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Qualitative Assessment of Resilience to the Effects of Climate Variability in the Three Communities in Uganda

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Qualitative Assessment of Resilience to the Effects of Climate Variability in Three Communities in Uganda

Eastern Africa Resilience Innovation Lab

Prepared by the Eastern Africa Resilience Innovation Lab, Kampala University, Uganda

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In collaboration with the ResilientAfrica Network (RAN) Secretariat, Makerere University,
Kampala, Uganda

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired immune deficiency syndrome
FGD	Focus group discussion
HIV	Human immunodeficiency virus
KII	Key informant interview
NAADS	National Agricultural Advisory Services
NGO	Nongovernmental organization
NUSAF	Northern Uganda Social Action Fund
PTSD	Post-traumatic stress disorder
RAN	ResilientAfrica Network



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SUMMARY

Uganda is vulnerable to climate variability including increased frequency and intensity of rainfall, droughts and floods. Three sub-regions, Albertine in the western part of the country and Teso and Mt. Elgon in the east, suffer from recurrent floods, with resulting destruction of crops and infrastructure, water contamination and disease outbreaks. Teso sub-region also suffers from drought, and Mt. Elgon also experiences recurrent landslides. Population pressures, lack of awareness of how to mitigate these shocks and stresses, poor infrastructure (roads, schools, health facilities, water and sanitation), lack of livelihood diversification and resistance to relief or development efforts perceived as inappropriate or favoring certain beneficiaries have prevented communities in these vulnerable areas from improving their incomes. Land shortage has led communities to reclaim wetlands and forest reserves, dramatically changing the ecosystem.

OBJECTIVE

The general objective of the qualitative assessment was to understand the drivers of vulnerability and adaptive capacity of the target communities to climate variability. The specific objectives were to identify the effects of priority shocks and stresses that communities face and explore the factors that lead to persistent vulnerability and promote coping and adaptation in order to develop resilience dimensions and propose interventions to strengthen resilience.

METHODS

The assessment was done in three sub-regions – Albertine in western Uganda and Teso and Mt. Elgon in eastern Uganda. Twenty-six key informants were interviewed. The key informants were representatives of nongovernmental organizations (NGOs), government agencies, development agencies operating in the study districts and political/religious/opinion leaders. Eighteen Focus Group Discussions (FGDs), one in each sub-county, were conducted in the local language. FGD participants were mobilized by sub-county focal persons (Community Development Officers) from the most affected parishes and included youths, women’s group representatives, local opinion leaders, local cultural leader, local political leaders and other community members affected by climate variability.

RESULTS

The main shocks and stresses resulting from floods, drought and landslides in the three sub-regions are environmental degradation, poverty, food insecurity, damaged infrastructure and increased morbidity and mortality. Challenges for these communities that depend on subsistence



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agriculture are markets that favor middlemen, corruption, a high rate of school dropouts, disenfranchised youth, dilapidated road networks and a poor response to mobilization and sensitization campaigns aimed at conserving or improving the environment. Interventions to strengthen resilience to climate change to improve the key resilience dimensions of wealth and health in this context could include building entrepreneurship skills among youth and women, increasing agricultural yields, supporting market access and leverage, increasing access to schools, forming savings groups and sensitizing and educating communities to take action instead of lamenting the effects of climate-related shocks and stresses.



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CHAPTER ONE: INTRODUCTION

Over the past few decades, the burden of disasters has been on the increase (ECHO, 2013). Human factors underlie most disaster situations, contributing to either their causes or effects. Disasters often result in sudden shocks that disrupt the livelihoods of communities, infrastructure and institutions (UNISDR, 2009). Even without sudden events, communities face slow-onset and persistent stresses that affect their wellbeing and resilience.

The ResilientAfrica Network (RAN) is one of eight university-based Development Labs that make up the Higher Education Solutions Network (HESN) established by the U.S. Agency for International Development (USAID). In Africa, RAN brings together 20 universities in 16 countries, with a secretariat at Makerere University in Uganda. RAN is structured around four Resilience Innovation Labs (RILabs). The Eastern Africa RILab is based in Uganda and hosted by Makerere University. By applying science, technology, innovation and partnerships and using evidence-based approaches, RAN seeks to identify, develop and scale up innovative solutions to strengthen the resilience of African communities afflicted by natural and human-made shocks and stresses.

1.1. Background of the Assessment

RAN held a consultative partners’ meeting in April 2013 in Kampala, Uganda, involving representatives of all four RILabs. Each RILab selected priority thematic areas of focus for its regional programming and proposed geographical areas for targeted intervention. Selection of priority themes was based on the frequency of the shock/stress, its magnitude, effects of the shock/stress, vulnerability of the population and existing adaptive capacities in the communities as well as potential ways in which RAN can contribute to mitigating the vulnerability factors.

The priority themes were explored and validated in a thematic literature review of resilience priorities in the Eastern Africa region. For each of the selected geographical areas, the teams highlighted a preliminary list of vulnerability factors and adaptive capacities for the target populations, as well as ways RAN could help mitigate the vulnerability factors. The next step in RAN’s strategy was to develop and validate a framework for understanding, measuring and monitoring resilience in vulnerable communities and translate resilience challenges into an innovations agenda. This required a thorough understanding of the dimensions of resilience in the geographical areas of focus.

The Eastern Africa RILab conducted a thematic literature review to identify priority themes and geographical areas for its resilience programming. Among the priority themes were the effects of



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climate change. Various regions in Uganda suffer from repeated shocks and stresses arising from climate variability. To better understand these shocks and stresses, the Eastern Africa RILab identified relevant documents by searching the websites Ugandan nongovernmental organizations (NGOs) and United Nations agencies working in different sectors in Uganda. Using selected keywords, articles were also searched in the databases of Medline and Google Scholar.

1.2. Resilience Challenges Arising from Climate Variability in Uganda

Community consultations targeted three communities in which climate variability manifests in different forms:

- The Albertine Sub-region in western Uganda (specifically, Kasese, Nebbi and Hoima districts), where the main issue is *resilience to recurrent epidemics and floods as a result of climate variability*.
- The Teso Sub-region in eastern Uganda (specifically, Soroti, Katakwi and Amuria districts), where the main issue is *resilience to recurrent floods alternating with drought as a result of climate variability*
- The Mt. Elgon Sub-region in eastern Uganda (specifically, Bududa, Butalejja and Manafwa districts), where the main issue is *resilience to recurrent landslides and floods as a result of climate variability*

This section describes the causes and effects of these shocks and factors that make communities vulnerable to their effects.

1.2.1. Mt. Elgon Sub-region

Eight districts in the Mt. Elgon Sub-region (Bududa, Bukwo, Bulambuli, Kapchorwa, Kween, Manafwa, Mbale and Sironko) are prone to landslides and mudslides, with Bududa and Manafwa the worst affected (URCS, 2012). In Bududa, landslides and mudslides have occurred in the sub-counties of Bubita, Bududa, Bulucheke and Bushika (Kitutu et al., 2011). The landslides are triggered by long and persistent rainfall (Kitutu, 2010). Districts in lower-lying areas are prone to flooding, especially in Butalejja and Manafwa districts, because rainwater and silt flow from the highlands to the riverbeds. Heavy silting and large volumes of water often cause the rivers to burst their banks.

The primary effects of the landslides and floods are loss of lives and livelihoods and displacement. A major landslide in 2010 in Bududa claimed 400 lives and buried three villages (Kato and Mutonyi, 2011; Atuyambe et al, 2011). There was also destruction of farmland and livestock, property, businesses, roads, schools and health facilities, increasing households'



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susceptibility to famine, malnutrition and poverty (Juventine, 2012; Atuyambe et al., 2011). Among the secondary effects was resettlement of about 8,500 internally displaced persons (IDPs) in Kiryandongo camp (Atuyambe et al., 2011), land conflicts, post-traumatic stress disorder and the outbreak of diseases (DDMC, 2012).

The factors that make people, infrastructure and institutions vulnerable to the effects of landslides and floods include living on hilly areas or slopes or in flood plains. The Mt. Elgon slopes are very fertile and have attracted a growing population that is forced to farm even the most landslide-prone areas (Kato and Mutonyi, 2011). Other factors contributing to vulnerability are lack of education on the causes and mitigation of landslides, instability of the slopes, age (the young and the elderly are more vulnerable), gender, the construction of houses with wood and wattle and a poor level of preparedness (Juventine, 2012). Other drivers of vulnerability are strong socio-cultural beliefs about people’s ability to change behavior to cope and mitigate the effects of the landslides and floods (Atuyambe et al., 2011), a high population density and poverty resulting from the destruction of crops and farmland (Juventine, 2012).

The adaptive factors among the affected communities include reliance on assistance from the government and volunteers who provide emergency water, sanitation, hygiene and health services (IFRC, 2013b). Another important adaptive mechanism is the resettlement of displaced populations after landslide/mudslides to minimize further damage to lives and property. Continued community sensitization on effective preventive measures by various agencies has also helped cope with the effects of the disasters.

From a resilience perspective, the floods and landslides in this region are predictable, with a strong relation to climate variability (heavy rains) as well as population settlement patterns. Government and civil society have tried a number of mitigation strategies and policies, including voluntary and mandatory relocation and prevention of encroachment into high-risk areas, but community response has been sub-optimal. There is a need to explore the factors that promote persistent settlement in high-risk areas and how these can be mitigated.

1.2.2. Teso Sub-region

The Teso Sub-region in northeastern Uganda comprises the districts of Amuria, Bukedea, Kaberamaido, Katakwi, Kumi and Soroti districts. Karamoja borders it in the north, Lira in the west and Mbale in the south. The main shocks/stresses in this sub-region are recurrent floods in one part of the district and recurrent drought in the other. Major flooding occurred in 2007 and 2010 (NUDC, 2012). Drought mainly occurs in the northern parts of Teso, especially in Amuria and Katakwi districts. (NAPA, 2007).



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The primary effects of flooding are loss of life and livelihoods; displacement (the 2007 floods left over 143,000 people displaced); massive destruction of crops and crop failure; destruction of bridges, roads and buildings; blocked urban drains and flooded latrines; and contamination of water sources (NUDC, 2012). The secondary effects of flooding include increased breeding of disease vectors and water contamination (Bambaiha, 2009), rising food prices (Rukandema, Ameziane, et al., 2008); malnutrition, lower productivity and reduced ability to learn/concentrate in class. The main primary effects of drought are shortages of water and food, while the main secondary effects are food insecurity, conflict, mortality, malnutrition, displacement, migration and loss of life (FAO, 2011).

The factors that make people, infrastructure and institutions vulnerable to flooding in Teso include the swampy terrain, especially in Amuria and Katakwi, that serves as a catchment area for water flowing from neighboring districts in Karamoja Sub-region) and permeable soils (Rukandema et al., 2008). Other factors are increased encroachment on wetland/swampy areas due to population pressure, age (children and the elderly are the most affected), gender (women are more vulnerable than men, especially female heads of households), inadequate awareness of how to mitigate the impact of floods (Bambaiha, 2009) and lack of evidence-based planning to target climate-related impacts (ACCRA, 2010). The factors that make people, infrastructure and institutions vulnerable to drought include natural variability in climate, with inadequate mitigation measures, lack of economic diversification, lack of rainfall triggered by deforestation and the extraction of water or the drying of wetlands, climate change and lack of awareness. The factors underlying vulnerability to floods and drought are poverty, lack of livelihood diversification, poor access to early warning data, poor farming methods and lack of access to improved seeds (Rukandema et al., 2008) and loss of indigenous knowledge in the younger generation (Egeru, 2012).

Teso households respond to shocks related to floods and water stress by reducing consumption, tapping savings, using technology and borrowing (Hisali et al., 2011), harvesting wild fruits and vegetables (Egeru, 2012) and accessing climate extension services and climate information (Ekiyar et al., 2012). People use indigenous knowledge to detect drought and keep sowing and planting in the hope that rain will come and stay. Some plant fast-growing tree varieties (NAPA, 2007). Teso people also depend on government and other development partners to provide emergency agriculture, agro-forestry, health and social services (Ekiyar et al., 2012, ACCRA, 2010). Despite the recurrence of floods and droughts in the area, the capacity of communities to mitigate or eradicate their effects is sub-optimal, despite a number of interventions by government and civil society organizations. There is need to further explore the underlying drivers of resilience to floods and drought in the area.



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1.2.3. Albertine Sub-region

The Albertine sub-region lies along Lake Albert and the River Nile in the mid-western end of Uganda and comprises the districts of Nebbi and Zombo in the north, Hoima and Kibale in the west and Kasese in the southwest. The area suffers recurrent floods and landslides from heavy rains, which escalate recurrent epidemics of cholera, malaria and viral hemorrhagic fevers. In 2013, heavy rains that lasted for six hours made the Nyamwamba River burst its banks and flooded nine sub-counties in Kasese District, killing eight people and affecting 25,445 (IFRC, 2013a). Kasese also experienced landslides in 2005, 2010 and 2011 that destroyed property but no lives.

The primary effects of floods and landslides are destruction of infrastructure and property (IFRC, 2013a), contamination of water sources, displacement and break-up of families. Cholera has long been a problem in this sub-region (IFRC, 2012a). Since the beginning of 2013 to August 2013, the cumulative number of cases reported from the cholera affected Hoima, Nebbi, Buliisa districts has reached 362 cases and 16 deaths. In 2013 the cholera case fatality rate was 4.4% (IFRC, 2013a). The sub-region is also at risk of Ebola, dysentery and other epidemic-prone diseases. Secondary effects of these shocks/stresses include increased government expenditure on diseases outbreaks, evacuation and resettlement.

Destruction of crops is catastrophic for communities highly dependent on subsistence agriculture. These communities depend on a narrow range of crops that they use both for household consumption and sale. The mere extension of either rains or drought by a month can mean the loss of an entire crop. Smallholdings and inefficient farming methods keep farmers trapped in low incomes. Reliance on middlemen to sell their produce means that they obtain much less profit from the sale of their produce than they would have if they dealt directly with the produce buyers (e.g., schools and exporters). In some places, dilapidated roads mean that buyers cannot reach farmers and perishable produce must be sold cheaply.

Factors that increase vulnerability are lack of effective climate change preparedness (Bambaiha, 2009), persistent heavy rainfall, inadequate outbreak preparedness and response mechanisms (Namusisi, 2007), inadequate sanitary facilities coupled with poor hygiene (IFRC, 2012a) and lack of knowledge about cholera (Namusisi, 2007). The factors that underlie failure to overcome vulnerability include the lack of policy documents relating to climate change and human health (Bambaiha, 2009), beliefs among fishing communities that cholera is airborne and caused by witchcraft (IFRC, 2013a) and resistance to first-line antibiotics to treat cholera (Okui, 2008). Cross-border movements between Uganda and Congo facilitate the quick spread of cholera (IFRC, 2012c). The soil texture in some flood-affected areas poses a challenge for improving latrine coverage (IFRC, 2012c). Because of land shortage, communities have reclaimed wetlands



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and forest reserves, and this has led to a dramatic change in the ecosystem. Inadequate water collection points such as swamps and valley dams have exacerbated flooding as the swamps have been reclaimed for agricultural activities hence aggravating the magnitude of floods in these communities. Weak soils coupled with a high water table hinder construction of permanent structures and sinking of pit latrines. In most cases the latrines can only last for a few years due to the nature of the soils.

Factors that help communities in the Albertine region cope with floods and drought include reliance on government and other emergency health, agriculture and water assistance (IFRC, 2012b). The sub-county also enacted by-laws stopping sale of cold foods and fluids associated with the spread of cholera and used mass media, posters, brochures and t-shirts in the local languages to disseminate information about the disease (IFRC, 2013a).

There is a need to explore why communities in the region suffer from the preventable effects of floods despite their predictability, especially in the rainy season. The lack of a reliable early warning system means that communities are often caught unaware. However, the fact that these events occur repeatedly with the same consequences means that community mechanisms of adaptation are not working.

1.3. Assessment Objectives

A literature review found insufficient information regarding community perceptions about vulnerability and adaptive capacities. The overall objective of this qualitative assessment was to gain a deeper understanding of the drivers of vulnerability and adaptive capacity of the target communities to priority shocks or stresses. The results were meant to inform resilience dimensions and metrics that would be used to develop innovations that will result in improved resilience of target communities. The specific objectives of this assessment were:

- To identify the primary and secondary effects of priority shocks and stresses that communities face.
- To explore the latent factors that lead to persistent vulnerability as a basis for developing resilience dimensions (mitigating, adapting, recovering and learning) and metrics.
- To explore the latent factors that promote strategies to cope with, mitigate and adapt to priority shocks and stresses as a basis for developing resilience dimensions and metrics.





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CHAPTER TWO: Problem Statement, Rationale and Theoretical Framework

2.1 Problem Statement

While many frameworks have been used to assess resilience, there is no unifying framework for understanding resilience in sub-Saharan Africa. The ResilientAfrica Network (RAN) will develop a framework for understanding, measuring and monitoring resilience in vulnerable communities in sub-Saharan Africa. However, to do this requires a thorough understanding of the dimensions of resilience in the geographical areas of focus for the program.

Although RAN’s regional partners have each proposed priority themes and geographical areas of focus for resilience interventions, there is an insufficient understanding of the range of vulnerability factors and underlying drivers of vulnerability and adaptive capacities of the target communities. Factors in the two dimensions are crucial to understanding the drivers of resilience in these communities.

A lack of information of the variability the underlying cause of vulnerability, adaptive capacities and geographical contextual factors render it difficult to develop a framework for measurement of resilience in the specific contexts. Qualitative data was therefore necessary to develop the dimensions of resilience, which will inform the process of developing quantitative tools to measure resilience in target communities.

There was therefore urgent need to conduct a more in-depth understanding of the drivers of vulnerability and adaptive capacities in the target communities, to enable a better understanding of resilience variables resulting from climate change.

2.2 Rationale for the qualitative assessment

The assessment fostered a better understanding of the resilience dimensions, especially the underlying factors that trap people in vulnerability as well as the factors that promote adaptation. The assessment also helped in facilitating the process to develop the dimensions of resilience to inform resilience programming

2.3 Theoretical Framework for assessment of resilience factors in the three regions of Uganda

RAN’s definition of resilience

USAID defines resilience as the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces



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chronic vulnerability and facilitates inclusive growth (USAID Policy and Program Guidance on building resilience to recurrent crisis). However, this definition appears broad and was rooted in resilience situations in areas of chronic crisis. Tulane University’s Disaster Resilience Academy on the other hand defines resilience as ‘the capacity of the affected community to self-organize, learn from and vigorously recover from adverse situations stronger than it was before’. However, this definition denotes communities which have already suffered a disaster shock, and does not adequately represent non-disaster situations.

As a middle ground, RAN defines resilience as ‘the capacity of people and systems to mitigate, adapt to, recover and learn from shocks and stresses in a manner that reduces vulnerability and increases well-being’.

Theory of Change

The resilience of people and systems in Africa will be strengthened by leveraging the knowledge, scholarship and creativity that exists across the ResilientAfrica Network (RAN) to incubate, test and scale innovations that target capabilities and reduce vulnerabilities identified by a scientific, data-driven and evidenced-based resilience framework for Sub-Saharan Africa. RAN defines resilience as the capacity of people and systems to mitigate, adapt to, recover and learn from shocks and stresses in a manner that reduces vulnerability and increases wellbeing.

Components of the RAN Resilience Framework

The goal of strengthening systems’ resilience is to ultimately improve their well-being. This necessitates an understanding of contextual factors, resilience dimensions and protective strategies, how to design interventions which build on systems’ capabilities to strengthen their resilience; all of which results in improved wellbeing. To accomplish this, the framework involves a four-step process from analyzing the context, understanding and prioritizing resilience dimensions, developing relevant interventions and evaluating their effectiveness in increasing resilience. The draft theoretical framework is summarized in the below:



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Figure 1: Theoretical conceptual framework for understanding local resilience

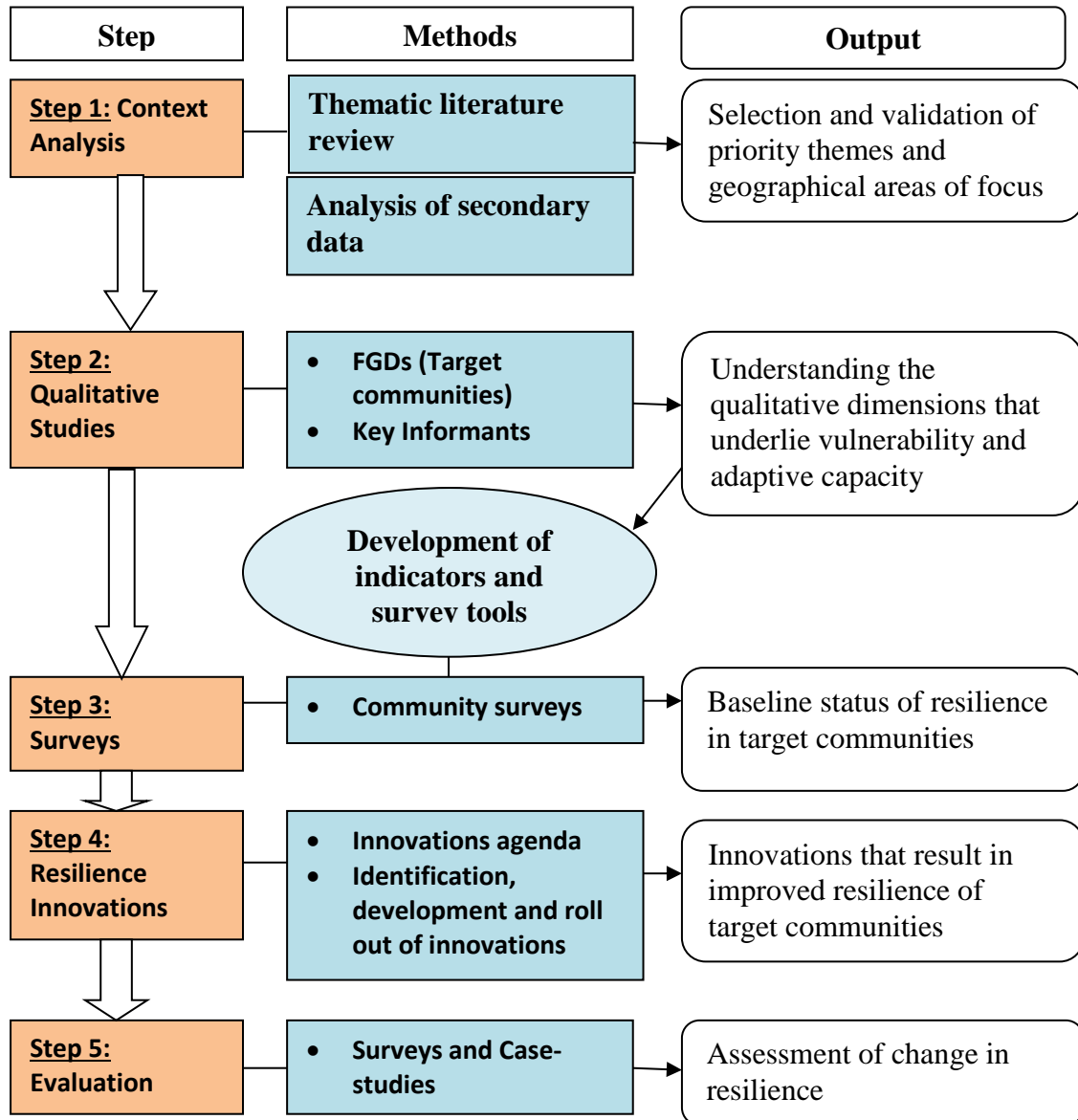


Figure 2: Conceptual framework for resilience factors associated with recurrent predictable climate events in Eastern Africa

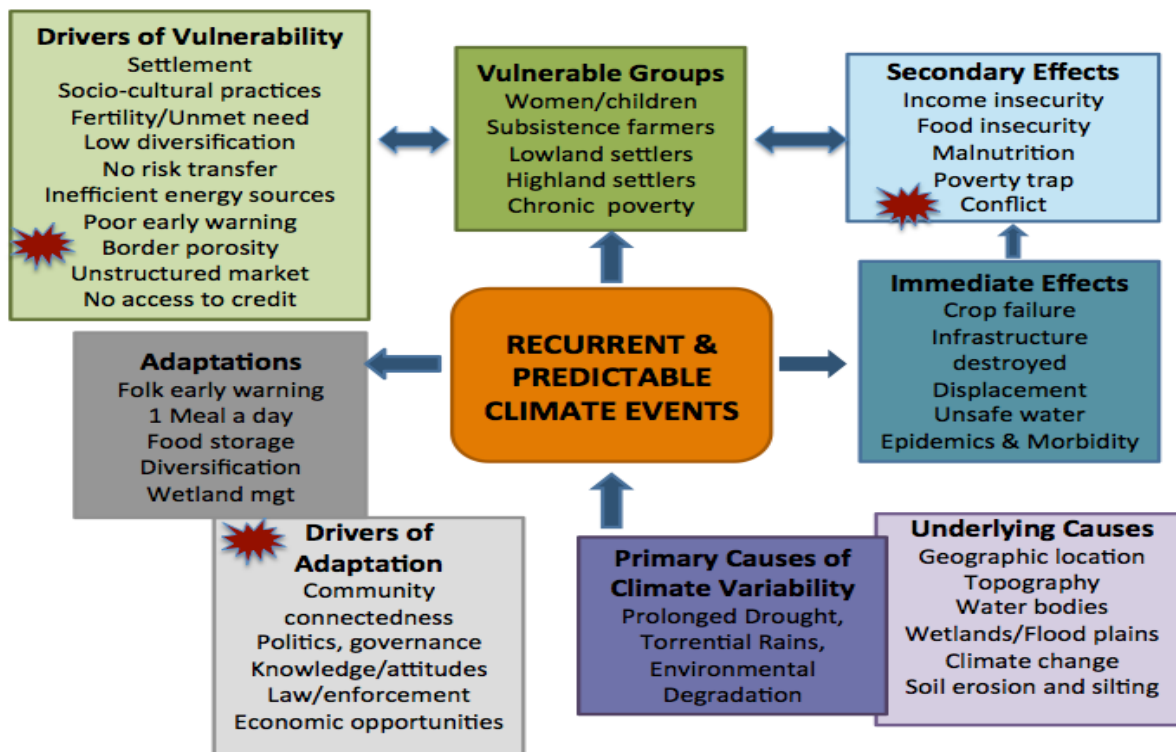


Figure above illustrates the central problem as Recurrent and Predictable Climate Events with the primary cause being prolonged drought, torrential rains and environmental degradation. In the event of such disasters, the most affected groups are usually women and children as well as those who live in the areas susceptible to these hazards. The immediate effects include loss of lives, crop loss and destruction of infrastructure among others. Consequently, many communities have devised means of adaptation like folk early warning signs to reduce the adverse effects caused by these recurrent and predictable climate events. This study is interested in studying the underlying drivers of vulnerability, drivers of adaptation and the secondary effects of the problem of recurrent and predictable climate events in Uganda.



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CHAPTER THREE: STUDY OBJECTIVES

3.1 General Objective

The general objective of the qualitative assessment was to gain a deeper understanding of the drivers of vulnerability and adaptive capacity of the three target communities to priority shocks or stresses. The results are meant to inform resilience dimensions and metrics that would be used to develop innovations that will result in improved resilience of target communities. The specific objectives of this assessment were:

3.2 Specific Objectives

- To identify the primary and secondary effects of priority shocks and stresses that communities face.
- To explore the latent factors that lead to persistent vulnerability as a basis for developing resilience dimensions (mitigating, adapting, recovering and learning) and metrics.
- To explore the latent factors that promote strategies to cope with, mitigate and adapt to priority shocks and stresses as a basis for developing resilience dimensions and metrics.



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CHAPTER FOUR: METHODOLOGY

4.1. Study Setting and Study Populations

The study was conducted in three districts in each of three sub-regions affected by climate variability, manifesting as floods alternating with drought (Teso), landslides and floods (Mt. Elgon) and disease epidemics and floods (Albertine). In each district, two sub-counties were selected for the study (Table 1).

Table 1. Study area: Climate variability

Sub-region	Administrative unit (district)	Study area (sub-county)
Teso	Amuria	Kapelebyong and Obalang
	Katakwi	Palam and Toroma
	Soroti	Arapai and Kamuda
Mt. Elgon	Bududa	Bukalasi and Bulucheke
	Butalejja	Mazimaza and Nawanjofu
	Manafwa	Bukokho and Wesswa
Albertine	Hoima	Kigorobya and Kyangwali
	Kasese	Kilembe and Nyakiyumbu
	Nebbi	Panyimur and Wadelay

4.2. Study Design

This was a qualitative assessment that used Focus Group Discussions and Key Informant interviews. The purpose of this design was to get to the root of the underlying drivers of vulnerability in each sub-population. A grounded theory approach was used to guide the development of qualitative dimensions from which a theoretical derivative for understanding resilience in this region.

4.3. Sample Size and Techniques

The Eastern Africa RILab collected qualitative data through focus group discussions (FGDs) and key informant interviews (KIIs) in the three communities affected by climate variability to identify causes, effects, vulnerability factors, vulnerable populations and adaptive strategies to recurrent landslides, floods and disease epidemics. (Table 2).

Table 2. FGDs and KIIs

Sub-region	Administrative unit (district)	Study area (sub-county)	Focus group discussions (FGDs)	Key informant interviews (KIIs)
Teso	Amuria	Kapelebyong and Obalang	2	9
	Katakwi	Palam and Toroma	2	
	Soroti	Arapai and Kamuda	2	
Mt. Elgon	Bududa	Bukalasi and Bulucheke	2	8
	Butalejja	Mazimaza and Nawanjofu	2	
	Manafwa	Bukokho and Wesswa	2	
Albertine	Hoima	Kigorobya and Kyangwali	2	9
	Kasese	Kilembe and Nyakiyumbu	2	
	Nebbi	Panyimur and Wadelay	2	
Total			18	26

A total of 26 KIIs were conducted. Key informants were representatives of NGOs, government agencies, development agencies operating in the selected districts and political/opinion leaders. Government and NGO representatives included people knowledgeable in the area of climate as well as the effects of climate change.

In each selected sub-county, a FGD was conducted with eight participants in the local language. FGD participants were mobilized by sub-county focal persons (Community Development Officers). Selected participants were from the most affected parishes. They included two youths (male and female), a women's group representative, a local opinion leader, a local cultural leader, a local political leader and two other community members affected by climate variability.

4.4. Data Collection Tools and Procedures

A team of trained research assistants conducted recorded and transcribed the 26 KIIs and 18 FGDs. Notes were taken during the interviews to supplement the recordings.

Key informant interviews

For each geographical area we conducted field visits to the selected administrative districts at the epicenter of the shock/stress and interview a minimum of nine key informants. These included representatives of government agencies in the target areas, representatives of non-governmental organizations and development agencies operating in the affected districts and political/opinion leaders of affected communities. The actual key Informants were identified during micro-



planning sessions at the district level. Respondents were people knowledgeable about the effects of climate change manifesting in form of floods, landslides and disease epidemics including victims.

Focus Group Discussions

FGDs were conducted in each targeted sub-country in the local language. FGD participants were selected from the most affected parishes and mobilized by sub-county focal persons (Community Development Officers). The participants included two youths (male and female), one women's group representative, one local opinion leader, one local cultural leader, one local political leader and two other community members affected by floods, landslides and disease epidemics. Data from the FGDs and KIIs were recorded using digital voice recorders, transcribed and then translated into English.

4.5. Data Management and Analysis

Data from the FGDs and KIIs were recorded using digital voice recorders. Thereafter, they were transcribed and then translated into English. The transcripts were read through several times by selected teams. Verbatim statements about the participants' experiences were extracted and compiled into one text in Excel for each region, which constituted the unit of analysis. The text was divided into meaning units that were condensed. The condensed meaning units were abstracted, and the whole context was considered when condensing and labeling meaning units with sub dimensions (Graneheim and Lundman, 2004). The various sub-dimensions were discussed and agreed on by a team of researchers. Finally, the sub-dimensions that were related to each other were merged to constitute the resilience dimensions. The qualitative data was analyzed using ATLAS Ti software to further elucidate the linkages between the identified dimensions of resilience.

4.6. Ethical Issues

The assessment had limited inquiry into individual experiences and was therefore not inherently designed to measure attributes of individuals. Issues were discussed with the community as the reference. Questions that were asked to key informants were in reference to the geographical area and population as a whole, and not to individuals, and therefore did not carry any invasiveness to human subjects. It is an initial appraisal which was used to develop a more detailed study protocol. The following ethical issues were considered:





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Ethical Approval: This study was approved by Makerere University School of public Health Institutional review (IRB00011353) board and Uganda National Council of Science and Technology (UNCST) (Ref SS 3357)

Informed consent: All participants received full informed consent at the time of recruitment as FGD participants or Key Informants. All FGD and KIIs participants signed consent forms and FGD participants signed as a group.

Privacy and confidentiality: The assessment team ensured privacy and confidentiality. For the FGDs, participants' names were not taken, but rather, anonymous identifiers were used, and referred to during the discussions, so that no names are tagged to particular responses. However, It was not possible to keep key informants anonymous because their status is part of why they are selected as key informants.



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CHAPTER FIVE: RESULTS

This chapter discusses the findings of the qualitative assessment in northern Uganda. The research team analyzed the FGDs and KIIs to derive dimensions of resilience to climate variability in three sub-regions that were identified by this study.

Data analysis identified eight dimensions of resilience for the study districts: *Infrastructure, Human Capital, Wealth, Governance, Natural Resources/Environment Agriculture, Health, Social Environment/Social Networks* and *Psychosocial Wellbeing*. To assess the capacity of communities in three districts to adapt to the stresses of chronic conflict, the study explored the following areas for each dimension:

1. **Adaptive strategies:** Factors that empower the communities to resist the effects of chronic conflict
2. **Coping strategies:** Behaviors to mitigate and absorb the impacts of chronic conflict; their effect on individuals, households and communities; and their sustainability
3. **Vulnerability factors:** Characteristics that make individuals, households and communities more susceptible to the negative impacts of chronic conflict and groups that are especially vulnerable
4. **Causes and effects** of each stress factor and the interrelationship among dimensions

5.1. Infrastructure

This dimension includes the basic infrastructure, physical community or societal assets (roads, bridges, railways, housing, bore holes, markets and telecommunications) that people use to function more productively. It includes aspects that relate to accessibility, functionality and linkages of infrastructural aspects to productivity in the communities. The dimension also includes the effects of infrastructure-related aspects on livelihoods.

5.1.1. Adaptive Strategies

- Community members who can afford it build strong permanent houses (constructed with burnt bricks and cement) that can resist flood damage.
When you see that floods have become a problem, you migrate to another area that is not flood prone, then other people who can afford it erect strong permanent houses so that even if there are floods, houses cannot be demolished. (Focus group participant, Teso Sub-region)
- Communities identified the need for collective stakeholder involvement in monitoring infrastructure construction to avoid sub-standard work.
- Local governments are maintaining the roads using tractors, especially in the dry season.

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5.1.2 Coping Strategies

- Communities are sensitized by experts on how to build flood-resistant houses and latrines because the pits collapse once floods come.
- Communities try to dig channels around homes to divert floodwater.
- Communities raise compounds to control floods, although this has been reported as ineffective.

We have always tried to dig soils from nearby hilly areas and spread it around the compound to raise the compound so that the area does not flood, but it has still failed because the floods affect our houses. (Focus group participant, Mazimasa Sub-county, Butalejja District, Mt. Elgon Sub-region)

5.1.3 Vulnerability Factors

- Floods destroy roads, gardens and property, causing food insecurity and migration.
Floods make roads impassable, bury crops in the garden and destroy property, leading to migration as people no longer plan for seasons, and when droughts come in, all these lead to food insecurity in the community. (Focus group participant, Soroti District, Teso Sub-region)
- The local government roads (roads under district local governments) are not maintained, making them inaccessible and vulnerable to floods and landslides.
- Floods cause cracks in houses, especially those constructed near wetlands, leading to destruction and collapse.

When the floods begin, it first starts by causing holes in the houses of those people next to the wetland/swamps. (Focus group participant, Kasese District, Albertine Sub-region)

- People used poor architectural planning to build houses that are prone to destruction during heavy rains. Communities build houses in high-risk areas (wetlands, slopes and highland areas).

There is no proper planning, especially when it comes to building our houses. Some people build houses directly on a slope in the dry season, but when it rains heavily, floods come, and most of these houses are just swept off. (Focus group participant, Kigorobya Sub-county, Hoima District, Albertine Sub-region)

In this area here, the landslide comes from above and the road is below, so when it occurs, it dumps all the soil on the road, making the road impassable for cars and people to cross. (Focus group participant, Manafwa District, Mt. Elgon Sub-region)



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The reason for all these problems in Butalejja is because we are in low lands without any hills around us, so all the water that comes from Bugisu flows here and destroys our crops, schools, roads and health facilities. (Focus group participant, Nawanjofu Sub-county, Butalejja District, Mt. Elgon Sub-region)

- Population pressure has forced people to settle in areas that used to be river channels.
- Poor-quality construction materials make roads and houses prone to destruction. Houses are built using local indigenous materials such as grass, banana leaves, mud and wattle, which have begun disappearing at a rapid rate because of drought.

These roads sometimes get destroyed because of poor construction. For example, the culverts they put on these roads are of poor quality and don't last long. Sometimes you find that when a heavy vehicle passes on these culverts, they get broken. The culverts alongside the roads are small, weak and easily broken, making the water flood all over the land. (Focus group participant, Kasese district, Albertine Sub-region)

In this community of Wadelay, we have small grass thatched houses where the walls are just mud and wattle, made out of sand, and the roof is covered with grass. Therefore, in some areas where the rate or level of floods is high, you find that those houses sink in and others are dissolved. Even those who have permanent houses complain of the cracks in the wall because of the looseness of the soil particles, which in most cases is caused by floods. (Focus group participant, Nebbi District, Albertine Sub-region)

Sometime back when it used to rain, we had grass and it was easy for us the people of Teso to build houses using grass thatch. But now there is no rain and hence no grass/thatch, so people's houses are falling. You find that people build poorly constructed and weak houses with little thatch, which is not enough for the house, so when it rains the house leaks and you spend the night awake. (Focus group participant, Arapai Sub-county, Soroti District, Teso Sub-region)

- Communities erect semi-permanent structures on bare land, exposed to destruction by natural disasters.
- The roads constructed in lowland areas are not raised, and when it rains heavily, flooding makes them impassable and easily destroyed. Bridges also are not. Most roads do not have water channels or culverts to direct water, so when heavy rains come, the roads are flooded.
- Sandy soil in Teso and water-saturated soil in Mt. Elgon make houses unstable.

I will add on that and say that the reason we cannot have permanent structures is because our soils are weak. It is also because of the water, which is underground, which weakens the construction materials that are used and can easily be moved away. (Focus group participant, Manafwa District, Mt. Elgon Sub-region)



5.1.4 Causes and Effects

- Destruction of bridges by floods and landslides has affected access to schools and markets, leading to price fluctuations and low school enrolment. This has led to poverty as communities end up selling produce at cheap prices.

Our bridges have broken down, and so we can't go to places that are distant, and the children no longer cross to go to school. Our produce has lost market because the cars cannot cross the bridges ... after flooding, all cars travel long distances, and the cost of food becomes expensive ... you cannot send the child to school because he would not manage to cross the flooded river. It also causes theft; people begin to steal food. (Focus group participant, Kasese District, Albertine Sub-region)

When we fall sick, our road is bad, and this makes transportation of patients really hard. Some have even died along the way as we transport them to the hospital. (Key informant, Bududa District, Mt. Elgon Sub-region)

Some classroom blocks and latrines are destroyed by floods, making teachers, pupils and other non-teaching members have nowhere to excrete or help themselves during rainy seasons. This has intensified the disease outbreaks. (Focus group participant Wadelay Sub-county, Nebbi District, Albertine Sub-region)

- Destruction of roads by floods leads to high transport costs, affecting access to health facilities.

Another problem is transport. Here in Wadelay, if a relative is sick, we hire vehicles at a very expensive price to go to either Angal Hospital or Pakwach Health Centre IV because of the poor state of the roads. (Focus group participant, Wadelay Sub-county, Nebbi District, Albertine Sub-region)

5.2 Human Capital

Aspects of this dimension include skills, knowledge and labor that together enable people to pursue different strategies to achieve their livelihood outcomes and meet their needs. *Human Capital* includes employment, labor, the labor force and characteristics such as education, skills and knowledge that directly or indirectly affect employment. Effects of chronic conflict and natural disasters that directly affect human capital include death leading to loss of labor force and skills. RAN and the EA RILab consider the *Human Capital* dimension to include indicators of access to quality education such as:

- Access to and quality of formal schooling, including technical or vocational training.
- Mentoring of children and youth by family members and community elders (informal education).



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- Educational infrastructure and materials/resources such as classrooms, textbooks and teachers.
- The influence of systems such as leadership, community involvement in education and food supply on educational outcomes.

5.2.1 Adaptive Strategies

- Communities sell agricultural produce at a low price in order to raise school fees. Some resort to taking children to poor-quality schools, as they cannot raise school fees from low-priced agricultural produce.

Last season, our coffee performed well on the market. We then ensured that we would do better the next season. To our surprise, the prices dramatically fell. This is also the same for cotton. The previous season, it was highly priced, and we worked hard, but then the price declined. This has even caused poverty. Now I have had to change children from good but expensive schools to the cheap ones. (Focus group participant, Maliba sub-county, Kasese District, Albertine Sub-region)

5.2.2 Vulnerability Factors:

- Delayed remuneration has led to teachers abandoning work, which affects schooling. Salaries are delayed, and most of the teachers abandon work to concentrate on other livelihood sources.

In schools, the teachers have been abandoned so much. They spend over 6 months without being paid, which causes them to abandon their work. In a school where teachers are supposed to be around 12, you can only find eight or seven. This has lowered the level of education. (Focus group participant, Kyangwali Sub-county, Hoima District, Albertine Sub-region)

- Communities report limited parental involvement in children's education, which affects enrolment in school. Most parents do not pay attention to children's education, and most children do not attend classes.

... in a school of about 100 pupils, you only find about 20 children. Their parents don't care about education. (Focus group participant, Kyangwali Sub-county, Hoima District, Albertine Sub-region)

- Floods affect access to schools, as children cannot manage to cross flooded areas.

Young children fail to go to school because you worry that if it is a young child, he can't manage to cross the flooded river. When it floods, it leaves some water



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stagnations that act as breeding grounds for mosquitoes, and this causes more problems. (Focus group participant, Maliba Sub-county, Kasese District, Albertine Sub-region)

- Few and distant secondary schools affect schooling because most children cannot walk long distances school. Parents do not have money to educate these children in boarding schools, and this has contributed to school dropouts. In some communities, children below the age of 12 no longer go to school because available schools are too far away or nearby ones were destroyed by landslides.

Our secondary schools are few in this sub-county, yet the sub-county is big. Our children walk long distances to reach the only existing secondary school, and this makes them late to school. Yet some of us parents don't have the capacity to raise money to take our children to boarding schools. (Focus group participant, Nyakiyumba Sub-county, Kasese District, Albertine Sub-region)

- Destruction of property, low yields of agricultural produce and poor sales prices reduce income for paying school fees.

You can see the rice farms around this area, so when the rice sale is affected, it leads to poverty because we have no other source of income. When it happens, even taking the children to school becomes a problem. (Key informant, Butalejja District, Mt. Elgon Sub-region)

- A high rate of secondary school dropouts is reported in all districts, as children provide labor in gardens or drop out because of long distances to school or nearby schools destroyed by floods and landslides. Also, their parents cannot raise money to pay school fees.

We are struggling to educate our children. You find that the rate of school dropouts is high, which in the end leads to poor performance, and if we are to evaluate right now, the P.L.E results for last year are out, and in the whole of Wadelay Sub-county, we have 13 schools but only two first grades [test results], something that affects our lives/clan/land in future as we know that education is important. (Focus group participant, Wadelay Sub-county, Nebbi District, Albertine Sub-region)

- Communities also reported that youths have a negative attitude to education and work.

There is the problem of the youth. Our children are not going to school. Children who are above 18years of age don't want to work, and they spend time playing cards, smoking opium and other drugs. (Focus group participant, Kyangwali sub-county, Hoima District, Albertine Sub-region)

- Girls drop out of school among because of lack of school materials, and this may lead to early pregnancies. Girl dropouts resort to selling agricultural produce in markets.



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The problem that usually shocks the people of this sub-county is the poor education of girls. The number of girls who go to school seems to be many, but among these girls, a good number is pregnant. Their reason for becoming pregnant in most cases is that they lack means of getting their school requirements. This makes them abandon school and stop studying. School dropouts here are mostly girls. On market days these girls mobilize and go to the market to look for ways to survive by selling fish, and the children help them to arrange/sort fish. (Focus group participant, Hoima District, Albertine Sub-region)

- Nature of livelihood attracts children into the activity thus affecting their schooling. Some children are attracted by livelihood activities and this has affected schooling as most children resort to providing labor in these activities hence school dropouts.

Children cannot concentrate because here we are at a landing site and the activities that take place here have attracted children so much, hence making them not to study but only think of fishing and rearing pigs. They do not concentrate on their studies because all they think of is only how to get money from the river. (Focus group participant, Panyimur Sub-county, Nebbi District, Albertine Sub-region).

- Landslides and floods destroy schools, affecting access to education. Some schools are completely washed away by landslides, and others are left in such poor conditions that the government is forced to close them.

Even a school was also affected because the landslide was almost taking it, so they decided to close it. What I know is that till today it has not been opened up, and this has affected these children because of the long distance to school and has also affected their performance. (Key informant, Bududa District, Mt. Elgon Sub-region)

- Poverty makes some people give up their children to human trafficking. Some parents allow their children to seek employment when they are still young to generate some income for domestic use.
- Communities report a low teacher/student ratio. In some communities, a teacher takes charge of two classes with about 100 pupils in each class, and this results in poor performance.

The level of education for us in Kapelebyong is the lowest in Uganda ... the children are there, but then the teachers to teach are not enough. One teacher handles about 200 children ... in primary.1 and 2 ... that scares us ... here education is so bad ... that really worries us” (Focus group participant, Kapelebyong Sub-county, Amuria District, Teso Sub-region)

5.2.3 Causes and Effects

- Displacement because of floods and landslides affects schooling, as children are settled in resettlement camps that do not have schools.



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Displacement has caused a negative effect to our development, like these children in the background are supposed to be in Bukinda Primary School but they are now at the headquarters playing because they were relocated here after a disaster and there is no school here to go to. (Focus group participant, Kyangwali Sub-county, Hoima District, Albertine Sub-region)

- Youth productivity is affected by pests and diseases and lack of start-up capital. The destruction of crops by disasters coupled with pests and diseases has discouraged youth from engaging in productive agriculture, but they lack capital to diversify their livelihoods.

The youth face problems of lack of school fees so they drop out. Also, when you try growing crops, there are many diseases that affect the crops, for example tomatoes. There is a lot of withering, the same applies to onions. When you try brick laying, there is no capital to start, or heavy rains come but you have no tarp line to use to cover the bricks. (Focus group participant, Teso Sub-region)

- Sick parents cannot afford to buy school materials or pay school fees, so children end up staying at home because there is no money.
- Poor road networks affect access to school. After heavy rains, the roads are impassable.
- Schools are often too far from children's homes to walk.

5.3 Wealth

This dimension describes both financial and non-financial assets and access to credit and goes beyond what is normally defined as wealth to include elements of livelihoods and food security. Livelihoods include activities required to make a living and have a good quality of life. They touch on forms of (formal and informal) employment and sources of incomes, as well as activities and choices within households and local populations that provide food, health, income, shelter and other tangible and intangible benefits, such as comfort, safety, respect and fulfillment. In northern Uganda, cattle ownership is considered a major indicator of wealth.

5.3.2 Adaptive Strategies

- Some communities are engaged in afforestation with the belief that trees will help them in the future. Trees are a source of income but also mitigate the effects of heavy winds.
- Communities are using indigenous means of food storage such as granaries and storage of some produce (e.g., rice) in polythene bags and use of raised stands to protect food from floods.

When floods come, we get polythene bags and pour on the rice so that the water is below the polythene and the rice is safe and not destroyed. People also create stands where the rice is placed after harvesting. It is then transported in small boats for





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drying like in Busolwe and stored there. (Focus group participant, Nawanjofu Sub-county, Butalejja District, Mt. Elgon Sub-region)

- People dry foods and store them for consumption during drought. Some of the preservation mechanisms include using local herbs such as neem tree leaves.
- There has been a rapid increase in the number of village saving groups aimed at raising income.
- Communities have been relocated to safer places, sometimes in other districts, to avoid property loss due to shocks and stresses.

After the mudslides, some people's crops, land and houses were destroyed, leaving them helpless, so when they were taken to Kiryandongo district, they acquired land. (Focus group participant, Bukalasi Sub-county, Bududa District, Mt. Elgon Sub-region)

- Some people have diversified their livelihoods, for example, raising birds and animals as alternative sources of income.

5.3.3 Coping Strategies

- Some livelihood sources expose communities to further shocks and stresses. Some communities reported cutting trees for money despite the fear of possible desertification. These natural resources provide cheap sources of fuel, including charcoal and wood, which are in high demand in schools, factories and households. Communities have resorted to selling most of their food crops after harvest, leading to food insecurity and malnutrition.
- Diversification into animal husbandry as a source of livelihood has been a challenge because of cattle rustling.
- Some communities are engaged in unsustainable businesses for survival such as human trafficking, and some young girls have engaged in commercial sex for income. This is worsened by the high levels of drunkenness in the communities.

... human trafficking because of poverty ... people come to the village and deceive people [saying,] bring your children and we take them to Kampala for education, but when they get to Kampala, the children end up in other businesses. (Focus group participant, Soroti District, Teso Sub-region)

5.3.4 Vulnerability Factors

- Access to credit was mentioned as a key component of the *Wealth* dimension. Communities voiced concern over lack of access to credit to invest in enterprises such as agriculture and other businesses. Rural settings frequently suffer from limited investment,



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leading to limited business ventures and underdevelopment. There are no financial institutions to offer credit to the rural poor.

- Drought, floods, landslides, hailstorms, heavy winds and wildfires destroy houses, agricultural produce and livestock, leading to income loss and food insecurity. Livestock diseases have also affected household incomes.
- The topography of the three sub-regions predisposes communities to a continuum of disasters that lead to property and income loss. The limited resources force communities
- To settle in high-risk areas (wetlands, waterways and landslide-prone areas or highlands). There is limited free land because of the high population and land fragmentation into smallholdings, leaving no room for communities to be resettled. This leads to annual exposure to climate-related shocks.
- Poor road networks (because of poor maintenance or destruction by floods and landslides) affects sale of agricultural produce, leading to price fluctuations and trapping farmers in poverty.
- Illiteracy and low education levels make it difficult for people to diversify their livelihoods. Communities are still trapped in subsistence agriculture with very low income. This has been worsened by the negative attitudes to development programs such as tree planting that are aimed at alleviating poverty.
- Communities have been faced with a high disease burden, which has affected their productivity.
- Many young people have dropped out of school. Climate variability, rampant pests and diseases and lack of start-up capital have made agriculture unattractive to youth.

5.3.5 Causes and Effects

- Crop destruction by floods affects income, leading to school dropouts and early marriages.

Floods cause early marriages and school dropouts because you may tell a child to be patient, that maybe next season you will cultivate something else so that you get money to take the child back to school. But because she is a girl, it is at times hard for them to be patient. She may be there and someone gives her some money or buys her a chapatti, and she is gone and drops out of school. She cannot be patient until you will cultivate and get money. (Focus group participant, Nawanjofu Sub-county, Butalejja District, Mt. Elgon Sub-region)

5.4 Governance

The governance dimension involves activities, processes and frameworks within which political, economic and administrative authority is exercised to manage the affairs of a country or



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administrative unit. It incorporates formal and informal mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. This can be from the household and local levels to provincial, national and international levels, e.g., the judiciary and private sector. This dimension includes information on the role of the government, external organizations and institutions in responding to the concerns of the population faced by the effects of chronic conflict and climate variability. This information may be transmitted through sensitization campaigns, humanitarian assistance and poverty eradication programs, as well as community perception of the effectiveness, accountability, transparency, inclusiveness and responsiveness of these programs. Governance also includes advocacy—raising awareness of issues in an effort to influence people, policies, structures and systems to bring about positive change—and establishing dialogue with civil society, communities and the media. Governance is a critical dimension, and abuse of authority has widespread effects on all other dimensions (e.g., *Health, Infrastructure, Natural Resources/Environment*).

5.4.1 Adaptive Strategies

- Nationally, the Government has implemented the Poverty Eradication Action Plan (PEAP) with programs such as the Northern Uganda Social Action Fund (NUSAF) and National Agricultural Advisory Services (NAADS), in an attempt to alleviate poverty. These programs support communities by providing agricultural inputs such as goats, cattle and seeds. Diversification of livelihood sources by NAADS was deemed effective after the government introduced fast-yielding crops that improved household diet and income.

What I have seen is that government through NAADS has taught us good farming methods. NAADS has taught us how to dig trenches and trap the good soils and that we are to throw it back to the garden. (Focus group participant, Nawanjofu Sub-county, Butalejja District, Mt. Elgon Sub-region)

- Both key informants and FGD participants highlighted community initiatives such as co-funding construction and maintenance of schools and water sources, enforcing punitive measures against those who do not construct latrines, introducing rules on latrine construction and enacting by-laws on afforestation.

We have been able to dig channels alongside the rice scheme to prevent the waters from flooding, and this was with the help of the Chinese firm that helped us. (Focus group participant, Mazimasa Sub-county, Butalejja District, Mt. Elgon Sub-region)

- The government has trained village health teams (VHTs) that move from house to house, sensitizing communities on proper sanitation and hygiene, family planning and newborn



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care. They also provide basic health care such as malaria treatment. However, VHTs are faced with limited resources.

- Land disputes have been settled effectively through multiple means including land committees and involvement of leaders and various stakeholders. Authorities have started issuing land ownership documents at sub-county level to deal with land disputes.
- The government and NGOs have set up advocacy fora for university education as a poverty reduction strategy and advocated for formation of support groups leading to development, e.g., the Uganda Women’s Effort to Save Orphans (UWESO).

5.4.2 Coping Strategies

- Focus group participants mentioned government policies such as relocation to Kiryandongo District, which they believe was ineffective because of unwillingness to relocate and lack of alternative land.

As for me, the landslide struck, but I shifted to another area, which was less than 100 meters away. I will shift when it occurs again (laughter). Even if it strikes here, I cannot think of shifting to Teso because I cannot manage the conditions there. (Focus group participant, Wesswa Sub-county, Manafwa District, Mt. Elgon Sub-region)

- VHTs’ community sensitization programs were deemed ineffective because of limited resources and motivation.

Local governments have trained some VHTs who have helped educate the community about health-related issues, including hygiene. The only challenge with this is that we do not have enough resources to sustain these VHTs and enable them to carry out their work more effectively because they need facilitation. We also have community health workers who work hand in hand with the VHTs and also move around communities creating awareness about health-related issues. There are those specifically trained to fight cholera but not facilitated to do their work. We also managed to go to the Red Cross to seek assistance, and they came in and built for us a latrine. (Focus group participant, Kigolobya Sub-county, Hoima District, Albertine Sub-region)

- Ineffective sensitization of communities on moral principles by Cultural leaders.
- Government and NGOs have conducted sensitization campaigns on health, agriculture, human rights, early marriage, social-cultural values and other issues.

... Sensitization on preventive measures of flooding by NEMA [the National Environment Management Authority]. The Red Cross also assisted us with latrine pipes and over 20 latrine slabs. They also taught people how to use these latrines and to always keep water near the latrines so that people can wash their hands after use (good hygiene and sanitation practices), but all this seems not to be working out.





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(Focus group participant, Kigolobya Sub-county, Hoima District, Albertine Sub-region)

- NGOs (Concerned Parents, Samaritans Purse, Save the Children and Facilitation for Peace and Development, or FAPAD) have provided humanitarian assistance including blankets, soap and counseling and rehabilitation of affected people by religious leaders.

5.4.3 Vulnerability Factors

- Both key informants and FGD participants in all three regions described alarming rates of poverty that may lead to corruption among some community leaders.

The government wanted to give us different varieties of seeds, but people who bring these seeds to us are acting as if they want to benefit from their work and are not doing the right thing. They give us seeds that don't help people to come out of poverty. (Focus group participant in Kapelebyong Sub-county, Amuria District, Teso Sub-region)

There is corruption. Things that are brought so as to help people are not enough for all. Sometimes the things are brought and are given to a few people and others go empty handed. (Focus group participant in Kapelebyong Sub-county, Amuria District, Teso Sub-region)

Government can give us support and other people who were not affected hijack it. (Focus group participant in Kapelebyong Sub-county, Amuria District, Teso Sub-region)

- Corruption leads to inequitable distribution of relief supplies after disasters, as mentioned in Teso and Elgon sub-regions. In the north, corruption has been manifest in settling land matters, with the result that those with money use bribes to influence even landowners to report their issues of land. In Albertine, land disputes have increased as elders shy away from their responsibilities of explaining land issues to community members. Land ownership has been hard to handle because of the high influx of refugees from the Democratic Republic of the Congo.

The elders, who should explain the right issues about land, don't do it. The local residents come complaining that this is my grandfather's land. This problem makes it very difficult to carry out development activities in every village because of complaints about land and land wrangles. (Focus group participant, Hoima District, Albertine Sub-region)

Land wrangles are because of the presence of refugees who have occupied our land and are utilizing it. These refugees are over protected and supported, and the few years the refugees have lived on these pieces of land gives them the right to ownership. (Focus group participant, Hoima District, Albertine Sub-region)





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- Lack of feedback from sub-county authorities on reported incidences of pests and diseases mean that crops are destroyed.

We have tried even to take those worms to the sub-county, but they say that they are first going to screen them. However, they don't come back to rescue us. Even potatoes become bitter, for cassava you see it drying on top until it gets spoilt. We remain empty handed with nothing to sell or even to eat. (Focus group participant, Toroma Sub-county, Katakwi District, Teso Sub-region)

- Government response to floods is reactive, usually after the disaster occurs, and is most times bogged down by corruption and negligence of early warning signs.

Floods affect us so much. The floods come from Bugisu and destroy our crops. We have tried to inform the government, but we have not heard from them. (Focus group participant, Mt Elgon Sub-region)

- Environmental degradation results from weak law enforcement.

You find that people cut down trees and encroach on the swamps at liberty, with no one to stop them. (Focus group participant Kigolobya Sub-county, Hoima District, Albertine Sub-region)

- Limited government intervention and irregular maintenance of health facilities affects health service delivery.

5.4.3 Causes and Effects

- In spite of government efforts, government programs are ineffective because of corrupt government officials. Owing to the widespread corruption, development programs do not benefit the communities they were intended to benefit, leaving them trapped in poverty.
- Communities were not consulted during planning of interventions, with the end result that new crop varieties were introduced that are not adapted to the local environment.
- Some community leaders divert money meant for community development programs, hence driving communities deeper into poverty and resentment of government efforts.
- Some focus group participants noted that only a few people benefited from the NAADS program, which gave preferential treatment to people who already have goats and pigs, leaving others without and trapped in poverty

In addition to distribution of things, there is corruption. Things that are brought to help people are not enough. Sometimes even if these things are brought, they are given to a few people and others go empty handed. Sometimes they say that they need people who have at least some income. For example, when livestock is brought, they put conditions such as prior experience in livestock farming before one is given livestock. This limits some people from benefiting from such programs. I will give an



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example of NAADS. The way NAADS people select beneficiaries is not appropriate and is biased. (Focus group participant, Kapelebyong District, Teso Sub-region)

- Both KIIs and FGDs revealed that the Kony war spurred land conflicts, as mass displacement led to encroachment on other people’s land with no intervention from the government. In Albertine, return of land to rightful owners by the government, population pressure and overstay of refugees who claim ownership of land has intensified land disputes.
- Resource and power sharing lead to perceived unfair treatment of different tribes by the government, for example, the lack of senior positions for people from the north and east of the country.

5.5 Natural Resources/Environment

This dimension includes soil, water, air, wetlands, minerals, forests, fisheries, water and associated services (e.g., erosion protection, storm protection) upon which resource-based activities (e.g., farming and fishing) depend. It also include the management (maintenance and enhancement) of natural resources through forest and range management, wetland management, agroforestry, livestock rearing, water resource management and coastal and riverbank protection. This dimension involves recognizing the value of natural resources and ecosystems, prioritizing identification of natural resource concerns and addressing those concerns. It also describes factors, especially human factors that affect management of natural resources.

5.5.1 Adaptive Strategies

- Terracing has been done in mountainous areas to control soil erosion.
People have been digging terraces to avoid the soils from sliding, and this is especially done in parishes of Lyakirema and Muhindi. (Focus group participant, Nyakiyumba Sub-county, Kasese District, Albertine Sub-region)
- FGD participant and key informants mentioned afforestation and good farming methods to mitigate the effects of landslides and heavy winds.
- People have dug water channels to redirect floodwater.
We always try to dig channels and also try to ask for land in the plains from other people because we do not have money to buy land, and yet we cannot rely on swamps alone. (Focus group participant, Nawanjofu Sub-county, Butalejja District, Mt. Elgon Sub-region)
- FGD participant and key informants mentioned by-laws on afforestation, planting fruit trees for both windbreaks and source of income, planting perennial crops in highland areas and non-perennial crops in lowland areas, and sensitization on the need for afforestation to contribute to rain formation.



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On drought, we have been teaching people about the need to plant trees because this will help in the formation of rains. If you cut two trees, we encourage that you plant six to replace them. (Focus group participant, Nyakiyumba Sub-county, Kasese District, Albertine Sub-region)

- Communities are adapting to climate change by planting fast-yielding crops and trees.
We have tried to grow fast-yielding crops. These take a short time from planting to harvest. So we try to plant what we feel we can harvest in a short time because we are not sure of tomorrow. That is one strategy to fight this shocks and stresses. Then in other places we have tried to plant trees to try and help because we feel maybe this will help in future, so we are trying to plant trees in some places where people are willing. (Focus group participant, Obalang Sub-county, Amuria District, Teso Sub-region)

5.5.2 Coping Strategies

- FGD participant and key informants mentioned a high rate tree and bush cutting as one of the problems in their community.
- Sealing of riverbanks has been ineffective in controlling floods.
We have also tried to heap soils around the riverbanks so that we can prevent the waters from flooding onto the land, but still when water comes, it is has a lot of force, which washes away the soils, leading to floods. (Focus group participant, Nawanjofu Sub-county, Butalejja District, Mt. Elgon Sub-region)
- Digging trenches to prevent encroachment on crops by elephants and guarding farmland from wild animals have been ineffective.
We have always come together to dig trenches, and at times protect the farms with help of Uganda Wildlife Authority gunmen, but still we are always few and we cannot cover the entire land with trenches. The elephants also find other routes. The elephants also cover the trenches with soil and cross. We therefore need barbed wire fences that can deter the elephants from crossing to destroy our crops. We used to go to protect our farms, but even if you are many, the elephants are clever; they will always find a way of escaping. (Focus group participant, Nyakiyumba Sub-county, Kasese District, Albertine Sub-region)
- Reports are mixed on the benefits of terracing to prevent landslides. Some communities have reported terracing to be ineffective, whereas others have advocated for it.
We have tried to terrace using the reeds, but still the landslides cut them down and uproot them. (Focus group participant, Bukhoho Sub-county, Manafwa District, Mt. Elgon Sub-region)



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People have been digging terraces to prevent the soil from sliding, especially for the parishes of Lyakirema and Muhindi. (Focus group participant, Nyakiumba Sub-county, Kasese District, Albertine Sub-region)

5.5.3 Vulnerability Factors

- Topography (hillsides), human activity (e.g., settlement along lakeshores), and reclamation of wetlands due to population pressure predispose land to landslides or flooding. Reclamation of wetlands also affects soil fertility.

We had swamps where we grazed animals, but now you don't find a swamp. People have cultivated the swamps and cut trees so it has changed ... even the soils can't provide enough nutrients to crops. (Focus group participant, Obalang Sub-county, Amuria District, Teso Sub-region)

- Soil texture increasing vulnerability to flooding and drought:

The soil in Kapelebyong has a texture that easily gets flooded even if rains fall only a few days ... if it rains for only one week, it is already a problem. Water accumulates, destroying crops. Gardens get flooded, houses collapse because there is nowhere for the flood water to drain to, the swamps are few, there are no dams, the dams are few where the water would drain to and accumulate ... the sandy nature of soil lets drought easily affect us. (Focus group participant, Kapelebyong Sub-county, Amuria District, Teso Sub-region)

- Inadequate water collection points exacerbate flooding.
- Deforestation leads to a change in weather patterns, soil erosion and lower soil fertility.
- A lack of drainage channels enhances flooding.
- Water sources are limited in spite of the high population density.
- Over-cultivation leads to weakening of the soil.

We have over cultivated and also cut down trees for firewood, and they would hold the soils. So when it rains the soils get weak and it is washed away, hence famine. (Focus group participant, Bukhoho Sub-county, Manafwa District, Mt. Elgon Sub-region)

- Lack of water catchment areas such as dams and encroachment on riverbanks enhances flooding.
- Clearing of grass along riverbanks makes the land vulnerable to flooding.
- Water shortage affects livelihoods and health.

5.5.4 Causes and Effects

- Soil texture around the forests and steep slopes makes them prone to landslides and along with the high water table, hinders construction of permanent structures.



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The soil in Kapelebyong has texture that easily gets flooded. Even if it rains for only one week, it is already a problem. Water accumulates, destroying crops, gardens get flooded and houses collapse because there is nowhere for the floodwater to drain to. The swamps and dams are few where the water would drain. (Focus group participant Kapelebyong Sub-county, Amuria District, Teso Sub-region)

- The flat or hilly nature of the land makes it vulnerable to flooding and landslides during heavy rains, leading to loss of property, life and infrastructure.

The reason why we are having all these problems is because we are in lowlands without any hills around us, so all the water that comes from Bugisu flows here and destroys our crops, schools and health facilities. (Focus group participant, Mazimasa Sub-county, Butalejja District, Mt. Elgon Sub-region)

- Many participants described deforestation as one of the causes leading to change in weather patterns, soil erosion and affecting soil fertility. This makes the land prone to landslides leading to loss of property, life and soil fertility among others.
- Lack of drainage channels enhancing flooding.
- Human activity along river banks predisposing the land to floods.
- Heavy rains destroy crops and cause soil erosion.
- FGD participant and key informants mentioned that the Community is aware on the dangers of encroachment of river banks but are adamant in protecting them.
- Population pressure leading to encroachment on high risky areas for both settlement and agriculture.

The land has become small, so we are now extending into the forests and cutting down trees that would support/hold the soils, and we plant there other crops, hence making the soil weak.” (Focus group participant, Bukhoho Sub-county, Manafwa District, Mt. Elgon Sub-region)

- Cultivation around water sources enhances flooding.
- FGD participants and key informants mentioned that environmental degradation from weak law enforcement has led to a change in weather patterns.

You find that people cut down trees and encroach on the swamps at liberty, with no one to stop them.

Floods can be prevented because the people concerning environment (NEMA) said that people have to leave water areas by 500 m away and the area should not be dug, as well as no cutting or clearing of trees that prevent flooding. But here, people do the opposite ... hence failure to overcome the floods. (Focus group participant, Wadelay Sub-county, Nebbi District, Albertine Sub-region)

- Climate variability leads to unpredictable occurrence of landslides.
- Lack of water channels leads to flooding, causing destruction of property.





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- Soil fertility fuels overpopulation and settlement in risky areas.

The problem is over population because the land is fertile, and so people want to be around such areas. And also maybe because you have no other option to construct your house, you just decide to settle there, so when the mudslides come you are washed away. (Focus group participant, Bukalasi Sub-county, Bududa District, Mt. Elgon Sub-region)

5.6 Agriculture

Most of the rural communities in Uganda are highly dependent on subsistence agriculture. They depend on a narrow range of crops that they use both for household subsistence and income generation from the sale of part of the produce. The economic output in Uganda is dominated by agriculture, which employs over 80% of the labor force. Agriculture includes crop farming, rearing of livestock and poultry and fisheries. Because of the importance of agriculture as an industry in Uganda, it is important to understand the vulnerabilities, coping mechanisms and adaption to shocks and stresses related to climate change.

5.6.1 Adaptive Strategies

- Farmers plant fast-yielding crops, and communities plant trees.
- Communities have adapted to early planting integrated with planting crops at different intervals to minimize losses.

People sow in different gardens at different time intervals, such that the lucky gardens will get rains and others will be lost. That is what we are doing so that you don't lose out completely. You prepare many gardens, plant two and leave four, then after some time like 1 month, you plant in the other two, then again after 1 month you plant in the last two, so that by luck if the rain comes in between the middle, two gardens will at least grow and something can be harvested for food and the other four will be lost" (Focus group participant Obalang Sub-county, Amuria District< Teso Sub-region)

- Communities have been sensitized on bringing back traditional and drought-resistant crops such as millet, sorghum, maize and cassava. This has been coupled with planting rice in the flood plains.
- Communities have also been sensitized on food storage and preservation.
- Backyard gardening is also being encouraged.

People grow short-term crops just near their houses, and they keep watering them. Like cabbage, tomatoes and cowpeas ... People use watering cans. You can store water in a big drum, and then it is from there that you fetch using the watering can





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and you water the crops. (Focus group participant, Arapai Sub-county, Soroti District, Teso Sub-region)

- Locally available manure is used to increase yield per farm/garden.

We use liquid manure goat droppings to put in the garden to conserve moisture in the soil and add fertility to the soil. Also, for the soft leafy plants, we let them decompose and make the garden moist at least for some time. (Focus group participant, Arapai Sub-county, Soroti District, Teso Sub-region)

- Because the intense droughts reduce water and pasture, communities have adapted to taking their animals to graze very early in the morning.

5.6.2 Coping Strategies

- The fact that floods, landslides and drought occur repeatedly, leading to the same effects on communities, means that community adaptation mechanisms are not working.
- Some communities have mobilized themselves to mitigate the effects of floods by desilting the riverbeds and channels using traditional local tools such as hoes and spades, which has been unsuccessful.

It all started in 2000, and it has been coming every year because I think the river is now shallow because of the soils that have been washed from uphill. So government has to come and help us de-silt the river using tractors to make it deep so that even if it floods, the effect is not much because it will be deep and allow easy flow of water. (Focus group participant, Butalejja District, Mt. Elgon Sub-region)

They should get a tractor to clear out the sand from the channels so that water follows downstream." (Focus group participant, Butalejja District, Mt. Elgon Sub-region)

- Communities have attempted to diversify from crop farming to fish farming in flood-prone areas, although the fish die.
- A number of policy options have been considered to mitigate risk to shocks and stresses in the region. These have included promoting better methods of agriculture through a national agriculture advisory program, in which agricultural officers are placed in the communities to provide advice on better methods of production, although some communities report lacking extension services and maintaining traditional farming practices. Many of these programs are out of reach of the majority, and their effect on empowering the communities has been minimal.



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5.6.3 Vulnerability Factors

- Communities have been faced with land shortage, and this has led to reclamation of wetlands and forest reserves, with dramatic changes in the ecosystem. The destruction of water collection points such as swamps and valley dams has over time exacerbated flooding. The effects of all these phenomena are nearly the same –destruction of crops from heavy rains and droughts and direct impacts on livelihoods.
- Although floods, landslides and drought occur repeatedly, the lack of a reliable early warning system means that communities are often caught unaware. The extension of rains or drought by even 1 month leads to the loss of an entire crop, hence loss of livelihoods.
- The communities rely on smallholdings and have long practiced poor methods of agriculture, keeping them trapped in low incomes.
- Reliance on middlemen to sell produce means that communities obtain much less profit than they would if they dealt directly with produce buyers (e.g., schools and exporters).
- In some places, the dilapidated road network means that buyers cannot easily reach farmers. Farmers often sell perishable produce cheaply because of the impassible roads. This contributes to malnutrition, resulting in high levels of morbidity and mortality in children.
- Deep and intense cyclical droughts have led to scarcity of pasture and water, late cultivation and reluctance among youth to engage in agriculture.
- There are frequent reports of pests and diseases and delays in response to these stresses by the authorities.
- The government has introduced new crop varieties that are not adapted to the local environment.

The government may want to give us different varieties of crops, but people in authority bring seeds that don't help communities to come out of poverty. To our observation, these crops don't match our soils. It yields for only 1 or 2 years, not like our old traditional varieties that you keep sowing every year and it germinates. I think the crops that are being distributed as improved varieties are increasingly spoiling the situation. (Focus group participant, Obalang Sub-county, Amuria district, Teso Sub-region)

In this community ground nuts do well but the varieties of ground nuts they bring are those where you need to buy seeds for planting every year, you cannot get seeds from your last harvest for planting in the next season.” (Focus group participant, Kapelebyong Sub-county, Amuria District Teso Sub-region)





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- Because of poor methods of agriculture and encroachment on riverbanks for rice growing, there is continuous silting of riverbeds in the lowlands as a result of run-off from the highlands. Heavy rains therefore often result in the rivers bursting their banks in the lowlands.
- Other important vulnerability factors include the low level of education that traps people in subsistence agriculture, gender factors (women are the main producers yet have little control over savings and development-related decisions) and governance (leadership does not address the critical needs of the community and is infiltrated by corruption).

5.7 Health

Aspects of health as a dimension include physical health (illness/disease, epidemics, injuries, physical and financial access to health services, quality of health services and human resources for health) and water, sanitation, and hygiene (WASH) (functioning of water and sanitation services, water and sanitation-related factors and behaviors that drive illness and disease and hygiene-related illness).

5.7.1 Vulnerability

- WASH activities are still not well conducted. Some communities lack a clean and safe water supply. Sanitation and hygiene are also very poor, and this worsens during floods. Some communities still practice open defecation, a behavior that causes diarrheal diseases

When the rains are much and people have no latrines and they defecate around home ... This can cause diarrheal diseases. (Focus group participant, Kamuda Sub-county, Soroti District, Teso Sub-region)

- The quality of health services delivered in the communities is very poor. There was an outcry over medicine stock-outs for primary health care. Human resources are also inadequate at most facilities.
- There is a high burden of diseases such as malaria, HIV, hepatitis and zoonosis such as brucellosis.
- Physical access to health facilities is another big challenge. Most of this is attributed to poor road infrastructure, coupled with long distances to health facilities. Floods make roads difficult to use, forcing people to resort to transporting patients using traditional methods such as stretchers.

People have to be carried on traditional stretchers because motorcycles cannot pass. A vehicle cannot pass there, maybe if it is a strong car. (Focus group participant, Palam Sub-county, Katakwi District, Teso Sub-region)

It is because you people have come during the dry season, but if you had come during the rainy season, you would have reached here at 2:00 pm. If these roads had been



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graded well, it would be good, as this can help in rushing a patient to a health facility. But if it is during the rainy season, a patient may even die on the way to the health facility because of the bad road, especially when this patient has caught cholera disease. (Focus group participant, Panyimur Sub-county, Nebbi District, Albertine Sub-region)

- Drought, floods and landslides have destroyed food crops, contributing to hunger and famine. This has led to malnutrition, with life-threatening cases of kwashiorkor and reported deaths.

People don't eat well. You know some diseases are as a result of lack of some vitamins, so people don't eat well. (Focus group participant Kamuda Sub-county, Soroti District, Teso Sub-region).

5.8 Social Environment/Social Networks

Social Network encompasses the immediate physical surroundings, social relationships and cultural milieus within which defined groups of people function and interact. The interactions between people and institutions may be in person or through a communication medium and may not imply equality of social status. The social environment, therefore, is a broader concept than that of social class or social circle. Components of the social network include social and economic processes, wealth, social and health services, power relations, cultural practices, religious institutions, beliefs and practices. Social environments are dynamic and change over time as a result of both internal and external factors. Social environments are also interrelated with other dimensions (either directly or indirectly).

5.7.1 Adaptive Strategies

- Communities have formed groups in order to access funds from the government for development projects such as those under NAADS.

We have made groups so as to access development projects, and these groups are there now registered with local government. We have received funds under NAADS, and the funds have helped us in this community. (Focus group participant, Hoima District, Albertine Sub-region)

- Communities have also formed groups that have enabled them to start income generating activities.

We have already started working on income generating activities with support from the Uganda Wildlife Authority that have allowed us to keep bees in the forest without necessarily antagonizing animals, and we hope this should start earning some income for the people. (Key informant, Kasese District, Albertine Sub-region)

On poverty reduction, as people we have formed groups to rear chickens and goats because these can be sold if someone needs fees to take children to school. (Focus



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group participant, Kasese District, Albertine Sub-region)

5.7.2 Coping Strategies

- Communities affected by landslides are resettling with relatives, mostly with those who live in safer areas.

Whenever a landslide occurs here, we go and settle with our relatives who are settling in safer areas around Masaba instead of going to Kiryandongo to suffer. (Focus group participant, Bududa District, Mt. Elgon Sub-region)

- Those affected by floods run to friends, who offer safe gardens for agricultural practices.
We sometimes request for gardens from our friends who have somewhere else and then we go and cultivate there especially those with safer places that are not heavily affected by floods. (Focus group participant, Soroti District, Teso Sub-region)

5.7.3 Vulnerability Factors

- Most of the social groups lack capital, and this has affected their sustainability.
The other thing is that women who are in the self-help groups do not have capital. I wish there was a way of getting startup capital so that we can start businesses as women's groups. Sometimes the men have more than one wife, so if there is lack of basic needs in this home, he goes to the other, so women's groups need to be empowered. Focus group participant, Amuria District, Teso Sub-region.

- Landslides and floods have affected several families, with some breaking up because of separation resulting from displacement.
Like for me, when my house developed cracks, the man who married me ran away, and we have children, but the abandonment has affected me so much, as I feel much burdened to take care of children without my husband. (Focus group participant, Manafwa District, Mt. Elgon Sub-region)

5.7.4 Causes and Effects

- Landslides have affected social networks. Most people no longer visit each other because some have been relocated to distant areas.
Landslides have affected our social life because we used to visit our relatives at their homes, but we can no longer go there because government has relocated most of them. We would say, "Let me go and relax at my sisters' place," but she is not there. Our social network has been affected. (Focus group participant, Manafwa District, Mt. Elgon Sub-region)

- Family systems can disintegrate because of death resulting from disease outbreaks.
Disease outbreaks leave behind orphans, and sometimes it leads to death of both



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parents. Then those children are left without a household head. This is the problem that HIV is causing. Now grandparents have to look after orphans, and yet they are so old. This is the problem that HIV is bringing in the community. So I see that deaths have increased greatly. (Focus group participant, Panyimur Sub-county, Nebbi District, Albertine Sub-region)

5.8 Psychosocial Wellbeing

Psychological status and well-being of household heads is a dimension of resilience often adversely affected in the short term, and potentially in the long term, depending in part on the nature and effectiveness of humanitarian assistance. This dimension includes the ability to resume normal life after a shock such as chronic conflict, people's participation in their convalescence and the pathological consequences of traumatic events.

5.8.1 Adaptive Strategies

- Communities have led mobilization and sensitization efforts on the occurrence of disasters.

The other strategy is that we are trying to spread the gospel to our people that every year our houses are collapsing because we have built on low land, let us build on higher land. Then for perennial crops, we should look for raised gardens to plant and for the non-perennial, we can plant in the lowlands. (Focus group participant, Kasese District, Albertine Sub-region)

5.8.2 Coping Strategies

- Experts have conducted community sensitization on how to construct flood-resistant houses and how to change behavior to prevent some diseases.

Those that are quick maturing are lobbying for help from experts who would come and sensitize people about how to build flood-resistant houses and prevent disease outbreaks, like latrine construction, hand washing and disposal of waste. (Key informant, Hoima District, Albertine Sub-region)

5.8.3 Vulnerability Factors

- There is delayed response by the government and other agencies, causing frustration among the communities.

The reason why you don't easily or quickly return to normal life is that sometimes government does not quickly come in to rescue, because now a person has been





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affected like that, but the government just looks on. It doesn't quickly come in. (Focus group participant, Toroma sub-county, Katakwi district, Teso Sub-region)

- There is persistent psychological fear among the community resulting from an increase in disease epidemics.

Panyimur has the problem of cholera, which cannot be contained. For instance, at a place that has had the death of a person who suffered from cholera, you become fearful to go there. So the government should try to find a lasting solution to this as regards Panyimur. For people to even attend your burial, it is difficult. People fear to go to a home where there has been a cholera victim. (Focus group participant, Panyimur Sub-county, Nebbi District, Albertine Sub-region)

HIV has led to very many effects because if someone is lacking the household head ... if a person dies, the children scatter instantly. There is no caretaker, and the children start indulging in immoral behaviors. That is why right now youths are taking drugs and alcohol as a way to try to forget their problems. Focus group participant, Panyimur Sub-county, Nebbi District, Albertine Sub-region)

5.8.4 Causes and Effects

- Landslides have led to psychological effects on the community that could be potential hindrances to adaptation.

When it rains and landslides occur, it creates bad thoughts in people because the floods have led to loss of their relatives and food crops. When a landslide hits, it affects our bodies and thoughts because we move away from places where we have been living to other places where we are not comfortable. (Focus group participant, Bulucheke Sub-county, Bududa District, Mt. Elgon Sub-region)

Landslides have made people traumatized. It has made people restless. Even if you talked to them, you will agree that people are traumatized.” (Focus group participant, Bukalasi Sub-county, Bududa District, Mt. Elgon Sub-region)

- Communities' negative attitudes toward sanitation programs exacerbate disease outbreaks. Some FGDs reported some communities not adhering to sensitization campaigns on public health, something that is perceived as contributing to disease outbreaks.

I have seen that the reason why this community is failing to overcome cholera/floods is because of our attitudes. We have failed to adhere to sensitization or counseling messages on how to prevent cholera/floods, for example, messages on construction of latrines, digging of rubbish pits, and drinking of clean water. We have all failed, and even the government is not holding our hands or helping us in constructing clean



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water [sources] such as a borehole or springs.” (Focus group participant, Nebbi District, Albertine Sub-region)

- Belief in witchcraft affects education, hence the demand to change the mindset.

The mindset of the people is one key critical development problem that we have, you know! In that same place where I was, there is a guy with three taxis (cars), but he is a witch doctor, and then he would tell the people ... We call them vudsha. They dress in skins, and their hair is like Lucky Dude (dreadlocks), okay Rastafarian hair, you know! They had deities, and the man was a role model, but the guy did not go to school even though he had three taxis. Now it was until there was a guy who had gone to school, he used to grass around until he was appointed an electoral commissioner in the Democratic Party. He began to do these things, and then they said okay, now we can go to school. You can have a school with all the facilities, but the mindset of the people still is critical. We need to change the mindset of the people. So ... because if we do not have skills, then we cannot do much. (Key informant, Soroti District, Teso Sub-region)



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CHAPTER SIX: CONTEXT-SPECIFIC RESILIENCE FRAMEWORK

6.1. Inter-dimensional Concurrence

We determined the dimensional concurrences to explain inter-dimensional concurrences among each dimension and which dimensions relate with most other dimensions. The respective code concurrences are presented in the table below:

Table 3. Dimension by dimension code concurrence

Resilience dimension	Infrastructure	Human Capital	Wealth	Governance	Natural Resources/ Environment	Agriculture	Health	Social Environment /Social Networks	Psychosocial Wellbeing	Total
Infrastructure		23	60	9	17	10	36	2	4	161
Human Capital	23		50	6	5	9	33	6	9	141
Wealth	60	50		13	37	23	86	10	9	288
Governance	9	6	13		11	4	7	3	5	58
Natural Resources/ Environment	17	5	37	11		28	15	4	1	118
Agriculture	10	9	23	4	28		11	3	2	90
Health	23	33	86	7	15	11		10	9	207
Social Environment /Social Networks	2	6	10	3	4	3	10		5	43
Psychosocial Wellbeing	4	9	9	5	1	2	9	5		44

The table above shows the number of quotes from the transcripts coded under different dimensions when the co-occur with another dimension. The total represents a sum of all occurrences that a quote is shared between different dimensions. The number in each cell shows the total quotes that are shared between two dimensions. For instance, in this context, wealth, health, infrastructure and human capital had the highest code co-occurrences with 288, 207, 161



and 141 respectively. Social networks, psychosocial and governance recorded the lowest code concurrences with 43, 44 and 58 respectively.

Concurrence by relationship hierarchy (Analysis framework points):

After determining the dimensional concurrences, we determined the concurrence of codes within different dimensions appearing as causes, effects, suggested solutions, vulnerabilities or adaptation in the analysis framework as illustrated below.

Table 4. Relationship hierarchy concurrence

Resilience dimension	Causes	Effects	Suggested solutions	Vulnerabilities	Adaptation	Total
Infrastructure	0	177	23	119	14	333
Human Capital	10	125	45	51	21	252
Wealth	63	425	22	109	35	654
Governance	32	39	82	0	21	174
Natural Resources/ Environment	93	31	53	13	33	223
Agriculture	13	133	34	61	81	322
Health	68	334	71	15	15	503
Social Environment/ Social Networks	0	42	43	0	37	122
Psychosocial Wellbeing	6	82	12	78	55	233

In this context, participants identified Wealth and Health as the ultimate outcomes with 425 and 334 code concurrences reported as effects respectively. Additionally, participants identified Environment and Natural resources as the underlying cause of vulnerability with 93 code concurrences as indicated in the table above. Agriculture was reported as a means of adaptation in this context with 81 code concurrences.



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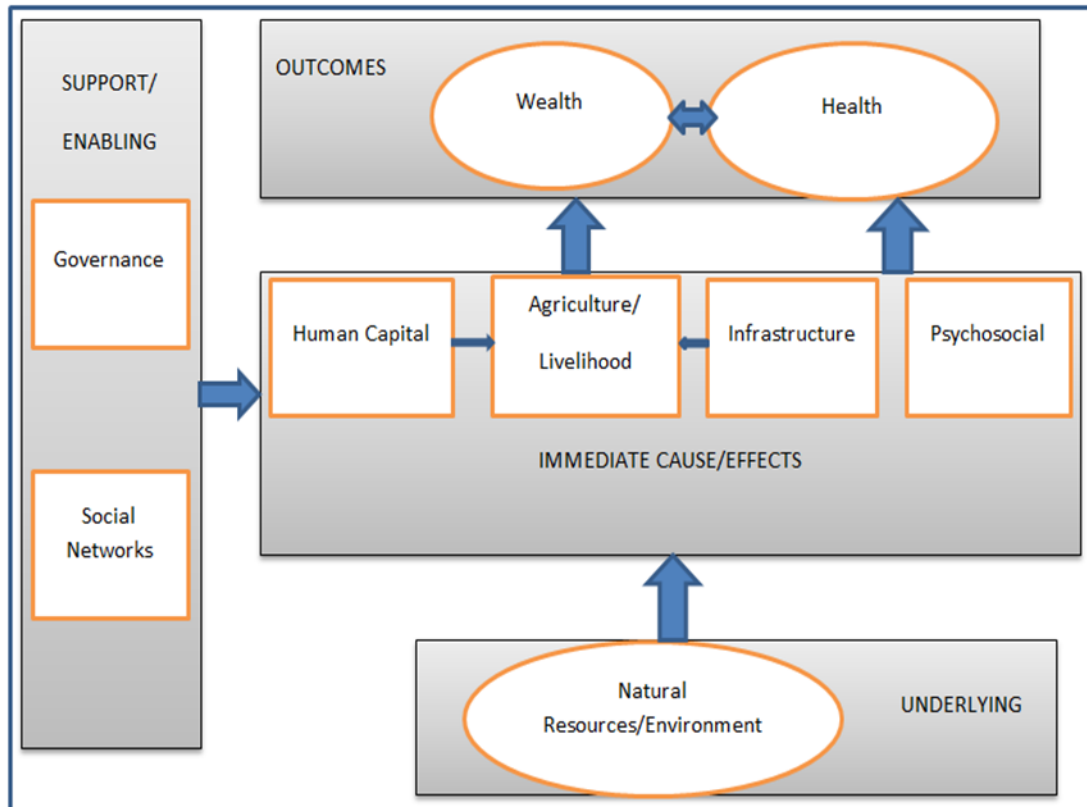
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6.2. Resilience Framework: Relationship among Resilience Dimensions

Based on the relationships on code concurrences described above, the relationships emerge as in Figure 1.

Figure 3. Resilience framework for climate variability in selected districts in Albertine, Teso and Mt. Elgon sub-regions in northern Uganda



6.3. Description of Relationships and Probable Intervention Entry Points

The resilience framework in Figure 1 represents the relationships and interactions between the nine dimensions (*Infrastructure, Human Capital, Wealth, Governance, Natural Resources/Environment, Agriculture, Health, Social Environment/Social Networks and Psychosocial Wellbeing*) that the qualitative analysis of data from Teso, Elgon and Albertine sub-regions affected by climate variability in Uganda. From these data, *Wealth* and *Health* emerged as key dimensions and were thus considered at the outcome level. *Governance* and *Social Environment/Social Networks* were identified as enabling dimensions that influence and



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support the dimensions of *Human Capital*, *Agriculture*, *Infrastructure* and *Psychosocial Wellbeing*.

The underlying driver of resilience to adverse climate in this context appears to be environmental factors, including adverse climate events, degradation, productivity of the soil and conservation. The communities surveyed depend on subsistence agriculture as their main source of livelihood and hence wealth. Any destruction of natural resources (soils, vegetation) by adverse climate change effects (floods, drought, landslides) affects their livelihoods and makes them vulnerable. Topography, human activities, geological factors (e.g., the nature of soils) and population pressure are some of the underlying vulnerability factors affecting this dimension.

The second level in the diagram consists of *Psychosocial Wellbeing*, *Human Capital*, *Agriculture* and *Infrastructure*, which are the immediate causes/effects of the two outcomes (*Health* and *Wealth*). In the communities surveyed, the occurrence of shocks or stresses such as landslides, drought, floods or disease epidemics can affect the dimensions at this level and can be manifested as the loss of entire crops, an increase in crop pests and diseases and loss of transport infrastructure, among others.

Psychosocial Wellbeing as an immediate cause relates to the attitude, mindset or behavior of a community. The communities surveyed had a negative attitude and behaviors that facilitated destruction of the environment and a poor response to mobilization and sensitization campaigns aimed at conserving or improving the environment.

Human Capital includes interventions that develop the capacity of individuals to achieve their full potential. Youth were reported to have dropped out of school and were unproductive and engaged in gambling and drug abuse. There is a need to build new skills that include business/entrepreneurship among youth and women. Education and sensitization were seen as some of the ways through which communities could be empowered to catalyze productivity, especially among youth.

The *Agriculture* and *Infrastructure* dimensions are key entry points for resilience interventions because the majority of the communities in Uganda depend on farming. Interventions that increase agricultural yield on the farm and those that support farmers to access and have leverage in the market are paramount. Community members expressed their disappointment in several agricultural inputs (e.g., seeds that have low yields and cannot be replanted, lack of machinery on the farm; exhausted, infertile soil and “fake” fertilizers), as well as skewed markets that favor the middlemen, low prices for farmers; produce and poor road networks hindering produce transport.





Governance and *Social Environment/Social Networks* are the factors/dimensions that were viewed as enabling achievement of the desired outcomes (health and wealth). Broadly, *Governance* has significant potential to affect service delivery. In the surveyed communities, the government has implemented several development programs (e.g., NAADS and NUSAF, free education and health care) to support livelihoods, but corruption is reported to make them ineffective for the intended beneficiaries. Social networks such as savings groups and families hosting other in the event of a disaster also support achievement of the desired outcomes.

Governance and *Social Environment/Social Networks* as enabling dimensions are an important entry points for interventions. The communities reported that several forms of corruption have hindered service delivery, affecting other dimensions such as *Agriculture, Infrastructure, Human Capital* and *Health*. Sensitization and education programs that build community agency could be an entry point for interventions to achieve the desired outcomes. Communities should be empowered to take action instead of lamenting the effects of climate-related shocks and stresses as in the past. Communities need to be involved collectively in the education of their children to diversify their livelihoods. Involving the community members in the education system enables them to appreciate the role education in improving their livelihoods. A key intervention in this direction is campaigns that increase children's access to schools to reduce dropouts.





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