that aim to boost productivity and improve livelihoods in rural areas. Their involvement in the TWG ensures that agricultural considerations are integrated into disaster risk management strategies. The MoA primary **interest lies in increasing agricultural output and ensuring food security for households in the Greater Upper Nile Region**. They aim to enhance the capacity of farmers and promote sustainable agricultural practices that can withstand climate variability. Their focus on food security is critical for reducing vulnerability to hunger and malnutrition. **The Ministry wields considerable influence over agricultural policies and programs.** Their ability to implement initiatives that directly affect farmers and food production makes them a key stakeholder in enhancing community resilience. Their engagement in the TWG allows them to advocate for agricultural priorities in disaster management discussions.

7.3.3 Ministry of Health

The Ministry of Health (MoH) Ministry focuses on the health and well-being of populations affected by disasters and food insecurity. They are responsible for implementing health programs that address the medical needs arising from climate shocks and conflict-related displacements. Their involvement in the TWG ensures that health considerations are part of broader disaster risk management strategies. The health Ministry is **primarily interested in reducing health risks associated with food insecurity, malnutrition, and disease outbreaks.** They aim to promote health resilience by improving access to healthcare services and ensuring communities are prepared for health emergencies. Their focus on health is essential for maintaining community well-being amid crises. The influence of the MoH is moderate but crucial. **Their decisions regarding health interventions can significantly impact community resilience and recovery.** They provide essential health-related data and insights that inform disaster management strategies, making their participation in the TWG vital for holistic planning.

7.3.4 Meteorological Department

In terms of its role, th**e Meteorological Department provides critical climate and weather information necessary for early warning systems.** They monitor weather patterns, issue forecasts, and assess climate-related risks. Their data is essential for anticipating the impacts of climate shocks on communities and informing disaster response strategies. **The Department is interested in enhancing the accuracy and dissemination of climate information to mitigate the impacts of extreme weather events**. Their goal is to improve community awareness and preparedness for climate-related risks, ultimately contributing to disaster resilience. The **influence of the Meteorological Department is high, as their data directly informs decision-making processes related to disaster management.** Accurate weather forecasts can significantly affect agricultural planning, health responses, and overall community preparedness. Their role as a reliable source of climate data positions them as a critical stakeholder in the TWG.

7.3.5 National Bureau of Statistics

The National Bureau of Statistics (NBS) is responsible for collecting and analyzing data related to demographics, markets, and economic activities. Their data is crucial for understanding the

socio-economic context in which the THRIVE project operates. They contribute to risk assessments and provide valuable insights for informed decision-making. The NBS is **interested in ensuring the accuracy and reliability of data that informs policy and programmatic decisions.** They aim to support evidence-based planning and resource allocation for disaster management and development interventions. **The influence of the NBS is moderate but significant.** Their ability to provide accurate statistics affects the planning and implementation of various initiatives under the THRIVE project. Their data helps stakeholders understand community needs and monitor progress, making them a valuable partner in the TWG.

7.3.6 Commission of Peace and Ministry of Information

These entities focus on promoting social cohesion and effective communication strategies within communities. They facilitate conflict resolution efforts and ensure that information flows effectively between stakeholders and the public. **Their primary interest lies in fostering a peaceful and cohesive environment that can withstand the pressures of climate shocks and conflict**. They aim to enhance community resilience through dialogue and information dissemination. **Their influence is moderate, as they play a key role in shaping public perceptions and responses to crises.** Effective communication can enhance community preparedness and response to disasters, making their involvement in the TWG important for promoting social stability.

7.3.7 GOAL

As the lead organization for the THRIVE project, GOAL is responsible for overall project management, implementation, and coordination of activities. They engage with communities, implement interventions, and monitor progress toward project goals. **GOAL's primary interest is achieving project objectives related to food security, resilience, and empowerment**. They focus on ensuring that interventions are effective and responsive to community needs. **GOAL holds significant influence due to its leadership position in the project.** Their expertise and experience in implementing similar initiatives enhance their ability to mobilize resources and coordinate stakeholder efforts effectively.

7.3.8 Mercy Corps

Mercy Corps is a key partner in the THRIVE project, providing technical support and expertise in community-level interventions. They work on enhancing livelihoods and resilience through various programs. **Their interest lies in promoting sustainable development practices that empower communities and reduce vulnerability to disasters.** They aim to support long-term resilience-building efforts. Mercy Corps **has a high influence due to its established reputation and experience in conflict-affected regions and their role in the THRIVE project.** Their involvement can attract additional resources and support for project initiatives.

7.3.9 CAFOD and VSF Swiss

Both organizations provide specialized support in areas such as food security and livelihoods. They contribute to the implementation of project activities and offer valuable insights based on their expertise. **Their primary interest is to enhance community resilience and improve food security through targeted interventions**. They focus on addressing the needs of vulnerable populations. **Their influence is moderate to high, as they bring specialized knowledge and resources that can enhance project effectiveness**. Their collaboration with other stakeholders is essential for achieving project goals.

7.3.10 Local Implementing Partners

Local partners engage directly with communities to implement project activities and facilitate participation. They play a crucial role in ensuring that interventions are culturally appropriate and effective. **Their interest lies in meeting community needs and fostering local ownership of project initiatives.** They aim to enhance community involvement and feedback in the project. **Local partners hold high influence due to their direct connection with communities**. Their insights and feedback are essential for adapting strategies to local contexts, making them invaluable stakeholders in the THRIVE project.

7.3.11 Target Households

Target households are the primary beneficiaries of the THRIVE project, directly engaging with the interventions designed to improve their livelihoods and resilience. Their primary **interest is in achieving better economic and food security, as well as benefiting from empowerment initiatives**. They seek opportunities for sustainable livelihoods and improved well-being. **Target households have high influence, as their engagement and feedback are crucial for the success of the project.** Their participation in the project can drive demand for interventions and shape the trajectory of project outcomes.

7.3.12 Community Leaders and Groups

Community leaders and groups facilitate coordination and mobilization within their communities. They serve as intermediaries between the project and the community, ensuring that local perspectives are considered. **Their interest lies in promoting social cohesion and addressing the needs of their communities.** They aim to enhance community resilience and ensure that interventions are effective. **Community leaders have moderate to high influence, as their support can enhance community participation and ownership of project initiatives. T**heir ability to mobilize community members is critical for project success.

7.3.13 Women and Youth

Women and youth are key beneficiaries of empowerment initiatives within the THRIVE project. They participate in programs aimed at enhancing their economic opportunities and resilience. **Their primary interest is in achieving financial inclusion and improving gender equality.** They seek opportunities that enhance their livelihoods and empower them within their communities. **Women and youth hold high influence, as their participation is essential for achieving gender equity and inclusive development**. Their feedback can shape project strategies and ensure that interventions meet their needs effectively.

7.3.14 World Food Programme

The **World Food Programme (WFP) provides critical financial support and resources for disaster management activities and food security initiatives.** They play a vital role in funding and facilitating project actions. **The WFP is interested in ensuring food security and effective disaster response within vulnerable populations.** They aim to support initiatives that align with their mission of alleviating hunger. **The WFP has high influence due to its capacity to provide essential resources and support for project implementation**. Their involvement can enhance the project's visibility and attract additional partnerships and funding.

7.3.15 Mobile Phone Providers

Mobile providers are essential for enhancing the communication infrastructure and networks crucial for the EWS. They ensure reliable connectivity across urban and rural areas, enabling timely alerts and information dissemination. These companies **can facilitate the rapid transmission of critical disaster alerts and safety information through SMS and mobile applications**. This direct communication helps communities respond quickly to potential hazards. **Mobile providers can assist in gathering data related to community behaviours, responses to alerts, and the overall effectiveness of the EWS**. This data can inform necessary adjustments and improvements to the system. By partnering with NGOs and government agencies, **mobile providers can run campaigns aimed at raising awareness about the EWS and the importance of disaster preparedness, fostering a culture of readiness within communities**. Collaborating with tech firms and NGOs, mobile providers can **help develop innovative mobile applications that deliver real-time updates and guidance during emergencies, enhancing the accessibility of the EWS**. Integrating mobile money services allows providers to facilitate **financial transactions for emergency relief, ensuring affected households have access to resources during crises**. Establishing channels for community feedback enables providers to gather insights on the clarity and relevance of alerts, which can be used to refine the EWS and better meet community needs.

Mobile phone providers are primarily interested in enhancing their service offerings and improving customer satisfaction. By participating in the EWS, they can strengthen their reputation as socially responsible companies while expanding their market reach. **Additionally, fostering community resilience aligns with their corporate social responsibility objectives, as it contributes to a stable environment in which their services can thrive**. The **influence of mobile phone providers is significant due to their established infrastructure and extensive customer base.** Their ability to communicate vital information directly to communities enhances the effectiveness of the EWS. Moreover, their partnerships with NGOs and government agencies can drive innovation and improve disaster response strategies, making them key stakeholders in the THRIVE project. Through leveraging their technological capabilities and networks, mobile providers can substantially contribute to building resilience in vulnerable communities.

Through key informants in the telecommunications sector, the study was informed that the telecommunication companies typically handle partnerships with NGOs and government organizations through formal agreements that outline the terms of collaboration. These partnerships are crucial for facilitating awareness campaigns, especially those aimed at educating the public about health, climate issues, or disaster preparedness. One of the informants informed the team that:

> *"When NGOs wish to utilize telecommunication platforms for awareness campaigns, they must approach the telecommunication company to negotiate terms. This usually involves submitting a proposal that details the campaign's objectives, target audience, and the specific services required, such as SMS alerts or call center support. The telecommunication company will then assess the proposal based on its feasibility and alignment with their business model.* **Interview with a telecommunication company representative in Juba, 21 March 2025.**

It is therefore important to note that while telecommunication companies are open to collaboration, they operate as business entities and often charge for their services. This means that NGOs need to consider the financial implications of using these platforms. However,

companies may offer discounts or special rates for social initiatives, reflecting their commitment to corporate social responsibility.

7.3.16 National broadcasters

National broadcasters – both radio and television – are essential for disseminating timely and accurate information regarding disaster alerts, weather forecasts, and safety protocols. Utilizing radio and television, they can reach broad audiences, ensuring that critical updates are accessible, especially to remote communities with limited access to digital communication. **Broadcasters can create and implement awareness campaigns to educate the public about the EWS, emphasizing the importance of disaster preparedness and appropriate responses to alerts.** Through fostering a culture of preparedness, they help communities understand the risks they face. In emergencies, national broadcasters can provide **live coverage of alerts and updates, delivering real-time information to the public**. This capability is crucial for enabling swift community responses to unfolding disasters, potentially saving lives. **Broadcasters can facilitate programs that engage communities in discussions about disaster risk reduction, climate change, and resilience-building strategies.** By creating platforms for dialogue, they empower individuals to share experiences and solutions, promoting a more informed public. National broadcasters **can work closely with the EWS to synchronize alerts and information dissemination efforts. This collaboration ensures consistency in messaging,** reinforcing the urgency of preparedness and enhancing the overall effectiveness of the system. Broadcasters can establish channels for community feedback regarding the effectiveness of their broadcasts and alerts. This feedback is essential for continuously improving communication strategies and ensuring that the EWS meets the needs of the population.

In terms of their interests, national broadcasters are primarily aimed at enhancing their role as trusted sources of information while fulfilling their public service obligations. Though participating in the EWS, they can strengthen community ties and support public safety, which aligns with their mission to inform and educate the public. **The influence of national broadcasters is significant due to their extensive reach and established credibility.** Their ability to communicate vital information quickly and effectively enhances the EWS's impact, ensuring that communities are informed and prepared. Through leveraging their platforms, broadcasters play a crucial role in building resilience and promoting disaster preparedness within the Greater Upper Nile Region, thereby contributing to the overarching goals of the THRIVE project.

7.3.17 Community Radio Stations

Community radio stations serve as critical channels for broadcasting localized disaster alerts, weather updates, and safety information. Through the use of local languages and dialects, they ensure that vital information is accessible and comprehensible to all community members, including those who may not be literate. **These stations can run educational programs focused on disaster preparedness and risk reduction.** By fostering awareness of potential hazards and appropriate responses, they empower communities to take proactive measures to safeguard themselves. **Community radio facilitates discussions and forums that engage listeners in conversations about local risks, climate change, and disaster management strategies**. This engagement allows communities to voice concerns, share local knowledge, and collaborate on solutions that enhance resilience. During emergencies, community radio stations **can provide live updates and continuous coverage, including evacuation procedures and safety tips.** Real-time information helps guide community responses, enabling individuals to make informed decisions

during crises. **Community radio can work alongside local government bodies, NGOs, and the EWS to ensure that messaging is consistent and aligned with official alerts.** This collaboration enhances the credibility of the information and ensures synchronized messaging for communities. Community radio can **establish channels for listeners to provide feedback on alerts and report local conditions during emergencies.** This feedback loop enhances the effectiveness of the EWS by ensuring responsiveness to community needs. **Community radio can also highlight local initiatives and success stories related to disaster risk reduction**. Sharing these narratives inspires community participation and replicates successful strategies for resilience-building.

Community radio stations are primarily interested in fulfilling their role as trusted sources of information while serving their communities. Through participating in the EWS, they strengthen local ties and support public safety, aligning with their mission to inform and educate. **The influence of community radio stations is significant due to their established local presence and credibility.** Their ability to communicate vital information quickly and effectively enhances the impact of the EWS, ensuring communities are well-informed and prepared. Through leveraging their platforms, community radio stations play a crucial role in building resilience and promoting disaster preparedness within the GUN Region, contributing to the overall goals of the THRIVE project.

7.4 Gaps and challenges with current early warning systems

7.4.1 Current EWS Infrastructure at National Level

Gaps identified by the study

The existing infrastructure for early warning systems in South Sudan is critically limited, which poses a significant barrier to effective disaster risk management. The current EWS is characterized by a lack of functional monitoring stations and inadequate technological support. One of the members of the TWG on DRM had the following to say:

> *"The current state of Early Warning Systems infrastructure in South Sudan is characterized by significant limitations. There is inadequate overall infrastructure for early warning systems in the country, which hinders effective disaster risk management. Additionally, the Meteorological Department and the Ministry of Water Resources possess insufficient equipment necessary for accurate and timely early warning alerts. These challenges highlight the urgent need for investment and enhancement of EWS capabilities to better prepare for and respond to potential disasters".* **Interview with a member of the TWG, Juba, 14 March 2025**

In particular, **the Meteorological Department and the Ministry of Water Resources have insufficient equipment, including weather stations and sensors needed for real-time data collection**. This deficiency severely limits their ability to gather reliable data on climate conditions, which is crucial for issuing timely warnings about impending disasters. A representative of the Metrological Department also backed these observations:

> *"While we have access to various resources for monitoring climate variables, there are significant gaps, particularly in the aviation sector. For instance, our ground stations, which are crucial for collecting real-time data on temperature, humidity, and rainfall, are currently*

non-functional. Although we obtain some information from online sources, such as the World Meteorological Organization (WMO), having functional ground stations is vital for accuracy. We have projects in place aimed at procuring new equipment and restoring these stations, but their implementation is pending. The need for reliable ground data is critical for improving our forecasting accuracy and supporting sectors that rely heavily on precise weather information, such as aviation and agriculture". **Interview with Meteorological Department Representative, 21 March 2025**

A representative of the Ministry of Environment and Forestry echoed almost the same sentiments:

"Currently, the automated weather stations are stored, awaiting installation in designated areas. It is imperative that these systems have reliable internet access for effective data transmission. Collaborating with telecom companies will be essential to establish connectivity. Additionally, the use of solar power for these stations should ensure sustainability. Overall, enhancing communication infrastructure is vital to ensure timely dissemination of weather information to those most affected by climate events". **Interview with a Ministry of Environment and Forestry Representative, 21 March, 2025**

The same official further highlighted that there is an existing system based on data from the Intergovernmental Panel on Climate Change (IPCC), but it lacks specificity and urgency. The bulletins issued by the Ministry of Humanitarian Affairs are too general and do not adequately inform communities about imminent threats. He highlighted that for a more robust early warning system that can provide clear, actionable alerts. It was further highlighted that daily weather updates should be broadcasted through various media outlets to ensure people receive timely and relevant information about weather conditions.

These acknowledgment of existing gaps highlights the urgent need for investment in the necessary infrastructure for weather and climate forecasting. Ensuring that ground stations are functional is essential for enhancing the accuracy of weather forecasts and supporting critical sectors like agriculture, aviation and EWS. Through prioritizing the procurement of new equipment and restoring these stations, the Meteorological Department can significantly improve the reliability of climate data and better equip communities to respond to environmental challenges.

Moreover, the absence of a centralized EWS platform complicates coordination among various government agencies and NGOs involved in disaster management. Each agency may operate independently without standardized procedures or communication channels, leading to inefficiencies and delays in information dissemination. For example, when a weather warning is issued, the lack of a unified system means that alerts may not reach all relevant stakeholders simultaneously, especially those at the community level.

Challenges

The inadequate infrastructure hampers not only data collection but also the analysis and interpretation of that data. Even when data is gathered, it may not be processed in a timely manner due to equipment shortages or lack of trained personnel. Consequently, communities may receive warnings too late to take effective action, increasing their vulnerability to disasters. Additionally, the reliance on outdated technologies and methods further exacerbates these challenges. For instance, many rural areas lack access to electricity, making it difficult to operate and maintain modern

weather equipment. As a result, the EWS struggles to adapt to the rapidly changing climate conditions that impact the GUN Region.

Investing in infrastructure improvements, such as establishing more weather monitoring stations and enhancing existing ones, is crucial. This includes not only procuring new equipment but also training personnel to operate and maintain these systems. Strengthening the EWS infrastructure will not only improve data collection and analysis but also enhance the overall effectiveness of disaster preparedness and response efforts in the GUN in particular and South Sudan in general.

7.4.2 Availability and Reliability of Climate Data

Gaps identified by the study

The availability and reliability of climate data in South Sudan are significant concerns that impede the effectiveness of the EWS. While the Meteorological Department and the Ministry of Water Resources do collect climate data, the quantity and quality of this data are often inadequate. The lack of modern equipment limits the ability to gather comprehensive and precise data on weather patterns, temperature fluctuations, and precipitation levels. Consequently, the existing data may not accurately reflect the current climate realities faced by communities, leading to potentially misplaced trust in the EWS.

Moreover, the data collection process is often fragmented, with various ministries contributing data only relevant to their specific areas of operation. This piecemeal approach results in a national dataset that lacks coherence and may not address local conditions or risks effectively. For instance, while flood monitoring centers have been established, they may not provide comprehensive data on other climate-related hazards such as droughts or extreme heat events.

Challenges

The reliance on satellite data further complicates the situation. **While satellite technology can provide valuable information, it is often not suitable for localized forecasting, which is essential for effective early warning.** Communities in the GUN Region may face unique climatic challenges that satellite data alone cannot capture. Therefore, without localized data, the EWS may struggle to provide accurate and timely forecasts that are essential for community preparedness.

Additionally, the lack of functional ground weather forecasting equipment severely limits the ability of the Meteorological Department to provide localized weather forecasts. This reliance on international bodies for information creates delays and may lead to discrepancies between the data received and the actual conditions on the ground. Improving the availability and reliability of climate data requires establishing a more integrated data collection system that includes input from local communities, NGOs, and government agencies. Training personnel to utilize modern technology and methods for data collection will also be essential. Furthermore, creating a feedback loop that allows communities to report local conditions can enhance the accuracy of the data and improve the responsiveness of the EWS.

A representative of the Meteorological Department summed up some of the issues as follows:

> *"There are several challenges we face in disseminating climate information effectively. One major issue is the lack of resources, including vehicles and internet access, which hampers*

our ability to reach remote areas and communicate timely warnings. Additionally, many media outlets lack the capacity to broadcast the information we provide, often citing budget constraints or logistical issues. Economic factors play a significant role as well, as many communities may not prioritize climate information due to immediate financial pressures. This lack of awareness can lead to underutilization of the information we generate, hindering our collective efforts to prepare for and respond to climate-related challenges". **Interview with Meteorological Department Representative, Juba, 21 March 2025**

The study was further informed that the primary challenges in providing climate change data stems from the inherent complexity of climate prediction. Accurate climate change projections require access to specialized expertise and resources, which may not always be available locally. Much of the information on climate trends comes from global research centres, making it difficult to generate specific local data. Additionally, the lack of functional ground stations limits the ability to collect real-time data, which is crucial for accurate forecasting. Budget constraints also hinder the capacity to implement necessary projects for data collection and dissemination.

"Despite these challenges, we remain committed to strengthening our cooperation with organizations like CAFOD to improve the availability and quality of climate information for South Sudan". **Interview with Meteorological Department Representative, Juba, 21 March 2025**

Therefore, light of these challenges, it is crucial that stakeholders prioritize the enhancement of resources, capacity-building for media outlets, and community engagement initiatives under the THRIVE project.

7.4.3 Financial Constraints and Accessibility

Gaps identified by the study

Financial constraints represent a significant barrier to the effectiveness of the EWS in South Sudan and the GUN region. Community radio stations, which are crucial for disseminating disaster alerts, often require payment to broadcast vital information. This financial burden can deter local broadcasters from providing timely alerts, especially in impoverished areas where resources are scarce. The Meteorological Department and other relevant government agencies may not have the budgetary allocations necessary to cover these costs, resulting in decreased accessibility to critical information for communities. The study team was also informed that the national TV and radio broadcasters face financial constraints that hinder their ability to collect weather and climate data from the Meteorological Department due to lack of fuel or malfunctioning internet connectivity.

In addition, the overall budget for disaster management and EWS implementation in South Sudan is often limited. **This lack of funding affects not only broadcasting costs but also the procurement of necessary equipment and training for personnel.** Without adequate financial resources, sustainable EWS initiatives cannot be developed, leading to a reliance on ad-hoc solutions that may not be effective in the long term.

However, the Meteoritical Department is open to share relevant data and information even with private community owned radio stations according to the following quote:

> *"Local radio stations, including smaller ones like in Bentiu, can receive regular climate information from our office. We have established coordination mechanisms for disseminating this information effectively. Once we generate relevant data on climate conditions, it is our responsibility to ensure that it reaches local broadcasters. These stations can then broadcast the information to their communities, ensuring that people are informed about climate events and forecasts. This system helps to keep the public aware of critical climate changes, agricultural conditions, and potential hazards, thus empowering them to make informed decisions. We encourage radio stations to actively seek out this information and utilize it in their broadcasts, as it is essential for public awareness and safety.* **Interview with a Metrological Department Representative, 21 March 2025.**

This proactive approach by the Meteorological Department demonstrates a commitment to improving community resilience through effective communication. Through the fostering of partnerships with local radio stations, there is a significant opportunity to enhance public awareness and preparedness regarding climate events. Encouraging these stations to actively engage with the available data will not only empower communities but also strengthen collective efforts in mitigating climate-related risks.

Challenges

The lack of financial resources can also lead to inadequate maintenance of existing EWS infrastructure. **For instance, if equipment breaks down or becomes outdated, the lack of funds to repair or replace it may render the entire system ineffective.** This situation creates a cycle of poor performance that undermines community trust in the EWS, further complicating efforts to encourage public engagement and awareness.

Furthermore, transportation issues exacerbated by financial constraints hinder the ability of national broadcasters and meteorological staff to collect data and disseminate information effectively. Many areas in the Greater Upper Nile Region are remote and lack reliable transportation options. When national broadcasters cannot reach these areas due to logistical challenges, the vital information they possess fails to reach the communities that need it most.

To address these financial constraints, it is critical to secure funding from international donors, private sector partnerships, and government allocations specifically earmarked for disaster management and EWS development. Establishing a sustainable funding model that includes community contributions or partnerships with local businesses may also help alleviate some of the financial burdens on broadcasters and government agencies.

7.4.4 Disconnect Between National and Local EWS

Gaps identified by the study

A significant gap in the EWS for the THRIVE project is the disconnect between national and local early warning systems. This disconnect results in a lack of systematic transmission of alerts from higher levels to local communities, leading to inefficiencies and lack of clarity. Currently, there is no established structure for disseminating alerts from national bodies, such as the Meteorological Department or TWG, to local communities. As a consequence, information may not reach the intended recipients in a timely manner, leaving communities vulnerable to disasters. Moreover, the existing communication channels are often fragmented and uncoordinated. Different ministries and agencies may issue alerts without a unified approach, creating potential misinformation or

conflicting messages. This lack of coherence can erode public trust in the EWS, leading to apathy and disengagement among community members.

Challenges
The challenges posed by this disconnect can have dire consequences during emergencies. **When communities do not receive timely alerts about impending hazards, their ability to respond effectively is severely compromised.** This can lead to increased casualties and damage to property, undermining the objectives of the THRIVE project to enhance resilience and food security. Additionally, local entities often lack the capacity to interpret and act on the information provided by national bodies. This can result in a situation where even if alerts are disseminated, local communities may not understand the appropriate actions to take. For instance, without clear guidance on how to prepare for a flood or drought, households may remain unaware of the steps they need to take to protect themselves and their livelihoods.

To bridge this gap, it is crucial to establish a clear communication framework that facilitates the flow of information from national to local levels. Training local leaders and community members on how to interpret and respond to alerts can empower communities and enhance their resilience. Regular drills and simulations can also help familiarize communities with the EWS and improve their preparedness for future disasters.

7.4.5 Current EWS Infrastructure at the local level – State, County and Payam

According to a DRR Officer for the THRIVE program in Rubkona county:

> *"The effectiveness of early warning systems is significantly hampered by several challenges. Funding shortages limit the ability to develop and sustain these systems, while organizational readiness is often lacking, leaving communities unprepared. Additionally, the absence of technical expertise and knowledge in disaster management further undermines efforts to implement effective EWS, necessitating targeted capacity-building initiatives".* **Interview with DRR Officer for the THRIVE program in Rubkona, 16 March 2025**

Some of the main challenges and limitations are discussed in the following sub-sections.

7.4.6 Infrastructure Limitations

Gaps identified by the study
The infrastructure in the Greater Upper Nile Region is significantly underdeveloped, affecting disaster response and communication. **A massive 81.4% of respondents in the study survey expressed dissatisfaction with the condition of roads and transport networks, which are critical for timely emergency response.** Many roads have suffered extensive damage from ongoing conflict and natural disasters, making it difficult to transport emergency supplies and communicate effectively during crises. The lack of reliable transport infrastructure limits access to affected areas and hampers the effectiveness of disaster management efforts.

Challenges
The challenges stemming from inadequate infrastructure are multifaceted. **First, the damage to roads not only affects logistics but also exacerbates community vulnerability. When roads are impassable, timely delivery of aid is compromised, leaving communities without critical resources during emergencies**. Furthermore, the telecommunication sector is equally impacted;

companies like MTN struggle to provide reliable services in conflict-prone areas. Only 29.7% of respondents reported engagement with local authorities during disasters, highlighting the limited operational capacity of telecommunication companies. This inadequacy impedes the dissemination of timely information and warnings, which are vital for community preparedness. One of the telecommunication company representatives had this to say:

> *"Currently, telecommunication coverage in the Greater Upper Nile is limited, with estimates suggesting that only a fraction of the population has reliable access to services. The infrastructure challenges, combined with ongoing conflict and instability, have stunted growth in this sector. Telecommunication companies are cautious about expanding their services in areas where political instability and insecurity prevail, as these factors directly affect their ability to operate effectively and sustainably".* **Interview with a Representative of one of the Mobile Telecommunication Companies in Juba; 21 March 2025.**

The study team was further informed that the potential for expansion exists but is heavily contingent upon **political stability**. Should the region experience a period of peace, there would be opportunities for companies to invest in infrastructure development and enhance coverage. For instance, if conflict subsides and communities feel secure, telecommunication companies could extend their networks to underserved areas, thus increasing their customer base and improving service delivery. Moreover, the needs and economic viability of the local population in investing in these areas must be considered. Companies often evaluate whether the potential user base can sustain the operational costs involved in providing services. Therefore, a combination of political stability and a clear understanding of the local market dynamics will be essential for any meaningful expansion of telecommunication services in the GUN region.

Additionally, the study team found that the lack of facilities to store and maintain essential communication equipment further complicates disaster response. Many local government buildings have been damaged, reducing the capacity to coordinate disaster management efforts effectively. Consequently, addressing infrastructure issues is paramount for establishing an effective EWS and ensuring community resilience.

7.4.7 Lack of Early Warning Systems

Gaps identified by the study

The absence of a functional EWS represents a critical gap in disaster preparedness. **The survey indicates that 57.8% of respondents reported no existing EWS, which is a concern given the increasing frequency of climate-related disasters.** Furthermore, only 15.5% of respondents feel they receive timely warnings about hazards, indicating a severe deficiency in communication processes. The lack of awareness and skills related to EWS is particularly concerning, with 67.4% of respondents expressing ignorance about these systems. This gap underscores the need for comprehensive education and outreach initiatives that inform communities about the significance of early warning systems.

Challenges

The challenges associated with the lack of an EWS extend to community engagement with local governance. **Only 29.7% of respondents reported interactions with local authorities during disasters, raising concerns about the existing communication channels between community members and officials.** Without effective collaboration, establishing a comprehensive EWS tailored to the unique needs of different communities becomes challenging. **Moreover, the reliance on informal networks for information increases the risk of misinformation and**

confusion during emergencies. In the absence of a structured EWS, communities may not receive timely alerts, leading to inadequate responses to impending threats. This situation highlights the urgent need for a robust EWS that integrates local governance and community engagement, ensuring that information flows efficiently to those who need it most.

7.4.8 Communication Barriers

Gaps identified by the study

Effective communication is critical for disseminating timely hazard information to communities. **However, the survey reveals significant gaps in this area. A considerable 57.2% of respondents do not have access to radios, and 51.8% lack television, severely restricting their ability to receive timely information about potential hazards.** In addition, 50.6% of respondents do not know what media are used for warnings, indicating a substantial flaw in outreach strategies aimed at raising awareness. A discussion with a community leader in Bentiu, Rubkona County revealed the significant challenges regarding **communication networks**, particularly in remote or underserved areas where traditional media may not reach all residents. Emphasis was placed on the fact that radio broadcasts are not always accessible, highlighting the limitations of technology in ensuring widespread communication during emergencies. This gap in communication can lead to misinformation or a lack of awareness about critical situations, placing individuals at greater risk. He highlighted that:

> *"To address these challenges, the importance of **word of mouth** as an alternative communication method should be underscored. In communities where technology may fail, interpersonal communication becomes crucial for disseminating important information. Neighbours talking to one another, community leaders sharing updates, and local gatherings can all serve as vital channels for relaying messages, particularly in times of crisis. This reliance on personal connections emphasizes the importance of community cohesion and the role of social networks in enhancing resilience".* **Interview with a Community Leader, Bentiu Town, Rubkona County, 17 March 2025**

Additionally, the discussions highlighted the need for comprehensive communication strategies that consider the unique characteristics of each community. Tailoring communication efforts to local contexts can improve the effectiveness of messaging and ensure that all residents, including those who may not have access to technology, receive critical information. This approach requires collaboration among various stakeholders, including government agencies, NGOs, and community leaders, to develop and implement effective communication plans.

Challenges

Language barriers further complicate effective communication. **While 90.1% of respondents receive warnings in local languages, a substantial 72.7% find these warnings incomprehensible.** This lack of comprehension can lead to confusion and a lack of preparedness, undermining the very purpose of an EWS. **Poorly communicated messages can result in community members ignoring warnings or failing to take necessary precautions**. Furthermore, the lack of awareness regarding existing communication channels exacerbates the problem. Many community members are unaware of how to access vital information, which fosters complacency and reduces the urgency to prepare for potential disasters. **The absence of reliable channels for disseminating information, combined with financial barriers that prevent access to communication technology, creates an environment where communities remain unprepared.** To address these challenges, it is essential to enhance communication strategies that prioritize

accessibility and comprehension. **Initiatives could include training community members on effectively using available media, ensuring messages are clear and culturally relevant, and promoting awareness of existing communication channels.** This approach can empower communities to take proactive steps in disaster preparedness.

7.4.9 Government capacity and resources

Gaps identified by the study

The capacity of local governments to manage disaster responses is a significant concern in the Greater Upper Nile Region. **The survey indicates that only 15.5% of respondents believe local authorities can effectively maintain infrastructure, demonstrating a widespread lack of trust in governmental capabilities.** This skepticism extends to disaster response; a staggering 85% of respondents express doubt about the ability of the local government to respond adequately to disasters. The lack of confidence in local governance structures can hinder community engagement and willingness to cooperate during emergencies.

Challenges

Moreover, **the survey reveals that 59.3% of respondents report no disaster preparedness and response plans in their communities.** This indicates a critical need for structured frameworks that can guide local governments in coordinating disaster response efforts. **A lack of formal plans means that communities are often ill-prepared and may struggle to mobilize resources effectively during crises.** The limited presence of resources and trained personnel further exacerbates the challenges facing local governments. Many local authorities lack the financial means to implement necessary disaster management initiatives, which hinders their ability to provide essential services and support to vulnerable populations. Strengthening local government capabilities through training programs, resource allocation, and community engagement is vital to enhance their disaster response capacities and ensure effective management of crises. Through investing in local government capacity-building initiatives, communities can foster a more collaborative approach to disaster preparedness and response. This approach should include establishing clear roles and responsibilities for local authorities, enabling them to coordinate effectively with community members and other stakeholders.

7.4.10 Community engagement and participation

Gaps identified by the study

Community engagement is pivotal for effective disaster preparedness and resilience, yet the survey shows low levels of active participation in climate monitoring. **Only 10.8% of respondents across the region are consistently involved in such activities, which may contribute to heightened vulnerability to climate impacts**. When community members are not actively engaged, they lose opportunities to share local knowledge and insights that could inform disaster preparedness strategies. This highlights the need for capacitating communities with the relevant knowledge and skills. This was highlighted in a conversation with a community leader in Bentiu Town:

> *"There is need to underscore the importance of educating communities about meteorological insights. When residents are informed about how to interpret weather forecasts and understand the potential risks associated with severe weather, they are better equipped to take proactive measures to protect themselves and their families. This education fosters a culture of preparedness, empowering individuals to make informed decisions during emergencies".* **Interview with a Community Leader, Bentiu Town,**

Challenges

The presence of organized disaster management structures is limited. **Only 32.8% of respondents across the region reported the existence of Civil Protection or Disaster Risk Reduction Committees, indicating a significant gap in formalized disaster management efforts.** The absence of these committees means there is often no structured approach to disaster preparedness, leading to fragmented efforts that may not effectively address community needs. **To promote community engagement, it is essential to create and empower Disaster Risk Reduction Committees at the local level. These committees should include diverse representation from various community groups, such as women, youth, and marginalized populations.** Engaging these groups can foster a culture of preparedness and resilience, as they can share unique perspectives and knowledge about local hazards and vulnerabilities. Furthermore, regular training and capacity-building workshops can help community members develop skills related to disaster preparedness and response. This could include training in hazard monitoring, communication strategies, and resource mobilization, thereby enhancing the overall resilience of the community.

7.4.11 Financial and Resource Constraints

Gaps identified by the study

Financial barriers significantly impact the resilience of communities to disasters in the Region. **The survey indicates that 88.1% of respondents lack access to banking or community funds, limiting their ability to invest in preparedness measures and recovery efforts**. This lack of financial inclusion exacerbates vulnerability, as individuals and households cannot access resources to mitigate the impacts of disasters.

Challenges

Furthermore, the survey highlights that only 23.6% of respondents have access to essential agricultural resources, such as fertilizers and crop seed varieties. This scarcity affects food security and livelihoods, making communities more susceptible to the impacts of climate shocks. Without adequate agricultural inputs, farmers cannot cultivate crops effectively, leading to reduced yields and increased food insecurity. This situation is especially concerning given the region's reliance on agriculture as a primary source of income and sustenance. **To address these financial constraints, it is crucial to implement programs that improve access to financial resources, including microfinance and community funds. These initiatives can empower individuals and families to invest in disaster preparedness measures and recovery efforts, thereby enhancing resilience.** Additionally, partnerships with local financial institutions can facilitate the development of tailored financial products that meet the unique needs of communities in the GUN region. Moreover, improving access to agricultural resources is essential for enhancing food security. This may involve establishing distribution networks for essential inputs, providing training on sustainable agricultural practices, and promoting community-led initiatives that encourage resource-sharing and collaboration.

7.4.12 Overall impact on THRIVE project goals

The gaps and challenges identified in the EWS directly impact the overarching goals of the THRIVE project, which aims to enhance economic and food security while improving resilience

to climate and conflict shocks. Without a functional and reliable EWS, communities may struggle to respond effectively to disasters, undermining efforts to achieve the objectives of the project. For instance, if farmers and fishers do not receive timely alerts about extreme weather events, they may suffer significant losses to their crops and livelihoods. This not only jeopardizes their economic security but also affects food availability within the community, exacerbating issues of hunger and malnutrition. Furthermore, the lack of preparedness can lead to increased displacement and conflict over scarce resources, undermining social cohesion and the goals of the project of promoting conflict resolution capacities.

In addition, the disconnect between national and local EWS can hinder women and youth empowerment initiatives. If these groups do not receive adequate information about impending risks or do not understand how to respond, their participation in economic activities can be severely restricted. This can further entrench gender inequalities and limit opportunities for economic inclusion, which are central to the THRIVE project.

Addressing these gaps and challenges is critical for ensuring that the EWS effectively supports the goals of the THRIVE project. Through investing in infrastructure improvements, enhancing data collection and reporting mechanisms, ensuring financial support for broadcasting, and establishing a systematic transmission structure, stakeholders can empower communities in the GUN region to effectively respond to hazards. Collaborative efforts among government agencies, NGOs, and local communities will be vital for building a resilient EWS that supports the needs of vulnerable populations and contributes to the overall success of the THRIVE project.

8 Community-Based Early Warning Systems (CBEWS)

8.1 Mechanism and Information Flow

8.1.1 Stakeholder Coordination and Engagement

Effective communication within the THRIVE project's EWS hinges on robust stakeholder coordination. To facilitate this, establishing a **Multi-Stakeholder Coordination Committee** is essential. This committee should include representatives from key stakeholders such as the Ministry of Humanitarian Services and Disaster Management (MoHSDM), the Ministry of Agriculture (MoA), the Ministry of Health (MoH), the Meteorological Department, the National Bureau of Statistics (NBS), and various NGOs involved in the project, including GOAL, Mercy Corps, CAFOD, and VSF Swiss.

The primary function of the committees will be to oversee the integration of early warning systems into broader disaster risk management strategies. According to the beneficiary survey for this report, approximately 57.8% of respondents across the GUN reported a lack of awareness regarding existing EWS, which underscores the necessity for clear and consistent messaging. Meeting quarterly will allow stakeholders to review the effectiveness of the EWS, share insights from the ground, and adjust strategies based on community feedback and emerging risks**. To facilitate these meetings, it is crucial to establish a clear agenda that focuses on the operational effectiveness of the EWS, data sharing, and community engagement**. This will involve reviewing past incidents, analysing the response times to alerts, and discussing how to improve the clarity and relevance of the messages being transmitted**. Furthermore, the committee should also engage local leaders and community representatives including women, youth and persons with**

disability to ensure that the voices of those directly impacted by disasters are considered in decision-making processes.

The influence of this committee cannot be understated, as it will serve as a bridge between national policies and local realities. By fostering a collaborative environment, the committee can build trust and enhance the overall effectiveness of the EWS. This approach aligns with the findings of the survey, where only 29.7% of respondents reported having interacted with local authorities during disasters, indicating a clear need for improved communication and engagement.

The importance of effective communication structures was highlighted in an interview with an RRC representative in Rubkona County. He pointed out to the fact that organizations can improve collaboration with local authorities by actively engaging them in the planning process from the outset. This involves sharing detailed project proposals and timelines, allowing local authorities to review and provide input. He highlighted that:

> *"Establishing regular meetings and communication channels can help facilitate ongoing dialogue and ensure that all stakeholders remain informed about project developments. Organizations should also be transparent about their goals and activities, enabling local authorities to align their efforts accordingly. By fostering a collaborative environment, both parties can work towards common objectives, thereby enhancing the effectiveness and sustainability of initiatives".* **Interview with RRC representative in Rubkona County, 17 March 2025**

He added that providing training and capacity-building opportunities for local authorities can empower them to take a more active role in project implementation, further strengthening the partnerships between organizations and government entities.

The RRC further highlighted that effective communication between organizations and local authorities is essential to avoid overlaps and conflicts in project implementation. When organizations fail to share their plans and objectives with local authorities, it can lead to confusion and inefficiencies, jeopardizing the success of initiatives like the Thrive program. Clear communication ensures that all parties are aware of existing programs, resources, and community needs, allowing for better coordination and collaboration. It also facilitates informed decision-making, as local authorities can provide valuable insights and support based on their understanding of the context of the community. By fostering open lines of communication, organizations can enhance trust and cooperation, ultimately leading to more successful and sustainable outcomes for the communities they aim to serve.

8.1.2 Information Collection and Data Management

The foundation of an effective EWS lies in accurate data collection and management. Developing a **Centralized Data Hub** is crucial for streamlining information sharing among stakeholders. This hub should serve as a digital platform where real-time data can be aggregated and analysed. **The necessity for a centralized system is highlighted by the inadequacies in the current data management practices, where 85% of respondents expressed doubt about the ability of local governments to respond adequately to disasters.** To build this hub, it is essential to utilize modern technology that can integrate data from various sources, including local communities, weather stations, and national bodies. The Meteorological Department, for instance, currently faces challenges with outdated equipment that limits its ability to gather reliable climate data. Through

investing in modern data collection tools, the project can ensure that accurate and timely information reaches stakeholders and communities alike.

Training local data collectors is another critical component of this strategy. Engaging community members to gather localized weather and risk data will not only enhance the accuracy of the information but also foster a sense of ownership and responsibility among residents. According to the survey, only 10.8% of respondents across the three states are actively involved in climate monitoring activities, indicating a significant opportunity for community engagement. Implementing training programs tailored for local data collectors will empower them with the skills necessary to monitor climate variables effectively. This could involve workshops focusing on data collection methodologies, the use of digital tools for reporting, and understanding the local context of climate risks. Furthermore, establishing a feedback loop where community members can report local conditions will enhance the responsiveness and adaptability of the EWS.

To ensure the success of the centralized data hub, it is vital to maintain strong collaboration with local and international partners who can provide technical support and resources. This partnership will help overcome the financial constraints currently hindering effective data management, as identified in the survey, where only 23.6% of respondents reported having access to essential agricultural resources.

8.1.3 Communication Channels

Effective communication channels are the lifeblood of any early warning system. To optimize outreach and ensure timely dissemination of alerts, establishing a **Mobile Alerts and SMS Notification System** is paramount. **Collaborating with mobile providers will enable the project to set up a system that disseminates warnings to registered community members via SMS.** This method has the potential to reach a wide audience, especially in rural areas where traditional media may not be as effective. According to the survey, 57.2% of respondents do not have access to radios, and 51.8% lack televisions, emphasizing the need for alternative communication methods. By leveraging mobile technology, the project can ensure that critical information reaches the most vulnerable populations. The SMS alerts should be concise, delivered in local languages, and include clear instructions on how to respond to various hazards.

In addition to mobile alerts, strengthening partnerships with community radio stations is crucial for broadcasting timely alerts and educational programs. Community radio has been shown to be an effective tool for reaching local populations, especially those who may not have access to other forms of media. Given that they can use local dialects, these local stations can enhance the understanding and effectiveness of the warnings issued.

Educational campaigns should also be launched to raise awareness about the importance of the EWS among community members. **These campaigns can utilize various media platforms, including social media, to spread the message about disaster preparedness and the specific actions individuals should take when they receive alerts.** Engaging local leaders and influencers in these campaigns can further enhance their impact, as they can disseminate information in culturally relevant ways. **To ensure the effectiveness of these communication channels, regular assessments should be conducted to evaluate their reach and impact. Feedback from community members regarding the clarity and usefulness of the alerts should be incorporated into future communications strategies.** This will not only improve the effectiveness of the EWS but also foster trust and engagement within the community.

8.1.4 Community Engagement and Training

Community engagement is fundamental to the success of any early warning system therefore to effectively prepare communities for disasters, conducting **Training Workshops** is essential. These workshops should focus on educating community leaders, women, persons with disability, and youth about interpreting alerts and responding effectively to warnings. **Given that only 29.7% of respondents reported interacting with local authorities during disasters, this training will empower community members to take proactive roles in disaster preparedness.** Workshops should incorporate practical exercises that simulate disaster scenarios, enabling participants to practice response strategies in real-time. This hands-on approach will enhance community readiness and build confidence in their ability to respond to emergencies. Moreover, engaging local leaders in these training sessions will ensure that the knowledge gained is disseminated throughout the community.

Creating **Disaster Risk Reduction Committees** at the local level is another critical step in fostering community engagement. These committees should be composed of diverse representatives from various community groups, including women, youth, persons with disability and other marginalized populations. Through the inclusion of these voices, the committees can develop more comprehensive and culturally relevant disaster preparedness plans. **The survey revealed that only 32.8% of respondents reported the existence of formal disaster management structures, indicating a significant gap in organized disaster response efforts.** Empowering local committees will provide a structured approach to disaster preparedness, ensuring that communities are better equipped to handle potential hazards.

Regular capacity-building workshops should also be implemented to train committee members in disaster management practices. These workshops could cover topics such as hazard monitoring, communication strategies, and resource mobilization. By equipping community members with the necessary skills and knowledge, the project can enhance overall community resilience. Furthermore, engaging women and youth in these initiatives is crucial, as they often play key roles in household decision-making and community leadership. Their active participation will not only empower them but also ensure that disaster preparedness efforts are inclusive and effective.

8.1.5 Feedback Mechanisms

Establishing effective **Community Feedback Channels** is essential for refining the early warning systems and ensuring they meet community needs. **Gathering feedback from community members will provide valuable insights into the effectiveness of the EWS, enabling continuous improvement. This aligns with the survey findings, where 67.4% of respondents expressed ignorance about existing early warning systems, highlighting the need for better communication and community involvement**. Implementing surveys and focus groups at the community level can be an effective way to gather feedback on the performance of the EWS. These initiatives should focus on understanding community perceptions of the alerts received, including their clarity, timeliness, and relevance. Additionally, establishing a system where community members can report local conditions and responses to alerts will enhance the adaptability of the EWS.

To facilitate feedback, utilizing mobile applications or community radio call-in programs can provide accessible platforms for community members to voice their opinions and experiences.

This two-way communication will foster trust between the community and the project, creating a sense of ownership among residents. **Regularly scheduled community meetings can also serve as a forum for discussing EWS performance and gathering insights.** These meetings should include representatives from various stakeholder groups, allowing for diverse perspectives to be shared and considered. It is essential to analyze the feedback collected and share findings with stakeholders to inform decision-making processes. By incorporating community input into the project's strategies, the THRIVE initiative can enhance its effectiveness and ensure that interventions are responsive to the needs of the population.

8.1.6 Monitoring and Evaluation

A robust **Monitoring and Evaluation (M&E)** framework is crucial for assessing the effectiveness of the early warning systems and stakeholder engagement strategies. **Conducting biannual evaluations will allow stakeholders to measure progress against established indicators, ensuring that the project remains aligned with its goals.** The M&E framework should include metrics such as response times to alerts, community engagement levels, and satisfaction rates regarding the clarity of the messages disseminated. According to the survey for this study, only 15.5% of respondents in the GUN region believe local authorities can effectively maintain infrastructure, indicating a need for enhanced accountability and transparency in disaster management efforts.

Establishing a baseline for these indicators at the inception of the THRIVE project will provide a reference point for future evaluations. **Through engaging community members in the evaluation process, the project can gather insights that may not be captured through traditional assessment methods.** This participatory approach will empower communities and foster a sense of ownership over the EWS. Furthermore, regular reporting on M&E findings should be shared with stakeholders, including government agencies, NGOs, and community leaders. This transparency will facilitate informed decision-making, allowing for timely adjustments to strategies and interventions based on real-time data. **In addition to assessing performance, the M&E framework should also identify lessons learned and best practices that can be shared across regions**. By documenting successes and challenges, the project can contribute to the broader knowledge base on effective disaster risk management and early warning systems.

8.1.7 Advocacy for Infrastructure Investment

Addressing the infrastructure gaps identified in the EWS assessment is critical for enhancing disaster preparedness and response. **Engaging with Government and Donors** will be essential to secure the necessary funding and resources for infrastructure improvements. **According to the survey, 81.4% of respondents expressed dissatisfaction with the condition of roads and transport networks, highlighting the urgent need for investment in these areas**. Advocacy efforts should focus on emphasizing the importance **of reliable communication networks, weather monitoring stations, and transportation infrastructure for effective disaster response**. Through measures such as presenting data on the current limitations of the EWS and the potential benefits of infrastructure improvements, stakeholders can make a compelling case for increased funding.

Working closely with government agencies to align advocacy efforts with national disaster management strategies will enhance the likelihood of securing support. Additionally, fostering partnerships with international donors and the private sector can provide alternative funding sources for infrastructure projects. **Engaging community members in advocacy efforts can also**

amplify the message and ensure that their voices are heard. Through community forums and workshops, residents can articulate their needs and concerns regarding infrastructure and EWS effectiveness, creating a grassroots movement for change. **Furthermore, establishing a long-term funding model that includes community contributions or partnerships with local businesses can help alleviate financial constraints**. By creating a shared responsibility for disaster preparedness, communities can foster a culture of resilience and collaboration.

8.1.8 8. Crisis Communication Plan

Developing a comprehensive **Crisis Communication Protocol** is essential for ensuring effective communication during emergencies. **This protocol should outline procedures for disseminating information quickly and coherently, minimizing confusion and maximizing community preparedness.** Identifying designated spokespersons from each stakeholder group will help streamline communication during crises**. These spokespersons should be trained in crisis communication strategies to ensure that messages are clear, consistent, and actionable**. According to the survey, only 15.5% of respondents believe local authorities can effectively respond to disasters, emphasizing the need for credible and trustworthy communication channels.

The crisis communication plan should also include guidelines for engaging with the media, including community radio stations and national broadcasters. **Establishing relationships with local journalists and media outlets will facilitate timely coverage of alerts and updates, ensuring that critical information reaches wider audiences.** Regular drills and simulations should be conducted to test the effectiveness of the crisis communication plan**. These exercises will help identify strengths and weaknesses in the system, allowing for adjustments to be made ahead of actual emergencies**. Through the incorporation of feedback from community members into the crisis communication protocol, the project can ensure that messages resonate with the population and are culturally relevant. This participatory approach will enhance community trust and engagement, ultimately leading to more effective disaster preparedness and response.

8.2 Community Engagement

8.2.1 Establishing Community-Based Disaster Risk Reduction Committees

Formation and Structure

Establishing **Disaster Risk Reduction Committees (DRRCs)** in each of the eight counties of the Greater Upper Nile region – Ulang, Renk, Fashoda, Panyikang, Nasir, Akobo, Rubkona, and Panyijiar – is vital for enhancing community engagement in disaster preparedness. Given that only 32.8% of survey respondents indicated the presence of formal disaster management structures, the formation of these committees will provide a necessary and organized approach to disaster risk reduction. The DRRCs should consist of diverse representatives from various community groups, including women, youth, persons with disabilities, and other marginalized populations. This diversity is crucial as it ensures that different perspectives and experiences are considered in disaster preparedness and response strategies. Each committee should include at least five members from each of these groups to ensure balanced representation.

Responsibilities

The primary responsibilities of the DRRCs will include identifying local hazards, developing disaster response plans, and facilitating effective communication between community members and local authorities. According to the survey, 57.8% of respondents reported a lack of awareness regarding existing EWS. This highlights the urgent need for committees to serve as

conduits of information, educating the community about potential risks and response strategies. To empower these committees, training sessions should be conducted focusing on disaster management principles, climate change adaptation strategies, and effective communication techniques. These workshops can be developed in collaboration with NGOs and local experts, ensuring that the training is both relevant and practical. The goal is to train at least 100 individuals across each county within the first year, with a target of having all committees fully operational and engaged by year three.

Community Mobilization
To mobilize community members effectively, the committees can hold regular community meetings and events. These gatherings should be strategically scheduled to coincide with local market days or community celebrations, maximizing participation. Expectations for attendance should be set, aiming for at least 50% of community members to engage in discussions about disaster risks and preparedness strategies by the end of the THRIVE project. Moreover, utilizing traditional leaders and local influencers to champion the importance of DRRCs will help foster trust and acceptance within the community. This grassroots approach can significantly enhance participation rates, as community members are more likely to respond positively to familiar faces advocating for change.

The significance of stakeholder engagement, participation and input into EWS was pointed out by an RRC representative in Rubkona County**. He highlighted that stakeholders are encouraged by the RRC to provide feedback on the design and functionality of early warning systems**. Their input is vital to ensure that these systems effectively meet the needs of the community. Key considerations include the types of hazards that should be monitored, the methods of communication for disseminating warnings, and the specific information that should be included in alerts. He further highlighted that:

> *"Stakeholders may also suggest accessible channels for sharing warnings, ensuring that all community members can receive timely information. Through incorporating local knowledge and preferences, the early warning system can be tailored to enhance its effectiveness, leading to better preparedness and response during climate-related emergencies. Ultimately, stakeholder engagement is crucial for fostering a sense of ownership and responsibility within the community, which can improve the overall efficacy of the system".*
> **Interview with RRC representative in Rubkona County, 17 March 2025**

8.2.2 Training programs for community leaders and members

Workshops and Capacity Building
Conducting **training workshops** is essential for empowering community leaders and members to interpret alerts and respond effectively to disasters. These workshops should be tailored to address the unique needs of different groups, including women, youth, and persons with disabilities. Given that only 29.7% of respondents reported engaging with local authorities during disasters, training will equip community members with the knowledge and skills necessary to take proactive roles in disaster preparedness.

Content of Training
Training workshops should focus on several key areas, including:

- **Hazard Identification –** Teaching participants how to recognize potential hazards in their environment, such as flooding, drought, and other climate-related risks.
- **Risk Assessment –** Instructing community members on how to assess the risks associated with these hazards and prioritize actions based on vulnerability.
- **Effective Communication –** Training on how to disseminate alerts and warnings within the community, ensuring that messages are clear and culturally relevant.
- **Community Mobilization Techniques –** Equipping participants with strategies to engage and mobilize their communities during emergencies.

The workshops should incorporate practical exercises, such as role-playing scenarios involving disaster response. These hands-on activities will enhance community readiness and build confidence in their ability to respond to emergencies effectively.

Engaging local leaders
Engaging local leaders in these training sessions can further enhance their impact. Leaders can play a crucial role in disseminating knowledge throughout the community, ensuring that the information shared during workshops reaches a wider audience. The aim is to train at least 300 community members within the first year and to establish a network of trained leaders who can continue to educate others.

8.2.3 Utilizing mobile technology for engagement

Mobile Alerts and SMS Notification System
Given that over 57.2% of respondents lack access to radios and 51.8% do not have televisions, establishing a **Mobile Alerts and SMS Notification System** is paramount for effective communication within the community. Collaborating with local mobile providers will enable the project to set up an SMS-based alert system that disseminates warnings to registered community members promptly.

Implementation Strategy
The implementation of this system should include:
- **Registration Drives –** Conducting community outreach to encourage residents to sign up for the SMS alerts, ensuring that at least 70% of households in each community are registered by the end of the first year.
- **Language Considerations –** Ensuring that messages are translated into local dialects and are culturally appropriate, as this will significantly enhance comprehension and actionability.
- **Content of Alerts –** Messages should be concise and include specific instructions on actions to take during emergencies, such as evacuation routes or safety measures to implement.

Feedback Mechanism
In addition to disseminating alerts, the mobile system should also facilitate feedback from community members. **A dedicated SMS line can allow residents to report local conditions and responses to alerts, creating a two-way communication channel that fosters trust and engagement**. This feedback mechanism is crucial for the continuous improvement of the EWS.

8.2.4 Community Radio and Local Media Engagement

Partnerships with Community Radio Stations
Community radio stations are invaluable for reaching local populations, especially in rural areas where access to other forms of media may be limited. Forming partnerships with these stations will enable the broadcasting of timely alerts and educational programming about disaster preparedness. **According to the survey, only 29.7% of respondents indicated they engage with local authorities during disasters, suggesting a need for improved communication channels**.

Content Development
The content broadcasted on community radio should include:

- **Timely Alerts –** Real-time updates regarding weather conditions and potential hazards.
- **Educational Segments –** Programs that educate listeners on disaster preparedness and response strategies, leveraging local stories and experiences to enhance relatability.
- **Community Events –** Announcements about upcoming community meetings, training sessions, and DRRC activities to encourage participation.

Awareness Campaigns
Launching educational campaigns to raise awareness about the importance of the EWS is crucial. These campaigns can utilize various media platforms, including social media, to spread messages about disaster preparedness and responses to alerts. Engaging local leaders and influencers in these campaigns will help amplify the message and ensure it resonates culturally and contextually.

8.2.5 Regular Community Meetings and Engagement Events

Scheduled Community Meetings
Regular community meetings should be organized to discuss the performance of the EWS and gather insights from community members. **These meetings should include representatives from various stakeholder groups, allowing for diverse perspectives to be shared and considered.** The goal is to conduct at least quarterly meetings in each county, fostering an environment of continuous dialogue and engagement.

Engagement Events
In addition to regular meetings, organizing community events such as disaster preparedness fairs or local resilience competitions can serve to mobilize community participation**. These events can showcase local knowledge and practices while allowing community members to share their experiences and solutions**. For instance, involving schools in disaster preparedness activities can teach children valuable skills and encourage them to share this knowledge with their families.

8.2.6 Incentivizing Participation through Local Initiatives

Community-Led Initiatives
Encouraging **community-led initiatives** is a powerful way to enhance participation and ownership in disaster preparedness efforts. These initiatives can focus on various areas, such as community gardening projects that promote food security or training programs that enhance the skills of local farmers in sustainable practices.

Recognition Programs

Implementing recognition programs for communities that demonstrate exceptional engagement in disaster preparedness can further incentivize participation. Awards or public acknowledgments during community gatherings can foster a sense of pride and encourage others to get involved. This recognition can be structured to highlight both individual contributions and collective achievements, creating a community-wide culture of resilience.

8.2.7 Monitoring and Evaluation of Engagement Efforts

Regular Assessments
A robust M&E framework is crucial for assessing the effectiveness of community engagement strategies. This framework should track metrics such as participation rates in training, feedback from community meetings, and the effectiveness of communication channels.

Community Feedback
Utilizing surveys and focus groups at the community level will provide valuable insights into the effectiveness of engagement efforts. **For example, feedback can be gathered on the clarity and usefulness of alerts received through the SMS system or community radio**. This participatory approach will ensure that community input shapes future strategies, fostering ownership and accountability.

8.2.8 Advocacy for Infrastructure and Resource Support

Engaging with Local Governments
Advocacy efforts should be directed towards local governments and stakeholders to secure support for infrastructural improvements necessary for effective disaster response. Community members should be encouraged to voice their needs and concerns, creating a grassroots movement for change.

Funding and Resource Mobilization
Establishing partnerships with international donors and the private sector will be crucial for securing funding to enhance community resilience. Engaging in dialogues with local businesses to explore potential collaborations can also help alleviate financial constraints. By promoting community contributions to disaster preparedness, a shared responsibility can be cultivated, fostering a culture of resilience and collaboration.

8.3 Last Mile' Connectivity

8.3.1 Strategies for Ensuring Effective Communication to the Last Mile

1. Community-Centric Communication Channels

Utilizing Local Media
Leveraging local media, particularly community radio stations, is essential for reaching remote populations. Community radio can broadcast messages in local languages and dialects, ensuring that information is culturally relevant and easily understood. Given that many community members may lack access to other forms of media, such as television or the internet, radio becomes a primary source of information.

Engagement with Local Influencers

Identifying and collaborating with local leaders, influencers, and respected figures within communities can enhance message credibility. These individuals can help disseminate information through informal networks, ensuring that critical alerts and educational content reach the last mile. Their involvement fosters trust and can significantly improve community engagement.

2. Mobile Technology Integration

SMS and Mobile Alerts
Implementing an SMS-based alert system can effectively inform communities of impending disasters or critical information. Mobile technology is increasingly accessible, even in rural areas, making it a practical solution. The project should aim for high registration rates among community members, focusing on ensuring that at least 70% of households sign up for these alerts.

Two-Way Communication Platforms
Establishing two-way communication channels through mobile applications or SMS can enable communities to provide feedback, report local conditions, and respond to alerts. This interactivity fosters a sense of ownership and allows for real-time adjustments to communication strategies based on community input.

3. Localized Training and Capacity Building

Empowering Community Members
Conducting training sessions for community members on effective communication strategies enhances their ability to share information within their networks. Training should cover how to interpret alerts, respond to emergencies, and disseminate information to others. This grassroots capacity-building approach can create a network of informed individuals who can bridge communication gaps.

Engaging Youth and Women
Focusing on youth and women in training programs can amplify outreach. These groups often have unique insights and access to different networks within communities. By empowering them to disseminate information, the project can leverage their influence to ensure that messages reach diverse segments of the population.

4. Culturally Relevant Messaging

Tailoring Content to Local Contexts
Developing messaging that resonates with the local culture and context is critical for effective communication. This includes using local languages, cultural references, and examples that are familiar to the community. Involving community members in the content creation process can ensure that the messaging is relevant and impactful.

Utilizing Visual Aids
In addition to verbal communication, utilizing visual aids like posters, infographics, and community bulletins can enhance understanding, particularly for those with low literacy levels. These materials should be distributed in community centres, schools, and places of worship, where they can be easily accessed by the public.

5. Regular Community Engagement and Feedback Mechanisms

Scheduled Community Meetings
Organizing regular community meetings allows for direct communication between project representatives and community members. These meetings serve as platforms for sharing information, discussing concerns, and gathering feedback on the effectiveness of communication strategies. Establishing a schedule for these meetings ensures consistent engagement and helps build trust within the community.

Surveys and Focus Groups
Conducting surveys and focus groups can provide valuable insights into the community's awareness of the EWS and its effectiveness. Gathering feedback on how information is received and understood will enable the project to make necessary adjustments and improve communication strategies continuously.

6. Leveraging Existing Community Structures

Collaboration with Local Organizations
Partnering with local NGOs, faith-based organizations, and community groups that are already established can facilitate communication to the last mile. These organizations often have deep-rooted connections within the community and can assist in disseminating information effectively.

Utilization of Traditional Structures
Engaging traditional governance structures and community leaders can enhance the reach of communication efforts. These structures are often trusted and can play a significant role in mobilizing community members during emergencies and facilitating the dissemination of critical information.

7. Emergency Preparedness Drills and Simulations

Conducting Simulations
Regularly organizing emergency preparedness drills and simulations can help communities practice their response to disasters. These activities not only familiarize community members with emergency procedures but also reinforce communication channels and clarify the roles of various stakeholders.

Evaluating Communication During Drills
Using these drills as opportunities to evaluate the effectiveness of communication strategies is essential. Gathering feedback on how well information was communicated and understood during simulations can

9 Integration with National DRM Systems

9.1 Current Integration Status

The effectiveness of EWS is critical in mitigating the impacts of disasters, especially in regions vulnerable to climate shocks and conflicts, such as GUN region. The THRIVE project aims to enhance resilience and food security among target households, but significant gaps exist in the communication between national and local EWS. This analysis focuses on the current link between these systems, particularly the disconnect that hinders effective disaster response and community preparedness.

9.1.1 The Nature of the Disconnect

The disconnect between national and local EWS in the GUN region is characterized by several interrelated issues that impede the timely and effective transmission of alerts. The primary sources of hazard alerts include the Meteorological Department and the Ministry of Water Resources, which relay information through the TTWG to national broadcasters. However, there is no systematic structure for disseminating these alerts to local communities, leading to a lack of clarity and confusion. According to the study survey, a staggering **57.8% of respondents reported not being aware of any existing EWS**, highlighting a critical communication gap. This lack of awareness is compounded by fragmented communication channels, where different ministries and agencies may issue alerts without a unified approach. This fragmentation can result in conflicting messages, creating mistrust within communities and diminishing the effectiveness of the EWS.

The importance of an integrated system was summed up by an official in the Ministry of Environment and Forestry:

> *"The scope of your project (THRIVE project) needs to align with broader governmental efforts. It is crucial to integrate data from the Met Department, as independent data generation can lead to inconsistencies. Donors often focus on specific areas without considering the comprehensive picture. If interventions happen in isolation, they risk using irrelevant data, which ultimately undermines the effectiveness of efforts aimed at supporting vulnerable groups like women and youth".* **Interview with a representative of the Ministry of Environment and Forestry, Juba, 21 March 2025**

9.1.2 Inefficiencies and Lack of Clarity

The absence of a cohesive communication strategy means that alerts often do not reach intended recipients in a timely manner. Without immediate communication, communities remain vulnerable, unable to take necessary precautions against disasters. The survey indicates that only **15.5% of respondents feel they receive timely warnings about hazards**, which is concerning given the increasing frequency of climate-related disasters. In emergencies, the consequences of such disconnects can be dire. Delayed or unclear information can lead to increased casualties and property damage. Furthermore, when communities do not receive timely alerts, their ability to respond effectively is severely compromised. This directly undermines the objectives of the THRIVE project, which aims to bolster resilience and food security.

9.1.3 Capacity Constraints at the Local Level

Another critical factor contributing to the disconnect is the limited capacity of local entities to interpret and act upon the information provided by national bodies. Even when alerts are disseminated, local communities may lack the necessary skills and knowledge to understand the implications of these warnings. For instance, without clear guidance on how to prepare for a flood or drought, households may remain unaware of the steps they need to take to protect themselves and their livelihoods. The survey results reveal that **only 10.8% of respondents are consistently involved in climate monitoring activities**, suggesting a lack of engagement and capacity in local disaster risk management. This limited involvement exacerbates the disconnect and highlights the need for training and capacity-building initiatives that empower communities to respond effectively to hazards.

9.1.4 Fragmented Communication Channels

The current communication channels between national and local EWS are often uncoordinated and fragmented. Different ministries and agencies may operate independently, issuing alerts without a synchronized approach. This lack of coherence can lead to mixed messages, further eroding public trust in the EWS. In the survey, **67.4% of respondents expressed ignorance about existing EWS**, indicating a significant need for better communication strategies that ensure clarity and consistency. The reliance on national broadcasters to relay information also poses challenges. If broadcasters do not receive timely and accurate information, the alerts they disseminate may be outdated or misleading. This can result in confusion among community members who rely on these broadcasts for critical updates. Moreover, the financial constraints faced by local radio stations can hinder their ability to broadcast vital information, further complicating communication efforts. A conversation with the Akobo FM 98.5 Radio Station highlighted some of the issues:

> *"....However, the station also faces challenges, particularly the need for capacity building for its journalists to improve proper and accurate reporting. The radio station is open to collaborations with other programs to enhance communication and raise awareness about weather, climate, and disaster-related issues".* **Interview with a representative of Akobo FM 98.5 Radio Station, 18 March 2025**

9.1.5 Bridging the Communication Gap

To address the disconnect between national and local EWS, it is essential to establish a clear communication framework that facilitates the flow of information from national to local levels. This framework should include standardized procedures for disseminating alerts, ensuring that all stakeholders are informed and engaged.

Training and Capacity Building

One of the most effective ways to bridge the gap is through training local leaders and community members on how to interpret and respond to alerts. This capacity-building initiative can empower communities, enabling them to take proactive measures during emergencies. Regular training sessions can focus on hazard recognition, risk assessment, and effective communication strategies, ensuring that community members are well-prepared to respond to disasters. In addition, conducting regular drills and simulations can help familiarize communities with the EWS and improve their preparedness for future disasters. These practical exercises can enhance community resilience by allowing participants to practice their responses in a controlled environment.

Enhancing Communication Channels
Strengthening communication channels between national and local bodies is crucial for effective EWS. This can be achieved by establishing a centralized platform for information sharing that integrates data from various sources, including local communities, weather stations, and national agencies. Such a platform would facilitate real-time updates and improve coordination between different stakeholders. Utilizing mobile technology to disseminate alerts can also enhance communication efforts. SMS alerts can be sent to registered community members, providing timely warnings about potential hazards. Given that mobile technology is increasingly accessible, this approach can ensure that critical information reaches even the most remote populations.

9.2 Proposed Integration Strategies

9.2.1 Strategies for Enhancing Integration of Local EWS with National DRM Systems

1. Establishing Clear Communication Protocols

Standardized Communication Framework
A fundamental step in enhancing the integration of local EWS with national disaster risk management is the development of a standardized communication protocol. This protocol should clearly outline the processes for transmitting alerts and information between national and local EWS**. It must define roles and responsibilities for various stakeholders, including local governments, community organizations, national agencies, and the media.** For instance, the communication protocol could specify that the Meteorological Department is responsible for issuing weather-related alerts, which should then be relayed to local EWS through the TWG. Local communities would then receive these alerts via established communication channels such as SMS, community radio, or public announcements. Clear guidelines for what constitute an alert, the timeline for dissemination, and the type of information to be conveyed will help minimize confusion and ensure that all parties are on the same page.

Regular Communication Channels
In addition to a formalized protocol, establishing regular channels of communication is vital for ongoing coordination. **Monthly coordination meetings can be organized, bringing together representatives from both national and local EWS to discuss upcoming hazards, review past incidents, and strategize for future responses. These meetings should include a diverse range of participants, including local leaders, community representatives, and national agency officials**. These interactions will foster a collaborative environment where stakeholders can share insights, challenges, and best practices. Through the creation of a culture of open communication, stakeholders can build trust and ensure that local needs are effectively communicated to national authorities. Furthermore, creating a shared digital platform for ongoing communication allows for real-time updates and information sharing, which can be particularly useful during emergencies when timely information is critical.

2. Capacity Building and Training

Training Programs for Local Actors
Capacity building is crucial for enhancing the integration of local EWS with national DRM systems. Implementing comprehensive training programs for local leaders, community members, and disaster response teams will empower them to understand the national DRM

policies and how local systems can align with these frameworks. Training should cover a range of topics, including hazard recognition, risk assessment, and effective response strategies. Workshops can be facilitated by national experts and local trainers who understand the unique challenges faced by communities in the Greater Upper Nile region. For example, training sessions could focus on how to interpret national alerts and translate them into actionable steps for local populations. This localized training will help bridge the gap between national policy and local action.

Collaborative Drills and Simulations
Conducting joint disaster response drills and simulations is another effective way to strengthen capacity. These exercises can involve both local communities and national agencies, allowing participants to practice their roles within the integrated system**. For instance, a flood simulation could involve local leaders coordinating evacuation plans based on alerts received from national authorities. Such drills not only familiarize participants with their respective responsibilities but also identify weaknesses in the communication and coordination processes.** After each drill, debriefing sessions can be held to discuss what worked well and what needs improvement, ensuring that lessons are learned and applied for future emergencies. By fostering collaboration through these exercises, the project can enhance the overall effectiveness of both local and national EWS.

3. Data Sharing and Centralized Information Hub

Centralized Data Management System
Creating a centralized data management system is vital for integrating local EWS with national DRM systems. This system should serve as a repository for data collected from both local and national sources, facilitating real-time data sharing and access. T**hrough the centralizing of information, national agencies can better understand local conditions and vulnerabilities, allowing for more tailored disaster response strategies.** The centralized system could include a dashboard that displays real-time weather data, hazard alerts, and community responses. Local EWS can input data on local hazards, community preparedness, and response efforts, providing national authorities with a comprehensive view of the situation on the ground.

Local Input in National Databases
Encouraging local communities to contribute data on climate patterns, hazard occurrences, and community vulnerabilities to national databases is essential for enhancing the accuracy and relevance of national risk assessments. **Local input can improve the quality of data used for decision-making at the national level, allowing for more effective resource allocation and response planning. For instance, local observations regarding unusual weather patterns or emerging hazards can be invaluable for national agencies.** Training local data collectors on how to gather, analyse, and report this information will empower communities and strengthen the overall data ecosystem. By fostering a culture of data-sharing, stakeholders can enhance collaboration and ensure that local knowledge informs national strategies.

4. Policy Alignment and Advocacy

Aligning Local Policies with National Frameworks
To enhance integration, it is essential to align local DRM policies with national frameworks. This involves reviewing existing local policies to ensure they support national objectives and comply with national guidelines. **For example, local governments should be encouraged to adopt policies**

that promote the establishment of community-based early warning systems that align with national disaster management strategies. Engaging local government officials in discussions about national policies can foster a sense of ownership and commitment to these frameworks. Workshops and training sessions can be organized to educate local leaders on the key components of national DRM policies and how these can be effectively implemented at the local level.

Advocacy for Inclusion in National Plans

Additionally, advocating for the inclusion of local EWS in national disaster management plans is vital for integration. This can be achieved through strategic engagement with national policymakers, demonstrating the effectiveness of local systems in improving disaster response and resilience. Engaging with national government representatives during policy formulation processes ensures that local needs and experiences are considered. Creating platforms for dialogue between local communities and national authorities will facilitate this advocacy work. Community representatives can share their success stories and challenges, providing valuable insights that can inform national strategies. Through highlighting the importance of local EWS, stakeholders can help shape national policies that better reflect the realities faced by vulnerable populations.

5. Community Engagement and Awareness

Public Awareness Campaigns

Launching public awareness campaigns is crucial for informing community members about how local EWS fit within the national DRM framework. **These campaigns can utilize various media platforms, including community radio, social media, and public forums, to disseminate information about the importance of early warning systems and disaster preparedness**. By emphasizing the role of local EWS in enhancing community resilience, these campaigns can foster trust and encourage participation in disaster preparedness initiatives. Engaging local leaders and influencers in the campaigns can further amplify the message, making it more relatable and effective.

Feedback Mechanisms

Establishing feedback mechanisms that allow local communities to communicate their needs and experiences to national authorities is essential for effective integration. This two-way communication will help national agencies understand local contexts, ensuring that their strategies are informed by the realities faced by communities. Regular surveys and focus groups can be conducted to gather feedback on how well the EWS is functioning and whether community members feel adequately informed. This feedback should be communicated to national authorities to inform policy adjustments and improve the overall effectiveness of disaster management efforts.

6. Leveraging Technology

Mobile Applications and Platforms

Utilizing technology is an effective strategy for enhancing the integration of local EWS with national DRM systems. Developing mobile applications that facilitate communication between local and national EWS can streamline the dissemination of alerts and information. These platforms can be used for sending timely warnings, updating communities on ongoing hazards, and collecting feedback from residents. For example, a mobile app could allow users to receive real-time alerts about weather conditions and natural disasters while also providing a platform for reporting local

hazards. This two-way communication can enhance situational awareness and empower communities to take proactive measures.

GIS and Remote Sensing Technologies

Incorporating Geographic Information Systems (GIS) and remote sensing technologies into both local and national EWS can enhance data visualization and risk assessment capabilities. These technologies can provide valuable insights into hazard patterns, community vulnerabilities, and resource allocation, allowing for better-informed decision-making. Training local stakeholders on how to utilize these technologies will build local capacity and ensure that communities can effectively analyse and interpret data. By leveraging technology, stakeholders can enhance the integration of local and national systems, improving overall disaster preparedness and response.

7. Strengthening Institutional Frameworks

Creating Multi-Stakeholder Coordination Committees

Establishing multi-stakeholder coordination committees that include representatives from local communities, national agencies, NGOs, and other stakeholders is essential for effective integration. These committees can oversee the integration process, ensuring that all voices are heard and that local needs are addressed. These committees should meet regularly to discuss challenges, share best practices, and develop collaborative strategies for improving disaster management. Through the fostering of a culture of collaboration and inclusivity, stakeholders can create a more cohesive and effective EWS that benefits all parties involved.

Institutional Capacity Building

Investing in building the capacities of local institutions to better coordinate with national DRM systems is vital. This may involve providing resources, training, and technical support to enhance their operational effectiveness. For instance, local disaster management offices can be equipped with the tools and knowledge needed to engage with national authorities effectively. The strengthening of institutional frameworks, will ensure that communities are better positioned to respond to disasters and contribute to national disaster management efforts. This investment in capacity building will not only enhance local EWS but also foster a culture of resilience within communities.

8. Monitoring and Evaluation

Joint Monitoring and Evaluation Frameworks

Developing joint monitoring and evaluation frameworks that assess the effectiveness of both local and national EWS is crucial for integration. **These frameworks should include clear indicators for measuring the success of communication efforts, data sharing, and community engagement**. Regular evaluations will help identify gaps and areas for improvement, ensuring that both local and national systems evolve to meet changing needs. Stakeholders should engage in collaborative evaluations, fostering a sense of shared ownership and accountability.

Regular Reporting and Accountability

Implementing regular reporting mechanisms that hold both local and national entities accountable for their roles in disaster management is essential. Transparency in reporting will build trust and enhance collaboration between different levels of the EWS. Community representatives should be involved in the evaluation process, providing feedback on the effectiveness of disaster management

efforts and suggesting areas for improvement. This participatory approach will ensure that local perspectives are considered in national decision-making processes.

9.3 Strategies for creating Private-Public Partnerships

9.3.1 Identifying Key Private Sector Players

Mapping Stakeholders

The first critical step in establishing effective partnerships is to identify key private sector players who can contribute resources, expertise, and technologies that align with the goals of local EWS and national DRM systems. This process begins with a comprehensive stakeholder mapping exercise. **In the Greater Upper Nile region, potential partners may include mobile service providers, technology companies, logistics firms, agricultural businesses, and organizations specializing in health services.** Each of these sectors can offer unique contributions. For instance, mobile service providers can enhance communication capabilities, while technology firms can provide data analytics tools to process and interpret hazard information.

Stakeholder mapping should involve not only identifying organizations but also analysing their capabilities, interests, and past involvement in disaster management initiatives. This can be done through surveys, interviews, and focus group discussions with community members and local leaders, as well as by reviewing existing documentation about each organization's activities. By understanding the strengths and interests of potential partners, stakeholders can create a targeted approach for engagement.

Assessing Capabilities and Interests

Once stakeholders are mapped, the next step is to assess their capabilities and interests concerning disaster management. This involves evaluating what each entity can bring to the partnership and how they can align their business objectives with the goals of disaster resilience. For example, a mobile service provider may have the technical infrastructure to implement SMS alert systems, while a technology firm may possess expertise in developing mobile applications that facilitate real-time communication during emergencies. Logistics companies can provide vital support in distributing emergency supplies, and agricultural firms can contribute knowledge on how to manage crop failures due to climate impacts.

Understanding these capabilities allows for strategic alignment between local needs and private sector offerings. This alignment is crucial for fostering a sense of ownership and commitment from private entities, as they see their contributions directly impacting community resilience.

9.3.2 Creating a Value Proposition

Demonstrating Mutual Benefits

Creating a compelling value proposition is essential for attracting private sector partners to disaster management initiatives. This value proposition should clearly articulate the mutual benefits of partnership, highlighting how collaboration can enhance community resilience while also providing advantages to private entities**. For example, mobile service providers can enhance their brand reputation and customer loyalty by actively participating in community resilience efforts**. Through the demonstration of a commitment to social responsibility, they can strengthen their relationships with customers and local stakeholders, potentially leading to increased market

share. For local EWS, the partnership allows access to advanced technologies and expertise that can significantly improve disaster preparedness and response capabilities. For instance, through partnerships with technology firms, local EWS can develop mobile applications that not only disseminate alerts but also provide educational resources on disaster preparedness.

Aligning Goals

It is crucial to align the goals of the private sector with those of the local EWS and national DRM systems. This alignment can be achieved through workshops and collaborative planning sessions where stakeholders come together to discuss shared objectives. By establishing common goals, such as improving disaster response times or increasing community engagement in preparedness activities, stakeholders can create a foundation for a successful partnership. Furthermore, aligning goals can foster collaboration in developing innovative solutions. For example, if both local EWS and mobile providers aim to reduce response times during disasters, they can work together to optimize communication channels and ensure that alerts are disseminated promptly and clearly.

9.3.3 Formalizing Partnerships

Memorandums of Understanding (MoUs)

Formalizing partnerships through Memorandums of Understanding (MoUs) is essential to establish clear expectations, roles, and responsibilities. An MoU serves as a legal document that outlines the specifics of the partnership, including each party's contributions, timelines, and deliverables. For example, an MoU with a mobile service provider might specify the number of alerts to be sent during a disaster, the format of the messages, and the types of information to be communicated. This level of detail ensures that all parties are aligned in their efforts and accountable for their commitments.

Establishing Governance Structures

Creating governance structures that include representatives from both the local EWS and private sector partners is crucial for overseeing the partnership's implementation. These governance bodies can help resolve conflicts, monitor progress, and ensure accountability. Regular meetings should be scheduled to review the partnership's activities, share insights, and adapt strategies as necessary. Establishing a clear decision-making process within these governance structures will facilitate efficient collaboration and ensure that the partnership remains focused on its objectives.

9.3.4 Leveraging Technology for Communication

SMS Alert Systems

One of the most effective ways to integrate private sector capabilities into local EWS is through the development of SMS alert systems. Mobile service providers can facilitate the rapid dissemination of alerts to local communities, ensuring timely communication during emergencies. This technology is particularly valuable in regions where traditional communication infrastructure is limited. The creation of an SMS alert system involves collaborating with mobile service providers to design a user-friendly platform that allows for the quick dissemination of alerts. This system should be capable of reaching a wide audience, including those in remote areas. Training local leaders on how to use this technology effectively will enhance its implementation.

Mobile Applications

Partnering with technology firms to develop mobile applications can further improve communication capabilities. These apps can provide real-time alerts, safety tips, and resources for community

members. By offering features such as interactive maps of hazard zones and emergency contacts, these applications can empower users with critical information. Engaging community members in the design process of these mobile applications is essential to ensure that the tools meet their needs. User feedback can help refine the app's functionality, making it more accessible and user-friendly.

9.3.5 Capacity Building and Training

Joint Training Initiatives

Capacity building is a critical aspect of successful partnerships. Conducting joint training initiatives that involve both private sector partners and local EWS personnel can enhance the overall effectiveness of disaster management efforts. For example, mobile service providers can conduct training sessions on how to effectively use SMS systems for emergency alerts. These sessions should be tailored to local contexts, ensuring that participants understand the technology and its applications in disaster scenarios.

Community Workshops

Involving private sector partners in community workshops can also enhance public awareness and understanding of the EWS. These workshops can focus on how individuals can leverage technology to stay informed about hazards and respond effectively during emergencies. By providing practical demonstrations of how to use SMS alerts or mobile applications, community members will gain confidence in utilizing these tools. Additionally, these workshops can serve as platforms for gathering feedback from participants, helping to improve the overall effectiveness of the EWS.

9.3.6 Innovative Funding Models

Public-Private Partnerships

Exploring innovative funding models, such as Public-Private Partnerships (PPPs), can provide necessary financial resources for enhancing local EWS. These partnerships can leverage private sector investments to develop the infrastructure and technology needed for effective disaster management. In a PPP model, resources from both public and private sectors can be pooled to fund projects that improve disaster preparedness. For example, a private entity might provide funding for the development of an SMS alert system, while local authorities contribute by implementing community training programs.

In-Kind Contributions

Encouraging private entities to make in-kind contributions is another effective strategy. This can include providing technology, training, or logistical support. For instance, a logistics company could offer its services for distributing emergency supplies during a disaster, while a mobile provider might offer free SMS alerts during critical periods. Through utilizing in-kind contributions, local EWS can enhance their capabilities without incurring significant financial costs. This collaborative approach fosters a sense of shared responsibility among stakeholders and strengthens the overall impact of disaster management efforts.

9.3.7 Monitoring and Evaluation

Joint Monitoring and Evaluation Frameworks

Developing joint monitoring and evaluation frameworks is essential for assessing the effectiveness of partnerships in enhancing local EWS. These frameworks should include clear indicators for measuring the success of communication efforts, data sharing, and community engagement.

Regular evaluations can help identify gaps and areas for improvement, ensuring that both local and national systems evolve to meet changing needs. This collaborative evaluation process promotes transparency and accountability, reinforcing trust among stakeholders.

Feedback Mechanisms
Incorporating feedback mechanisms that allow both private sector partners and local communities to share their experiences and insights is crucial for continuous improvement. Regular feedback loops can help identify areas for enhancement and inform future strategies. For instance, after a disaster response, stakeholders can gather feedback from community members on how well the EWS functioned and what improvements are needed. This participatory approach ensures that local perspectives are valued and integrated into decision-making processes.

9.3.8 Advocacy and Public Awareness

Joint Advocacy Campaigns
Collaborating on joint advocacy campaigns can effectively promote the importance of disaster preparedness and the role of local EWS. These campaigns can leverage the marketing reach of private sector partners to increase awareness and engagement at the community level.

10 Early Warning System and Implementation Plan

In an increasingly complex and dynamic environment, the establishment of a robust EWS is crucial for the success of the THRIVE project. This chapter outlines the strategic framework and implementation plan designed to proactively identify, monitor, and respond to potential challenges and risks that may arise throughout the lifecycle of the project. Through the integration of advanced data analytics, stakeholder engagement, and real-time monitoring mechanisms, the EWS aims to enhance decision-making processes and foster resilience among project participants. Through a systematic approach, this chapter will detail the methodologies employed, the roles of various stakeholders, and the anticipated outcomes that will ensure the THRIVE project not only meets its objectives but also adapts effectively to unforeseen circumstances.

10.1 EWS Framework for the THRIVE Project

The **THRIVE project** is designed to enhance **economic and food security** while building **resilience** in the Greater Upper Nile Region of South Sudan. This region faces increasing challenges due to climate variability, conflict, and socio-economic instability. Consequently, a comprehensive **EWS** becomes essential for mitigating risks and fostering community resilience. This section presents a holistic framework for the EWS, integrating insights from stakeholder analyses and survey data, and aligning with the overarching objectives of the THRIVE project.

The primary intent of the EWS is to enable the timely detection of hazards, facilitate effective responses, and empower communities with the tools and knowledge necessary to navigate potential crises. Through the fostering of collaboration among diverse stakeholders – including government ministries, international and local NGOs, community leaders, and vulnerable households - the EWS aims to provide timely alerts and information that empower communities to prepare for and respond effectively to disasters. In this context, the EWS framework will focus on **five core objectives**: timely detection and response, stakeholder engagement, data-driven

decision-making, community empowerment, and sustainability. Each of these objectives is critical to ensuring that the EWS is not merely reactive but proactive, paving the way for comprehensive disaster risk management.

The **Greater Upper Nile Region** is characterized by its unique socio-economic landscape, where communities are heavily dependent on agriculture, livestock, and natural resources. However, these livelihoods are increasingly threatened by **shocks**, such as floods, droughts, violent winds, heatwaves, fires, human disease outbreaks, livestock disease outbreaks, conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance.. Therefore, the establishment of a robust EWS is not just a technical necessity but a social imperative. Moreover, the integration of local knowledge, cultural practices, and community engagement into the EWS framework is vital. This ensures that the system is not only effective but also culturally relevant, enhancing its acceptance and utility among the target populations. The success of the EWS will ultimately hinge on its ability to resonate with local communities, addressing their specific needs and vulnerabilities. In the following subsections, we will delve deeper into the core components of the **Holistic EWS Framework**, highlighting the importance of each element in supporting the goals of the THRIVE project.

10.2 Objectives of the Holistic EWS Framework

The primary objectives of the EWS framework for the THRIVE project include:

10.2.1 Timely Detection and Response

To establish mechanisms for the **early detection of hazards**, enabling communities to respond promptly to potential threats such as floods, droughts, violent winds, heatwaves, fires, human disease outbreaks, livestock disease outbreaks, conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance. This involves identifying key indicators that signal impending disasters, such as weather patterns from the **Meteorological Department** and socio-economic data from the **National Bureau of Statistics**. Through utilization of advanced data analytics, the EWS can deliver timely alerts to communities, ensuring they have adequate time to prepare.

10.2.2 Stakeholder Engagement

To ensure active participation and collaboration among all stakeholders, fostering a sense of ownership and shared responsibility in disaster risk management. This involves creating platforms for dialogue and collaboration, where stakeholders can share insights, concerns, and solutions. Engaging local communities and leaders is crucial for building trust and ensuring that the EWS is tailored to their specific needs.

10.2.3 Data-Driven Decision Making

To utilize reliable and relevant data from various sources to inform decision-making processes and enhance the accuracy of alerts. This includes integrating quantitative data from observatories and qualitative insights from community leaders. The goal is to create a comprehensive understanding of risks that can guide effective interventions.

10.2.4 Community Empowerment

To equip communities with the knowledge and resources necessary for effective disaster preparedness and response. This involves training programs, workshops, and community drills that enhance local capacities. Empowerment is crucial for fostering resilience, enabling communities to take proactive measures in the face of emergencies. The importance of community engagement was highlighted in an FGD conducted in Fashoda County:

> *"Community engagement is vital for the success of early warning systems. We must involve everyone, especially vulnerable groups, in planning and implementation. Through the conducting of workshops and fostering open communication, we can ensure that our strategies are culturally appropriate and that all voices are heard. This collective approach will strengthen our resilience against climate-related disasters."* **A participant in an all-female FGD, Fashoda County, Hai Ochuj Boma, 19 March 2025**

10.2.5 Sustainability and Adaptability

To create a flexible EWS that can adapt to changing conditions and integrate lessons learned from past experiences. The framework should include mechanisms for continuous monitoring and evaluation, allowing for iterative improvements. By fostering a culture of learning, the EWS can remain relevant and effective over time.

10.3 Components of the Holistic EWS Framework

10.3.1 Risk Assessment and Monitoring

The foundation of an effective **EWS** lies in comprehensive **risk assessment** and ongoing **monitoring**. This process involves several critical steps, each designed to ensure that the framework is both robust and responsive to emerging threats.

- First, **hazard identification** is essential, requiring collaboration with the **Meteorological Department** and the **National Bureau of Statistics** to pinpoint key hazards affecting the Greater Upper Nile Region, such as **floods, droughts, violent winds, heatwaves, fires, human disease outbreaks, livestock disease outbreaks, conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance**. This ongoing process should include the analysis of historical data and current trends to anticipate future risks. The responsibility for this task will primarily rest with the **Meteorological Department**, which will provide the necessary climate data, while the **National Bureau of Statistics** will contribute socio-economic insights.

- Next, conducting a **vulnerability assessment** is crucial for understanding the specific vulnerabilities and capacities of local communities. Engaging local populations in this process ensures that the EWS addresses the needs of diverse demographic groups, including **women**, **youth**, and **marginalized populations**. Utilizing participatory approaches such as **community mapping** and **focus group discussions** allows for the unveiling of local insights that are often overlooked. The **local NGOs** and **community leaders** will be instrumental in facilitating these participatory assessments, ensuring that community voices are heard and incorporated into the EWS framework.

- Furthermore, effective **data collection and analysis** are vital for monitoring socio-economic indicators, health statistics, and environmental conditions that may signify emerging risks. Utilizing both quantitative and qualitative data sources will provide a nuanced understanding of the context, which is crucial for tailoring responses accordingly. The **National Bureau of Statistics** will play a key role in collecting this data, while **local health departments** can provide health-related statistics to inform the overall risk assessment.

- In addition, the **integration of local knowledge** is essential for enhancing the effectiveness of the EWS. Local communities often possess invaluable insights into **weather patterns**, **seasonal changes**, and **risk management strategies** that should be incorporated into the framework. Engaging with community elders and local experts will facilitate this integration, allowing for a more culturally relevant approach to risk management. The responsibility for organizing these engagements will fall on **local NGOs** and **community facilitators**.

- Lastly, adopting a **multi-hazard approach** is crucial, recognizing that communities face multiple interconnected risks. This involves assessing how different hazards interact and affect one another, thereby ensuring that the EWS provides comprehensive information that considers these complexities. The **Technical Working Group (TWG)**, led by the **Ministry of Humanitarian Services and Disaster Management**, will oversee this multi-hazard strategy, ensuring that all relevant data is synthesized and communicated effectively.

Through these steps – hazard identification, vulnerability assessment, data collection and analysis, integration of local knowledge, and a multi-hazard approach – the risk assessment and monitoring component of the EWS will create a solid foundation for subsequent actions. Ultimately, this comprehensive framework will contribute to more effective **disaster preparedness** and response, enhancing the resilience of communities.

10.3.2 Communication and Information Dissemination

Effective **communication** is critical for the success of the **EWS**, as it ensures that timely and accurate information reaches those who need it most. To achieve this, several key strategies must be implemented.

- First, establishing **multi-channel alert systems** is essential. This involves leveraging **mobile phone providers** and **national broadcasters** to disseminate alerts through various channels, including **SMS**, **radio**, and **community meetings**. By utilizing multiple communication avenues, the EWS can ensure that information reaches diverse audiences, including those in remote areas. The responsibility for implementing this strategy will primarily fall on **mobile network operators**, who will facilitate SMS alerts, and **media outlets**, which will broadcast critical information to wider audiences.

- Next, it is vital to focus on **localized messaging**. Ensuring that alerts and educational materials are presented in local languages and dialects significantly enhances comprehension among all community members. This approach not only improves understanding but also fosters a sense of **ownership** among the community, as individuals feel that the information is relevant to their context. **Local NGOs** and **community leaders** will be responsible for developing and disseminating these localized messages, ensuring that they resonate with the target populations.

- Furthermore, establishing **feedback mechanisms** is essential for assessing the clarity and effectiveness of alerts. Creating channels for community feedback allows for continuous improvement of communication strategies. This two-way communication is crucial for building trust and ensuring that the EWS remains responsive to community needs. **Community facilitators** and **local organizations** will oversee the implementation of these feedback channels, gathering insights that can inform future communication efforts.

- In addition to these strategies, launching **public awareness campaigns** is important for educating communities about the EWS, its purpose, and how individuals can prepare for potential hazards. These campaigns may include workshops, training sessions, and informational materials designed to raise awareness and empower community members to take proactive steps toward disaster preparedness. **Local NGOs** and **government agencies** will play a key role in organizing these campaigns, utilizing their networks to reach as many individuals as possible.

- Moreover, the **use of technology** can greatly enhance the dissemination of information. Exploring innovative technological solutions, such as **mobile applications** and **social media platforms**, can facilitate real-time communication, enabling communities to receive timely updates and guidance during emergencies. The responsibility for developing and maintaining these technological tools will rest with **tech partners** and **software developers**, who will work in collaboration with the EWS to ensure that the applications are user-friendly and accessible.

In Rubkona county in an FGD chiefs expressed a strong interest in establishing an early warning system that could effectively communicate flood risks. They suggested that a system should incorporate **multiple communication methods** to ensure that all community members receive critical information. While face-to-face communication is valuable, diversifying the communication channels could significantly enhance the effectiveness of any warning system**. One proposed method is the utilization of SMS alerts, which could quickly disseminate information to a large number of people.** Given the increasing penetration of mobile technology, this could be a viable option for reaching community members, especially the youth who are more tech-savvy. Additionally, using local radio broadcasts could serve as an effective way to communicate warnings, as radio remains a trusted source of information in many rural areas. **One of the members had this to say:**

> *"There is also need for visual signals or community gatherings where information could be shared. For instance, organizing community meetings to discuss weather patterns and potential risks could foster greater awareness and preparedness. Ultimately, the community is eager for a comprehensive early warning system that not only informs them of imminent threats but also provides guidance on how to respond effectively, thereby enhancing their resilience to flooding and other climate-related challenges".* **Male FGD participant, Group of Chiefs, Rubkona Town, 17 March 2025**

Through these comprehensive communication strategies – multi-channel alert systems, localized messaging, feedback mechanisms, public awareness campaigns, and the use of technology – the EWS will ensure that communities are well-informed and prepared to respond to potential hazards. Ultimately, these efforts will enhance community **resilience**, enabling individuals to take informed actions in the face of disasters and contribute to the overall effectiveness of the THRIVE project.

10.3.3 Capacity Building and Training

Empowering local stakeholders is essential for the **sustainability** of the **EWS**, and this empowerment involves several key components.

- First, developing **training programs** is crucial to equip community leaders, local implementing partners, and target households with the necessary skills and knowledge for effective disaster preparedness and response strategies. These training sessions should be tailored to the specific needs and contexts of different communities, ensuring that the content is both relevant and practical. The responsibility for organizing and delivering these training programs will primarily rest with **local NGOs** and **government agencies**, who can leverage their expertise and understanding of community dynamics.

- In addition to training programs, conducting **simulation exercises** is vital for testing the EWS and familiarizing communities with emergency protocols. Regular drills and exercises not only enhance coordination among stakeholders but also provide invaluable opportunities for practice and learning. These simulations allow communities to refine their response strategies in a controlled environment, preparing them for real emergencies. **Community leaders** and **local implementing partners** will be responsible for organizing these exercises, ensuring that they are realistic and beneficial for all participants.
- Moreover, ensuring **resource provision** is critical for enhancing community preparedness. Communities must have access to essential resources, such as **emergency kits**, informational materials, and communication tools, that enable them to effectively prepare for and respond to disasters. By providing these resources, stakeholders can significantly boost community confidence in their ability to manage crises. **Local government agencies** and **NGOs** will play key roles in coordinating the distribution of these resources, working to ensure that all communities are adequately equipped.

- Facilitating **peer learning** opportunities is another essential component of capacity building. By creating platforms for communities to share experiences, challenges, and best practices, stakeholders can foster a culture of collaboration and continuous improvement. This exchange of knowledge not only enhances the learning experience but also builds strong networks among communities. **Local organizations** and **community facilitators** will be tasked with organizing these peer learning sessions, connecting individuals and groups to share insights and strategies.

- Finally, forming **partnerships for capacity building** with NGOs and academic institutions can provide additional expertise and resources for training initiatives. These collaborations can enhance the effectiveness and reach of capacity-building efforts, ensuring that communities are well-equipped to manage risks. **Academic institutions** can contribute research and technical knowledge, while **NGOs** can offer practical experience and resources. The responsibility for establishing and maintaining these partnerships will lie with **project coordinators** and **stakeholder engagement teams**, who will work to align objectives and share resources.

A representative of the Metrological Department highlighted some of the initiatives to address these gaps:

"Improving early warning systems in South Sudan requires a multi-faceted approach. First,

securing funding for operational costs is essential, allowing us to enhance our communication capabilities and ensure timely dissemination of critical information. Additionally, establishing partnerships with media outlets and community organizations can help bridge the gap in communication. Training local stakeholders on disaster preparedness and response can empower communities to take proactive measures based on the information we provide. Finally, fostering collaboration among various governmental and non-governmental organizations will be crucial in creating a cohesive strategy for climate resilience and disaster management". **Interview with Metrological Department representative, Juba, 21 March 2025.**

It was further highlighted that the Metrological Department conducts meetings at both the national and regional levels to share climate information and gather feedback from stakeholders. Regional meetings occur quarterly, focusing on seasonal forecasts and their implications for various sectors. After attending these meetings, the Department would aim to organize national forums to present findings and discuss strategies. However, logistical challenges often prevent the Department from executing these meetings effectively, primarily due to budget constraints. If the department can secure support from partners, it can facilitate these gatherings, allowing stakeholders to develop actionable plans based on the latest climate data and forecasts.

Therefore, through investments in capacity building and training, the EWS should be able to empower local stakeholders to take charge of their disaster preparedness and response efforts. This empowerment ultimately fosters resilience in the face of adversity, enabling communities to proactively address challenges and safeguard their futures.

10.3.4 Collaboration and Coordination

A successful **EWS** requires effective **collaboration** among various stakeholders to ensure comprehensive disaster preparedness and response. This collaboration can be achieved through several key strategies.

- First, establishing a **TWG** is essential. This group, led by the **Ministry of Humanitarian Services and Disaster Management**, will coordinate efforts among government agencies, **NGOs**, and community representatives. The TWG serves as a central hub for **information sharing**, **decision-making**, and **collaborative planning**, thereby enhancing the overall effectiveness of the EWS. The responsibility for coordinating the TWG will primarily rest with the Ministry, ensuring that all relevant stakeholders are engaged and active in the process.

- In addition to the TWG, fostering **partnership development** with local, national, and international organizations is crucial. Engaging organizations such as **Mercy Corps**, **GOAL**, and the **World Food Programme** allows for the leveraging of diverse resources and expertise. These partnerships can significantly enhance the effectiveness of the EWS by integrating varied perspectives and capacities into the framework. **Project coordinators** will be responsible for identifying potential partners and facilitating collaboration, ensuring that synergies are realized and resources are optimally utilized.

- Moreover, **community involvement** is vital for ensuring that the EWS interventions are culturally appropriate and responsive to local needs. Engaging community leaders and groups facilitates coordination and mobilization at the grassroots level. By involving community members in the planning and implementation processes, the EWS can foster a sense of **ownership** and commitment to disaster risk management. **Local NGOs** and

community facilitators will take the lead in organizing these engagements, ensuring that community voices are heard and incorporated into decision-making.

- Additionally, encouraging **cross-sector collaboration** is essential for enhancing the EWS's effectiveness. By promoting collaboration across different sectors – such as **health**, **agriculture**, and **education** – stakeholders can address the interconnectedness of various issues. This integrative approach allows for the development of comprehensive solutions that meet the multifaceted needs of communities. **Sectoral representatives** will be tasked with identifying opportunities for cross-sector collaboration and facilitating joint initiatives that align with the objectives of the EWS.

- Finally, organizing **regular stakeholder meetings** is crucial for strengthening relationships and facilitating the exchange of information among all parties involved. These interactions foster a collaborative atmosphere and ensure that all voices are heard in the decision-making process. **The TWG**, under the leadership of the Ministry, will be responsible for scheduling and facilitating these meetings, ensuring that they are productive and inclusive.

Through these collaborative efforts – establishing a TWG, fostering partnerships, engaging communities, encouraging cross-sector collaboration, and organizing regular meetings – the EWS can create a cohesive network of stakeholders committed to enhancing disaster preparedness and response in the Greater Upper Nile. This collaborative framework not only amplifies the capacity of the EWS but also strengthens community resilience in the face of potential disasters.

10.3.5 Continuous Improvement and Adaptation

The **EWS** must be dynamic and adaptable, allowing for **continuous improvement** based on evolving conditions and lessons learned from past experiences. This adaptability includes several key components.

- First, establishing robust **monitoring and evaluation** frameworks is essential for assessing the effectiveness of the EWS and its components. These frameworks will enable regular assessments to identify gaps and areas for improvement, ensuring that the EWS remains relevant and effective. The responsibility for implementing this monitoring and evaluation process will primarily rest with the **TWG**, which will oversee data collection and analysis to inform necessary adjustments.

- In addition to monitoring and evaluation, creating **learning platforms** is vital for fostering a culture of **learning** and **innovation** among stakeholders. These forums will allow stakeholders to share experiences, challenges, and best practices, facilitating knowledge exchange and enhancing collaboration. **Local NGOs** and the **TWG** will be responsible for organizing these learning platforms, ensuring that they are accessible and beneficial to all participants.

- Moreover, the **integration of new technologies** is crucial for enhancing the reach and effectiveness of the EWS. Exploring emerging technologies, such as **mobile applications** and **social media**, can facilitate real-time communication and improve the overall responsiveness of the system. The responsibility for researching and implementing these technological solutions will lie with **tech partners** and **software developers**, who will collaborate with the EWS to ensure that these tools meet community needs.

- Additionally, the EWS should adapt to **changing environmental**, **social**, and **political conditions**. This flexibility is crucial for maintaining its effectiveness in the face of evolving risks. The **TWG** will play a key role in monitoring these changes and ensuring that the EWS can adjust its strategies and protocols accordingly.

- Establishing **community feedback loops** is also essential for the responsiveness of the EWS. By creating mechanisms for community feedback, stakeholders will be able to incorporate local insights and experiences into the system. This responsiveness can enhance trust and engagement among community members, ensuring that their needs and concerns are addressed. **Community facilitators** and **local organizations** will be responsible for gathering and analyzing feedback, providing valuable input for continuous improvement.

Thorough the prioritization of continuous improvement and adaptation by means of robust monitoring and evaluation, creating learning platforms, integrating new technologies, adapting to changing conditions, and establishing community feedback loops, the EWS will remain a vital tool for enhancing **resilience** and **disaster preparedness.** This proactive approach will empower communities to effectively manage risks and respond to potential disasters, ultimately strengthening their capacity to thrive in the face of adversity.

10.4 Stakeholder Roles and Responsibilities

A successful EWS relies on the active engagement of various stakeholders, each with distinct roles and responsibilities:

10.4.1 Government Ministries

- The **Ministry of Humanitarian Services and Disaster Management** plays a pivotal role in leading the **TWG**, which coordinates disaster management efforts across various sectors. This Ministry is responsible for ensuring that disaster response initiatives align with national policies and frameworks, thereby establishing a cohesive strategy for disaster risk management. **Through fostering collaboration among government agencies, NGOs, and community representatives, the Ministry ensures that resources are effectively mobilized and that stakeholders work towards common goals**. Furthermore, the Ministry is tasked with monitoring the effectiveness of disaster response initiatives, facilitating training programs for local authorities, and advocating for policies that enhance community resilience. Their leadership is essential in creating a comprehensive EWS that not only reacts to emergencies but also proactively mitigates risks through comprehensive planning and community engagement.

- The **Ministry of Agriculture** is crucial in integrating agricultural considerations into disaster risk management strategies. By advocating for food security priorities, the Ministry ensures that agricultural resilience is a central component of disaster preparedness efforts. Their involvement includes the development of policies that promote sustainable agricultural practices, enhancing food production, and securing access to essential resources for farmers. **The Ministry collaborates with local farmers and agricultural organizations to assess vulnerabilities in the sector, providing training and resources that enable communities to adapt to changing environmental conditions**. Additionally, the Ministry plays a vital role in monitoring agricultural indicators that can signal emerging food security

crises, ensuring that the EWS incorporates timely warnings related to crop failures or livestock losses. By prioritizing agriculture in disaster planning, the Ministry supports not only the immediate needs of communities but also their long-term capacity to thrive.

- The **Ministry of Health** addresses health-related risks associated with disasters, playing a critical role in ensuring that health interventions are integrated into the EWS. This Ministry is responsible for assessing the public health impacts of potential disasters, including disease outbreaks, malnutrition, and mental health issues that may arise during crises. **By collaborating with health care providers and community health workers, the Ministry develops protocols for emergency health responses that can be activated during disasters.** The Ministry also focuses on training local health professionals and community members on best practices for health management during emergencies, ensuring that communities are prepared to respond effectively. Furthermore, the Ministry monitors health indicators that can inform the EWS, allowing for timely interventions that safeguard community well-being. Their participation is vital in fostering a comprehensive approach to disaster risk management that prioritizes public health and enhances community resilience.

- The **Relief and Rehabilitation Commission (RRC)** plays a **vital role in coordinating humanitarian assistance and recovery efforts following disasters. T**his Commission is tasked with overseeing the delivery of aid, ensuring that it is timely, adequate, and aligned with the needs of affected communities. The RRC works closely with local and international NGOs, government agencies, and community leaders to assess the impact of disasters and to plan effective recovery strategies. Their responsibilities include facilitating the distribution of relief supplies, coordinating shelter and rehabilitation initiatives, and ensuring that recovery efforts are integrated into longer-term development plans. The RRC is also responsible for engaging communities in the recovery process, fostering a sense of ownership and empowerment among affected populations. By prioritizing the needs of vulnerable groups, such as women and children, the RRC helps to rebuild communities in a way that enhances their resilience to future disasters.

- The **Ministry of Water** is essential in managing water resources, particularly in the context of disaster preparedness and response. **This Ministry plays a key role in ensuring access to safe drinking water and sanitation facilities, which are critical during emergencies**. The Ministry is responsible for assessing the availability and quality of water resources, implementing water conservation strategies, and addressing issues related to waterborne diseases that may arise during disasters. By collaborating with local communities and organizations, the Ministry promotes practices that enhance water management and resilience against droughts and floods. Additionally, the Ministry supports the integration of water resource management into the EWS, providing vital data that informs disaster risk assessments and response plans. Their involvement is crucial for safeguarding public health and ensuring that communities have access to essential resources during crises.

- **State and County-level authorities** are instrumental in implementing disaster risk management strategies at the local level. **These authorities are responsible for translating national policies into actionable plans that address the specific needs of their communities**. They coordinate local disaster response efforts, mobilize resources, and engage community members in preparedness activities. By working closely with local NGOs,

community leaders, and residents, state and county authorities ensure that disaster management initiatives are culturally relevant and responsive to local conditions. Their responsibilities also include conducting risk assessments, facilitating training programs, and establishing local emergency response teams. By fostering strong relationships with community members, these authorities enhance local capacities and ensure that disaster preparedness efforts are sustainable and effective.

10.4.2 NGOs and Implementing Partners

- **GOAL** and **Mercy Corps** provide critical technical support, coordinate community-level interventions, and engage in capacity-building efforts. **Their expertise in disaster management and humanitarian response** is crucial for implementing effective strategies that enhance community resilience. These organizations work closely with local stakeholders to assess needs, design appropriate interventions, and ensure the effective delivery of services. They also facilitate training programs that empower communities to respond to disasters and manage risks effectively. Through leveraging of their global experience and resources, GOAL and Mercy Corps enhance the overall effectiveness of the EWS, ensuring that diverse perspectives and capacities are integrated into the framework. **Their collaborative efforts significantly improve the impact of disaster management initiatives.**

- **CAFOD** and **VSF Swiss** offer specialized insights into food security and livelihoods, supporting project activities aimed at enhancing community resilience. **These organizations provide critical technical assistance** to ensure that food security considerations are integrated into disaster risk management strategies. They conduct assessments to identify vulnerabilities in local food systems and work with communities to develop sustainable agricultural practices. Through the promotion of livelihoods that can withstand shocks, CAFOD and VSF Swiss help communities become more resilient to disasters. They also engage in capacity-building initiatives that empower local stakeholders with the knowledge and tools needed to manage food security effectively. **Their contributions significantly enhance the effectiveness of interventions** aimed at reducing vulnerability and improving community well-being.

- **Local implementing partners** are essential for the on-the-ground execution of disaster management strategies. **These organizations have deep-rooted connections within communities**, which enables them to understand local needs and dynamics effectively. Their roles include facilitating community engagement, delivering training programs, and implementing preparedness and response activities tailored to specific contexts. They collaborate with national and international organizations, which ensures that interventions are culturally appropriate and sustainable. They also play a crucial role in monitoring and evaluating the effectiveness of these interventions, providing valuable feedback that can inform future strategies. **Their local knowledge and expertise are invaluable** for ensuring that the EWS is relevant and effective in addressing community-specific challenges.

10.4.3 Community Leaders and Groups

- **Community leaders and groups** play a vital role in facilitating communication between project stakeholders and community members. They act as essential **bridges** that ensure local perspectives inform project interventions. Through engagements with community

members, these leaders collect valuable insights about specific **vulnerabilities** and **needs**, which are critical for tailoring the EWS to be more effective and relevant. Their understanding of local dynamics, cultural practices, and historical experiences with disasters allows them to advocate for the community's interests and ensure that interventions are culturally appropriate. Additionally, community leaders are instrumental in mobilizing local resources and volunteers during disaster preparedness activities. They can organize training sessions, workshops, and simulations that enhance community readiness and resilience. They also foster **collaboration** among various stakeholders, and this helps to build trust and ensure that community voices are heard in the decision-making process. Ultimately, their leadership and advocacy are essential for creating a **sense of ownership** among community members regarding disaster risk management and the EWS.

10.4.4 Target Households

- **Target households** are crucial participants in the EWS, as their active involvement significantly enhances community resilience. By engaging in EWS activities, they provide essential **feedback** that informs the effectiveness and relevance of the system. Their participation includes attending training sessions, drills, and community meetings, which equip them with the knowledge and skills needed to respond effectively to disasters. Through this engagement, households can identify their specific **vulnerabilities** and contribute to the development of tailored disaster preparedness plans. Their insights help ensure that the EWS addresses real community challenges and priorities. Furthermore, target households play a vital role in disseminating information within their networks, helping to spread awareness about disaster risks and preparedness strategies. Their commitment to participating in **disaster preparedness efforts** not only enhances their own family's resilience but also strengthens the community as a whole. By fostering a culture of preparedness, they contribute to a collective response that can mitigate the impacts of disasters, making their involvement critical for the EWS's overall success.

10.4.5 Media and Communication Channels

- **National and community radio stations** serve as trusted sources of information, playing a vital role in broadcasting alerts and educational content tailored to local audiences. Their **credibility** and reach make them an invaluable asset in the EWS, as they can disseminate critical information about impending disasters, safety protocols, and recovery efforts. Through providing timely updates and engaging programming, these stations help build awareness and understanding of disaster risks within communities. Additionally, radio stations can conduct interviews and discussions that highlight local experiences and solutions, fostering a sense of community solidarity and resilience. Their ability to reach diverse demographics, including those without access to digital technology, ensures that information is accessible to all community members. Through collaboration with the EWS, national and community radio stations enhance the overall effectiveness of communication efforts, contributing to a well-informed public ready to respond to emergencies.

- A conversation with Akobo FM 98.5 Radio Station, highlights several key issues highlighted that:

  "Established in 2023 with support from USAID, the radio station aims to inform the Akobo community about peace, security events, and other critical local issues. As part of its outreach, USAID helped distribute 100 radio receivers within the

community. The station plays a vital role in providing access to information and is interested in partnering with the THRIVE program to disseminate weather, climate information, and early warning systems to targeted communities. Additionally, Akobo FM engages in awareness campaigns and produces drama featuring local participants, which is broadcasted on air". **Interview with a representative of Akobo FM 98.5 Radio Station, 18 March 2025.**

The commitment of community radio stations to addressing local issues, coupled with their openness to partnerships, positions them as crucial resources for fostering community resilience and awareness. Moving forward, continued support and collaboration will be essential in enhancing capabilities of community radio stations and furthering their missions to inform and unite the communities.

10.5 Conclusion

The development of a holistic Early Warning System for the THRIVE project is a vital step toward enhancing resilience and food security in the region. Through the integration of risk assessment, effective communication, capacity building, stakeholder collaboration, and continuous improvement, the EWS can empower communities to proactively address the challenges posed by climate variability and conflict. Through the active engagement of diverse stakeholders – including government ministries, NGOs, community leaders, and target households – the EWS framework aims to create a sustainable and adaptable system that fosters resilience and supports the overarching objectives of the THRIVE project. Through prioritizing collaboration and leveraging local knowledge, the EWS has the potential to significantly mitigate the impacts of disasters and contribute to long-term development goals in the region.

10.6 Components of the EWS

The effectiveness of the EWS will hinge on its four key components: **hazard detection**, **risk analysis**, **warning dissemination**, and **community preparedness**. Each of these components plays a critical role in ensuring that communities are equipped to anticipate, respond to, and recover from potential disasters. Through the systematic identification of hazards, assessing associated risks, communicating timely warnings, and fostering community engagement, the EWS can create a comprehensive framework for disaster management. This proactive approach not only enhances the resilience of communities but also promotes a culture of preparedness that is essential for mitigating the impacts of disasters. In the following sections, we will explore each component in detail, highlighting their significance, the appropriate timing for implementation, the stakeholders involved, and the methodologies that can be employed to ensure their effectiveness.

10.6.1 Hazard Detection

Hazard detection is the foundational component of an effective EWS, as it involves identifying and monitoring potential threats that could pose risks to communities. The process begins with the collection of data from various sources, including **meteorological stations**, **satellite imagery**, and **historical records** of natural disasters. These data sources enable stakeholders to monitor environmental changes and identify patterns that may indicate impending hazards, such as floods, droughts, violent winds, heatwaves, fires, human disease outbreaks, livestock disease outbreaks,

conflict and violence, malnutrition, displacement pressures and landmines and unexploded ordnance. **Real-time monitoring** is essential, as it allows for the timely identification of hazards as they develop, providing crucial information that can trigger subsequent actions.

To enhance hazard detection, the EWS must integrate advanced technologies and tools, such as **remote sensing** and **geographical information systems (GIS)**. These technologies facilitate the analysis of large datasets, enabling experts to identify areas at risk and assess the severity of potential hazards. Furthermore, collaboration with **research institutions** and **technology providers** can lead to the development of innovative detection methods, such as **early warning sensors** that can provide immediate alerts about specific hazards, such as landslides or seismic activities.

The role of local communities in hazard detection cannot be overlooked. **Community members** often possess valuable traditional knowledge about local environmental conditions and historical patterns of hazards. Engaging local stakeholders in the monitoring process can enhance the accuracy of hazard detection and ensure that the system is tailored to specific community needs. **Training programs** can be established to educate community members on recognizing early warning signs, thereby empowering them to contribute to the hazard detection process actively.

Timing - Ongoing basis given that hazard detection should be a continuous process throughout the year, with intensified monitoring during specific seasons known for increased risks (e.g., rainy seasons for floods, dry seasons for droughts).

Key Stakeholders

- **Ministry of Humanitarian Services and Disaster Management -** Oversees the overall hazard detection framework.
- **Ministry of Agriculture -** Monitors agricultural hazards, particularly during planting and harvest seasons.
- **Local implementing partners -** Engage with communities to gather localized data.

Methodologies

- **Remote sensing technology -** Use satellite imagery and GIS for real-time monitoring.
- **Community reporting mechanisms -** Establish systems for local observations, including community weather stations.
- **Data analysis tools -** Employ statistical models to identify patterns and predict potential hazards.

10.6.2 Risk Analysis

Risk analysis is the second critical component of the EWS, as it involves assessing the potential impacts of identified hazards on communities and their assets. This process will begin with the collection and analysis of data related to hazards, vulnerabilities, and exposure. By examining these factors, stakeholders can gain insights into the level of risk posed to specific communities and identify which populations or assets are most vulnerable to different types of hazards.

To conduct a thorough risk analysis, it is essential to employ quantitative and qualitative methods. **Quantitative methods** often involve the use of statistical models and simulations to predict the likelihood of specific hazards occurring and their potential impacts. For example, **flood risk models** can estimate the extent of flooding in various scenarios, helping stakeholders understand the

potential consequences of different rainfall intensities. **Qualitative assessments**, on the other hand, focus on understanding the social, economic, and environmental dynamics that contribute to vulnerability. Engaging with community members through surveys, focus groups, and interviews can provide valuable insights into local perceptions of risk and the factors that heighten vulnerability.

The output of the risk analysis process is typically a **risk profile** for each community, which highlights the key hazards they face, their vulnerabilities, and the potential impacts of those hazards. This risk profile serves as a guiding document for stakeholders, informing decision-making and resource allocation for disaster preparedness and response initiatives. It can also be used to raise awareness among community members about the risks they face, empowering them to take proactive measures to enhance their resilience.

Furthermore, risk analysis should be an ongoing process, as both hazards and vulnerabilities can change over time. **Regular updates** to risk assessments are necessary to incorporate new data, emerging trends, and the evolving context of communities. By maintaining a dynamic risk analysis framework, the EWS can adapt to changing conditions and remain relevant in its efforts to protect communities from disasters.

Timing - Pre-Disaster Seasons: Conduct comprehensive risk analyses at least once a year, ideally before the onset of hazard seasons (e.g., before the rainy season or hot weather season).

Key Stakeholders

- **Ministry of agriculture -** Conducts agricultural risk assessments.
- **Ministry of health -** Evaluates health vulnerabilities related to specific hazards.
- **Technical Working Group -** Coordinates the overall risk analysis process.

Methodologies

- **Quantitative risk models -** Utilize statistical analysis and simulations to assess potential impacts.
- **Qualitative assessments -** Conduct focus groups and community surveys to gather local insights on vulnerabilities.
- **Risk mapping -** Develop visual maps that highlight areas of high risk based on data analysis.

10.6.3 Warning Dissemination

Warning dissemination is the third key component of the Early Warning System, as it involves the effective communication of alerts and information regarding impending hazards to at-risk populations. The goal of warning dissemination is to ensure that communities receive timely and accurate information that enables them to take appropriate action to protect themselves and their assets. To achieve effective warning dissemination, it is essential to establish a multi-channel communication strategy that utilizes various platforms to reach diverse audiences. **Mobile technology**, including SMS alerts and mobile applications, is particularly effective for disseminating warnings quickly and widely. These technologies allow for real-time updates and can reach individuals directly, regardless of their location. Additionally, **traditional communication channels**, such as radio and television, remain crucial for reaching populations that may have limited access to mobile technology.

Community engagement is a vital element of warning dissemination. Stakeholders should work with local leaders and organizations to ensure that alerts are communicated in culturally

appropriate and accessible ways. This may involve translating warnings into local languages or using visual aids to convey critical information. Furthermore, community members should be educated on how to interpret and respond to warnings effectively. Training sessions and community drills can help familiarize populations with warning protocols and the actions they should take in response to alerts.

It is also essential to establish feedback mechanisms that allow for two-way communication between authorities and communities. This feedback can help assess the effectiveness of warning dissemination efforts and identify areas for improvement. Engaging communities in the evaluation process can foster trust and cooperation, enhancing overall preparedness. Effective warning dissemination relies on a comprehensive communication strategy that utilizes multiple platforms, engages communities, and fosters two-way communication. Through ensuring that alerts are timely, accurate, and culturally relevant, the EWS should empower communities to respond proactively to hazards and mitigate potential impacts.

Timing - Immediate Response Period: Warning dissemination should occur as soon as a hazard is detected, with periodic updates throughout the hazard event. Regular communication should also happen during high-risk seasons.

Key Stakeholders

- **Mobile phone providers -** Facilitate the rapid dissemination of alerts through SMS and applications.
- **National and community radio stations -** Broadcast warnings and educational content.
- **Relief and Rehabilitation Commission (RRC) -** Coordinates the overall communication strategy.

Methodologies:

- **Multi-channel communication -** Implement SMS alerts, social media updates, and radio broadcasts to reach diverse audiences.
- **Community workshops -** Conduct training sessions on how to interpret and respond to warnings effectively.
- **Feedback mechanisms -** Establish channels for community members to report back on the effectiveness of warnings.

10.6.4 Community Preparedness

Community preparedness is the final key component of the Early Warning System, encompassing the actions and strategies that communities undertake to enhance their resilience to hazards. Preparedness involves a range of activities, including planning, training, and resource allocation, all aimed at ensuring that communities are ready to respond effectively to disasters when they occur. One of the primary elements of community preparedness is the development of **disaster response plans**. These plans outline the roles and responsibilities of various stakeholders during emergencies, identifying key resources and strategies for response. Engaging community members in the planning process is crucial, as it ensures that local knowledge and priorities are incorporated into the plans. **Community drills and simulations** can also be organized to test these plans and provide individuals with hands-on experience in responding to emergencies.

Training programs are another essential aspect of community preparedness. These programs can equip community members with the knowledge and skills needed to respond effectively to disasters.

Topics may include first aid, search and rescue techniques, and effective communication during emergencies. By empowering individuals with practical skills, communities can enhance their overall capacity to respond to hazards. Resource allocation is also critical for preparedness. Communities should identify and secure the necessary resources, such as emergency supplies, equipment, and safe shelters. Establishing partnerships with local NGOs and government agencies can help facilitate access to these resources. Furthermore, creating **community networks** can enhance coordination and collaboration among stakeholders, ensuring that resources are shared effectively.

Finally, community preparedness is an ongoing process that requires regular evaluation and adaptation. Stakeholders should continually assess the effectiveness of preparedness initiatives and make necessary adjustments based on new information and changing conditions. By fostering a culture of preparedness and resilience, communities can significantly reduce their vulnerability to disasters and enhance their ability to recover.

Timing - Pre-disaster season - Community preparedness activities should be intensified in the months leading up to high-risk seasons, along with regular training sessions throughout the year.
Key Stakeholders

- **Community leaders and groups -** Facilitate local preparedness initiatives.
- **Local implementing partners -** Conduct training and drills.
- **State and County-Level authorities -** Oversee the implementation of preparedness plans.

Methodologies:

- **Disaster response planning workshops -** Organize community planning sessions to develop and refine disaster response plans.
- **Simulation drills -** Conduct regular drills to practice emergency response procedures.
- **Training programs -** Offer workshops on first aid, search and rescue, and effective communication during emergencies.

It should be noted that the four key components of the EWS – **hazard detection**, **risk analysis**, **warning dissemination**, and **community preparedness** – are interconnected and essential for protecting communities from disasters. Through investing in these components, the THRIVE project and its stakeholders can create a robust EWS that empowers communities to anticipate, respond to, and recover from hazards effectively.

10.7 Technology and Equipment

The successful implementation of the THRIVE project EWS relies heavily on the integration of appropriate technologies and equipment that address local conditions and specific community needs. Through the leveraging of advancements in **meteorological tools**, **remote sensing technologies**, and **communication systems**, stakeholders can enhance the effectiveness of hazard detection, risk analysis, warning dissemination, and community preparedness. This subsection will explore the various technologies and equipment essential for a robust EWS, highlighting their significance in fostering resilience, improving response capabilities, and ultimately safeguarding communities from the impacts of disasters.

10.7.1 Meteorological Stations

Automated Weather Stations (AWS) provide real-time data on temperature, humidity, rainfall, wind speed, and barometric pressure, making them essential for hazard detection, particularly for meteorological hazards like floods and storms. **Rain gauges**, both simple and low-cost, can be deployed in community areas to monitor rainfall and provide early warnings of potential flooding. Together, these technologies enable timely and accurate predictions, enhancing the overall effectiveness of the EWS. In an interview with the Akobo County Office representative the study was informed that:

> *"Currently, the only equipment we have in the area is the water gauge for monitoring river levels. Unfortunately, there are no local weather stations available to provide comprehensive weather data. The lack of additional monitoring tools limits our ability to predict weather patterns accurately and to prepare the community effectively for adverse conditions. Investing in further meteorological equipment would enhance our capacity to respond to climate-related hazards".* **Interview with the Akobo County Office representative, 17 March 2025**

10.7.2 Remote Sensing Technologies

Satellite imagery is crucial for monitoring large-scale environmental changes, such as deforestation, drought, and flood extent, aiding in hazard detection and risk analysis. **Drones** equipped with cameras and sensors can survey areas for damage assessment and monitor environmental conditions, especially in hard-to-reach locations. These technologies provide valuable data that can inform decision-making processes and improve community preparedness.

10.7.3 Geographical Information Systems

GIS software is essential for analysing spatial data, creating hazard maps, and assessing vulnerabilities within communities. By visualizing risk areas, GIS helps stakeholders understand the geographical context of hazards and inform decision-making processes. This technology enables effective planning and resource allocation, ultimately enhancing the overall effectiveness of the Early Warning System in mitigating disaster risks.

10.7.4 Communication Technologies

Mobile communication systems such as SMS alert systems disseminate warnings and updates quickly to a wide audience, ensuring timely information reaches at-risk populations. **Community radio stations** serve as effective local media channels for broadcasting alerts and educational content, especially in areas with limited internet access such as the GUN region. Together, these communication technologies enhance public awareness and foster community engagement during emergencies.

10.7.5 Data Management Systems

Database management systems store and analyse data related to hazards, risks, and community preparedness, facilitating efficient data retrieval and reporting. Where there is good connectivity, **Web portals** can provide communities with access to information, updates, and training resources related to the EWS. These systems ensure that stakeholders can quickly access critical information, improving response efforts during disaster events.

10.7.6 Community Engagement Tools

Participatory mapping tools engage community members in identifying local hazards and resources, enhancing local knowledge and ownership of the Early Warning System. **Feedback mechanisms** such as surveys or mobile feedback apps allow for the collection of community input on warnings and preparedness activities. These tools promote active participation and ensure that the EWS remains relevant and responsive to community needs.

10.7.7 Emergency Supplies and Equipment

Emergency kits stocked with essential supplies like first aid items, food, water, and communication devices are critical for effective community response during emergencies. **Mobile command centres**, equipped with communication and data processing capabilities, serve as hubs for coordination during disaster events. These resources enable communities to respond quickly and efficiently, minimizing the impact of hazards.

10.7.8 Training and Simulation Equipment

Simulation software can conduct training exercises and simulations to prepare communities for disaster response, enhancing their readiness. **Training materials**, including educational workshops and drills tailored to local risks, increase awareness and preparedness. By investing in these training tools, communities can develop the skills necessary to effectively respond to emergencies and reduce vulnerability.

10.8 Capacity Building

To effectively implement the THRIVE project EWS, it is crucial to **conduct a needs assessment** to identify training requirements and capacity-building measures. Project partners, local authorities and **community leaders** should engage stakeholders through surveys and interviews to gather insights on existing knowledge, skills, and gaps within the community. Additionally, field observations during drills or actual events can help identify specific areas where further training is needed.

Once the assessment is complete, stakeholders should **define training objectives** by establishing clear and specific goals based on the identified needs. It is essential to understand the **target audience** for each training program, which may include community members, local responders, and government officials. The next stage should involve local project partners and **training organizations** developing customized training programs tailored to the specific needs identified in the assessment. These programs should incorporate **hands-on training** through practical exercises, simulations, and drills to reinforce learning and build confidence in emergency response scenarios.

Diverse training methods should be utilized, including **workshops and seminars** that foster interactive learning. Inviting experts to share best practices can enhance the training experience. Additionally, leveraging online resources and platforms can help reach a broader audience, especially in remote areas, providing access to instructional materials and webinars. To enhance capacity-building efforts, collaboration with local NGOs, educational institutions, and **community organizations** is essential. These partnerships can bring in additional resources and expertise. Encouraging active participation from community members in training initiatives promotes ownership and sustainability of the EWS.

Establishing a **feedback mechanism** will be crucial for evaluating training effectiveness. Participants should be encouraged to provide insights through surveys or focus groups, allowing stakeholders to assess what worked well and where improvements can be made. This feedback should be used for continuous improvement of training content and methods. Promoting ongoing learning is vital for maintaining preparedness. The project should schedule regular **refresher courses** and training updates to keep knowledge current and reinforce skills. Creating knowledge-sharing platforms among community members, responders, and stakeholders can facilitate continuous learning and collaboration.

10.9 Governance and Institutional Arrangements

To ensure the sustainability and effectiveness of the EWS, a robust governance structure is essential. This structure should facilitate collaboration among implementing partners, local authorities, community representatives, and other stakeholders, including the private sector. The proposed governance framework is designed to operate at multiple levels: local, state, and national, ensuring a comprehensive approach to disaster risk management.

10.9.1 Governance Structure

1. Local Level

- **Community EWS Committees:**
  - Composed of community representatives, local implementing NGOs, and volunteers.
  - Responsible for **local hazard monitoring**, data collection, and dissemination of warnings to the community.
  - Collaborate with **Mercy Corps**, **GOAL**, and **CAFOD** for training and capacity-building initiatives.
- **Local Implementing NGOs:**
  - Facilitate community engagement and mobilization, providing resources and training for EWS activities.
  - Act as a bridge between the community and higher governance levels.

2. County Level

- **District Risk Reduction Committee (DRRC)**
  - Composed of representatives from local government, community leaders, **local implementing NGOs**, and technical experts.
  - Responsible for coordinating EWS activities across multiple communities within the County, ensuring consistency and integration of local data into County-level planning.
  - Collaborate with **VFS Swiss**, **Mercy Corps**, **GOAL**, and **CAFOD** for capacity-building initiatives and resource mobilization.
- **County Technical Working Groups**
  - RRC
  - Include experts from various sectors (meteorology, health, infrastructure) to provide technical guidance and support for EWS implementation.
  - Work closely with community EWS committees to enhance capacity and share best practices.

3. State Level

- **State EWS Coordination Body**
  - Composed of representatives from the **Regional Risk Council (RRC)**, RRC, local governments, and relevant state ministries (e.g., disaster management, environment).
  - Responsible for coordinating EWS activities across Counties, ensuring integration of local data into state-level planning and policy development.
  - Facilitate partnerships with private sector stakeholders for technological support and resource mobilization.
- **State Technical Working Groups**
  - Include experts from various sectors to provide technical guidance for EWS implementation across the state.
  - Collaborate with County-level groups to ensure consistent messaging and best practices.
  - Includes RRC and relevant Ministries

4. National Level

- **Technical Working Group/National EWS Steering Committee**
  - Composed of representatives from national government agencies, **international NGOs** (including **Mercy Corps**, **GOAL**, **CAFOD**, **VFS Swiss**), and private sector partners.
  - Responsible for overarching policy development, funding allocation, and strategic direction for the EWS at the national level.
  - Ensure alignment of EWS initiatives with national disaster risk reduction strategies and climate adaptation plans.
- **National Data and Research Centre**
  - A dedicated body for analyzing data collected from local, County, and state levels, providing insights for policy-making and resource allocation.
  - Collaborate with academic institutions and research organizations to enhance the scientific basis for EWS initiatives.
  -

Key Partnerships for Sustainability

- **Private Sector Engagement**
  - Involve private companies in technology and telecommunications to provide resources, expertise, and innovative solutions for data collection and communication.
  - Foster corporate social responsibility initiatives that support local EWS efforts.
- **Community Engagement**
  - Encourage active participation from community members in governance structures to ensure that local needs and perspectives are integrated into decision-making processes.
  - Establish feedback mechanisms that allow communities to voice their concerns and suggestions regarding the EWS.
- **Capacity Building**
  - Implement continuous training programs for all stakeholders involved in the EWS, ensuring that knowledge and skills are consistently updated and relevant.
  - Promote knowledge-sharing platforms that facilitate collaboration and exchange of best practices among different governance levels and stakeholders.

The proposed governance structure for sustaining the EWS emphasizes collaboration among diverse stakeholders, from local community representatives to national agencies. Through the integration of the efforts of implementing partners like **Mercy Corps**, **GOAL**, **CAFOD**, and **VFS Swiss**, along with local NGOs and the private sector, this governance framework aims to create a resilient and effective EWS that protects communities from disasters and fosters long-term sustainability.

10.10 Major EWS tools or Anticipatory Action protocols for the THRIVE programme to prioritize for immediate action

Weather Forecasting Tools

Weather forecasting tools play a critical role in early warning systems by providing timely and accurate information about impending weather events. Local and regional meteorological data, such as those from the National Meteorological Services and National Oceanic and Atmospheric Administration (NOAA), are essential for predicting extreme weather patterns. Seasonal climate outlooks, generated using tools like Climate Analysis for Decision-Making (CLIMAND) and Climate Prediction Center models, enable communities to prepare for droughts or floods well in advance, allowing for more strategic resource allocation and risk mitigation.

Remote Sensing Technology

Remote sensing technology is vital for monitoring environmental changes and assessing disaster risks. Satellite imagery from platforms like Landsat and Sentinel-2 can track land use changes, vegetation health, and water resources, providing crucial data for informed decision-making. Tools such as Moderate Resolution Imaging Spectroradiometer (MODIS) are used to monitor drought conditions and flooding events, enabling early interventions. These technologies help visualize impacts on the ground, facilitating targeted responses to emerging threats.

Food Security Early Warning Systems

Food security early warning systems are essential for assessing and predicting food insecurity conditions. The Integrated Food Security Phase Classification (IPC) provides a standardized approach to analyzing food security situations, helping prioritize interventions based on severity. Tools like the Famine Early Warning Systems Network (FEWS NET) utilize market analysis to monitor food prices and supply trends. These systems support timely responses to food shortages, ensuring that vulnerable populations receive necessary assistance before crises escalate.

Vulnerability and Risk Assessment Tools

Vulnerability and risk assessment tools are crucial for understanding local risks and tailoring interventions effectively. Community risk profiles are developed using participatory methods that engage residents, ensuring local knowledge is incorporated. GIS tools, such as ArcGIS, help visualize vulnerabilities and hazards geographically. Impact modeling software, like Hazus, estimates potential disaster impacts on communities, allowing for better preparedness planning and resource allocation to mitigate risks effectively.

Community-Based Monitoring

Community-based monitoring involves local populations in reporting emerging risks and conditions, fostering ownership and responsiveness. Local reporting mechanisms can include mobile applications, such as Ushahidi, which allow communities to share real-time information about

hazards. Participatory mapping initiatives engage residents in identifying local vulnerabilities and resources, enhancing situational awareness. This grassroots approach ensures that early warning systems are grounded in community realities, improving their effectiveness and relevance.

Simulation and Drills
Simulation and drills are essential for testing emergency response readiness and improving strategies. Conducting emergency response simulations helps stakeholders practice their roles and identify gaps in preparedness. Tools like Tabletop Exercises and Incident Command System (ICS) frameworks provide structured environments for these drills. Scenario planning techniques, using software like AnyLogic, allow teams to explore various disaster scenarios and their potential impacts, ensuring a well-prepared response when real emergencies occur.

Collaboration Platforms
Collaboration platforms are vital for fostering cooperation among stakeholders involved in disaster management. Data sharing networks, such as Humanitarian Data Exchange (HDX), facilitate the exchange of critical information among NGOs, government agencies, and local organizations. Multi-stakeholder coordination platforms, like the Inter-Agency Standing Committee (IASC), enhance collaboration and streamline responses during crises. These platforms ensure that resources are utilized efficiently, reducing duplication of efforts and maximizing the effectiveness of interventions. These tools and protocols enhance the overall effectiveness of early warning systems, enabling proactive measures to mitigate the impacts of disasters.

11 Lessons learned and best practices

- **Infrastructure resilience:** Investing in the repair and maintenance of **transport and communication infrastructure** is essential for an effective EWS. Damage from conflict and natural disasters has severely impacted roads and telecommunication networks, hindering the movement of emergency resources and information. A robust infrastructure enables timely communication of warnings and facilitates the quick deployment of aid during crises. Strengthening these systems not only improves immediate disaster response capabilities but also enhances long-term resilience by ensuring communities remain connected and informed, particularly in remote areas.
- **Community training and engagement:** Establishing structured EWS necessitates comprehensive **training for community members** on hazard awareness, risk assessment, and appropriate responses. Engaging local governance in the formation and dissemination of these systems fosters a sense of ownership and accountability among community members. Training programs should be tailored to the local context, incorporating culturally relevant practices and languages. By empowering communities with knowledge and skills, the EWS can become more effective, as individuals will be better equipped to recognize and respond to warnings, ultimately saving lives and reducing vulnerabilities.
- **Effective communication strategies**: Improving access to **communication media**, such as radios and mobile networks, is crucial for disseminating timely warnings. Many communities lack reliable access to information, which can lead to confusion and delayed responses during emergencies. Tailoring messages to ensure clarity across different language groups enhances understanding and engagement. Additionally, utilizing multiple communication channels (e.g., community gatherings, social media, and local leaders) ensures that information reaches diverse audiences. Effective communication strategies will not only

increase the likelihood of timely action but also build community trust in the EWS.

- **Building government capacity:** Strengthening the capabilities of local governments through targeted **training and resource allocation** is vital for enhancing disaster management effectiveness. Local authorities play a critical role in coordinating responses and facilitating community engagement during emergencies. By providing training on emergency planning, resource mobilization, and community outreach, local governments can improve their operational capacity. Additionally, ensuring that they have adequate resources, including funding and equipment, will empower them to respond effectively to disasters, fostering a more resilient governance structure that supports community needs.
- **Establishing Disaster Risk Reduction Committees:** Creating and empowering DRR **Committees** at the community level promotes active participation from diverse groups, including women, youth, and marginalized populations. These committees serve as localized governance structures that can coordinate disaster preparedness and response efforts. By involving community members in decision-making processes, the committees can ensure that plans and resources align with local needs and priorities. Furthermore, fostering a sense of ownership and responsibility among committee members can lead to increased community resilience and better preparedness for future disasters.
- **Promoting financial inclusion:** Implementing initiatives to enhance access to **financial resources**, such as microfinance and community funds, is essential for supporting resilience-building activities. Financial inclusion enables communities to invest in preparedness measures, such as acquiring necessary supplies or improving infrastructure. Through the provision of training on financial literacy and resource management, communities can learn to leverage available funds more effectively. Additionally, fostering partnerships with local financial institutions can facilitate access to credit and savings programs, empowering individuals and communities to better prepare for and recover from disasters.
- **Utilizing indigenous knowledge:** Incorporating **local knowledge and practices** into disaster preparedness plans recognizes the value of traditional understanding of hazards. Indigenous knowledge systems often contain valuable insights into local environmental patterns, historical responses to disasters, and sustainable practices. Through integrating this knowledge with scientific data, EWS can become more relevant and effective. Engaging community elders and local experts in the planning process ensures that culturally appropriate strategies are developed, fostering community buy-in and enhancing the overall effectiveness of the early warning systems.

  A representative of the Ministry of Environment and Forestry had this to say:

  > *"Indigenous knowledge plays a crucial role in early warning systems. Many communities have traditional indicators, such as bird migration patterns, that signal changing weather conditions. Incorporating this local knowledge with scientific data can enhance forecasting accuracy. It is important to educate communities about these indicators while also respecting their traditional wisdom. By combining indigenous practices with modern science, we can create a more effective and culturally relevant early warning system".* **Interview with a representative from the Ministry of Environment and Forestry, Juba, 21 March 2025**
- **Addressing information gaps:** Conducting regular **vulnerability assessments** and ensuring the availability of **hazard maps** are critical for effective disaster preparedness and response. These tools provide essential information about local risks, helping communities to understand and prepare for potential hazards. By involving community members in the

assessment process, the EWS can ensure that local knowledge is incorporated, leading to more accurate and relevant data. Furthermore, providing training on how to interpret and utilize these maps will empower communities to make informed decisions, ultimately enhancing their resilience to disasters.

- **Enhancing media accessibility:** Improving access to **informational media**, including radios, televisions, and mobile technology, is crucial for bridging communication gaps. Many communities currently lack reliable means to receive timely warnings, which can severely hinder disaster preparedness. Ensuring that messages are disseminated in local languages and tailored to the specific needs of diverse audiences will enhance understanding and compliance. Additionally, investing in community media initiatives can create platforms for sharing critical information, fostering a culture of preparedness, and ensuring that all community members are informed and ready to respond.

  Strengthening Community Trust: Building trust in warnings and communication is vital for effective disaster preparedness. Regular updates, clear messaging, and community involvement in monitoring climate hazards can foster confidence in the EWS. Engaging community members in the development and dissemination of warnings ensures that messages resonate and are seen as credible. Establishing feedback mechanisms allows communities to voice their concerns and suggestions, which can further strengthen trust. As communities begin to see the efficacy of the EWS, their willingness to engage and act on warnings will increase, ultimately enhancing overall resilience.

12 Conclusions

From the analysis, conclusions are that development and strengthening of an EWS within the THRIVE project is pivotal for enhancing community resilience against climate-related and conflict-induced disasters. The challenges identified in the region highlight significant gaps in infrastructure, communication, and community engagement, necessitating a multi-faceted approach that incorporates the lessons learned and recommendations outlined. Firstly, the importance of infrastructure resilience cannot be overstated. The damage inflicted by conflict and natural disasters on transport and communication networks has severely hampered timely access to vital information and resources. Investments in repairing and maintaining these infrastructures are essential for ensuring that communities can effectively respond to emergencies. By enhancing connectivity, communities will be better positioned to receive warnings and mobilize resources quickly during crises.

Community engagement and training are also critical components of a successful EWS. Empowering local populations through structured training programs on hazard awareness and response strategies will foster a culture of preparedness. Engaging local governance in these initiatives ensures that the EWS is not only accepted but also tailored to the specific needs of the community. This collaborative approach will enhance the overall effectiveness of disaster preparedness efforts. The role of effective communication is paramount in the dissemination of warnings. Increasing access to communication tools, such as radios and mobile devices, will facilitate timely information sharing. Tailoring messages to be clear and culturally relevant across various local languages will improve understanding and compliance. The integration of indigenous knowledge into these communication strategies further enriches the EWS, ensuring that it resonates with local practices and experiences.

Strengthening the capacity of local governments is another vital recommendation. Local authorities play a crucial role in coordinating disaster responses, and providing them with the necessary training and resources will enhance their operational effectiveness. A well-prepared local government can build trust within communities, leading to better collaboration during emergencies. The establishment of Disaster Risk Reduction Committees at the community level will foster inclusivity and diverse representation in disaster preparedness efforts. Through incorporating voices from women, youth, and marginalized groups, these committees can develop more comprehensive and effective strategies tailored to the unique challenges faced by different community segments.

Moreover, promoting financial inclusion through access to microfinance and community funds will empower individuals and families to invest in preparedness measures. Financial security enables communities to recover more swiftly from disasters and reduces overall vulnerabilities. Finally, the establishment of feedback mechanisms is essential for improving the EWS continuously. By allowing community members to share their insights and experiences, the system can adapt and evolve to meet changing needs. This engagement fosters a sense of ownership and trust, which is crucial for effective disaster management. The THRIVE project has the potential to significantly enhance community resilience in the Region by addressing the critical gaps identified in the current EWS. By implementing the outlined recommendations – focusing on infrastructure repair, community training, communication enhancement, government capacity building, and inclusive participation – the project can create a robust framework for disaster preparedness. This proactive approach will not only empower communities to respond effectively to emergencies but also cultivate a culture of resilience that can withstand future challenges.

The role that the THRIVE program can play in the targeted counties was best summed up by one of the THRIVE program staff members based in Rubkona County:

> *The THRIVE Program holds significant potential for fostering capacity building within communities facing challenges in Rubkona. Through engaging local populations, especially youth and women, in decision-making processes, the program can empower these groups to take active roles in addressing their challenges. Training sessions focused on conflict resolution, resource management, and agricultural practices can facilitate dialogue among community members, fostering understanding and cooperation. This approach can help mitigate conflicts over resources and improve community resilience. Additionally, creating platforms for knowledge sharing and collaboration among different stakeholders can enhance the effectiveness of interventions. By ensuring that marginalized voices are included, the THRIVE Program can cultivate a sense of ownership among community members, leading to sustainable development. Ultimately, investing in capacity building is crucial for equipping communities with the skills and resources needed to navigate their socio-economic and environmental challenges, thereby promoting long-term stability and growth.* **Interview with THRIVE Project Staff member, Rubkona County, 18 March 2025.**

13Recommendations

13.1 Overall Actionable Recommendations

- **Invest in Infrastructure Repair:** Investing in the repair and maintenance of transport and communication infrastructure is crucial. Focus on restoring damaged roads and telecommunication networks to ensure timely access to resources and vital information

during emergencies. This investment will enhance the overall effectiveness of the EWS and improve community resilience against future disasters.
State and County Level - Implementing Stakeholder: Local government and relevant infrastructure agencies.

- **Establish Structured EWS Training Programs:** Develop comprehensive training programs focused on EWS for community members. These programs should cover hazard awareness, risk assessment, and appropriate response strategies. Engaging local governance in the training process will enhance the efficacy and acceptance of the EWS, empowering communities to act effectively during emergencies and mitigate potential risks.
  State and County Level - Implementing Stakeholder: NGOs like Mercy Corps, GOAL, and CAFOD.
- **Enhance Access to Communication Tools:** Enhancing access to communication tools, such as radios and mobile devices, is vital for timely information dissemination. Communities should be equipped with reliable media to receive alerts and warnings. Tailoring messages to ensure clarity in various local languages will improve understanding and response rates, ultimately enhancing preparedness and reducing vulnerability during emergencies.
  ***State level - Implementing Stakeholder*:** Telecommunication companies and local NGOs.
- **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies can enhance the dissemination of crucial hazard information and improve community engagement.
  ***County Level - Implementing Stakeholder*:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).
- **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy. These methods are culturally relevant and can be effective in reaching communities with limited access to modern communication technologies.
  ***County Level - Implementing Stakeholder*:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)
- **Strengthen Local Government Capacity:** Strengthening the capacities of local governments is essential for effective disaster management. Providing targeted training and resources will empower local authorities to coordinate responses effectively and engage with communities during emergencies. Enhanced government capabilities will lead to more efficient management of disaster situations, fostering trust and collaboration between authorities and community members.
  County Level - Implementing Stakeholder: National government and capacity-building organizations.
- **Create and Empower DRR Committees:** Establishing and empowering DRR Committees at the community level is crucial for coordinated disaster preparedness efforts. These committees should include diverse representation, particularly from women and youth, to ensure inclusivity. By involving community members in decision-making processes, the committees can tailor strategies to local needs and enhance overall resilience against disasters.
  State and County Level - Implementing Stakeholder: Local NGOs and community leaders.
- **Promote Financial Inclusion Initiatives:** Promoting financial inclusion initiatives is vital for

enhancing community resilience and preparedness. Implementing programs that improve access to financial resources, such as microfinance and community funds, will enable individuals and families to invest in necessary preparedness measures. Access to financial support can empower communities to recover more quickly from disasters and reduce vulnerabilities.

County Level - Implementing Stakeholder: Financial institutions and local governments.

- **Integrate Indigenous Knowledge into Plans:** Integrating indigenous knowledge and traditional practices into disaster preparedness plans is essential for culturally relevant strategies. Local knowledge often contains valuable insights into environmental patterns and historical responses to hazards. Engaging community elders and local experts in planning ensures that strategies reflect community values, fostering greater acceptance and effectiveness of the Early Warning System.

  County Level - Implementing Stakeholder: Local communities and cultural organizations.
- **Conduct Regular Vulnerability Assessments**: Regular vulnerability assessments are critical for identifying risks and informing disaster preparedness strategies. Conducting these assessments will help ensure that hazard maps are available and accessible to communities. This information is vital for effective planning and response efforts, allowing communities to understand their vulnerabilities and implement appropriate measures to mitigate risks during emergencies.

  County Level - Implementing Stakeholder: Local governments and research institutions.
- **Enhance Media Outreach and Education:** Enhancing media outreach and education initiatives is key to effective communication about hazards and preparedness. Investing in community media programs will help disseminate critical information in accessible formats. Ensuring that messaging is clear, culturally relevant, and available in local languages will empower communities to understand and respond to warnings, ultimately fostering a culture of preparedness.

  County Level - Implementing Stakeholder: Local media organizations and NGOs.
- **Establish Feedback Mechanisms:** Establishing feedback mechanisms will allow community members to voice their opinions on warnings and preparedness initiatives. This feedback is essential for building trust and improving the effectiveness of the Early Warning System. By actively engaging with communities and incorporating their insights, the EWS can be continually refined and adapted to better meet local needs.

  County Level - Implementing Stakeholder: Local governance bodies and community organizations.

13.1.1 Actionable Recommendations Akobo

- **Enhance Community Awareness and Education -** Implement comprehensive educational initiatives aimed at increasing community awareness about climate change and disaster preparedness. These programs should focus on the specific risks faced by the community and the necessary actions to take in the event of a disaster. Through equipping residents with knowledge about evacuation procedures and safety measures, communities in Akobo can significantly improve their resilience and ability to respond effectively to climate-related hazards.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.

***County Level - Implementing Stakeholder*:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)

- **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.
  ***County Level - Implementing Stakeholder*:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).

- **Strengthen Local Capacity Building -** Prioritize the development of local skills and knowledge through targeted capacity-building programs. Training initiatives should focus on climate-smart agriculture, disaster management practices, and community leadership. Thorough the empowering of local leaders and residents with practical skills, communities can take proactive measures to mitigate risks, enhance their livelihoods, and effectively respond to climate-related challenges, ultimately fostering a culture of resilience and self-sufficiency.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Improve Communication Infrastructure**: Invest in reliable communication and information-sharing tools to facilitate timely dissemination of critical updates about hazards. Enhancing access to mobile technology, radios, and other communication devices will enable community members to receive important alerts and information promptly. This improved communication infrastructure can help bridge the gap between local authorities and residents, ensuring that everyone is informed about potential risks and necessary safety precautions.
  County Level - Implementing Stakeholder: Mobile Telecommunication Companies, Radio Stations
- **Establish Local Weather Monitoring Systems**: Develop and install local weather stations to provide accurate and timely meteorological data relevant to the community. These systems can monitor rainfall, temperature, and other climatic factors, allowing for better forecasting of extreme weather events. By having access to localized weather information, communities can enhance their preparedness for climate events and improve the effectiveness of early warning systems, ultimately reducing vulnerability to disasters.
  County Level - Implementing Stakeholder: THRIVE Program and the Meteorological Department
- **Promote Collaboration Among Stakeholders**: Foster strong partnerships between government agencies, and community groups to create a coordinated approach to disaster risk reduction. Collaborative efforts can facilitate resource sharing, improve information dissemination, and enhance the effectiveness of responses during emergencies. Through working together, stakeholders can leverage their strengths and capabilities, ensuring a more comprehensive and unified effort in addressing climate-related challenges.
  County Level - Implementing Stakeholder: THRIVE Program, Government and Local Partners
- **Address Water and Sanitation Needs**: Focus on improving access to clean water and adequate sanitation facilities to reduce the prevalence of waterborne diseases in the community. Investments in water infrastructure, such as boreholes, water treatment plants, and sanitation systems, are essential for safeguarding public health. Ensuring that all

community members have access to safe drinking water will significantly decrease the risk of illness and enhance overall community resilience in the face of climate-related challenges.

County Level - Implementing Stakeholder: Local Government and donors

- **Implement Evacuation and Emergency Plans**: Develop clear and actionable evacuation plans, identifying designated safe zones for community members during flooding events. These plans should be communicated effectively to all residents, ensuring that everyone knows where to go and what steps to take in an emergency. Regular training programs and drills can prepare the community for potential disasters, fostering readiness and minimizing panic during actual events, thus enhancing overall safety.

  County Level - Implementing Stakeholder: THRIVE Program, Local Government and donors
- **Support Conflict Resolution Initiatives**: Promote peacebuilding efforts within the community to address underlying tensions and conflicts that contribute to violence and insecurity. Establishing mediation committees can facilitate dialogue and help resolve disputes related to resource access, particularly during times of scarcity. Through fostering a culture of cooperation and understanding, these initiatives can create a more stable environment, allowing communities to focus on recovery and resilience-building rather than conflict.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Monitor and Evaluate Interventions**: Establish a robust system for monitoring and evaluating the effectiveness of disaster preparedness and response strategies. Regular assessments can identify strengths and weaknesses in current initiatives, providing valuable feedback for improvement. Community meetings and participatory evaluations can ensure that residents have a voice in the process, leading to more relevant and effective interventions that adapt to the evolving needs of the community.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Encourage Sustainable Agricultural Practices**: Advocate for the adoption of sustainable agricultural techniques, such as planting drought-resistant crops and implementing climate-smart farming practices. Providing training and resources to farmers can enhance food security and resilience against climate impacts. By supporting the transition to more sustainable methods, communities can improve their agricultural productivity, reduce vulnerability to climate shocks, and ensure a more stable food supply for future generations.

  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.1.2 Actionable Recommendations Panyinjiar

- **Improvements to Current Early Warning Systems**: To enhance the effectiveness of early warning systems, it is essential to diversify information sources beyond central government weather forecasts. Strengthening partnerships with local NGOs that provide localized weather forecasts can ensure that community members receive timely and relevant information. Through the incorporation of multiple perspectives and data sources, the community can better prepare for potential hazards, leading to more informed decision-making and proactive disaster response.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
  - **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.

***County Level - Implementing Stakeholder*:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging).

- **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.

  ***County Level - Implementing Stakeholder*:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).

- **Enhancing Hazard Detection, Monitoring, and Forecasting**: Strengthening the capacity of local chiefs is crucial for effective hazard detection and monitoring. Through equipping them with modern technical tools, we can reduce reliance on spiritual leaders and enhance the accuracy of hazard assessments. Additionally, providing advanced technologies will improve the overall effectiveness of early warning systems, enabling timely alerts to community members and facilitating a more organized response to imminent threats.

  County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Additional Resources and Support Needed**: Implementing a "food for work" program can empower the Dyke Committee, equipping them with the necessary resources to maintain and strengthen flood defenses. This initiative not only addresses immediate food needs but also fosters community engagement in disaster preparedness. Furthermore, increasing visibility and support for the Disaster Risk Committee will enhance their effectiveness in community preparedness and response, allowing them to coordinate better and mobilize resources during emergencies.

  County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Active Participation in Early Warning System Development**: Community engagement is vital for the successful development and implementation of early warning systems. Through involving community members in the validation of anticipatory action plans by collaborating with the Dyke Committee, the THRIVE program can ensure that local knowledge and needs are adequately addressed. This participatory approach fosters ownership and accountability, ultimately leading to a more resilient community prepared to respond to potential hazards.

  County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Roles of Community Groups in Enhancing Early Warning and Preparedness**: Various community structures, including youth organizations, can play a crucial role in mobilizing individuals during early warning events. Ensuring an organized response requires active participation from these groups, which can help disseminate information effectively and coordinate actions. By leveraging the strengths of community organizations, we can enhance preparedness efforts and ensure that all members are informed and ready to act when necessary.

  County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Making the Early Warning System More Inclusive**: To ensure that the early warning system reaches a broader audience, it is essential to install FM radio stations that cater to the needs of vulnerable groups. This inclusive approach allows for timely communication of critical information, ensuring that all community members, regardless of their circumstances, have access to warnings and guidance. By addressing the diverse needs of the population, we can enhance community resilience to climate-related threats.

County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Measures for Involving Women, Youth, and Marginalized Groups**: Implementing mass awareness campaigns is crucial for ensuring that women, youth, and marginalized groups actively participate in the early warning process and related activities. Through promoting inclusivity in disaster preparedness efforts, can be made to empower these groups to take on leadership roles and contribute their unique perspectives. This engagement fosters a sense of community ownership and strengthens overall resilience against climate impacts.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Support for School Girls**: Providing support for school girls during their menstruation is essential to ensure they can attend classes without fear of embarrassment. Organizations like HOPE RSS are already making strides, but additional assistance is needed to ensure that menstrual hygiene products and education are accessible. Supporting school girls not only contributes to their health and well-being but also promotes gender equality and empowers young women to pursue their education confidently.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Community Training Committee**: Establishing a community training committee dedicated to educating others about weather-related information is essential. This committee should regularly assess flood responses and provide training to its members to ensure they are well-equipped to disseminate accurate information. Through the fostering of a culture of learning and preparedness, the community can enhance its resilience to climate-related hazards and improve its overall response capabilities.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Addressing Migration in Yai Community**: The Yai community has been severely affected by adverse weather conditions, leading to significant family migration and a decline in population. Addressing the root causes of this migration, such as improving agricultural resilience and providing support for displaced families, is crucial. By creating opportunities for sustainable livelihoods, we can help stabilize the community and reduce the pressures that lead to migration.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Housing and IDP Issues**: The impact of natural hazards, particularly flooding, has resulted in widespread homelessness and the creation of IDPs in surrounding areas. Immediate action is needed to address housing shortages and provide support for IDPs, including access to essential services and safe living conditions. Through prioritizing the needs of displaced populations, stability can be fostered and which can then promote recovery within the community.
  County Level - Implementing Stakeholder: THRIVE Program, Local Government and NGOs
- **Increased Conflict and GBV**: Adverse weather conditions have heightened tensions between host communities and IDPs, leading to increased conflicts and a rise in gender-based violence, including rape and defilement. Addressing these critical issues is essential for maintaining community stability and safety. Initiatives focused on conflict resolution, gender sensitivity training, and support services for survivors of violence can help mitigate these risks and foster a safer environment for all community members.
  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.1.3 Actionable Recommendations Rubkona

- **Enhance Reach to Remote Areas**: To ensure that early warning systems effectively reach

isolated and underserved communities, it is crucial to implement targeted strategies that leverage mobile technology, community radio, and local networks for information dissemination. Engaging local leaders in this process can foster trust and enhance the adoption of warnings. Through prioritizing communication with remote areas, THRIVE can significantly improve community preparedness and response to hazards, ultimately saving lives and reducing risks.

County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Capacity Building**: Investing in comprehensive training programs for DRR committees and relevant government departments is essential for effective disaster management. Workshops focusing on risk assessment, emergency planning, and effective communication strategies will enhance the skills and knowledge of these entities. Through strengthening their capacity, communities will be better prepared to manage disaster risks and implement efficient response measures during emergencies, leading to improved resilience and recovery outcomes.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Provision of Equipment**: Supplying essential detection equipment, such as weather stations and flood gauges, is vital for enhancing the monitoring capabilities of EWS. These tools should be strategically placed in key locations to ensure accurate data collection and timely hazard prediction. Regular maintenance and training on the use of this technology will keep it operational and effective, ultimately improving the ability of the community to anticipate and respond to climate-related threats.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Dissemination of Early Warnings**: Establishing clear protocols and communication channels for the timely dissemination of early warnings is critical for effective disaster response. Utilizing multiple platforms, including SMS alerts, social media, and community meetings, will help reach diverse audiences. Ensuring that information is available in local languages and accessible formats will enhance understanding and compliance among community members, fostering a more coordinated and effective response during emergencies.

  County Level - Implementing Stakeholder: THRIVE Program, Local Government, Mobile Communication Companies, Radio Stations and Local Partners
  - **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.

    County Level - Implementing Stakeholder**:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)
  - **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.

    County Level - Implementing Stakeholder**:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).
- **Infrastructure Improvement**: Upgrading and maintaining road infrastructure is essential for ensuring that communities can access assistance and evacuate safely during emergencies. Conducting assessments of current road conditions and implementing necessary repairs or upgrades, particularly in flood-prone areas, will greatly enhance accessibility. Improved infrastructure will facilitate timely response efforts, ensuring that emergency services can

reach those in need without delay, thereby reducing the impact of disasters.
County Level - Implementing Stakeholder: Government and Local Government

- **Support Relocation Strategies**: Assisting households and communities in identifying and establishing alternative relocation sites for emergencies, such as floods or landslides, is crucial for disaster preparedness. Engaging community members in the planning process ensures that these sites are safe, accessible, and equipped with basic amenities. Raising awareness about these relocation sites will enable communities to respond quickly and effectively when hazards occur, ultimately reducing risks and enhancing safety.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Awareness Campaigns**: Conducting comprehensive awareness campaigns focused on disaster preparedness, response, and reporting is essential for fostering a culture of readiness within the community. Utilizing various mediums, including workshops, social media, and local events, will engage community members effectively. Through promoting proactive recognition of risks and encouraging effective responses to emergencies, these campaigns can significantly reduce potential losses and enhance overall community resilience to disasters.
  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.1.4 Actionable Recommendations Fashoda

- **Establish a Community-Based Early Warning Committee**: Forming a dedicated community-based early warning committee is essential for fostering ownership and accountability within the community. This committee should include diverse representatives from various backgrounds to ensure that all voices are heard and considered. Through overseeing the implementation of EWS, managing communication strategies, and coordinating training sessions, this committee will significantly enhance the preparedness of the communities for emergencies and natural disasters, ultimately improving response effectiveness.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Provide Training**: Offering comprehensive training sessions for community members is critical to ensure that everyone understands how to effectively utilize EWS. These sessions should encompass emergency preparedness, communication skills, and practical responses to alerts. Through the equipping of individuals with the necessary knowledge and skills through hands-on training, the community will be better prepared to act swiftly and efficiently in the face of potential disasters, thereby minimizing risks and enhancing overall safety.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Improve Communication Channels**: Enhancing existing communication methods is vital for the timely dissemination of early warnings to all community members. This involves addressing accessibility issues and improving network coverage to ensure crucial information reaches everyone without delay. Implementing multiple communication strategies, such as social media platforms, community messengers, and local radio broadcasts, will help expand the reach of warnings, ensuring that no one is left uninformed during emergencies and increasing community resilience.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.

***County Level - Implementing Stakeholder*:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)

- **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.
  ***County Level - Implementing Stakeholder*:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).
- **Conduct Drills**: Regularly organizing emergency drills is essential for preparing the community to respond effectively to various potential disasters. These drills should simulate realistic scenarios, allowing individuals to practice their responses and become familiar with evacuation routes and safety protocols. Through reinforcing these practices, the community can build confidence and ensure that everyone knows how to act in real emergencies, leading to quicker and more organized responses when actual disasters occur.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Develop Culturally Appropriate Materials**: Creating informational materials that resonate with the cultural values of the community is crucial for effective communication and engagement. These materials should be easy to understand, visually appealing, and culturally relevant, ensuring that vital information about early warning systems and emergency procedures is accessible to all residents. By tailoring content to reflect local customs and languages, community members are more likely to engage with the materials and take necessary precautions during emergencies.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Engage in Participatory Planning**: Involving community members in the planning process is fundamental for fostering a sense of ownership and collaboration. Conducting workshops and awareness campaigns allows the community to collectively identify its needs and priorities concerning early warning systems. This participatory approach empowers individuals to contribute their insights and ensures that the strategies developed are more effective, relevant, and aligned with the unique context and challenges of the community.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Ensure Inclusive Participation**: It is critical to include vulnerable groups, such as women, children, and the elderly, in the planning and implementation of EWS. Through the provision of targeted information and resources tailored to their specific needs, these groups can be better prepared for emergencies. Ensuring that their voices are heard leads to more comprehensive strategies that address the unique challenges faced by all community members, ultimately enhancing overall resilience and inclusivity.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Implement Monitoring and Evaluation Mechanisms**: Establishing robust monitoring and evaluation mechanisms is necessary to assess the effectiveness of EWS systematically. Through tracking the dissemination of warnings and conducting feedback surveys, the community can gather valuable insights into how well the systems function. This information will be instrumental in identifying areas for improvement, making necessary adjustments to enhance response rates, and ultimately increasing overall community preparedness for future emergencies.
  County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Foster Partnerships**: Collaborating with NGOs, INGOs, and other stakeholders is essential for strengthening early warning systems. These partnerships can provide access to additional resources, training, and technical expertise that the community may lack. Through working together, stakeholders can enhance the capacity and effectiveness of early warning systems, leading to improved disaster response capabilities and better outcomes for the entire community.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Enhance Resource Mobilization**: Actively seeking funding and resources is vital for establishing and maintaining effective early warning systems. This includes exploring grants, donations, and partnerships with various organizations to secure the necessary financial support. Through mobilizing resources, the community can implement crucial improvements to EWS, ensuring they remain sustainable, responsive to emerging needs, and capable of protecting community members from potential disasters.
  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.1.5 Actionable Recommendations Renk

- **Immediate Actions for Improvement**: There is urgent need for immediate actions, including the distribution of drought-resistant crops and the rehabilitation of water infrastructure. These interventions are crucial for enhancing food security and ensuring that communities can withstand climate-related challenges. Additionally, long-term strategies should focus on establishing community-led disaster response teams and integrating climate education into school curricula, which are essential for fostering sustainable development and resilience against future crises.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
  - **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.
    County Level - Implementing Stakeholder**:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)
  - **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.
    County Level - Implementing Stakeholder**:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).
- **Addressing Food Security and Health Implications**: Without timely intervention, a significant portion of households in Renk County risks facing annual food shortages, which could lead to increased rates of malnutrition and place additional strain on already under-resourced healthcare facilities. Furthermore, unresolved resource conflicts can escalate tensions within communities, threatening social stability and leading to further humanitarian challenges. It is imperative to address these issues proactively to ensure the health and well-being of all community members.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Promoting Community Engagement**: Engaging the community in the design and implementation of the early warning system is vital for its success. There is need to leverage technology, such as SMS alerts and radio broadcasts, to provide real-time information about

impending hazards. Additionally, involving women and youth as ambassadors for the early warning system can significantly enhance its inclusivity and effectiveness, ensuring that all community members are informed and prepared to respond to emergencies effectively.
County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Establishing Monitoring and Evaluation Mechanisms**: Implementing robust monitoring and evaluation mechanisms is essential for assessing the effectiveness of interventions related to disaster risk reduction. Establishing clear indicators for measuring success and conducting regular community meetings to review the performance of the early warning system will ensure continuous improvement and accountability. This process allows for timely adjustments and enhances the community's ability to respond effectively to future challenges.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Formation of Community-Led Disaster Response Committees**: Establishing community-led disaster response committees is critical for enhancing local capacity to manage emergencies. These committees should include representatives from various community sectors, ensuring diverse perspectives are integrated into planning and response efforts. Through empowering local leaders and volunteers, these committees can coordinate effective responses during disasters, facilitate training, and promote community resilience through organized action.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Integration of Climate Education in Local Schools**: Incorporating climate education into the school curricula is vital for fostering a culture of preparedness among future generations. Educational programs should focus on the impacts of climate change, disaster risk reduction strategies, and sustainable practices. By equipping students with knowledge about environmental challenges and resilience-building measures, the THRIVE program can cultivate a proactive mindset that encourages community engagement and preparedness for future climate-related events.
  County Level - Implementing Stakeholder: THRIVE Program; Ministry of Education and Partners
- **Development of a Comprehensive Early Warning Communication Strategy**: Creating a comprehensive communication strategy for the early warning system is essential for ensuring effective information dissemination. This strategy should outline the channels and methods for disseminating warnings, including visual aids, community meetings, and social media. Through the tailoring of messages to suit different audiences and ensuring accessibility, the community can enhance understanding and compliance, ultimately improving response times during emergencies.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Regular Capacity-Building Workshops for Local Leaders**: Conducting regular capacity-building workshops for local leaders and community members involved in disaster risk reduction is crucial for enhancing their skills and knowledge. These workshops should cover topics such as effective communication, risk assessment, and emergency planning. Through investing in human resources, the community will be better equipped to implement disaster response strategies effectively and foster resilience against future disasters.
  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.1.6 Actionable Recommendations Ulang

- **Establish Local Disaster Risk Reduction Committees**: Forming local DRR committees is

essential for enhancing community resilience to disasters. These committees should include representatives from various sectors, such as health, education, and agriculture, ensuring diverse perspectives are integrated. Through empowering community members to take ownership of disaster preparedness and response, these committees can facilitate organized action, coordinate training, and promote awareness of risk reduction strategies tailored to local needs and circumstances.

County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Enhance Early Warning Systems**: Developing an effective early warning system tailored to the specific hazards of Ulang County is crucial. This system should incorporate local knowledge and utilize technology, such as mobile alerts and community radio broadcasts, to ensure timely dissemination of warnings. Engaging community members in the design process will enhance the relevance and effectiveness of the system, ensuring that all residents receive critical information promptly and can respond appropriately to emerging threats.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Implement Sustainable Agricultural Practices**: Promoting sustainable agricultural practices is vital for improving food security in Ulang County. Providing training on drought-resistant crops, efficient water management, and soil conservation techniques can help farmers adapt to changing climate conditions. Through enhancing agricultural resilience, communities can reduce their vulnerability to food shortages and improve overall livelihoods, making them better equipped to withstand climate-related shocks.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Conduct Community Awareness Campaigns**: Organizing comprehensive awareness campaigns focused on disaster preparedness and risk reduction is essential for fostering a culture of resilience. These campaigns should utilize various mediums, including workshops, community meetings, and social media, to engage residents effectively. Through the raising of awareness about potential hazards and appropriate responses, community members will be more proactive in implementing safety measures and participating in disaster preparedness activities.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.

  County Level - Implementing Stakeholder**:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)
- **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.

  County Level - Implementing Stakeholder**:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).
- **Strengthen Water and Sanitation Infrastructure**: Improving access to clean water and sanitation facilities is critical for enhancing public health and resilience in Ulang County. Investment in water infrastructure, such as boreholes and sanitation systems, will reduce the incidence of waterborne diseases and support community well-being. Ensuring that these facilities are well-maintained and accessible to all residents will contribute to overall health and enhance the ability of the community to cope with emergencies.

County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Integrate Conflict Resolution Mechanisms**: Incorporating conflict resolution mechanisms into disaster risk management strategies is essential for addressing underlying tensions within the community. Training local leaders and community members in mediation and negotiation skills can help resolve disputes related to resource allocation, especially during times of scarcity. Through the fostering of peaceful dialogue and collaboration, communities can enhance social cohesion and stability, which are critical for effective disaster preparedness and response.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Develop School-Based Disaster Preparedness Programs**: Implementing disaster preparedness programs in local schools is vital for educating future generations about risks and resilience. These programs should cover emergency response procedures, first aid training, and environmental awareness. Through engaging students in hands-on activities and simulations, schools can cultivate a proactive mindset and empower young people to become champions of disaster preparedness within their families and communities.
  County Level - Implementing Stakeholder: THRIVE Program; Ministry of Education and Partners
- **Facilitate Access to Financial Support for Resilience Projects**: Actively seeking funding and financial support for resilience-building projects is crucial for Ulang County. This includes exploring grants, partnerships with NGOs, and community fundraising initiatives to secure necessary resources. Through the mobilization of financial support, the community can implement vital improvements in infrastructure, disaster preparedness programs, and agricultural initiatives, ensuring long-term sustainability and resilience against future challenges.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Establish Monitoring and Evaluation Frameworks**: Creating robust monitoring and evaluation frameworks is essential for assessing the effectiveness of disaster risk reduction initiatives. Regularly tracking progress and gathering feedback from community members will provide valuable insights into what is working and what needs improvement. This process will allow for continuous adjustments to strategies, ensuring that interventions remain relevant and effective in addressing the evolving needs and challenges faced by the community.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Promote Gender-Inclusive Disaster Planning**: Ensuring that women and marginalized groups are actively involved in disaster planning and decision-making processes is crucial for developing comprehensive strategies. Providing targeted training and resources to these groups will empower them to contribute their unique perspectives and address specific vulnerabilities. By fostering gender-inclusive planning, the community can enhance overall resilience and ensure that all voices are heard in disaster risk management efforts.
  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.1.7 Actionable Recommendations Panyikang

- **Establish Community Disaster Response Teams**: Forming community disaster response teams is essential for enhancing local preparedness and resilience. These teams should be composed of diverse community members, including youth, women, and elders, to ensure a wide range of perspectives and skills. Through the training of these teams in emergency response, first aid, and evacuation procedures, Panyikang County can foster a proactive

approach to managing disasters and ensuring swift action during crises.
County Level - Implementing Stakeholder: THRIVE Program and Partners

- **Enhance Early Warning Systems**: Developing a robust EWS tailored to the specific hazards faced by Panyikang County is crucial. This system should utilize local knowledge and technology, such as SMS alerts and community radio broadcasts, to ensure timely dissemination of information. Involving community members in the design and implementation of the system will enhance its effectiveness and ensure that all residents are informed and prepared to respond to emergencies.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Promote Sustainable Livelihood Practices**: Encouraging sustainable agricultural and livelihood practices is vital for improving food security in Panyikang County. Providing training on climate-resilient crops, efficient irrigation techniques, and sustainable fishing practices can help communities adapt to changing environmental conditions. Through enhancing the resilience of local livelihoods, families will be better equipped to withstand climate shocks and reduce their vulnerability to food shortages.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Implement Comprehensive Health Programs**: Strengthening healthcare services is essential for addressing the health impacts of disasters and food insecurity. Implementing comprehensive health programs that include maternal and child health services, nutrition education, and disease prevention initiatives will improve community well-being. Additionally, training community health workers to respond to emergencies will enhance the capacity of local health systems and ensure timely care during crises.
  County Level - Implementing Stakeholder: THRIVE Program, Ministry of Health and Partners
- **Conduct Community Awareness and Training Workshops**: Organizing regular community awareness and training workshops focused on disaster preparedness and risk reduction is vital. These workshops should cover topics such as emergency planning, first aid, and the importance of EWS. Through engaging community members in hands-on training and discussions, Panyikang County can cultivate a culture of preparedness and empower individuals to take proactive measures during emergencies.
  County Level - Implementing Stakeholder: THRIVE Program and Partners
  - **Utilize Traditional Methods**: Recognize and incorporate traditional warning methods, such as drum beating and horn blowing, into the communication strategy.
    County Level - Implementing Stakeholder**:** Cultural Institutions (to provide guidance on traditional practices) and Local Media (to promote and integrate these methods in messaging)
  - **Leverage Local Leaders**: Utilize the influence of local leaders, as word of mouth is a crucial method of communication for many communities. Training local leaders on effective communication strategies should enhance the dissemination of crucial hazard information and improve community engagement.
    County Level - Implementing Stakeholder**:** Traditional Authorities (to mobilize and engage community leaders) and Local Government (to support training initiatives and resource allocation).
- **Strengthen Water and Sanitation Infrastructure**: Improving access to clean water and sanitation facilities is critical for enhancing public health and resilience. Investments in water infrastructure, such as boreholes and safe latrines, will help reduce the incidence of waterborne diseases and improve overall community health. Ensuring that these facilities

are maintained and accessible to all residents will contribute to a healthier, more resilient community capable of coping with emergencies.

County Level - Implementing Stakeholder: THRIVE Program, Local Government and Partners

- **Facilitate Conflict Resolution Workshops**: Addressing potential conflicts over resources is crucial for maintaining social stability in Panyikang County. Facilitating conflict resolution workshops can equip local leaders and community members with the skills needed to mediate disputes and promote dialogue. Through the fostering of an environment of cooperation and understanding, the community can address underlying tensions, which is essential for effective disaster preparedness and response.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Develop School-Based Disaster Preparedness Programs**: Implementing disaster preparedness programs in schools is vital for educating children about risks and resilience. These programs should include practical training on emergency response, safety drills, and environmental awareness. Through engaging students in disaster preparedness activities, schools can empower the next generation to be proactive and informed, ultimately strengthening community resilience.

  County Level - Implementing Stakeholder: THRIVE Program, Ministry of Education and Partners
- **Enhance Resource Mobilization Efforts**: Actively seeking funding and resources for disaster risk reduction initiatives is essential for Panyikang County. This includes exploring partnerships with NGOs, international organizations, and government agencies to secure necessary financial support. By mobilizing resources, the community can implement vital infrastructure improvements, training programs, and health initiatives that enhance resilience and preparedness against future challenges.

  County Level - Implementing Stakeholder: THRIVE Program and Partners
- **Establish Monitoring and Evaluation Frameworks**: Creating effective monitoring and evaluation frameworks is crucial for assessing the impact of disaster risk reduction initiatives. Regularly tracking progress and gathering feedback from community members will provide insights into the effectiveness of strategies and interventions. This continuous evaluation process will allow for timely adjustments and improvements, ensuring that the community remains responsive to emerging needs and challenges.

  County Level - Implementing Stakeholder: THRIVE Program and Partners

13.2 Way Forward

As part of the way forward, and to effectively implement the main recommendations of the EWS study, a structured action plan is essential. First, focus on infrastructure enhancement by collaborating with local governments to repair transport and communication networks, ensuring timely access to information. Simultaneously, initiate community training programs to raise awareness about hazards and response strategies, engaging local governance to facilitate these efforts. Increasing access to communication tools, such as radios, will enhance information dissemination. Establishing Disaster Risk Reduction Committees will ensure diverse community representation in preparedness initiatives. Additionally, promoting financial inclusion through access to microfinance will empower communities to invest in resilience-building measures. GOAL and partners may require further technical support in areas such as data analysis and mapping, to create accurate vulnerability assessments and hazard maps. Training on disaster risk management best practices will be crucial for local government officials and community leaders. Additionally, expertise in communication strategies will help tailor messages for diverse audiences, ensuring effective outreach.

14Annexes

14.1 Annex 1: Terms of Reference of the Study

Terms of Reference (TOR) for conducting a Multi-Hazard Early Warning System Assessment and Implementation Plan for Transforming Household Resilience Through Inclusive Economic Development in South Sudan (THRIVE) Consortium Programme in the eight (8) counties of Greater Upper Nile (GUN) in Ulang, Renk, Fashoda, Panyikang, Nasir, Akobo, Rubkona & Panyijiar, in South Sudan.

Introduction

This Terms of Reference (TOR) serves as a request for Expression of Interest (EOI) and proposals from potential firms or individual consultants interested in conducting a Mulit- Hazard Early Warning System and Implementation Plan in the above earmarked counties in South Sudan. The purpose, scope and requirements of the planned study are herein explained.

THRIVE Background information.

The THRIVE programme aims to bolster resilience in conflict and climate-affected communities in the Greater Upper Nile (GUN) region. Targeting eight (8) priority counties in Upper Nile (Ulang, Renk, Fashoda, Panyikang, Nasir), Unity (Rubkona & Panyijiar), and Jonglei (Akobo) States over four years, THRIVE will reach approximately 120,000 households (105,000 direct beneficiaries and 15,000 indirect beneficiaries) with gender-responsive and inclusive livelihoods development, market system strengthening, financial inclusion, women's economic empowerment, climate change adaptation, and social cohesion activities.

Led by GOAL, in partnership with Mercy Corps, CAFOD, and VSF Swiss, and our local implementing partners, the consortium boasts over ten decades of combined experience in GUN. We focus on fostering sustainable and inclusive economic development and building household resilience by leveraging our core expertise and experience in community-centred approaches, market systems development, financial inclusion, peacebuilding & social cohesion, DRR & climate change adaptation, and women's economic empowerment.

THRIVE's programme design is grounded in evidence from the consortium's deep experience and understanding of the South Sudan and other global operating contexts. The complex and interconnected challenges faced by communities in the target locations will be addressed

through tailored and integrated interventions which foster community ownership. Combining market systems development with locally led participatory approaches, THRIVE offers a unique solution to address the root causes of systemic challenges within target pastoral and agro-pastoral value chains, creating long-term and sustainable improvements in household resilience.
THRIVE's overall goal is for target households to achieve economic and food security, and improved resilience to conflict and climate shocks and stresses. Key outcomes envisaged as a result of the integrated intervention strategies include:

- Increased incomes among individuals and micro/small-scale businesses engaged in the fishing, livestock, and agro/non-timber forestry sectors.
- Improved food security among households targeted with livelihoods and women/youth empowerment activities.
- Strengthened disaster preparedness and coping capacities for climate and conflict shocks and stresses.
- Improved social cohesion and conflict resolution capacities among target communities.
- Women and youth economic empowerment, including financial inclusion and improved gender equality.

Aligning with the broader South Sudan Humanitarian & Resilience Programme (SSHARP) Theory of Change, THRIVE's Theory Of Change envisages that: IF markets in target agricultural systems critical to the target population are thriving, inclusive, diverse, competitive, and serve users, and IF women and youth are economically empowered to access sustainable market-oriented livelihoods opportunities within those systems, and their participation is valued by their communities, and IF communities dependent on those systems are able to mitigate, adapt to, and manage the effects of climate change and conflict shocks and stresses, and resolve conflicts peacefully, THEN target households and communities will be more resilient, live in harmony, have improved economic and food security, and reduced need for humanitarian assistance.

The main objective of the Climate Risk Assessment and Climate Management Plan

The main objective of conducting the Multi-Hazard Early Warning System Assessment (during the inception phase of the THRIVE project is to examine the existing early warning system in the

THRIVE Programme locations at all levels (community, county, state ,) and National Level. The implementation plan shall provide key recommendations and steps on the strengthening EWS linked to the Climate Risk Assessment and climate risk management plan(CRMP). The strengthening/establishment of an early warning system by the programme is an adaptive measure for climate change, using integrated communication systems to help targeted communities prepare for hazardous climate-related events

The specific objectives are as follows

1.1) To conduct a holistic multi-hazard early warning system in 8 counties of the THRIVE programme operational locations.

As informed by the Climate Risk Assessment and Climate Risk Management plan, a holistic early system for the THRIVE programme shall identify existing actors , stakeholders, humanitarian partners, community structures through a mapping exercise and status of the communication system to help targeted communities prepare for hazardous climate related events.

To develop an Early Warning System Implementation Plan

Based on the outcome of the EWS assessment, an implementation plan shall be developed with key recommendations, entry point and measures that can be taken at household, community and organizational levels to strengthen. The THRIVE programme aims to strengthen/establish an effective EWS built upon four components: (i) hazard detection, monitoring and forecasting; (ii) analysing risks and incorporation of risk information in emergency planning and warnings; (iii) disseminating timely and "authoritative" warnings; and (iv) community planning and preparedness.

Excepted Outputs

•Comprehensive EWS Report on the analysis and assessment of existing EWS in South Sudan with a special focus on Greater Upper Nile Region of THRIVE Programme operational counties

•Report for Recommendations for an EWS Protocol for hazards including drought, analysis of adaptation capacity and an Implementation Plan that clearly indicates improvements and actions required to strengthen EWS

Scope of work

The scope of the consultancy includes but is not limited to the following tasks:

- In consultation with the Project Team, prepare and submit an Inception Report which include, inter alia, details the methodology/ approach to the assignment and a work plan.
- Undertake a desk review of the project document and other relevant documents in the field of EWS, CCA, DRR
- Review the existing EWS at all levels (National, Regional and local) to identify gaps, challenges and opportunities for improvement.
- Review policies, rules and regulations for mainstreaming early warning information to assess and identify gaps and challenges in mainstreaming early warning information into public and private decision-making.
- Review and gather information on past, current and planned projects related to the EWS, including disaster risk management and risk reduction activities.
- Engage with both public and private institutions to determine the current state of the EWS, including equipment, telecommunications, databases, forecasting and monitoring products, advisories and communication of EWS information.
- Undertake consultative meetings with Disaster Risk Management Committees /Stakeholders as well as project beneficiaries on the functionality and effectiveness of the existing EWS
- Conduct consultations to determine how an EWS for drought and other shocks impacting the GUN region could be integrated and mainstreamed into existing National EWS .
- Based on the field visits, develop a draft Standard Operating Procedure (SOP) on Community Based Early Warning Systems (CBEWS) including a poster to depict the mechanism and information flow.
- Review the capacities available at various public and private institutions, and identify capacities needed to support the institutions for long term monitoring and data management
- **Prepare a Draft Report** on the recommendations for an EWS . This should cover but not limited to the aspects of:

a) Network design

b) Technology/Equipment needed (should suit local conditions and circumstances)

c). Estimated costs of any equipment proposed for use

d) 'Last mile' connectivity of EWS – What communications and community tools (e.g. community mobilization methods), methods and processes are the most effective in accomplishing this?

e) Dissemination of messages

f). Possible private-public partnerships (for example mobile service providers) and advice on how best to integrate such a system with the existing national Disaster Risk Management (DRM) systems

g) Identification of capacities required to improve existing EWS

h) Training needs for capacity building

i) Governance and institutional arrangements required to sustain EWS

Deliverables

The deliverables for this assignment, are derived from the scope of work as outlined in this Terms of Reference (TOR).

6.1) The consultant is expected to produce a **preliminary Inception report** and attend a **an in- person inception meeting** based on the understanding of the TOR and desk review. This report will inform the primary field **research methodology** and aims, providing a foundation for the subsequent phases of analysis. Following this, **a detailed work plan** must be developed. This work plan will outline the expected timeframes align methodological approaches, security and ethical considerations, and data collection tools to be employed in each planned activity.

6.2) A **draft report and power point presentation**. The draft should be structured according to an agreed-upon format and should reflect the comments and feedback received from THRIVE consortium management team and other relevant stakeholders This ensures that all key insights and observations are considered and incorporated. In particular the report will have dedicated analysis for each of the eight counties and common issues across all counties.

6.3) Finally, the consultant will submit a 4-page executive summary and the **final report** in both digital and four hard copies (no more than twenty-five pages) to present the findings

and methodology used in a language that is clear and accessible to non-research audience. The final report should be thoroughly edited, well-structured, and designed, ensuring clarity and conciseness by limiting itself to essential points. Detailed materials should be included as appendices. The report will be presented in English and should clearly articulate the main findings of the study, with clear unambiguous and actionable recommendations.

Methodology

Methodological thoroughness in this assignment will be highly valued to ensure the assessment is comprehensive and robust. The consultant is expected to develop an appropriate study design for the EWS assessment as part of the inception report. The THRIVE management committee will set up agreed key stages and milestones for timely feedback: validation and approval of the inception report, data collection tools, the final work plan, and methodology before the fieldwork phase.

Additionally, there should be a briefing by the consultant on the preliminary results and an opportunity for providing comments on the draft report and recommendations by THRIVE management before final approval. This will be agreed after the adoption of the methodology and workplan.

The THRIVE management team, provide relevant reference documents and other logistical support, access to structures and communities that the consultant (s) may need during the analysis.

In line with a participatory methodological approach and the scope for meaningful participation, opportunities for the involvement of partner organisations with lived experience in each county, and community members directly involved in the project, will be explored to complement the consultant methodology. This will be discussed and agreed at the inception meeting and aligned to the consultants work plan.

Selected consultant(s) will be expected to sign and abide by CAFOD values and key policies on Safeguarding. Selected consultant(s) will also be expected to make a commitment to the work over the full term of the project and to maintain their availability at key times.

All materials from the analysis will remain the property of THRIVE.

Timing and Reporting

The assignment is expected to start not later than **28th February 2025.** The final report must be submitted by **31st of March 2025.** It is foreseen that the analysis can take maximum of 30 days

from the time of signing the contract and this is inclusive of inception, data collection and analysis, validation, and report finalization.

The following staff members of THRIVE will coordinate the consultancy.

Name Position	**Organisation**	**Email**
Tichaona Mashodo (Lead)	CAFOD	tmashodo@cafod.org.uk

The Consultant will report to and is accountable to **Tichaona Mashodo (CAFOD – Head of Programmes).**

Quality assurance will be provided through THRIVE internal mechanisms. Quality assurance of evaluation products will take place for: Terms of Reference, Inception Report, methodology, draft, and final report.

Consultant's Competencies

The lead consultant is expected to hold a master's/ doctorate degree in Environment , Climate Sciences, Climate Change , Disaster Risk Reduction/Management, Development Studies, Social Sciences, or a related field, or equivalent experience, is required. The candidate must have a minimum of 7 years of progressively responsible experience in similar consultancies with demonstrable results. They should possess extensive and proven knowledge of gender, conflict, security, livelihoods, and environmental issues in South Sudan or comparable fragile contexts. The candidate must have a successful record in coordinating complex research processes across multiple locations in various counties. Strong expertise in qualitative research methods and qualitative data analysis is essential, along with a solid understanding

of conflict analysis approaches in fragile environments and community participatory methodologies. At least 5 years of experience in Research; Climate Change Adaptation, Vulnerability Assessment, DRM, NRM and Agriculture development planning; Demonstrated experience in DRR risk and vulnerability assessment & mapping, GIS applications; National and sub-National DRR planning, DRR and CCA policy development. Excellent analytical and reporting skills and fluency in written and spoken English are

essential

Application Procedure

Interested consultants should submit their proposal (both technical and financial) as (detailed below) including updated CVs, Copies of certified sample reports for similar work and references in soft copy to ctpsupply@cafod.org,uk and cc syiey-puol@cafod.org.uk for inquiry only with subject line "**Multi-Hazard Early Warning System Assessment**" by the 18th **of February 2025** not later than **4:00 PM (Central African time).** Proposals received after the deadline shall not be considered.

Technical Proposal

The **Technical Proposal** (not exceeding fifteen pages) should include:

- Organisational profile.
- Detail of previous experience of similar assignments with traceable references
- Proposed methodology for the delivery of assignment as outlined in the ToR.
- Proposed team composition, including qualifications and relevant experience of the audit team (please attach CVs).
- Proposed workplan with timelines
- Contact details of key persons.

10.2 The Financial Proposal should include:

- The all-inclusive fixed total professional fees supported by a breakdown of costs: daily rates and number of days to be spent on the consultancy; disbursements if any; any other related costs contributing to the overall total cost.
- The cost must include VAT price and payment terms. The financial proposal must be stated in USD ($). The consultant proposal will be evaluated based on the technical proposal, financial proposal, and general understanding of the TOR requirements.

Confidentiality

All the information and approaches outlined in the proposal including the personal information of the consultant will be treated in strict confidence and remains the property of THRIVE.