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Building Women Smallholder Farmers Adaptive Capacities: A pathway to Enhancing Women's Resilience to Climate Change in Uganda

Baseline REPORT

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Abbreviations and Acronyms

3DE	Three-Dimensional Empowerment
ALL-IN	Strengthening Women Smallholders' Resilience to Agricultural Shocks
ASSP	Agriculture Sector Strategic Plan
AUPWAE	Association of Uganda Professional Women in Agriculture and the Environment
CLARE	Climate Adaptation and Resilience initiative
Col %	Column Percentage
COP	Conference of Parties
COVID-19	Coronavirus Disease of 2019
CPR	Common Pool Resources
CSG	Community Social Group
DEC	District Executive Committee
DPP III	District Development Plan III
FAO	Food and Agriculture Organization
FCDO	Foreign, Commonwealth, and Development Office
FIES	Food Insecurity Experience Scale
FM	Frequency Modulation
GDP	Gross Domestic Product
GPI	Gender Parity Index
HDI	Human Development Index
IDI	In-depth Interview
IDRC	International Development Research Centre
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
IPCC	Intergovernmental Panel on Climate Change
LNGO DP	Local Non-Governmental Organisation Development Programme
LNGO	Local Non-Governmental Organisation
MAAIF	Ministry of Agriculture, Animal Industry, and Fisheries
MEL	Monitoring, Evaluation, and Learning
MoGLSD	Ministry of Gender, Labour, and Social Development
N	Number
N/A	Not Applicable
NAEP	National Agricultural Extension Policy
NAP	National Adaptation Plan
NGO	Non-Governmental Organisation
NPA	National Planning Authority
OECD	Organization for Economic Co-operation and Development
POS	Point of Sale
Pro-WEAI	Project-Level Women's Empowerment in Agriculture Index
P-value	Probability value

PWDs	Persons with Disabilities
R2A	Research to Action
RCT	Randomized Controlled Trial
REC	Research Ethics Committee
SACCOs	Savings and Credit Cooperative Organisations
SD	Standard Deviation
SIGI	Social Institutions and Gender Index
SMS	Short Message Service
STATA	Statistic and Data software for Data Analysis
TANGO	Technical Assistance to Non-Governmental Organisations
UBOS	Uganda Bureau of Statistics
UG CSA MSP	Uganda Climate Smart Agriculture Multistakeholder Platform
UNCST	Uganda National Council of Science and Technology
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USSD	Unstructured Supplementary Service Data
VSLA	Village Savings and Loan Association
VSO	Voluntary Service Overseas
WOSFER	Women Smallholder Farmers' Empowerment and Resilience to climate change shocks

Executive Summary

This report presents the findings of the baseline survey of the Women Smallholder Farmers' Empowerment and Resilience (WOSFER) project on "Building women smallholder farmers' empowerment and adaptive capacities in Uganda, a pathway to strengthening resilience to climate change shocks". The survey aimed at generating participants' in-depth views on:

1. Women smallholder farmers' levels of empowerment and adaptive capacities to the effects of climate change (particularly drought, flooding, pests and diseases); and
2. The social and cultural gender norms, economic and political trade-offs, and barriers to empowerment and climate adaptation by women smallholder farmers.

Study Design and Methodology

Launched in May 2023, this 3.5-year action research project aims to strengthen women smallholder farmers' empowerment and climate resilience in Uganda. Baseline studies in Katakwi and Lyantonde districts use a randomized controlled trial and participatory qualitative methods to explore gendered aspects of empowerment, food security, resilience, and access to digital and financial resources. The quantitative baseline used the pro-WEAI tool to survey 768 households (384 per district), including both women and men, for gendered analysis of empowerment and resilience. The qualitative study engaged 673 participants through community profiling, focus group discussions (FGDs), life histories, and key informant interviews (KIIs), adapting IFPRI's pro-WEAI tools to the local context.

Contextual Overview

Both districts face socioeconomic challenges, including limited access to services and infrastructure, and persistent gender inequality. Agriculture, the main livelihood, is hindered by climate variability, poor soils, and weak processing systems. Food insecurity peaks seasonally with rainfall patterns. Gender roles influence farming: women grow food crops; men focus on cash crops.

Empowerment Dynamics

Empowerment is shaped by economic, social, and political factors but limited by traditional gender roles. Women are seen as empowered if hardworking, respectful, and financially independent, yet still expected to fulfill domestic duties. Men's empowerment centres on provision, leadership, and integrity. Despite gains in women's leadership and business, barriers such as early marriage, limited education, and resistance to female autonomy remain.

Quantitative results underscore these disparities: only 23% of women in Katakwi and 36% in Lyantonde were classified as empowered, compared to 45% and 51% of men, respectively. Gender parity was low, with only 47% (Katakwi) and 48% (Lyantonde) of households achieving parity. Disempowerment was primarily driven by lack of decision-making autonomy, self-efficacy, and burdensome work-life balance.

Climate Shocks and Resilience Capacities

Drought was the most severe and frequent climate shock, with Katakwi and Lyantonde exposed at 34.6% and 16.8%, respectively. Women's coping strategies – extra work, loans, or inaction – indicate low resilience, while men focused on structural solutions. Using the Tango framework, Katakwi slightly outperformed Lyantonde in absorptive, adaptive, and transformative capacities. However, women consistently scored lower than men, especially in adaptive capacity. Limited social networks and weak safety nets, particularly for women, hinder resilience.

Trade-Offs in Climate Adaptation

Adaptation efforts introduce socioeconomic and political trade-offs. Conversion of wetlands for conservation or irrigation has displaced communities and disrupted livelihoods. Women face compounded barriers – limited land ownership, access to credit, and exclusion from decision-making – worsening existing inequalities. Economic trade-offs include prioritisation of basic needs over long-term adaptation investments. The loss of traditional farming practices and increasing dependence on high-cost inputs also present risks to cultural heritage and sustainability.

Food and Nutritional Security

Quantitative findings reveal stark food insecurity, especially in Katakwi, where over 50% of households scored 8 on the food insecurity scale. Diets largely consist of starchy foods and legumes, with low intake of animal-based products and fruits. Gender differences in food consumption and intra-household food allocation further highlight inequality. Qualitative data reinforce this, revealing that women bear the primary responsibility for food security yet lack adequate control over resources.

Access to Digital Technologies

Access to digital technology is highly gendered, especially in Katakwi, where 58.9% of women lack phones compared to 28.1% in Lyantonde. Few women own basic phones, and control over use is limited. Norms restrict women's smartphone ownership, with 34.1% of men in Katakwi opposing it. These barriers reduce women's access to vital agricultural and climate information. FM radio is widely used, but digital tools remain underutilised. Improving women's digital access and literacy is critical.

Participation in Social Groups

Social groups such as Village Savings and Loan Associations (VSLAs), funeral associations, and women's collectives are critical for resilience. Women gain access to credit, emotional support, and leadership opportunities through these groups. However, their participation is often constrained by household responsibilities, gender-based violence, and financial limitations. Leadership remains male-dominated, especially in mixed-gender or economically-oriented groups, reducing women's influence in broader community development.

Access to and Control Over Credit

Access to affordable and adequate credit remains a significant challenge. While VSLAs are more accessible, they offer limited funds. Formal institutions are often distant and require collateral, excluding most women. Financial exclusion reduces farmers' capacity to invest in climate adaptation and agricultural diversification. Women bear a disproportionate burden in managing loans and dealing with the fallout from failed investments.

Climate Activism and Environmental Stewardship

Climate activism is minimal and poorly supported. Local government and community initiatives such as tree planting and discouraging charcoal burning exist but lack funding and broad community engagement. Women are more involved in communal resource management but need support to participate in structured activism and policy dialogues. Barriers include resistance from traditional leaders and lack of external institutional support.

Key Recommendations

1. **Promote gender equity in access to resources and decision-making** by ensuring women have equal rights to land, credit, assets, and leadership roles—particularly in high-risk areas like Katakwi.

2. **Invest in climate-resilient and gender-responsive agriculture**, including training in adaptive practices, access to inputs, and promotion of climate-smart technologies tailored to women smallholder farmers.

3. **Improve access to affordable and inclusive financial services** by expanding formal credit and insurance options and reducing dependence on exploitative informal lending systems.

4. **Strengthen rural infrastructure and social protection systems**, including health, education, markets, and safety nets, to reduce vulnerability and build long-term resilience.

5. **Support women's digital inclusion** by promoting mobile phone ownership, training in digital literacy, and access to timely climate and agricultural information via SMS and radio.

6. **Enhance community-based resilience strategies**, such as savings groups and local safety nets, with a strong emphasis on gender-balanced participation and leadership.

7. **Tailor interventions to district-specific vulnerabilities** by providing targeted support to regions like Katakwi that face deeper structural inequalities and climate risks.

8. **Foster collaboration among government, development partners, CSOs, private sector, and communities** to promote coordinated, multisectoral responses that empower women and strengthen adaptive capacity at all levels.

The WOSFER baseline findings demonstrate that while women smallholder farmers are central to climate resilience and food security, they face structural barriers that undermine their empowerment and adaptive capacities. To address these challenges requires integrated, gender transformative, and context-specific approaches to ensure that both women and men can contribute to and benefit from climate-resilient development pathways.

1. Background

1.1 Climate Shocks: An Urgent Priority in Uganda

Climate change characterised by extreme weather patterns (including erratic rainfall, drought, flooding, landslides, hailstorms) has emerged as one of the greatest risks of our time with cascading risks on the ecosystem, agricultural production and income (Meehl et al., 2007; Voluntary Service Overseas [VSO], 2019; IPCC, 2021).

The decline in agricultural production and productivity, leading to food insecurity, continue to threaten the livelihoods of millions of people, especially the poor in Sub Saharan Africa (Nelson et al., 2009; Asfaw et al., 2016).

The changing global climate has led to the depletion of natural resources such as water and forests, as well as increased outbreaks of diseases and pests like locusts and fall armyworm. These impacts threaten the daily survival of households, especially women, who bear primary responsibility for gathering food, fuel, and water.

The decline in agricultural production triggers price increases for most agricultural products especially cereals that form a large proportion of household consumption and animal feed ingredients (Nelson et al., 2009).

With support from UK Aid and Canada's International Development Research Centre (IDRC) under the Climate Adaptation and Resilience (CLARE) programme, the Makerere University Institute of Gender and Development Studies and the Association of Uganda Professional Women in Agriculture, and the Environment (AUPWAE) are implementing a project titled "Building women smallholder farmers' empowerment and adaptive capacities (WOSFER)".

1.2 National and Subnational Context

1.2.1 National Context

Evidence shows that Uganda has had experiences of climate change characterised by adverse weather changes with average temperatures increasing by 1.3^{0}C and rainfall decreasing by 6.0mm per month per decade (Nsubuga et al., 2014; Mulinde et al., 2016; Echeverria et al., 2016; National Planning Authority [NPA], 2020; Mulinde et al., 2016).

The most affected regions of the country are the arid and semi-arid areas, especially the cattle corridor running through some western, central, and north-eastern districts (NPA, 2020; Egeru et al., 2019; Mulinde et al., 2022; Nimusiima et al., 2014). This has in turn had negative consequences for the country's agricultural sector in terms of long-term crop failures and low animal productivity which threaten household food security, nutrition, and livelihoods (National Adaptation Plan for Uganda, 2020; Nimusiima et al., 2013).

Uganda's vulnerability to climate change is worsened by high poverty levels. At the same time, rising poverty has been linked to changing weather patterns that have reduced agricultural productivity (Uganda Bureau of Statistics [UBOS], 2018).

Agriculture is a key sector in Uganda, contributing 85% of export earnings and 21.9% of its Gross Domestic Product (GDP) (Republic of Uganda, 2018). However, evidence shows that agricultural production declined over the five years leading to 2018 due to the effects of climate change (UBOS, 2018) and is projected to further decline in the future (Mulinde et al., 2022).

Uganda's agricultural production is dominated by smallholder farmers, especially women who contribute over 70% of agriculture GDP, 90% of Uganda's food, and 50% of cash crop output (Feed the Future, 2015). In spite of the significant contribution to the agriculture sector, women smallholder farmers are more vulnerable to

climate change-related shocks mainly due to poverty as well as the underlying gender-based constraints associated with limited access to, and control over resources (land, assets, modern technology), extension information and financial services to adapt to the changing climate (Nakalembe et al., 2017; Tibesigwa, et al., 2015; Quisumbing et al., 2019; Theis et al., 2019; Mulinde et al., 2019).

Women smallholder farmers in Uganda face multiple constraints, including limited access to quality inputs, extension services, and formal markets. Their reliance on subsistence farming using traditional, low-yield practices and basic tools leads to low productivity and poor returns (Nakalembe et al., 2017). Their vulnerability to climate shocks is worsened by unequal household power dynamics, heavy unpaid care work, low literacy, restricted mobility, limited farming skills, inability to hire labour, and little control over farm income (Kavuma et al., 2018; Acosta et al., 2015; NPA, 2020).

Only 7.7% of women own agricultural land individually, while 39.9% own it jointly (UBOS, 2018). In Uganda's patriarchal society, entrenched norms favour male control over resources, decision-making, and inheritance. As a result, even joint ownership often leaves women dependent on men, especially within marriage (Gibson et al., 2014; Doss et al., 2014). Women's ability to assert themselves is closely linked to having independent and regular sources of income (Gibson et al., 2014). The limited access to property and assets such as land does not only limit the productive capacities of the women but also prevents them from accessing financial resources such as credit (using land as collateral) to enable them engage in productive investments such as re-investing in their farms to increase production or add value to their products or invest in off-farm income diversification. Evidence shows a substantial gender gap in mean yield of around 20-33% in favour of male farmers (Ali et al., 2016; FAO et al., 2019), further increasing their vulnerability to effects of climate change and reinforcing the cycle of poverty.

Rural female farmers who reside in fragile environments such as arid/semi-arid, flood-prone, mountainous and remote areas that are far from markets and other services are more vulnerable to climate change shocks (Boto & Pandya-Lorch, 2013). Enhancing women's empowerment and adaptive capacities to climate-related shocks will increase their agricultural productivity (both crop and animal husbandry), increase their income diversification opportunities as well as lead to general household food security, better nutrition and reduced poverty (FAO et al, 2019). Women, especially those in the reproductive age, and children are at higher risk of malnutrition than men; thus, they are more vulnerable to food insecurity (USAID, 2018; UNICEF Uganda, 2018; FAO et al., 2019). According to the 2020 National Adaptation Plan for Uganda, about 50% of women and 73% of children less than five years old are vulnerable to food and nutrient deficiencies, a situation that needs urgent attention.

1.2.2 Subnational Context

The project is being implemented in Lyantonde District in southern-central Uganda and Katakwi District in eastern Uganda, both located in Uganda's cattle corridor.

a) About Uganda's Cattle Corridor

Figure 1: Map of Uganda Showing the Cattle Corridor

The cattle corridor covers about 35% of Uganda's land surface and diagonally stretches from south-western to north-eastern Uganda, with many semi-arid characteristics such as low and unreliable rainfall, and prolonged drought, dominated by pastoral rangelands (Hasahya et al., 2023).

This region has experienced contrasting climate change-related conditions such as prolonged droughts, unpredictable rainfall onsets and withdraws as well as floods, among other climate variability-related phenomena (Nimusiima et al., 2013). Pastoralists in the cattle corridor face population pressures, diminished access to pasture and water, the fencing of land, and contention and conflict over land rights with crop farmers and other pastoralists (USAID, 2011). These issues have been compounded by the transition from communal grazing lands to Common Pool Resources (CPRs), leading to conflicts among communities as they compete for diminishing resources (Nkote Nabeta, undated). In this predominantly semi-arid region, local communities rely mainly on rain-fed crop and livestock production for their livelihood. According to Moureen et al. (undated), Uganda has ten agro-ecological zones, five of which fall within the cattle corridor, including Southern drylands, Lake Victoria Crescent, Karamoja drylands, part of Mid-Northern and part of Eastern agro-ecological zone. Among these five agro-ecological zones, the two agro ecological zones selected for the project were the Eastern agro-ecological zone (Katakwi) and Southern drylands agro-ecological zone (Lyantonde).

b) Katakwi District Setting

Geographical Context of Katakwi District

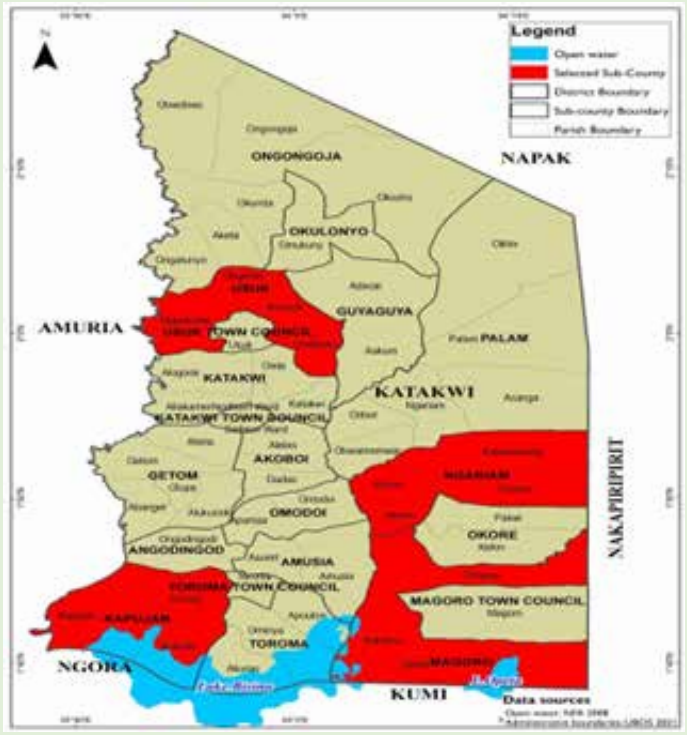

Figure 2: Map of Katakwi District Showing the Selected Sub-Counties (in red colour)

Katakwi District is located in the North-Eastern region of Uganda in the cattle corridor. It shares borders with the districts of Napak in the north, Nakapiripirit in the east, Amuria in the west, Kapelebyong in north-west, Soroti in the south-west, and Kumi and Ngora in the south. The district headquarters are in Katakwi Town Council in Katakwi sub-county.

The district landscape is generally a plateau with gently undulating slopes in certain areas. With regard to the altitude, the district lies approximately between 1,036m-1,127m above sea level. Katakwi District has three counties – Toroma, Ngariam, and Usuk with 20 sub-counties (16 sub-counties and four town councils), 131 parishes and 635 villages.

Social-economic livelihoods and services

Agriculture is the district's main economic activity, with 95% of the population relying on farming. Most (87.3%) practise subsistence farming, with any surplus sold to cover basic needs. Farming is done on fertile soils and relies entirely on family labour without mechanisation. Thus, yields are also poor due to poor farming methods and lack of inputs such as pesticides, fertilizers and other necessary agriculture inputs. Commercial farming is only practised by 3% of the population (UBOS, 2014). Nevertheless, of the 1,573 km^2 area of available arable land, only 629.2 km^2 is currently under cultivation (i.e. about 40%), resulting in overall low district revenue, as the majority of households do not produce enough to meet other costs and other expenditures. However, the main food crops cultivated are cassava, maize, sorghum, finger millet, sweet potatoes, groundnuts, sim-sim, cowpeas and other vegetables. While cotton, sunflower, rice, groundnuts, and sweet potatoes form some of the main cash crops (Katakwi DPP III, 2020).

In Katakwi District, many people are semi-pastoralists, earning a livelihood from subsistence crop production and livestock rearing – mainly cattle, goats, sheep, pigs, and poultry. Livestock is the second most important economic activity and a key indicator of household wealth, with most households keeping 2–3 animals. However, productivity is low due to pests, diseases, poor pasture, and limited access to safe drinking water for animals.

While human disease has not reached epidemic levels, skin rashes – locally known as "I am busy" – worsen during the rainy season due to flooding and waterlogging. Palam and Magoro sub-counties are at high risk, with moderate risk across the rest of the district.

Climate Vulnerabilities and Shocks

Katakwi District experiences extreme weather, with both heavy rainfall and drought. The climate has two main seasons: a wet season (March–October) and a dry season (November–February), sometimes extending into April. Annual rainfall ranges from 1,000–1,500 mm, with major peaks in March–June and minor peaks in August–October. December and January are typically the driest months. Rainfall has become increasingly erratic, often causing hailstorms and waterlogging, especially in Ngariam, Palam, Magoro, and Ongongoja sub-counties.

The district's average maximum temperature is 31.3°C and the minimum is 18°C. Morning humidity ranges from 66% to 83%, dropping to 35%–57% by midday. Katakwi District faces multiple climate-related hazards, including floods, drought, hailstorms, lightning, crop and livestock diseases, pests, and bushfires. Most sub-counties are highly vulnerable, especially Ongongoja, Toroma, Kapujan, Magoro, Palam, and Ngariam. Flood risk is highest in Ongongoja, Palam, Ngariam, and Magoro, with frequent flooding from April to July affecting infrastructure. Hail and lightning storms pose a medium threat district-wide, but vulnerability is highest in Palam and Ngariam. Katakwi, Katakwi Town Council, Toroma, and Omodoi have relatively low risk of drought, pests, and disease.

Crop and Animal Diseases

The major crop diseases are cassava brown, groundnut rosette, streak virus and sorghum smuts. Outbreaks of crop pests and diseases e.g. sweet potato caterpillars, grasshoppers and cassava brown streak viral disease have perennially affected the district. Pest risk is high in Ongongoja and Magoro, medium in Palam and Ngariam and low in Omodoi and Katakwi sub-counties and Katakwi Town Council. The most common animal diseases in the district are: tick borne, foot and mouth, contagious bovine pleuron pneumonia (CBPP), Newcastle disease (poultry), intestinal and liver flukes. Crop and animal disease risk is high in Ongongoja, Palam, Ngariam and Magoro sub-counties during the rainy season. The seasonal influx of un-vaccinated animals from Karamoja worsens the situation. Omodoi and Usuk sub-counties report medium risk levels while Toroma and Katakwi sub-counties have low risk situations. The district also faces persistent cattle rustling by the Karimojong, which contributes to high poverty levels – about 64% of Katakwi's population lives below the poverty line – and to the sparse settlement of parishes along the borders with Napak and Nakapiripirit districts.

Problem animals also affect communities adjacent to game and forest reserves. This is common during the dry season as the animals

disperse to look for pastures in the nearby communities. Elephants, buffaloes, hippopotamus and warthogs raid gardens, destroying crops and property, with occasional human fatalities. The risk is high in Ongongoja and low in Katakwi, Kapujan and Magoro sub-counties. The main risk hotspots are Obwobwo and Ongongoja (Ongongoja Sub-county), Abela Parish in Getom Sub-county; Kokorio in Kapujan Sub-county and Kamenu and Opeta in Magoro Sub-county. Other challenges experienced in Katakwi are the bushfires often used in preparation for agricultural purposes causing high levels of soil degradation and the invasion of invasive species with adverse economic, environmental, and/or ecological effects. Most common in Katakwi is the dodder weed.

c) Lyantonde District Setting

Geographical Context of Lyantonde District

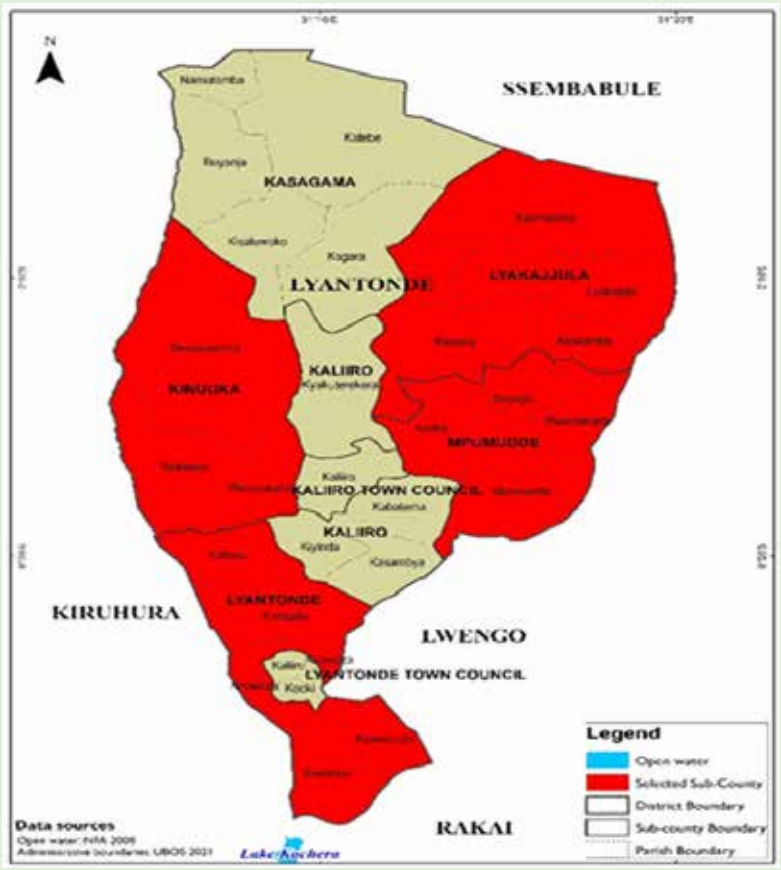

Figure 3: Map of Lyantonde District Showing Selected Sub-Counties (in red colour)

Lyantonde is located in the South-western region of Uganda lying between latitude 00^{S} and 0.50^{S} Longitude of 31.10^{E} and 31.30^{E}. Lyantonde borders Rakai District in the south, Lwengo in the east, Kiruhura in the west and Sembabule in the north-east. The district headquarters are in Lyantonde Town Council. Lyantonde has an area of about 864.62 km^2 (Lyantonde District, 2020).

The nature of land in Lyantonde District is composed of an undulating landscape with some hills and flat areas. It is also characterised by bare hills and the shrubs are concentrated in the valleys and lowlands. The district has a sandy type of soil, which has a low water retention capacity, and this makes crops dry before their maturity stage.

Lyantonde District has a 22-member council (including the executive and special interest group representatives) representing one county composed of six sub-counties and two town councils, 30 parishes and 221 villages. The political head of the district is the district chairperson who chairs the District Executive Committee (DEC) and the speaker as the head of the council (Ministry of Public service, 2016). At the sub-county and town council levels, the political heads are the Local Council (LC) III chairpersons, while parishes/wards are headed by the LC II chairpersons. Villages/cells are headed by the LC I chairpersons. According to UBOS (2014), Lyantonde District had a total of 20,839 households, total population of 96,825 of whom 47,849 are male and 48,973 are female.

Social-economic Livelihoods and Services

In Lyantonde District, 80% of households rely on subsistence farming, and over 83% of the indigenous population live in rural areas dependent on natural resources (Lyantonde NRU, 2016). Of the district's 864.62 km^2, 646.52 km^2 is arable, with 78% of land used for agriculture – mostly by men, who control its use and proceeds (OECD, 2015). Only 19% of farmers engage in large-scale farming (10–20 acres), mainly men involved in livestock, plantation, and mechanised commercial farming. Some land is rented to women smallholders, who often lack access to land as collateral.

On the other hand, women in Lyantonde constitute a big number of the farmers who use rudimentary farming tools such as hoes, axes, and pangas. A few women own land (less than an acre) but still lack control over the proceeds from the agricultural produce on that land. Crop production is dominated by women and children in the downstream stages of production such as tilling of land, planting, weeding and harvesting (Lyantonde District, 2020). Men are more involved in the upstream stage of production such as value addition and marketing and, therefore, control the proceeds from agriculture. The findings from the mapping revealed that men use the proceeds in marrying other women and drinking alcohol. The majority of the women do small-scale crop farming and poultry keeping which is done on relatively smaller pieces of land (less than an acre). Women mainly grow food crops such as vegetables, maize, beans, sweet potatoes, and cassava due to traditional gender roles (Davies, 2023). Men focus on cash and plantation crops such as coffee, matooke, and maize, while youth grow easy-to-manage crops such as onions, cabbages, tomatoes, and passion fruits.

Climate Vulnerabilities and Shocks

Lyantonde lies in the semi-arid Ankole-Masaka dry corridor and typically experiences bimodal rainfall. However, recent years have seen a shift to unimodal rainfall, averaging 450–750 mm, with prolonged droughts from April to October. Temperatures range from 25°C to 29°C, and relative humidity drops from 80–90% in the morning to 61–66% in the afternoon.

The district's only county, Kabula – meaning "scarcity" – reflects chronic shortages of water, fertile soils, vegetation, and rainfall. This results in frequent water crises, especially in sub-counties such as Mpumudde and Lyantonde, which face harsh weather, high poverty, and reduced household and district revenues (Lyantonde District, 2020).

Prolonged droughts affect livestock farming very much with the drying of water points as well as the withering of pastures to feed these animals. Women smallholder crop farmers, register little or no harvests due to shortage of water to irrigate their crops. Other social services such as schools and hospitals also receive a share of the impacts of these stressors. For example, during the dry season when water is scarce, children in rural primary schools are vulnerable to diseases, especially the airborne ones, Also due to the uneven distribution of hospitals, patients and pregnant women find it hard to access health services on scorching sunny days. It was also noted that too much sunshine reduces on the productivity of family members, especially women and children in crop fields.

In Lyantonde, prolonged heat often confines families indoors, leading to increased intimacy and, reportedly, higher birth rates. Long distances to fetch water expose girls and women to risks

of rape and defilement. Gender disparities in land ownership and control – largely favouring men – limit women's access to water sources, especially where dams are built on private land. Men, as primary holders of resources, benefit more from development initiatives, while most women lack collateral to access loans, leaving them marginalised. Although some women use savings groups to buy small water tanks, these efforts remain limited. Relief aid, such as the 1,300 kg of maize flour donation by businessman to 54 families in Kabateema (October 2023), is helpful but not a sustainable solution for women smallholder farmers facing climate shocks.

Gender Dynamics at the Family Level

Findings show that the district communities have gender norms and relations that mainly discriminate against women and girls such as gender division of labour, decision-making power, and access to and control over productive resources. These constrain exclude women from accessing key resources and opportunities, valuable for their well-being. They also delay socioeconomic development at family, community, and national levels.

Gender Division of Labour: Women carry out a multiplicity of roles, including fetching water, cooking food, caring for children, and looking for money. They are, hence, subjected to suffering more as a result of climate change effects because of their close association with food production. For example, in Mpumudde Sub-county, women predominantly pay school fees for their children because men spend most of their time in small bars and care less about their children. On the other hand, men do the rearing of animals, splitting firewood, and participating in brick laying processes.

Decision-making Power: Decision making is made entirely by men to the extent of dictating on what to be planted. This reflects on the fact that men are the owners and controllers of all the decisions and women are simply dependent. A case in point is on production decisions, including when to plant, how to plant, and on which land to plant what crop. This also extends to decisions on harvesting where most men hardly participate in production but control the proceeds from the harvests of that production.

Access to and Control over Productive Resources: Women are marginalised in terms of access to, ownership and control over land, education, business, skills development, financial resources, family planning services and other health services, employment and inheritance rights. This is mostly prevalent in Mpumudde and Lyantonde sub-counties. This socio-cultural rigidity affects decisions for development projects on land and other opportunities.

1.3 The Issue

Rural women smallholder farmers in Uganda are highly vulnerable to climate change shocks, compounded by gender-based violence and restrictive social norms. Despite their vulnerability, they are key agents of adaptation, with valuable knowledge and skills. However, their limited mobility and decision-making power hinder full participation in resilience-building efforts (UNECA, 2019; Kavuma et al., 2018). While state and non-state actors have introduced initiatives to boost adaptive capacity and productivity, these often overlook the need to transform gender norms and ensure women's control over resources – crucial for effective climate resilience. Existing interventions in Uganda mainly target low-risk, high-value cash crops and well-collateralised sectors such as agro-manufacturing, neglecting high-risk agricultural production often led by women smallholders (NPA, 2020). These efforts focus on disaster response rather than gender-transformative resilience strategies (Republic of Uganda, 2018). They also fail to address intersecting factors that limit women's ability to adapt and benefit from climate technologies (Ceia, 2021). Shocks such as COVID-19 have deepened gender inequalities, reduced women's income opportunities, and increased food insecurity and poverty, leaving smallholder farmers – especially women – with limited adaptive capacity (Kansiime et al., 2021).

1.4 Aim and Objectives of the Project

This project aims to strengthen women smallholder farmers' empowerment and adaptive capacities in order to increase their resilience to the effects of climate change. The specific objectives of the project include:

The WOSFER project adopts an intersectional approach that considers factors such as age, socio-economic status, ethnicity, education level, and sexual and gender identities. Spanning 3.5 years – from May 2023 to June 2026 – the project is structured in three phases: Baseline, Intervention, and Impact Evaluation.

This report presents findings from the baseline survey conducted between October 2023 and February 2024. The survey focused on project objectives 1 and 2, providing critical benchmark data for assessing the project's impact in later phases.

2. Research Approach and Methodology

2.1 Research Design

This is mixed methods action research drawing on an experimental research design using a Randomized Controlled Trial (RCT) to test and identify a suite of gender transformative and inclusive climate adaptation innovations for boosting women's empowerment and adaptive capacities as a pathway to enhancing women's resilience to climate change.

The project is employing the project level Women Empowerment in Agricultural Index (pro-WEAI) 2019 revised in 2021 (International Food Policy Research Institute (IFPRI), 2021) with additional modules of resilience (to measure women smallholder farmers' resilience to climate shocks) and food security and nutrition (to establish the levels of food insecurity and the type of nutrition in the households of the study sites). In addition to the field-based study, desk research was conducted. The key research questions in this study included:

1. What is the level of women smallholder farmers' empowerment/disempowerment and adaptive capacities to the effects of climate change?

2. What are the socio-cultural gender norms, economic and political trade-offs and barriers to women smallholder farmers' empowerment and adaptation to climate change?

3. What are the existing adaptation interventions that address climate change among smallholder farming communities in Uganda and the study communities?

2.2 Sampling Design

The project used a multistage sampling method to select the respondents. Since districts in the cattle corridor are more prone to drought, food insecurity and are poverty stricken (Taylor et al., 2015; Mulinde et al., 2016; UBOS, 2019; Mulinde et al., 2022), they were considered in the first stage. The districts in the cattle corridor of Uganda were categorised into six sub-regions, namely: i) South-western (Ankole); ii) Central 1 (South Buganda); iii) Central 2 (North Buganda); iv) Mid-eastern (Busoga); v) Lango; and vi) Karamoja – as used by UBOU to establish the level of poverty and gender discrimination using the poverty map and the Social Institutions and Gender Index (SIGI).

The second stage involved the selection of two sub-regions with the lowest SIGI, namely: Central 1 (South Buganda) with an index of 0. 389 and Mid-eastern region (Busoga) with an index of 0. 364 (OECD, 2015).

In the third stage, the two districts – Katakwi from Mid-eastern region and Lyantonde from Central 1 were randomly selected using a rotary method.

The fourth stage involved the selection of sub-counties in each district guided by the district officials and opinions from the field interviews during the district mapping exercise. Two major considerations were made: the spatial distance between the selected sub-counties to avoid selection of sub-counties that are similar in socioeconomic characteristics such as population density, households with safe water and households with less than two meals.

In the remaining stages, the rotary method was used to randomly select four parishes per sub-county, four villages per parish, and six households per village. This yielded a quantitative sample of 384 households per district, comprising 96 per sub-county, 24 per parish, and 6 per village, as shown in Table 1.

Table 1: Number of Respondents per Sub-County per District

District	Sub-county	Male		Female		Total	
		No.	Row %	No.	Row %	No.	Row %
Katakwi	Usuk	96	50	96	50	192	100
	Magoro	96	50	96	50	192	100
	Kapujan	96	50	96	50	192	100
	Ngariam	96	50	96	50	192	100
Lyantonde	Lyakajura	96	50	96	50	192	100
	Lyantonde	96	50	96	50	192	100
	Kinuuka	97	50	97	50	194	100
	Mpumudde	96	50	96	50	192	100
	Total	**769**	**50**	**769**	**50**	**1538**	**100**

For the qualitative sample, purposive sampling was used with the help of local leaders to select participants that took part in the FGDs, community profiles, seasonal calendar, life histories/semi-structured interviews (empowered and disempowered women and men), KIIs and in-depth interviews on the local understanding of resilience. Table 2 below summarises the sample size by tool and district.

Table 2: Summary of the Sample Size by Category of Participants, Tool and District

Tool	District				Total		Total M+F
	Katakwi		Lyantonde				
	Male	Female	Male	Female	Male	Female	
KII[1]	19	2	12	4	31	6	37
IDIs[2]	17	16	16	16	33	32	65
Life histories[3]	17	18	16	16	33	34	67
FGDs[4]	72	72	128	128	200	200	400
Seasonal[5] Calendar	16	16	16	16	32	32	64
Community[6] profiles	10	5	14	3	24	8	32
National level KIIs[7]					5	3	8
TOTAL	**151**	**129**	**202**	**183**	**358**	**315**	**673**

[1] A total of 37 Key Informant Interviews (KIIs) were conducted across two districts: Lyantonde (16 KIIs) and Katakwi (21 KIIs).
[2] A total of 64 In-depth Interviews (IDIs) were conducted across two districts: Lyantonde (32 IDIs) and Katakwi (16 IDIs).
[3] A total of 67 life histories were conducted across two districts: Lyantonde (32) and Katakwi (35).
[4] A total of 50 FGDs were conducted across two districts: Lyantonde (32 FGDs, with 16 for female and 16 for male respondents) and Katakwi (18 FGDs, with 9 for female and 9 for male respondents).
[5] A total of 16 seasonal calendars were conducted across two the district: Lyantonde (8 seasonal calendars, with 4 for female and [4] for male respondents) and Katakwi (8 seasonal calendars, with 4 for female and 4 for male respondents).
[6] A total of 8 Community Profiles were conducted across the two districts: Lyantonde (4) and Katakwi (4).
[7] A total of 8 KIIs were conducted at national level.

2.3 Data Collection

2.3.1 Field Research

The pro-WEAI questionnaire (with additional modules on resilience, food security, and nutrition) was administered through face-to-face interviews to male and female decision makers in the sampled households using Survey CTO on Android mobile devices for real-time data capture and stored on a server. The female and male respondents were interviewed separately to ensure privacy and confidentiality as well as avoid any biases which could arise from hearing the spouse's responses. A total of 1,538 (769 female: 769 male) were interviewed with 768 from Katakwi and 770 from Lyantonde. The interviews solicited data on socioeconomic characteristics of the respondents; empowerment indicators measuring the instrumental, intrinsic and collective agency; exposure to shocks; shock intensity; resilience capacity indicators measuring the absorptive, adaptive and transformative capacities; indicators for food insecurity and nutrition measured by the type of foods eaten.

The Research Team adapted IFPRI's validated pro-WEAI qualitative tools (2019) for FGDs to establish a baseline for understanding the research context. Key themes included local perceptions of empowerment and gendered experiences of shocks and resilience. Data collection methods included community profiling, seasonal mapping, FGDs, life histories, IDIs and KIIs. Ethical standards – confidentiality, privacy, and voluntary participation – were upheld, with informed consent obtained from all participants.

2.4 Data Management and Analysis

Data were collected electronically using SurveyCTO on mobile devices, enabling real-time flow, easier cleaning, remote access, and quality monitoring. Analysis was conducted in STATA, focusing on respondents' demographics and three empowerment domains based on 10 indicators (e.g., income autonomy, self-efficacy, asset ownership, decision-making, and group membership). An individual empowerment index was generated, and pro-WEAI results were disaggregated to show who was empowered or disempowered and how each indicator contributed.

Statistical computation of the resilience variables (shock exposure, ability to recover, coping strategies, absorptive capacity, adaptive capacity and transformative capacity) followed the TANGO methodological guide (TANGO International, 2018). Following the TANGO methodological guidelines, the researchers constructed the overall resilience index and subset indices (absorptive capacity, adaptive capacity and transformative capacity). T-tests (for continuous variables) and chi-square tests (for categorical variables) were used to assess for statistical significance of differences between various sub-groups at the 5% level.

All qualitative interviews and FGDs were transcribed and translated verbatim to produce interview transcripts. Themes and sub-themes were identified to form the basis of the coding structure for the transcripts, and coding and analysis in ATLAS.ti using thematic and content analysis. Qualitative findings corroborated the quantitative findings.

2.5 Ethical Considerations

Ethical considerations involved seeking approval from the Makerere University School of Social Science Research Ethics Committee (REC) and research clearance from the Uganda National Council for Science and Technology (UNCST), the national research clearance body for studies on human subjects. The reviews by REC and UNCST involve the examination of the research design, research protocols including data collection procedures, study instruments, recruitment materials, and informed consent documents to ensure they adhere to ethical standards of "do no harm" to the respondents, anonymity and confidentiality of research findings. Accordingly, the project obtained letters of support from the district leadership and constituted national and district advisory task committees to inform the research design. Voluntary participation and consent were sought during the baseline survey. Participants were informed of the objectives of the research as well as the study procedures and interventions. These ethical considerations will be followed while submitting research data sets to IDRC data library. Data sets from this project are unlikely to pose a risk for disclosure. However, to further protect participants, data will be anonymised before storage.

3. Findings

3.1 Background Characteristics

The study covered 1,538 respondents of which 50% were female with diverse background characteristics spanning age, education, marital status, and occupation. On **age,** male respondents were on average 6.5 years older than female respondents across all the sub-counties in the two districts, a difference which is statistically significant at the 5% level. Overall, the average age for female respondents is 36.7 and 43.2 years for male.

With **education attainment**, the majority of the respondents, from both districts, had attained primary level education. A larger percentage of respondents from Lyantonde (24.8%) had no formal education as compared to those from Katakwi (12.9%) as shown in Table 3.

Table 3: Highest Level of Education by District

Respondent's highest level of education	Katakwi		Lyantonde		Total	
	No.	Col %	No.	Col %	No.	Col %
No formal education	99	12.9	191	24.8	290	18.9
Primary	489	63.7	429	55.7	918	59.7
Secondary	152	19.8	124	16.1	276	17.9
Certificate	17	2.2	9	1.2	26	1.7
Diploma	8	1	3	0.4	11	0.7
Degree	3	0.4	2	0.3	5	0.3
Other	0	0	12	1.6	12	0.8
Total	**768**	**100**	**770**	**100**	**1538**	**100**

As Table 4 indicates, the percentage of respondents with no formal education was statistically significantly higher among female than male respondents, in Katakwi District. The percentage of respondents with secondary or tertiary education was significantly higher among male than female respondents in Katakwi.

Table 4: Highest Level of Education by District and Sex

Respondent's highest level of education	Katakwi				Lyantonde			
	Male		Female		Male		Female	
	No.	Col %	No.	Col %	No.	Col %	No.	Col %
No formal education	26	6.8	73	19	98	25.5	93	24.2
Primary	235	61.2	254	66.1	221	57.4	208	54
Secondary	99	25.8	53	13.8	57	14.8	67	17.4
Certificate	14	3.6	3	0.8	4	1	5	1.3
Diploma	7	1.8	1	0.3	3	0.8	0	0
Degree	3	0.8	0	0	2	0.5	0	0

On **occupation**, the majority of the female and male respondents, in both districts, were farmers (97% in Katakwi; 96% in Lyantonde) with a few who were engaged in non-agricultural activities (see Table 5).

Table 5: Respondents' Occupation by District and Sex

	Katakwi				Lyantonde			
	Male		Female		Male		Female	
Respondent's occupation	**No.**	**Col %**	**No.**	**Col %**	**No.**	**Col %**	**No.**	**Col %**
Agricultural (farmer, etc.)	370	96.4	375	97.7	372	96.6	366	95.1
self-employed Non-agricultural	5	1.3	8	2.1	8	2.1	9	2.3
Paid employee on-farm	0	0	0	0	2	0.5	2	0.5
Paid employee off-farm	6	1.6	0	0	2	0.5	0	0
Student	3	0.8	0	0	0	0	0	0
None	0	0	1	0.3	1	0.3	8	2.1
Total	**384**	**100**	**384**	**100**	**385**	**100**	**385**	**100**

The main source of livelihood for the majority of the households was largely growing and selling crops and livestock (see Table 6).

Table 6: Source of Livelihood in the Last 12 Months by District and Sex

Source	Katakwi					Lyantonde				
	Male (n=384)		Female (n=384)			Male (n=385)		Female (n=385)		
	No.	**%**	**No.**	**%**	**p-value**	**No.**	**%**	**No.**	**%**	**p-value**
Growing and selling crops	351	91.4	361	94	0.165	368	95.6	360	93.5	0.204
Raise and sell livestock	232	60.4	191	49.7	**0.003**	166	43.1	148	38.4	0.187
Non-farm activities	104	27.1	94	24.5	0.409	87	22.6	94	24.4	0.552
Agricultural wage labour	104	27.1	108	28.1	0.747	54	14	26	6.8	**0.001**
Non-agricultural wage labour	55	14.3	36	9.4	**0.034**	59	15.3	6	1.6	**<0.001**
Salaried work	13	3.4	6	1.6	0.104	1	0.3	4	1	0.178
Sale of agricultural produce	44	11.5	23	6	**0.007**	61	15.8	24	6.2	**<0.001**
Rent out land, house, rooms	5	1.3	1	0.3	0.101	3	0.8	1	0.3	0.316
Remittances	9	2.3	1	0.3	0.011	2	0.5	1	0.3	0.563
Gifts/inheritance	10	2.6	11	2.9	0.825	7	1.8	3	0.8	0.203
Poultry and other small animals	158	41.1	146	38	0.376	40	10.4	50	13	0.262

Regarding **marriage**, the majority of the respondents (92.1%), in both districts, were in monogamous marriages (91.9% in Katakwi; 92.3 Lyantonde), followed by 5.5% in polygamous marriages (5.6% Katakwi; 5.5% Lyantonde). Ten (1.3%) in Katakwi and eight (1%) in Lyantonde were single, while two (0.3%) in Lyantonde were divorced; nine (1.2%) in Katakwi and seven (0.9%) in Lyantonde were widowed.

3.2 Contextualising and Measuring Empowerment

The study is grounded in feminist theory, drawing on Kabeer's three-dimensional empowerment framework—resources, agency (power within, power to, power with), and achievements (Kabeer, 1999; 2009). Empowerment is seen as a process that enables individuals, especially women and girls, to make strategic life choices and act on them to improve their lives. Using this framework, we applied the Project-Level Women's Empowerment in Agriculture Index (pro-WEAI) developed by IFPRI (Malapit et al., 2019). The qualitative findings explored local understandings of empowerment and informed interpretation of the quantitative data, which measured intrinsic, collective, and instrumental agency across 10 indicators and generated overall pro-WEAI scores for the study sites.

3.2.1 The Local Understanding of Empowerment

Qualitative findings show that women's empowerment was viewed through economic, social, and political dimensions, but only valued when aligned with traditional gender roles – obedient wives and mothers – and when serving family or community needs over individual women's goals. These themes were consistent across both study districts. Six major categories emerged as follows:

1. Local perceptions of empowerment and associated norms;
2. Navigating empowerment: women's struggles with societal norms;
3. Reflections on the local definitions of an empowered man in the study communities;
4. Local perceptions of disempowered women and men;
5. Changes in community perception of empowerment over time; and
6. Barriers to women's agency and wellbeing.

Key issues raised across these categories are summarised below.

Local Perceptions of Empowerment and Associated Norms

Multiple Interconnected Interpersonal Social Attributes and Abilities

The local perceptions of empowerment identified by both male and female participants in Lyantonde and Katakwi districts are deeply rooted in traditional gender roles and social expectations. They associated empowerment with **interpersonal qualities and abilities** such as being hardworking, respectful, cooperative, trustworthy, and committed to family welfare. A woman was considered empowered when she worked in harmony with her husband, upheld respect for him, and contributed to family development, often being seen as a 'family boss' only when her leadership did not challenge male authority. An example is demonstrated below:

> *"For me, if that happens in a family, it means there's cooperation in the family because if a woman is late from Kyemamba, she will tell her man that she was planning for how the children will survive and her husband will respect her decision because of cooperation and the family will develop." (FGD, male participant, Lyakajura, Lyantonde)*

Respecting male dominance was emphasised even in cases where the man was perceived as weak or absent. While some admired empowered women for their resilience, responsibility, and contributions, others viewed them negatively, as disrespectful, promiscuous, or challenging social norms. Hard work, especially in supporting children's education and food security, was seen as a core empowerment trait, alongside community involvement, knowledge sharing, and good hygiene practices. Access to health care and proper sanitation were also seen as indicators of an empowered household. Marriage – especially religious or traditional – played a central role in empowerment, offering women social recognition and legal security. However, early marriages driven by economic pressures remained a concern. A participant noted that "a woman should never assume the position of family head if her husband is present, regardless of his

weaknesses. Respect in the community is partly derived from recognising her husband's role as the family head" (Life-history for an empowered man, Kichwamba Village).

Overall, empowerment was recognised more for how it served collective family and community goals than individual autonomy, reflecting a complex balance between traditional expectations and evolving roles.

Economic Dimensions of Empowerment

In Lyantonde and Katakwi, women's empowerment is closely linked to financial independence, asset ownership, and the ability to support their families. Women running small businesses, such as selling clothes, are seen as empowered for meeting household needs, funding education, and improving living standards. Financial autonomy enhances their decision-making power and social status. Owning land, livestock, or property signals a shift from poverty to stability, thus inspiring others. However, empowerment is most valued when balanced with traditional roles – cooperating with spouses and caring for family – underscoring that empowerment is both economic and relational. As participants noted:

> *"For me what makes me admire a woman is when she loves saving money. A woman who saves money and buys domestic animals, land, and also makes her family and house good looking through buying chairs and many others is a type of woman I admire."* (FGD male participant, Lyakajura in Lyantonde)
>
> *"A woman who has her own things like money is the one who makes decisions on her own because she does not fear her husband. A woman who can provide food for her family and ensure her children receive an education is highly respected in our community. Her life is marked by dedication and hard work as she strives to meet the needs of her family. She juggles multiple responsibilities with grace, balancing the demands of daily life while investing in the future of her children through education."* (FGD female, Mpumudde, Lyantonde).

Political Empowerment: Leadership and Decision-making Power

In Lyantonde and Katakwi, women's leadership and public decision-making are key markers of empowerment. However, within households, decision-making is only accepted when shared with spouses, reflecting traditional gender norms. Education has increased women's influence, but sole decision-making by women is often viewed negatively. Empowerment also involves managing children's education, health, finances, and shared family planning decisions. Women commonly make autonomous health decisions due to their caregiving role. Overall, empowerment is valued when it supports traditional roles and benefits the family and community, rather than challenging established power dynamics. As one respondent revealed during an FGD:

> *"Women are empowered these days because women are allowed in the public sphere. However, in the past, those women used to stay in the private sphere...Nowadays, women are leaders and join social groups that were not there before and hence, development in the families."* (FGD with women, Mpumudde in Lyantonde)

Navigating Empowerment: Women's Struggles with Societal Norms

Another overarching theme was centred on how women were navigating restrictive socio-cultural norms to enable their agency and well-being. Women's empowerment is largely challenged by deeply rooted traditional gender perceptions and the burden of their social roles. While increased financial independence and mobility have enhanced women's visibility and influence, they often face resistance and criticism from both men and women who perceive empowered women as arrogant, disrespectful, or even linked to witchcraft. Many still believe that a woman's place is to support, not lead, within the household, and that men should retain ultimate authority. This cultural resistance is compounded by fears among some women of added responsibilities and backlash from peers. Furthermore, women's

growing autonomy, particularly in education, mobility, and decision-making, is sometimes seen as a threat to male dominance, especially in relationships where the woman is more educated. These dynamics reveal that economic empowerment alone is insufficient. True progress requires a transformative shift in societal norms and attitudes that currently limit women's roles and freedoms within families and communities. Connected to the strongly held social norms, male participants supported women's marginalised position by noting that:

> *"Following how marriage began, a man is the head of the household and a woman is just a supporter, the one to strengthen a man in developing the family…A woman and a man in a home, the man is the big person in the family and the woman is the follower." (FGD with men, Kapujan in Katakwi)*
>
> *"Other women think such women are big-headed and arrogant in their families, while others think that she bewitched her man. But in an actual sense, a woman who was raised well should not overpower her husband…Some women would like to be like those women to head their families, but when a man is still sober, just know it will never happen however much she may like to do it. Also for women who fear responsibilities do not like such women because they are occupied with tasks like paying school fees for children and many other things." (FGD with men, Lyakajura in Lyantonde)*

The voices illustrate how women in these communities also strongly accept and internalise these marginalizing narratives and practices. The voices show stigmatization of empowered women **"***other women think such women are big-headed and arrogant…"* which suggests internalized patriarchy, in which fellow women view assertive or economically empowered women with suspicion or contempt, labelled as *"Big-headed*" and *"arrogant"*, Such labels are deployed to police women's behavior and punish non conformity from traditional femininity, which values submissiveness and deference to men. The belief that a woman has to use witchcraft or manipulation to gain influence in the household mirrors a deep cultural discomfort with female agency. Instead of recognizing women's success or assertiveness as legitimate, it's attributed to supernatural coercion, which delegitimizes their role, casting then as social threats. Men's view such as *"A woman who was raised well should not overpower her husband…"* reveals the normative ideal of womanhood in this community where a well-brought-up woman is expected to be submissive, deferential, and non-threatening to male authority. The word *"overpower"* assumes that household leadership is a zero-sum game, where a woman's rise must mean a man's fall—thus reinforcing rigid patriarchal hierarchies. The voice also reveals constraints to women's leadership in households where views such as *"…but when a man is still sober, just know it will never happen…"* demonstrate inherent male dominance seen as natural and only eroded by male incapacity (e.g., drunkenness).

A woman can only head a household by default, not by merit or choice, if a man is weakened. This view reflects a deep resistance to shared or negotiated power in intimate partnerships. The voices further illustrate mixed perception where there appears to division among women linked to "admiration vs. resentment" as demonstrated by the view that *"Some women would like to be like those women…"*. While there is aspiration among some women to gain greater household authority or independence, this desire exists in tension with fear of backlash or failure. The men also voiced contradictory expressions among women associated with household roles e.g *"…women who fear responsibilities do not like such women because they are occupied…"* This implies that while empowered women bear greater burdens, such as paying school fees and running households, roles traditionally seen as male, some other women may resent or fear this shift in responsibility, especially if they associate it with hardship or social judgment.

Overall, the findings reflect a contested terrain of gender relations, where empowered women are both admired and stigmatized, illustrating that social change is underway but not yet normalized. Men (and some women) perceive household leadership as a male prerogative, and women who challenge this are labelled as deviant or dangerous. There is no clear agreement among women themselves, some admire empowered

women, while others reject or fear them. These findings illustrate the urgent need for shifting gender norms, especially ideas around power, responsibility, and respect. Working with both women and men to reimagine masculinities and femininities that are collaborative, rather than hierarchical is critical, calling for a gender transformative approaches that promote dialogue, challenge internalized beliefs, and foster joint visioning for household decision-making and resilience.

Reflections on the Local Definitions of an Empowered Man in the Study Communities

In Lyantonde and Katakwi, male empowerment is defined by fulfilling traditional roles as provider, protector, and leader. It includes financial stability, education, moral integrity, respectful relationships, and community involvement. Empowered men support their families, work with spouses, educate children, avoid violence, and promote harmony – balancing personal success with family and community well-being.

Local Perceptions of Disempowered Women and Men

In Lyantonde and Katakwi, disempowerment is seen through a gendered lens, tied to financial instability, heavy workloads, and neglected duties. Women are often burdened with family responsibilities alone when men abandon their roles, facing poverty and insecure casual labour. Despite their efforts, many remain trapped in cycles of hardship. Local views on this are shared below:

> *"My mother is just there because she doesn't have anything for people to admire. She is responsible, yes, but then there is no progress. She lost her husband, but she struggles to feed her family without engaging in prostitution." (FGD with women, Lyakajura in Lyantonde)*
>
> *"For me, in most cases when a woman is the one making most decisions at home, just know that family will never develop because the man in that family left his responsibilities and nothing will work out. (FGD with men, Lyakajura in Lyantonde)*

For men, disempowerment is linked to behaviours such as gambling, neglecting family duties, and lacking assets such as land, which diminishes their ability to contribute meaningfully to the family and community. In communities such as Mpumudde, women report taking on traditionally male roles due to the absence of responsible men, further exacerbating the struggles with poverty and education. The idea of male empowerment, therefore, is tied to economic stability, family support, and involvement in community well-being, while disempowered men are seen as those who neglect their duties or lack the means to provide for their families. An example of such sentiments is reflected below:

> *"In our community, there's a lack of empowered men, which contributes to our ongoing struggles with poverty and access to education. Empowered men would actively support efforts to improve our community's economic situation and ensure that our children have access to education. However, the absence of such support indicates a broader issue of disempowerment among men in our community. If there were empowered men, then we would be, too, as women." (FGD with women, Mpumudde in Lyantonde)*

Similar views were heard from men and women smallholder farmers in Katakwi.

Changes in Community Perception of Empowerment over Time

Over the past decade, perceptions of empowerment in some communities have shifted significantly, with a notable increase in the number of empowered women. This change is attributed to the rise of women engaging in business ventures and pursuing educational opportunities. As one participant from Kapujan in Katakwi noted, many women now have their income and have advanced in education, with some working in government offices. She notes that: *"There is a difference because many women have joined business and have their own money... Many women have gone to school and are working in government offices" (FGD female particint, Kapujjan in Katakwi).* Education has played a pivotal role in this transformation, as more women take on influential roles in politics and advocacy,

further enhancing their empowerment and societal influence.

Barriers to Women's Agency and Well-being

Barriers to women's empowerment in the study communities of Katakwi and Lyantonde are deeply rooted in societal norms and structural challenges. Early marriage, school dropouts, poverty, lack of access to resources, and inadequate infrastructure significantly hinder women's progress. Early marriage and school dropouts limit educational and career opportunities for young girls, while poverty exacerbates these issues by restricting access to education and services. Additionally, poor infrastructure, such as the high cost of water and unequal resource distribution, further burdens women. Programmes training women in skills such as tailoring and soap making help address some challenges, but more comprehensive solutions, including better resource distribution and political accountability, are needed to empower women and allow them to reach their full potential.

3.2.2 Overall Pro-WEAI Scores for the Two Districts

The aggregate pro-WEAI score for women in Katakwi and Lyantonde is 0.7, based on a 3DE score of 0.68 and a GPI score of 0.85 (see Table 7). Only 26% of women and 48% of men were empowered, a statistically significant difference. Disempowered women had a mean adequacy (3DE) score of 0.57, while disempowered men scored 0.61, showing a small, insignificant gender gap in indicator adequacy. Gender parity was achieved in 48% of households, with an average empowerment gap of 28% between disempowered women and their male household counterparts.

Table 7: Overall pro-WEAI Results: Across the Two Study Districts

Indicator	Women	Men
Number of observations	752	694
3DE score	**0.68**	**0.8**
Empowerment score	0.64	0.73
% achieving empowerment	0.26	0.48
Mean 3DE score for not yet empowered	0.57	0.61
Number of dual-adult households	679	
Gender Parity Index (GPI)	**0.85**	
% achieving gender parity	0.48	
Average intra-household inequality score	0.09	
Empowerment gap	0.28	
pro-WEAI	**0.7**	

Overall Indicator Contribution to Disempowerment

Figure 4 shows that women in Katakwi and Lyantonde are more disempowered than men, mainly due to challenges with work balance, attitudes towards domestic violence, self-efficacy, mobility, and control over income. Patriarchal norms restrict women's agency and family well-being. Often, women's decision-making reflects men's abandonment of responsibilities, increasing their burden. Domestic violence is common, driven by financial conflicts, income control, restricted mobility, and male alcohol abuse. Women's groups provide support, but household duties frequently limit women's participation. As one participant noted, "Some women have experienced domestic violence after sharing their dividends. The man demands the money, and violence begins when she refuses" (Community Profile, Kinuuka, Lyantonde).

Women's access to and control over financial resources are also constrained by cultural and institutional barriers, leaving them to manage loan repayments and failed investments. Poor

market access and inadequate financial services compound these challenges. In both districts, early marriage, school dropouts, poverty, limited access to essential resources, and political inequalities significantly disempower women. Early marriage and school dropouts reduce girls' educational and career opportunities, while poverty restricts access to schooling and services. Inadequate infrastructure and unequal resource distribution further hinder empowerment.

For men, the main disempowerment factors are low self-efficacy, limited decision-making autonomy, and harmful attitudes towards domestic violence. Figure 4 illustrates the total disempowerment scores for women and men (1 - 3DE), with coloured bars showing each indicator's contribution to disempowerment.

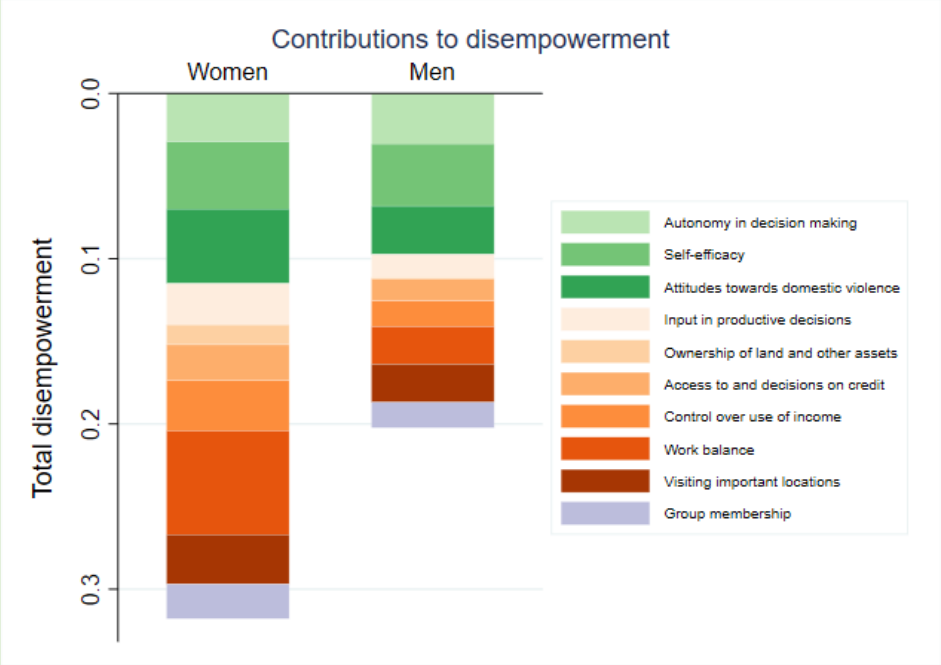

Figure 4: Overall Contributions of Each Indicator to Disempowerment

Overall Indicator Adequacy for Men and Women in the Two Districts

Table 8 compares the proportion of men and women (from dual adult households) who reach adequacy for each of the 10 indicators. In general, larger percentages of men are adequate in 8 out of 10 indicators, as compared to women. These differences are statistically significant (at the 5% level) for 7 out of the 8 indicators. A larger percentage of women were adequate for two indicators (autonomy in income and self-efficacy).

Most men (99%) and women (87%) were adequate in asset ownership, though men more so. Social and gender norms limit women's control over productive resources such as land, livestock, and vehicles. Livestock – cows, goats, chickens, pigs, fish, and bees – are valued but declining due to land fragmentation, drought in Lyantonde, and conflict in Katakwi. Beekeeping is growing as a low-cost, sustainable alternative. As one participant said, "Owning livestock and a car signifies stability and self-sufficiency. Men who provide without help are highly respected" (FGD, Mpumudde, Lyantonde). Inadequacy in this area reduces respect and self-esteem, especially for men whose authority is tied to asset ownership.

Both men and women were largely inadequate on the indicators of autonomy in income, and self-efficacy (with men being more inadequate than women). Large percentages of both men and women were inadequate for the indicator attitudes about domestic violence (with women being more inadequate). A small percentage of women (16%) were adequate on the work balance indicator, unlike the men (64%).

Table 8: Overall Adequacy for Men and Women

	Men			Women			t-test	
Indicator	**Mean**	**SE**	**N**	**Mean**	**SE**	**N**	**Mean differences**	**p-value**
Autonomy in income	0.585	0.018	769	0.694	0.017	769	-0.109	**<0.001**
Self-efficacy	0.446	0.018	769	0.528	0.018	769	-0.082	**0.001**
Attitudes about domestic violence	0.590	0.018	769	0.464	0.018	769	0.126	**<0.001**
Input in livelihood decisions	0.844	0.013	769	0.740	0.016	769	0.104	**<0.001**
Ownership of land and other assets	0.992	0.003	769	0.873	0.012	769	0.120	**<0.001**
Access to and decisions on credit	0.840	0.013	769	0.770	0.015	769	0.070	**<0.001**
Control over the use of income	0.827	0.014	769	0.685	0.017	769	0.142	**<0.001**
Work balance	0.640	0.018	694	0.164	0.013	752	0.476	**<0.001**
Visiting important locations	0.694	0.017	769	0.670	0.017	769	0.025	0.298
Group membership	0.818	0.014	769	0.761	0.015	769	0.057	**0.006**

3.2.3 pro-WEAI Scores for Katakwi District

Considering Katakwi District, the aggregate pro-WEAI score for women in the baseline survey is 0.68. This figure is the weighted average of the 3DE score for women (0.66) and the GPI score (0.86) (see Table 9). Only 23% of women and 45% of men were found to be empowered. Of the disempowered women, the mean adequacy (3DE) score was at 0.56, implying that these women only achieved adequacy in an average of 56% of the indicators. On the other hand, for the disempowered men, the mean adequacy (3DE) score was 0.6, indicating that they only achieved adequacy in an average of 60% of the indicators. The GPI score is 0.86, and 47% of households achieved gender parity. The average empowerment gap between women who did not achieve gender parity and the men in their households is 27%.

Table 9: pro-WEAI Results – Katakwi District

Indicator	Women	Men
Number of observations	372	339
3DE score	**0.66**	**0.78**
Empowerment score	0.63	0.71
% achieving empowerment	0.23	0.45
Mean 3DE score for not yet empowered	0.56	0.6
Number of dual-adult households	329	
Gender Parity Index (GPI)	**0.86**	
% achieving gender parity	0.47	
Average intra-household inequality score	0.09	
Empowerment gap	0.27	
Pro-WEAI	**0.68**	

Contributions of Each Indicator to Disempowerment in Katakwi District

Figure 5 shows that women in Katakwi are more disempowered than men. Key contributors to women's disempowerment include work balance, attitudes towards domestic violence, self-efficacy, income control, and decision-making autonomy. For men, the main factors are self-efficacy, attitudes towards domestic violence, and autonomy. Attitudes towards domestic violence and self-efficacy contribute more significantly to women's disempowerment. Qualitative data highlight how cultural subordination of women in areas such as

health, education, mobility, and resource access undermines not only their potential but also that of men, children, and households. In Kapujan Parish, participants noted that while men were slightly better off than women, many still lacked assets and business opportunities. As one put it, "*Men are still disempowered; they have few assets and businesses*" (FGD, Kapujan, Katakwi).

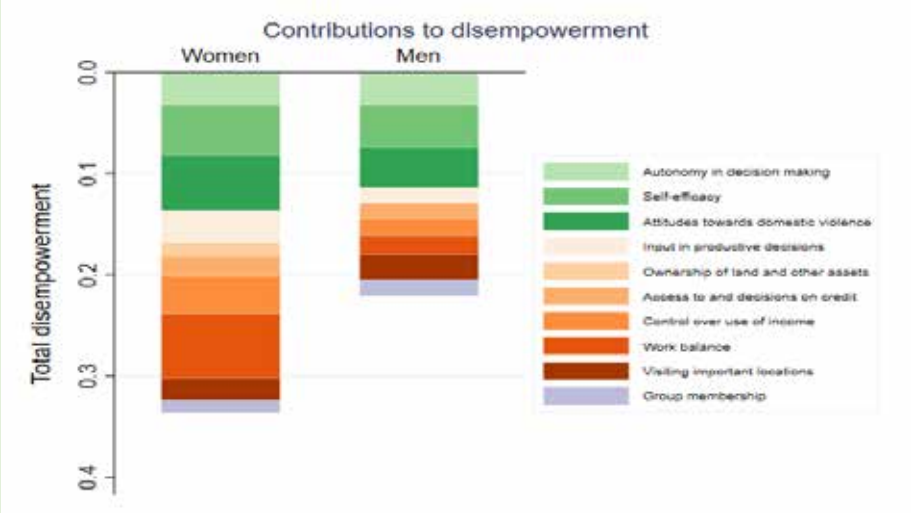

Figure 5: Contributions of Each Indicator to Disempowerment - Katakwi

Indicator Adequacy for Men and Women in Katakwi District

Table 10 shows that in Katakwi District, men achieved adequacy in 6 out of 10 indicators more than women, with statistically significant differences (5% level) in 5 of these. Women outperformed men in 4 indicators – autonomy in income, self-efficacy, mobility, and group membership – with 3 showing significant differences.

Asset ownership was high for both genders (99% men, 85% women), as was group membership (86% women, 81% men). Both men and women were equally inadequate in self-efficacy and had low adequacy in attitudes towards domestic violence, with women faring worse. Autonomy in income also showed high inadequacy, especially among men. Only 20% of women were adequate in work balance compared to 74% of men.

Table 10: Adequacy for Men and Women in Katakwi District

	Men			Women			t-test	
Indicator	**Mean**	**SE**	**N**	**Mean**	**SE**	**N**	**Mean differences**	**p-value**
Autonomy in income	0.563	0.025	384	0.669	0.024	384	-0.107	**0.002**
Self-efficacy	0.404	0.025	384	0.432	0.025	384	-0.029	0.422
Attitudes about domestic violence	0.451	0.025	384	0.346	0.024	384	0.104	**0.003**
Input in livelihood decisions	0.849	0.018	384	0.672	0.024	384	0.177	**<0.001**
Ownership of land and other assets	0.992	0.004	384	0.849	0.018	384	0.143	**<0.001**
Access to and decisions on credit	0.828	0.019	384	0.779	0.021	384	0.049	0.085
Control over use of income	0.833	0.019	384	0.633	0.025	384	0.201	**<0.001**
Work balance	0.737	0.024	339	0.196	0.021	372	0.541	**<0.001**
Visiting important locations	0.672	0.024	384	0.750	0.022	384	-0.078	**0.017**
Group membership	0.807	0.020	384	0.862	0.018	384	-0.055	**0.041**

3.2.4 Pro-WEAI Scores for Lyantonde District

In Lyantonde, the aggregate pro-WEAI score for women is 0.72, based on a 3DE score of 0.70 and a GPI of 0.85 (see Table 11). Only 30% of women and 51% of men were empowered. Disempowered women had a mean adequacy score of 0.57, while disempowered men scored 0.62. Gender parity was achieved in 48% of households, with a 29% average empowerment gap between women and their male counterparts.

Table 11: pro-WEAI Results – Lyantonde District

Indicator	Women	Men
Number of observations	380	355
3DE score	**0.7**	**0.82**
Empowerment score	0.65	0.74
% achieving empowerment	0.3	0.51
Mean 3DE score for not yet empowered	0.57	0.62
Number of dual-adult households	350	
Gender Parity Index (GPI)	**0.85**	
% achieving gender parity	0.48	
Average intra-household inequality score	0.09	
Empowerment gap	0.29	
Pro-WEAI	**0.72**	

Contributions of Each Indicator to Disempowerment in Lyantonde District

As in Katakwi District, the results show that in Lyantonde, women were more disempowered than men. The largest contributors to disempowerment for women are work balance, attitudes towards domestic violence, mobility, self-efficacy, and group membership. The largest contributors to disempowerment for men are self-efficacy, work balance, autonomy in decision making, and mobility. Work balance, mobility and self-efficacy are larger contributors to disempowerment for women compared to men. Women mentioned how men were engaged in gambling games, alcoholism, and had abandoned their child-rearing roles. One of the women stated, "We don't have empowered men in our villages because they are always on gambling games" (FGD with women, Mpumudde, Lyantonde). Another added, "They are not empowered because they always stay in bars and don't look after their children, and it's like we are men in the family" (FGD with women, Mpumudde, Lyantonde). See Figure 6 for details.

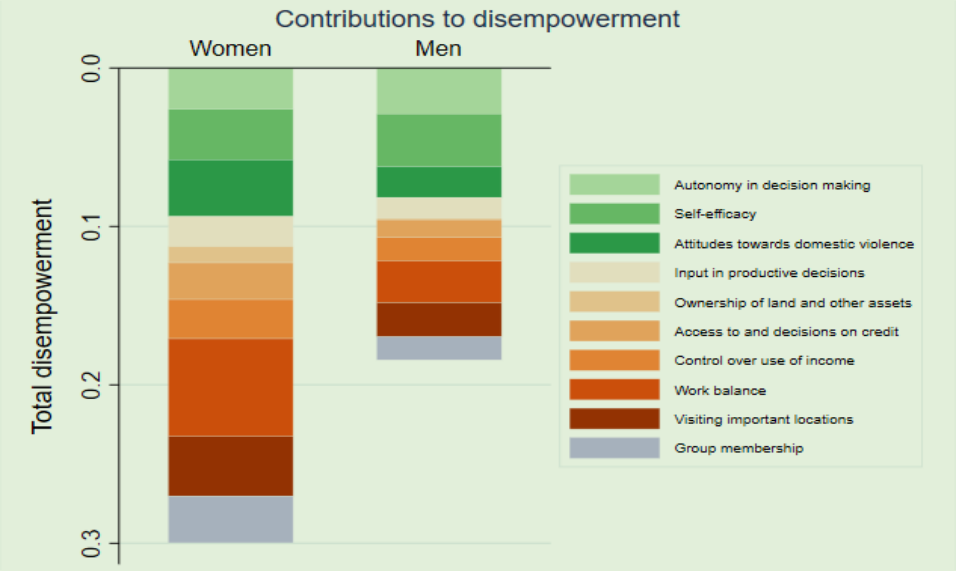

Figure 6: Contributions of Each Indicator to Disempowerment - Lyantonde

Indicator Adequacy for Men and Women in Lyantonde District

Table 12 shows the proportion of men and women who reach adequacy for each of the 10 indicators, in Lyantonde District. Generally, larger percentages of men are adequate in 8 out of 10 indicators, as compared to women. These differences are statistically significant (at the 5% level) for 7 out of the 8 indicators. A larger percentage of women were significantly more adequate than men for 2 indicators (autonomy in income and self-efficacy).

Larger percentages of men (99%) and women (90%) were adequate on asset ownership (although men were more so). A female respondent from Mpumudde highlighted the importance of financial resources and land ownership for empowerment highlighting the value of economic ability and independence: "I believe if I get more money and land to cultivate more crops and buy more domestic animals, I will be able to become a powerful woman" (FGD Women, Mpumudde). Another female participant observed that "men who are well-off financially due to successful farming ventures and those who prioritise the education of their children are looked up to. Their ability to invest in their family's future through education demonstrates foresight and dedication" (FGD Women Mpumudde in Lyantonde). A large percentage of both men (84%) and women (81%) were adequate on input in livelihood decisions. Significant percentages of both men and women were inadequate in self-efficacy (men more so). A paltry percentage of women (13%) were adequate on the work balance indicator, unlike the men (55%).

Table 12: Adequacy for Men and Women in Lyantonde District

Indicator	Men(N=385)		Women(N=385)		t-test	
	Mean	SE	Mean	SE	Mean differences	p-value
Autonomy in income	0.608	0.025	0.719	0.023	-0.112	**0.001**
Self-efficacy	0.488	0.026	0.623	0.025	-0.135	**<0.001**
Attitudes about domestic violence	0.730	0.023	0.582	0.025	0.148	**<0.001**
Input in livelihood decisions	0.839	0.019	0.808	0.020	0.031	0.257
Ownership of land and other assets	0.992	0.004	0.896	0.016	0.096	**<0.001**
Access to and decisions on credit	0.852	0.018	0.761	0.022	0.091	**0.001**
Control over use of income	0.821	0.020	0.738	0.022	0.083	**0.005**
Work balance	0.546	0.026	0.132	0.017	0.415	**<0.001**
Visiting important locations	0.717	0.023	0.590	0.025	0.127	**<0.001**
Group membership	0.829	0.019	0.660	0.024	0.169	**<0.001**

Overall, pro-WEAI index shows that women are more disempowered than men in both study sites, with a significant empowerment gap (28%). Across the districts, the contributors to disempowerment among women are work balance, attitudes towards domestic violence, self-efficacy, mobility, and control over the use of income. These findings call for empowerment initiatives to address inequalities and promote inclusivity by ensuring that marginalised or underprivileged groups have the tools and opportunities needed to advance themselves. Qualitative findings further clarified the underlying drivers and insights behind the numbers in the two districts.

3.3 Well-being Outcomes

Data were collected on the respondent's well-being outcomes with a focus on access to and ownership of productive resources (assets), food security, and nutrition.

3.3.1 Access to and Ownership of Productive Resources

On access to productive resources, there was a significant difference between women and men's ownership of productive resources. The most productive resources such as land and livestock (large animals) were owned by men (see Table 13).

Table 13: Individual Ownership of Different Assets by District and Sex

Individual ownership	Katakwi					Lyantonde				
	Male (n=384)		Female (n=384)			Male (n=385)		Female (n=385)		
	No.	%	No.	%	p-value	No.	%	No.	%	p-value
Agricultural land (acres)	326	84.9	219	57	**<0.001**	376	97.7	235	61	**<0.001**
Hoe	380	99	316	82.3	**<0.001**	382	99.2	330	85.7	**<0.001**
Ox-plough	167	43.5	103	26.8	**<0.001**	1	0.3	0	0	0.317
Small tractor	1	0.3	0	0	0.317	0	0	0	0	
Axe	208	54.2	142	37	**<0.001**	223	57.9	152	39.5	**<0.001**
Panga	299	77.9	186	48.4	**<0.001**	374	97.1	290	75.3	**<0.001**
Sickle	213	55.5	173	45.1	**0.004**	67	17.4	47	12.2	0.042
Chemical sprayer	57	14.8	28	7.3	**0.001**	112	29.1	63	16.4	**<0.001**
Mechanical water pump	1	0.3	0	0	0.317	0	0	0	0	
Motorised water pump	1	0.3	0	0	0.317	0	0	0	0	
Traditional processing equipment	103	26.8	182	47.4	**<0.001**	74	19.2	111	28.8	**0.002**
Improved processing facilities	5	1.3	5	1.3	1	0	0	3	0.8	0.083
Cattle	235	61.2	151	39.3	**<0.001**	111	28.8	68	17.7	**<0.001**
Goats	222	57.8	167	43.5	**<0.001**	186	48.3	131	34	**<0.001**
Sheep	186	48.4	136	35.4	**<0.001**	18	4.7	10	2.6	0.124
Poultry and other small animals	319	83.1	251	65.4	**<0.001**	242	62.9	199	51.7	**0.002**
Pigs	172	44.8	115	29.9	**<0.001**	105	27.3	96	24.9	0.460
Honey bees (hives)	25	6.5	8	2.1	**0.002**	19	4.9	5	1.3	**0.004**
Fishing pond or fishing equipment	20	5.2	5	1.3	**0.002**	0	0	1	0.3	0.317
Non-farm business equipment	79	20.6	46	12	**0.001**	70	18.2	72	18.7	0.853
House or building	301	78.4	225	58.6	**<0.001**	351	91.2	235	61	**<0.001**
Small consumer durables (radio, cookware)	124	32.3	91	23.7	**0.008**	233	60.5	137	35.6	**<0.001**
Means of transportation (bicycle, motorcycle, car)	198	51.6	124	32.3	**<0.001**	204	53	114	29.6	**<0.001**
Means of communication (mobile phone)	229	59.6	134	34.9	**<0.001**	300	77.9	264	68.6	**0.003**
Television	6	1.6	1	0.3	0.058	102	26.5	65	16.9	**0.001**
Improved charcoal/wood stove	14	3.6	16	4.2	0.710	13	3.4	32	8.3	**0.004**
Kerosene stove	0	0	0	0		0	0	2	0.5	**0.157**
Leather bed	0	0	0	0		10	2.6	1	0.3	**0.006**
Wooden bed	176	45.8	104	27.1	**<0.001**	334	86.8	231	60	**<0.001**
Sofa set	2	0.5	2	0.5	1	50	13	27	7	**0.006**
Metal bed	12	3.1	5	1.3	0.086	11	2.9	4	1	0.068
Modern table/chair	33	8.6	29	7.6	0.596	20	5.2	29	7.5	0.184
Passenger car/track	0	0	0	0		2	0.5	0	0	0.157
Micro energy (solar, hydro)	10	2.6	6	1.6	0.312	133	34.5	49	12.7	**<0.001**

3.3.2 Access to and Control over Credit

Access to credit in both Lyantonde and Katakwi districts is essential for supporting the livelihoods of farmers, particularly in the face of climate shocks. Farmers primarily rely on informal sources of credit, such as money lenders *(kafuna)* and Village Savings and Loan Associations (VSLAs). While VSLAs are preferred due to their lower interest rates and communal benefits, they are limited in the amounts they can lend, often insufficient for large agricultural investments. Formal financial institutions, such as banks and microfinance institutions, are often too far and cumbersome for most farmers, and their high interest rates and strict collateral requirements further exclude many, especially women. Barriers to credit access include lack of collateral, high interest rates, financial illiteracy, and fear of loan repayment failure, which discourage farmers from seeking formal loans. This financial exclusion impedes the ability to adapt to climate change and diversify income sources.

3.3.3 Food Security

Food security entails people's physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences. In the study, food security was measured by eight indicators. These indicators constituted the Food Insecurity Experience Scale (FIES). To better understand and support improvements in food security across the study sites, an FIES module was administered to respondents. This tool helps capture various aspects of people's experiences with food access over the past 12 months. It focused on situations such as the ability to access sufficient food, maintain regular and diverse meals, and eat healthy and nutritious foods. The module also explored challenges related to food access, such as financial or resource constraints. By identifying the range and frequency of these experiences, the assessment provides a valuable foundation for designing effective interventions to enhance food security. The eight key situations explored are outlined below:

1. Worried about not having enough food to eat
2. Unable to eat healthy and nutritious food
3. Ate only a few kinds of food
4. Skipped a meal
5. Ate less than the expected
6. Ran out of food
7. Hungry but did not eat due lack of food
8. Went without eating for a whole day

The analysis first considered the total number of situations highlighted. If an individual experienced all the eight situations, they would have a total score of 8 while those who did not experience any of the situations would score 0. Individuals with 0 score were considered food secure while those with score 8 had severe food insecurity. Table 14 shows that 53.4% of the respondents from Katakwi had a score of 8 (severe food insecurity) as compared to 22.9% from Lyantonde. A larger percentage (10.4%) from Lyantonde had a score of 0 (food secure) as compared to 4.2% from Katakwi.

Table 14: The Incidence of Food Insecurity Situations by District

Number of situations	Katakwi		Lyantonde		Total	
(Scores)	**No.**	**Col %**	**No.**	**Col %**	**No.**	**Col %**
0	32	4.2	80	10.4	112	7.3
1	9	1.2	33	4.3	42	2.7
2	23	3	27	3.5	50	3.3
3	20	2.6	66	8.6	86	5.6
4	39	5.1	63	8.2	102	6.6
5	51	6.6	93	12.1	144	9.4
6	65	8.5	95	12.3	160	10.4
7	119	15.5	137	17.8	256	16.6
8	410	53.4	176	22.9	586	38.1
Total	**768**	**100**	**770**	**100**	**1538**	**100**

Disaggregating the scores by sex and district, the results indicate that more female respondents (55.7%) had a score of 8 as compared to male respondents (51%), in Katakwi District. In Lyantonde District, it was interesting to observe that more female respondents (13%) as compared to male respondents (7.8%) reported a score of 0 (see Table 15).

Table 15: Incidence of Food Insecurity Situations Experienced by Sex and District

	Katakwi				Lyantonde			
Number of situations	**Male**		**Female**		**Male**		**Female**	
(scores)	**No.**	**Col %**	**No.**	**Col %**	**No.**	**Col %**	**No.**	**Col %**
0	15	3.9	17	4.4	30	7.8	50	13
1	5	1.3	4	1	11	2.9	22	5.7
2	14	3.6	9	2.3	10	2.6	17	4.4
3	14	3.6	6	1.6	38	9.9	28	7.3
4	18	4.7	21	5.5	33	8.6	30	7.8
5	29	7.6	22	5.7	50	13	43	11.2
6	36	9.4	29	7.6	45	11.7	50	13
7	57	14.8	62	16.1	80	20.8	57	14.8
8	196	51	214	55.7	88	22.9	88	22.9
Total	**384**	**100**	**384**	**100**	**385**	**100**	**385**	**100**

The scores were then categorised as: 0 = Food secure, 1-3 = Low food insecurity, 4-6 = Moderate food insecurity, and 7-8 = Severe food insecurity. With these categories, we observe that Lyantonde had a higher percentage of food-secure respondents (10.4%) as compared to Katakwi (4.2%). Katakwi had 68.9% respondents reporting severe food insecurity (see Table 16), which is much higher than the 40.6% in Lyantonde.

Table 16: Food Insecurity Status by District

	Katakwi		Lyantonde		Total	
Categories	**No.**	**Col %**	**No.**	**Col %**	**No.**	**Col %**
Food secure	32	4.2	80	10.4	112	7.3
Low insecurity	52	6.8	126	16.4	178	11.6
Moderate insecurity	155	20.2	251	32.6	406	26.4
Severe insecurity	529	68.9	313	40.6	842	54.7
Total	**768**	**100**	**770**	**100**	**1538**	**100**

With further disaggregation by sex, in Katakwi District, a higher percentage of female respondents (71.9%) reported severe food insecurity as compared to male respondents (65.9%). In Lyantonde, it was the reverse with more male respondents (43.6%) reporting severe insecurity as compared to female respondents (37.7%) – as shown in Figure 7 below.

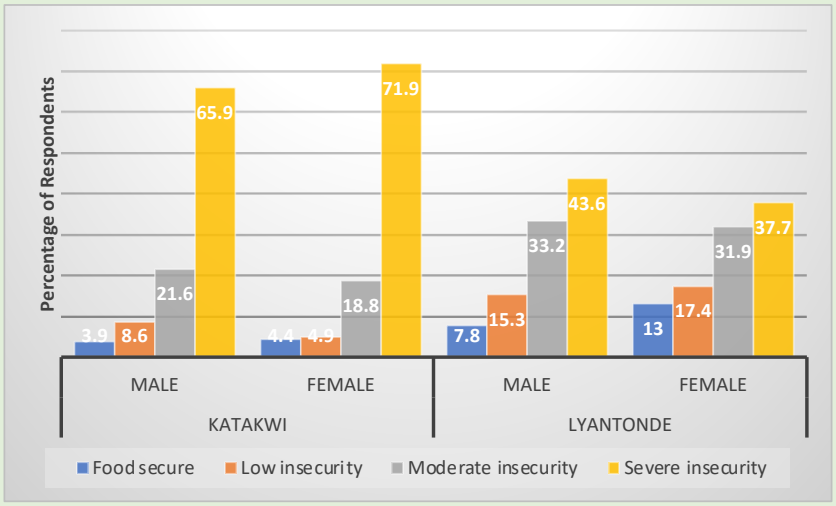

Figure 7: Food Insecurity Status by District and Sex

Across the different sub-counties in the two districts, more women than men were more likely to report severe food insecurity. In Katakwi District, Magoro Sub-county had the largest percentage of respondents with severe insecurity (77.6%), followed by Ngariam (66.7%), Kapujan (65.6%) and Usuk (65.6%). In Lyantonde District, Lyakajura Sub-county had the largest percentage of respondents with severe insecurity (51.6%), followed by Mpumudde (38.5%), Lyantonde rural (37.5%), and Kinuuka (35.1%).

Overall, a large proportion of the respondents reported that they were either moderately or severely food insecure (81%) compared to those who reported to be food secure (19%). Katakwi had a higher percentage of respondents (89%) who reported moderate or severe food insecurity compared to Lyantonde (73.2%).

3.3.4 Nutrition

Nutritional status reflects the body's intake and use of essential nutrients, as evidenced by physical, biochemical, and functional indicators (Gurinovic, 2016). While a comprehensive assessment includes diet, anthropometry, lab tests, and clinical signs, this study assessed nutritional status based on household food consumption over the seven days preceding the survey. Most respondents in Katakwi (96.1%) and Lyantonde (99.4%) consumed starchy foods. Many also ate vegetables, fruits, and legumes, while fewer consumed animal-based foods such as meat, eggs, and fish (see Table 17).

Table 17: Food Eaten During Last 7 Days by District

Food eaten during last 7 days	Katakwi (n=768)		Lyantonde (n=770)		Total (n=1538)	
	No.	Col %	No.	Col %	No.	Col %
Starchy/carbohydrate	738	96.1	765	99.4	1503	97.7
Any vegetables	711	92.6	657	85.3	1368	88.9
Any fruits	521	67.8	599	77.8	1120	72.8
Any meat	352	45.8	259	33.6	611	39.7
Any eggs	181	23.6	181	23.5	362	23.5
Any fresh or dried fish	389	50.7	128	16.6	517	33.6
Legumes	656	85.4	742	96.4	1398	90.9
Any dairy products	431	56.1	565	73.4	996	64.8
Any foods made with oil, animal fat or butter	275	35.8	326	42.3	601	39.1
Any sugar or honey	415	54	320	41.6	735	47.8

Overall, the majority of the respondents, both female and male, reported having eaten starchy/ carbohydrate foods (cassava, potatoes, sweet potatoes, yams, bananas, millet, maize), legumes, and vegetables (amaranthus, cabbage, kale, moringa). These are common agricultural crops grown in these areas.

3.4 Measuring Resilience by District and Sex

3.4.1 Shock Exposure

Resilience is defined 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 chronic vulnerability and promotes inclusive growth (USAID, 2022). Qualitative interviews revealed that communities view resilience as multidimensional, involving mitigation, adaptation, and recovery. Mitigation strategies include crop diversification, livestock rearing, and securing reliable water sources. Adaptation strategies focus on adjusting daily practices such as reducing food intake or withholding crops from market sales to secure household food. Recovery is defined as the ability of households to meet basic needs despite climate challenges, with men emphasising external strategies such as crop diversification and infrastructure, while women stress household cooperation and resourcefulness. Gender differences in resilience definitions highlight distinct roles. Men focus on community-level actions and structural preparedness, while women prioritise family survival strategies and internal household management.

Findings show that households in Katakwi face an average of five shocks annually, compared to three in Lyantonde (see Table 18). In Katakwi, Ngariam Sub-county reports the highest average (six shocks), while Usuk reports the lowest (four). In Lyantonde, shocks are more evenly distributed, with Lyantonde and Lyakajura sub-counties averaging about three shocks each.

Table 18: Average Number of Shocks Experienced in Past 12 Months by District and Sub-county

Sub-county	n	mean	SD	median	min	max
Katakwi						
Usuk	96	4.3	2.5	4	1	13
Magoro	96	5.2	3.5	4	1	14
Kapujan	96	4.8	3.1	5	0	12
Ngariam	96	6	3.5	6	1	15
Total	**384**	**5.1**	**3.2**	**5**	**0**	**15**
Lyantonde						
Lyakajura	96	2.6	2	2	0	8
Lyantonde	96	2.8	2.2	2	0	9
Kinuuka	97	2.5	1.8	2	0	8
Mpumudde	96	2.5	1.7	2	0	8
Total	**385**	**2.6**	**1.9**	**2**	**0**	**9**

Drought was the most reported shock (73.7%), followed by heat stress (41.4%), crop pests (32.9%), floods (30.7%), and crop disease (30.4%), as shown in Table 18. This highlights the dominance of climate-related shocks among women smallholder farmers. This pattern was consistent across districts. Qualitative interviews identified specific challenges such as banana diseases like *Todura*, livestock diseases (e.g., foot and mouth), and flooding in lowland areas such as Kapujan near Lake Bisina. Loss of indigenous crops such as cassava has worsened climate impacts. Women bear the brunt of these effects due to their central role in farming and food security, while men's involvement in domestic duties remains limited. Deforestation and wetland degradation were

cited as major contributors to reduced rainfall and more frequent extreme weather.

Among non-climate shocks, the most reported was sickness of a family member (25.6%), followed by disease outbreaks (17.7%), price fluctuations (14.3%), and theft of livestock or crops (13.3%). These shocks were more prevalent in Katakwi, where 30.5% reported family illness and 32% reported disease outbreaks.

Table 19: Distribution of Households Experiencing Various Shocks in the Past 12 Months by District

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Shock / stressor	**No.**	**%**	**No.**	**%**	**No.**	**%**
Excessive rains/floods	129	33.6	107	27.8	236	30.7
Variable rains/ drought	323	84.1	244	63.4	567	73.7
Landslides/soil erosion	30	7.8	13	3.4	43	5.6
Hail storms/hailstones	90	23.4	35	9.1	125	16.3
Increased number of hot days / heat stress	214	55.7	104	27	318	41.4
Crop disease	142	37	92	23.9	234	30.4
Crop pests	161	41.9	92	23.9	253	32.9
Livestock diseases	153	39.8	55	14.3	208	27
Livestock pests	52	13.5	18	4.7	70	9.1
Price fluctuations of agricultural products	77	20.1	33	8.6	110	14.3
Increased prices of agricultural inputs	17	4.4	25	6.5	42	5.5
Loss of land/rental property	12	3.1	2	0.5	14	1.8
Death of household member	33	8.6	11	2.9	44	5.7
Human disease outbreaks	123	32	13	3.4	136	17.7
COVID-19 response measures e.g. lockdown	0	0	1	0.3	1	0.1
Theft of livestock/crops	77	20.1	25	6.5	102	13.3
Sickness of family member	117	30.5	80	20.8	197	25.6
Insecurity (invasion from Karimojong)	92	24	0	0	92	12
Reduction in crop yields	93	24.2	49	12.7	142	18.5
Reduction in livestock productivity	1	0.3	7	1.8	8	1
Low quality of forages	1	0.3	0	0	1	0.1
Increase in costs of production	4	1	0	0	4	0.5

Qualitative interviews revealed that communities faced multiple climate shocks between 2018 and 2024. Respondents noted unusually hot days in 2020, prolonged droughts from May–October in 2021 and March–September in 2022, and heavier rains in 2023, with a dry spell in July. In 2024, rains began unusually early, disrupting the typical dry season. Farmers in Kinuuka Sub-County, Lyantonde, added that sandy soils worsen climate impacts by limiting water retention. The voices below are representative of these experiences:

> *good at all and it's mostly associated with prolonged drought. Our soils are like sieve/filter in that even if it heavily rains, the soils don't have any water holding capacity and thus in two to three days, the soils are dry. With such a nature of the soils, I think we need much rainfall which doesn't happen. However, in this previous year (2023), it has heavily rained but all the previous years have been associated with prolonged droughts. With such, you can at times find that coffee bears flowers but doesn't develop a seed inside the fruit and it is due to the prolonged drought." (IDI, male, Kanuuka in Lyantonde)*
>
> *"In this community, there is prolonged sunshine causing dry spell that destroyed our crops and only little could be harvested. At times there occurs strong winds, if not hailstones damaging food and sometimes floods which can cover the whole ground causing crops to rot in the gardens. Sometimes caterpillars are common that destroy crops in the plantations. Besides, there are also pests and diseases like cassava mosaic which happened sometime back and destroyed our indigenous cassava locally known as Ebwanaterak. This cassava was yielding very well; just a small portion was enough to push the family for more than two years and it was better than this new variety that we have now." (IDI, male, Usuk in Katakwi).*

The voices above reflect the severe climate-related challenges facing agriculture, including prolonged droughts, water scarcity, poor soils, and unpredictable weather. Extreme events – strong winds, hailstones, floods – along with pests, diseases, and declining traditional crop varieties such as ***Ebwanaterak*** cassava, have reduced yields and increased vulnerability. These issues highlight the urgent need for adaptive strategies to protect livelihoods and food security.

Key causes of climate change mentioned include deforestation, wetland degradation, poor farming practices, and factory pollution. Trees are cut for charcoal and farming, especially on small plots, reducing rainfall and leaving crops exposed to wind damage. Wetland clearing further worsens drought conditions. A respondent had this to say:

> *"...on the issue of the trees, it is the people who degraded the environment as people cut down trees for burning charcoal. You find a person had cut more than 20 trees and remember trees are very key in rainfall formation. And so, once trees are cut, strong winds get chances of coming; sunshine begins to hit us more. But when people learnt and started planting trees and right now in almost every one's land you find a tree, that's why you see that some climatic conditions started to reduce." (FGD, male, Lyakajura in Lyantonde)*

3.4.2 Shock Exposure Index

To assess women farmers' vulnerability, a shock exposure index was developed by combining shock incidence with perceived severity. Severity was based on the shock's impact on income and food consumption, rated from 1 (no impact) to 5 (worst ever).

The two scores were summed (range: 2–10) and used to weight each shock experienced (1 = yes, 0 = no). The resulting index ranges from 2 to 230, reflecting both exposure and severity across all shocks.

The findings presented in Table 20 reveal that Katakwi had a higher shock exposure index of 34.6% compared to Lyantonde's 16.8%. At the sub-county level, in Katakwi, Ngariam had the highest index of 39.1% and Usuk had the lowest index of 29.1%. In Lyantonde, Lyantonde Sub-county had the highest index of 17.2% and Lyakajura the lowest of 16.8 %.

Table 20: Shock Exposure Index by District and Sub-county

Sub-county	n	Mean	SD	Median	Min	Max
Katakwi						
Usuk	96	29.1	17.7	26.5	4	80
Magoro	96	36.5	24.3	30	2	86
Kapujan	95	33.5	21.9	32	6	94
Ngariam	96	39.1	22.5	36	6	92
Total	**383**	**34.6**	**22**	**30**	**2**	**94**
Lyantonde						
Lyakajura	91	16.8	10.6	13	4	52
Lyantonde	93	17.2	11.6	14	2	64
Kinuuka	93	16.2	9.3	14	2	50
Mpumudde	89	17	8.4	16	6	46
Total	**366**	**16.8**	**10**	**14**	**2**	**64**

According to the qualitative interviews, respondents reported several ways in which exposure to shocks has affected their livelihoods. For instance, climate shocks resulted in crop failure and death of animals caused by drying of the crops in the field, the strong winds uprooting some of the crops and the drying up of the water sources. We note such experiences from respondents:

> *"Now, like this season, I have not got anything. I first planted then they failed even to germinate from the soil because of the sun being too much and the little that had germinated, when the rain came, it was too much and it was destroyed. For the tomatoes, they were all burnt by sunshine." (IDI, male, Lyantonde rural in Lyantonde)*
>
> *"Sometimes the dry season can be too long and you find we have planted our crops and they all dry up or the rain takes long to come, and when it starts, it is too much and at the end destroys all our crops. Now, when the sun is too much, we lack water in this area, you find that we are using dirty water from the dam. Normally, that water is not safe; it causes diseases; sometimes children get problems; sometimes you find the animals also dying; the gardens dry up; and then that causes poverty. This is because when you expect to plant and get some money on time, the drought comes, so, poverty comes. Remember our money comes from farming and due to that, we fail to get it. Majorly, those are the challenges we are facing due to climate change." (IDI, female, Mpumudde in Lyantonde)*

Due to crop failure, households experience food insecurity and loss of income which leads to poverty. On the other hand, the food insecurity in the region has exacerbated the occurrence of insecurity by the Karimojong who attack residents in Katakwi to get food.

Views on the gendered impact of climate shocks were mixed. Some respondents saw no difference, while others noted that women are more affected. As primary farmers and those responsible for household food, women's livelihoods are especially vulnerable. The excerpt below reflects this perspective:

> *"Most women are greatly affected by climate change more than men, because most women here are predominantly farmers. The men here also do not normally take care of their children. So, all the financial burden falls more on us as women because we have to make sure our crops grow well so that we get money." (FGD, female Lyakajura, Lyantonde)*

Some men noted that climate change affected genders differently. When there was scarcity of water it affected women more than men because it was mainly the women who fetched water, while the men suffered looking for pasture for the cattle. On the other hand, some men had the opinion that climate change affected the men more than the women because in the case of a drought that resulted in scarcity of water, men had to travel long distances to fetch water for home use and also look for food to feed the family. One respondent said:

> *"...most men in case of hunger/famine within the community, the woman remains with only informing you and when you reach home she tells you there is no water and you know you fetch it from far miles (distances), you ride the bicycle to go fetch water but immediately you reach back home she tells you the children, as you can see them, have empty stomachs, their stomachs have fallen into their backs, and again you get the bicycle and ride to where they have informed you about the presence of cassava and when you reach where cassava is, at times you get it but other times things fail and by the time you reach home, you have a frowned face (stressed up)." (FGD, male, Lyakajura in Lyantonde)*

On the other hand, women noted with concern that climate change shocks affected them more than men. This was attributed to most men abandoning their home responsibilities such that in most homes, it was the women who had to ensure there was household food security and provide other basic needs to their children such as clothes and school fees.

> *"For us as women, our responsibility outweighs that of the men as the men relinquished all form of domestic responsibility, so it is the women that take up both manly and woman roles even when you have a man in the house. We work to sustain the family, look for children's school fees. The men simply come to sleep. That's why you find women taking up casual labour jobs." (FGD with women, Lyantonde rural in Lyantonde)*

Overall, the findings underscore the severe impact of climate shocks on both crop production and animal health, leading to food insecurity, loss of income, and increased poverty. Prolonged droughts, excessive sunshine, and erratic rainfall patterns result in crop failures, while water shortages, often worsened by strong winds, floods, and pests, exacerbate these challenges. Climate instability also affects gender dynamics, with many women shouldering the responsibility of farming to ensure household food security, as men are less involved in domestic duties. Women face a double burden, managing both productive and domestic tasks. These climate-induced challenges also contribute to broader social issues, including increased hunger, health problems, and social unrest, as evidenced by the growing insecurity in Katakwi. The disparity in gender roles and the additional pressures on women highlight the need for targeted interventions that address both environmental and gender inequalities.

3.4.3 Ability to Recover

A major component of measuring the resilience of individuals or communities is to assess their level of recovery from a shock. In the survey, respondents were asked to report their ability to recover from the shock using four parameters:

1. Same as before the shock,
2. Worse than before the shock,
3. Better than before the shock, and
4. No longer able to either produce the crop or meet food needs or meet household expenditure.

The findings presented in Table 21 show distinct differences between the two districts regarding recovery from a shock in the three dimensions of: production, food consumption, and household expenditure which is a proxy for household income. In Katakwi District, for most of the women, the recovery is ***worse than before the shock*** in

all the three dimensions with 40%, 36% and 39% in producing the same crop, meeting food needs, and meeting household expenditure in the subsequent year, respectively. The second most reported status of recovery from a shock is *same as before the shock* at 25%, 24% and 22% in producing the same crop, meeting food needs, and meeting household expenditure in the subsequent year, respectively.

In Lyantonde District, most of the women recover *same as before the shock* with 60%, 56% and 52% in producing the same crop, meeting food needs, and meeting household expenditure in the subsequent year, respectively. The second most frequently reported recovery is *worse than before the shock* at 35%, 40% and 43% in producing the same crop, meeting food needs, and meeting household expenditure in the subsequent year, respectively. Therefore, in view of the findings on the levels of recovery from a shock, Katakwi District appears to be more vulnerable than Lyantonde District.

Table 21: Ability to Recover by District

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Parameter	**No.**	**%**	**No.**	**%**	**No.**	**%**
Ability to continue producing the same crops in the next year						
Same as before shock	97	25.3	230	59.7	327	42.5
Worse than before the shock	154	40.1	134	34.8	288	37.5
Better than before the shock	76	19.8	9	2.3	85	11.1
No longer able to produce the same crops	57	14.8	12	3.1	69	9
Ability to meet your food needs in the next year						
Same as before shock	93	24.2	214	55.6	307	39.9
Worse than before the shock	139	36.2	156	40.5	295	38.4
Better than before the shock	77	20.1	8	2.1	85	11.1
No longer able to meet food needs	75	19.5	7	1.8	82	10.7
Ability to meet your household expenditure in the next year						
Same as before shock	83	21.6	202	52.5	285	37.1
Worse than before the shock	151	39.3	166	43.1	317	41.2
Better than before the shock	73	19	8	2.1	81	10.5
No longer able to meet household expenditure	77	20.1	9	2.3	86	11.2

At sub-county level in Katakwi, Usuk, Magoro, and Ngariam show similar patterns (see Table 22). Most women recover *worse than before the shock*, especially in crop production (Ngariam 55%, Usuk 40%, Magoro 41%). In contrast, 33% of women in Kapujan recover *better than before the shock*. For food needs and household spending, most women in Usuk, Magoro, and Ngariam also recover *worse than before the shock*. Overall, Usuk and Ngariam show greater vulnerability in production, while resilience in Kapujan is more balanced across all three dimensions.

Table 22: Ability to Recover by Sub-county in Katakwi

	Usuk (n=96)		Magoro (n=96)		Kapujan (n=96)		Ngariam (n=96)	
Parameter	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Ability to continue producing the same crops in the next year								
Same as before shock	34	35.4	20	20.8	25	26	18	18.8
Worse than before the shock	39	40.6	38	39.6	24	25	53	55.2
Better than before the shock	11	11.5	17	17.7	32	33.3	16	16.7

	Usuk (n=96)		Magoro (n=96)		Kapujan (n=96)		Ngariam (n=96)	
No longer able to produce the same crops	12	12.5	21	21.9	15	15.6	9	9.4
Ability to meet your food needs in the next year								
Same as before shock	28	29.2	22	22.9	24	25	19	19.8
Worse than before the shock	44	45.8	30	31.3	13	13.5	52	54.2
Better than before the shock	13	13.5	16	16.7	34	35.4	14	14.6
No longer able to meet food needs	11	11.5	28	29.2	25	26	11	11.5
Ability to meet your household expenditure in the next year								
Same as before shock	25	26	20	20.8	22	22.9	16	16.7
Worse than before the shock	47	49	31	32.3	15	15.6	58	60.4
Better than before the shock	13	13.5	14	14.6	34	35.4	12	12.5
No longer able to meet household expenditure	11	11.5	31	32.3	25	26	10	10.4

In Lyantonde District, the sub-counties are homogenous with similar levels of resilience (see Table 23). For instance, for all the three dimensions, many women (at least 48% as the lowest score and 65% as the highest score) recover to the *same* level of production, food consumption and household expenditure *as before the shock*. However, there are more women who recover *worse than before the shock* in all the three dimensions of production, food consumption and household income in Lyakajura and Lyantonde than in Kinuuka and Mpumudde.

Table 23: Ability to Recover by Sub-county in Lyantonde

	Lyakajura (n=96)		Lyantonde (n=96)		Kinuuka (n=97)		Mpumudde (n=96)	
Parameter	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Ability to continue producing the same crops in the next year								
Same as before shock	57	59.4	50	52.1	61	62.9	62	64.6
Worse than before the shock	35	36.5	36	37.5	31	32	32	33.3
Better than before the shock	2	2.1	3	3.1	3	3.1	1	1
No longer able to produce the same crops	2	2.1	7	7.3	2	2.1	1	1
Ability to meet your food needs in the next year								
Same as before shock	49	51	52	54.2	60	61.9	53	55.2
Worse than before the shock	43	44.8	38	39.6	34	35.1	41	42.7
Better than before the shock	2	2.1	1	1	3	3.1	2	2.1
No longer able to meet food needs	2	2.1	5	5.2	0	0	0	0
Ability to meet your household expenditure in the next year								
Same as before shock	46	47.9	46	47.9	56	57.7	54	56.3
Worse than before the shock	46	47.9	41	42.7	39	40.2	40	41.7
Better than before the shock	2	2.1	2	2.1	2	2.1	2	2.1
No longer able to meet household expenditure	2	2.1	7	7.3	0	0	0	0

3.4.4 Coping Strategies

In order to mitigate the impact of shocks on livelihoods, women and men adopt various coping strategies. In the majority of cases, women did nothing to cope with the shocks. When households experienced livestock pests, over half of the women (51.4%) said they acquired a loan, followed by selling the livestock (47%), receiving gifts in kind from friends and relatives (44.3%), and gift of money (40%). Similarly, in the case of

price fluctuation, a sizeable proportion of women said they acquired a loan (34.5%), followed by receiving gifts in kind from friends and relatives (29.1%), and gift of money (25.5%) (see Table 24).

Table 24: Women's Coping Strategies for Major Shocks

	Live-stock pests	Price fluc-tuation	Human disease	Theft of livestock / crops	Sickness of family member	Invasion from Kari-mojong	Reduction in crop yields
Did Nothing	15.7	20.9	5.1	58.8	10.2	54.3	18.3
Took up new/additional work	14.3	17.3	22.8	10.8	20.8	9.8	31
Sold household assets	1.4	1.8	0	0	3	0	0.7
Acquired a loan	51.4	34.5	27.9	18.6	37.1	1.1	12
Received emergency cash transfer from government or NGO	1.4	0	0.7	0	0	0	0
Received a gift in kind from friends or relatives	44.3	29.1	16.2	13.7	14.2	0	4.2
Received a gift of money from friends or relatives	40	25.5	16.2	12.7	13.2	0	2.8
Relied on own savings	17.1	10.9	19.1	3.9	23.9	3.3	12
Received remittances from relatives	0	0	0.7	0	0.5	0	0.7
Reduced household expenditure	17.1	14.5	8.1	5.9	5.6	6.5	4.2
Reduced food consumption	22.9	22.7	8.1	9.8	6.1	6.5	20.4
Did not sell to the market	11.4	16.4	1.5	3.9	2	2.2	28.2
Sent livestock in search of pasture	1.4	0	0.7	1	1	1.1	0
Sold livestock	47.1	26.4	22.8	11.8	26.4	8.7	8.5
Slaughtered livestock	22.9	8.2	1.5	3.9	1	0	0
Took children out of school	0	0	0	2	1	0	0

In the case of human diseases, a large proportion of women cited acquiring a loan (27.9%), followed by taking up additional work (22.8%), and selling livestock (22.8%). For theft of livestock/crops, a sizeable proportion of women did nothing (58.8%), while with sickness of family member, 26.4% sold livestock, followed by relying on own savings (23.9%). With invasion from Karimojong, a large proportion of women reportedly did nothing (54.3%). On reduction in crop yields, women said they did not sell to the market (28.2%), while others (20.4%) reduced consumption (20.4%), and others deployed other copying strategies as shown in Table 25.

The findings indicate that while there were multiple copying strategies to climate change shocks and stressors, the majority of women did nothing to cope with the various shocks.

Table 25: Women's Use of Coping Strategies for Major Shocks

	Excessive rains	Variable rains	Hail-storms	Increased hot days	Crop disease	Crop pests	Livestock disease
Did Nothing	41.5	25.9	57.6	39.6	31.2	32.8	23.1
Took up new/additional work	19.9	28.2	14.4	20.8	16.7	11.5	14.9
Sold household assets	0.4	0.7	0	0.3	0.4	0.4	0
Acquired a loan	11.4	23.6	13.6	19.8	23.1	24.1	29.3
Received emergency food aid from government or NGO	0	0.2	0.8	0	0	0	0
Received emergency cash transfer from government or NGO	0.4	0.2	0	0	0	0	0
Received a gift in kind from friends or relatives	3.8	7.4	11.2	11.6	13.7	12.6	15.4
Received a gift of money from friends or relatives	2.1	6.7	10.4	11.6	15.8	11.5	13.5
Relied on own savings	8.5	18.5	6.4	6.6	12.8	12.6	14.9
Received remittances from relatives	1.3	0.7	0	0.3	0	0.4	0.5
Reduced household expenditure	6.4	10.4	2.4	3.1	8.1	7.5	4.8
Reduced food consumption	13.1	20.5	6.4	5.3	15.8	14.2	9.6
Did not sell to the market	11.4	10.8	3.2	7.5	7.7	7.5	7.2
Sent livestock in search of pasture	0	0.7	0	0.3	0.9	0.4	0.5
Sold livestock	5.1	15	11.2	15.4	17.5	15.4	22.6
Slaughtered livestock	0	0.9	0	0.9	2.1	2.8	7.2
Took children out of school	0.8	0.5	0	0	0.4	0.4	0

The "do nothing" copying strategy mirrors the low resilience capacity of the women in the study site, which calls for support to enhance the resilience capacities. A sizeable percentage of women took additional work in the case of variable rains (28%) and increased hot days (20.4%), while others took up loans in case of livestock and crop diseases (29.3% and 23.1%, respectively) as well as variable rains (23.6%). These and others listed in the table above are not sustainable copying mechanisms.

The study found that farmers in Katakwi and Lyantonde districts were employing various strategies to cope with climate change, such as diversifying income through casual labour, small businesses, and livestock sales, irrigating crops using water from dams and wetlands, and planting drought-resistant or quick-maturing crops. However, challenges persist, including limited financial resources, difficulties repaying loans, and gender disparities in access to resources and decision-making. Women face greater challenges, particularly in securing loans, accessing irrigation, and managing household financial stress.

Qualitative interviews revealed that farmers in Katakwi and Lyantonde adopted various strategies to cope with climate change, including taking up extra work (e.g., farm labour, fetching water), digging water dams, obtaining loans, selling assets, saving, planting trees, quick-maturing or drought-resistant crops, protecting the environment, and reclaiming swamps. While extra work helps supplement income during crop failure, it often leads to neglect of their own farms and delayed wages.

> *"First and foremost, I cannot control these changes when they come. The only way I cope is by doing casual labour in order to look for money for survival, for instance, going to plough in someone else's garden with oxen and you get paid. Lobbying for support from different sources, like recently there was an NGO which had come to the community to support." (IDI, male, Usuk, in Katakwi)*
>
> *"As a farmer, just like I had told you, we usually don't have much at home; so, we must hustle and go for work in other people's gardens and farms for a daily pay locally known as emizizi. So, that's how I am able to get money. So, with that I can get a livelihood for my kids, pay school fees for my kids and survive. But you'll realise that we suffer a lot. Much of the time I would have spent working in my own gardens, I don't because I must work in other people's gardens for the rich people. But even at times, the rich men don't pay us our money, we stay up waiting for our money till late and at times even go home without our money. So, in situations like that, we don't eat anything." (IDI, female, Lyakajura in Lyantonde)*

To mitigate the impact of the drought on the crops, farmers irrigate their crops using water from lakes, dams dug by cattle keepers who freely offer the water to the community. Other farmers use water harvested from the rain which is stored in tanks, while some farmers access water from wetlands. One representative voice noted:

> *"Those things I always hear them to those people who are neighbouring a lake that use irrigation and also one person who dug a dam in the middle of his garden and uses it in irrigation. But for us, we have no water." (Community profile, Lyantonde Rural in Lyantonde).*

The more proactive farmers save money or produce during times of plenty which is used during periods of scarcity such as the drought season. Below are supporting excerpts:

> *"Sometimes, you save money which is not enough or keep food which is not enough. Thus, they get finished before the disasters are over." (IDI, male, Kanuuka in Lyantonde)*
>
> *"Also, for us farmers, we have some cassava planted somewhere, some maize from the last season if it was a good one. Instead of selling and consuming all the harvest, you sell some and keep some, if you have two sacks of beans, you sell one and a half then keep a half at home so that in case the situation becomes hard, and the season fails, you have where to start from other than starting from nothing completely." (IDI, female, Mpumudde in Lyantonde)*

Farmers who are not able to draw from their savings, secure loans from either the bank or savings group which help them to meet household expenditures. These expenditures include basic needs such as food and school fees. However, some of the farmers struggle to pay back the loans. Below is a voice that attests to the practice:

> *"When I go to the financial group and get a loan, it is difficult to pay it back and hence, I sell off the harvests that I had kept for the next season. Sometimes, there is violence in families due to famine because some parents don't care about their children whereby men take women to drink alcohol instead of buying food." (IDI, female, Lyantonde rural in Lyantonde).*

Other farmers mitigated the impact of climate change on their livelihoods by planting drought-resistant seeds, or planting early-maturing plants such as ground nuts, sorghum and beans which can mature before drastic changes in the weather take place. The respondents said:

> *"I had to buy drought-resistant seeds such as sorghum, cassava, and cowpeas. I have also started opening channels for water to avoid water logging; planted few trees around the compound; and started planting greens under the trees and watering them." (IDI, male, Ngariam in Katakwi)*
>
> *"We have tried to plant trees due to the sensitisation in the community but we are still challenged by drought. We are also practising timely planting; as soon as the rains come, we immediately plant crops. We are planting fast-maturing crops like sorghum...as we wait for the late-maturing crops like maize." (IDI, male, Magoro in Katakwi)*

Finally, farmers have diversified their sources of household income such as selling of assets to meet basic needs, while others run small businesses, and others invest in livestock keeping. Below are some of the excerpts that attest to the diversification of household income sources.

> *"The situation affected me. Because I had my goat, I first sold it and later sold my chicken and the situation hit us more because it occurred for a long period. We decided to offer casual labour on the farms of rich people." (FGD male, Lyakajura in Lyantonde)*
>
> *"As I told you, I have a small bar business; so, when the gardens fail me, I get money from the business and use it to run the household needs as we wait for rain to come and we plant another season." (IDI, female, Mpumudde in Lyantonde)*

In the event of a shock, households adopt various coping strategies to ensure they maintain their standard of living or bounce back to their pre-shock consumption levels. Various coping strategies were reported by the respondents which include engaging in alternative sources of livelihoods, joining and obtaining loans from SACCOs, and migrating to places with water or better pasture for the animals.

3.4.5 Adaptive Capacity

Adaptive capacity reflects the ability to adjust to shocks and minimise their impact. Using the TANGO framework, the study measured this through 10 indicators for women and men, including: aspirations/confidence index, bridging and linking social capital, social network index, education, livelihood diversification, information access, adoption of improved practices, asset ownership, and access to financial services.

Overall, the adaptive capacity index for women was 29% lower than for males at 35.8% as shown in Table 26 and Table 27. Women have lower scores in all sub-indices except for bridging social capital where women have a score of 0.8 compared to men who have 0.7. Similarly, women have the same score for availability of financial services with men which is plausible given that it is a community resource. It is noticeable that the gap between women and men is highest with the score for exposure to information where women have a score of 3.1 compared to men who have a score of 4.2. The second highest gap is for the linking social capital which is higher for men at 1.6 compared to women at 1.1.

At district level, women in Katakwi have a higher adaptive capacity score of 31.7% compared to 27% for Lyantonde which is statistically significant at 5%. On the side of men, Lyantonde has a slightly higher score at 35.9% compared to Katakwi with 35.6%. One of the drivers of lower adaptive capacity for women in Katakwi than the men in Katakwi emanates from two sub-indices: lower bridging social capital score of 0.9 for men and 1.2 women. The other driver is the social network index which is lower for men at 2.3 compared to 2.8 for women which is statistically significant.

Table 26: Adaptive Capacity Index and Components, by District - Female

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Indicator	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Adaptive capacity (mean, range 0-100)	31.7[a]	8.6	27[a]	7.6	29.4	8.5
Sub-components						
Aspirations/confidence to adapt/locus of control index (mean, max 13)	8.7[a]	1.7	7.9[a]	1.6	8.3	1.7
Bridging social capital (mean, max 2)	1.2[a]	0.9	0.4[a]	0.7	0.8	0.9
Linking social capital (mean, max 4)	1.3[a]	1.1	0.8[a]	1.1	1.1	1.1
Social network index (mean, max 6)	2.8[a]	1.4	1.5[a]	1.2	2.1	1.5
Education index (mean, max 3)	1.4[a]	0.8	1.6[a]	1	1.5	0.9
Livelihood diversification (mean, max 11)	2.5[a]	1.2	1.9[a]	1	2.2	1.2
Exposure to information (mean, max 18)	3.5[a]	3	2.6[a]	3.9	3.1	3.5
Adoption of improved practices (no., %)	339	88.3[a]	279	72.5[a]	618	80.4
Asset ownership (mean, max 35)	7.7	4.9	7.8	4.1	7.8	4.5
Availability of financial resources (mean, max 2)	0.1[a]	0.3	0.3[a]	0.7	0.2	0.5

[a,b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns. SD = Standard deviation.

Table 27: Adaptive Capacity Index and Components, by District - Male

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Indicator	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Adaptive capacity (mean, range 0-100)	35.6	9.4	35.9	7.9	35.8	8.7
Sub-components						
Aspirations/confidence to adapt/locus of control index (mean, max 13)	8.8	1.8	8.7	1.7	8.7	1.8
Bridging social capital (mean, max 2)	0.9[a]	0.9	0.6[a]	0.8	0.7	0.9
Linking social capital (mean, max 4)	1.7[a]	1.0	1.4[a]	1.1	1.6	1.1
Social network index (mean, max 6)	2.3[a]	1.3	2.8[a]	1.4	2.5	1.4
Education index (mean, max 3)	1.9	0.9	1.8	1	1.9	0.9
Livelihood diversification (mean, max 11)	2.8[a]	1.3	2.2[a]	0.9	2.5	1.2
Exposure to information (mean, max 18)	3.8[a]	3.9	4.5[a]	3.8	4.2	3.9
Adoption of improved practices (no., %)	339	88.3	355	92.2	694	90.3
Asset ownership (mean, max 35)	10.7	3.9	10.7	3.0	10.7	3.5
Availability of financial resources (mean, max 2)	0.1[a]	0.3	0.3[a]	0.7	0.2	0.6

[a] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns. SD = Standard deviation.

Men emphasise shock preparedness through crop diversification, livestock rearing, water access, and food storage. As one male respondent noted, "*A resilient person prepares by growing various crops, rearing animals, and storing harvests*" (FGD, Lyakajura in Lyantonde). Women support these strategies but highlight collective household efforts, including reducing food intake or withholding crops from sale to ensure food security during droughts, as one female respondent explained: "*We reduce the amount of food we eat to get through the drought*" (FGD, Magoro in Katakwi).

Regarding adaptation, both men and women describe resilience as the ability to adapt to adversity, but men highlight the use of technological and material solutions, such as water tanks or irrigation systems. Women emphasise household cooperation and the adaptation of daily practices, such as reducing consumption and managing resources at the household level to ensure survival during difficult times.

While both men and women acknowledge the importance of adapting to and recovering from climate change, their definitions of resilience reflect the different roles they play in the household and community. Men tend to focus on external preparedness and collective action, while women emphasise household resourcefulness and adaptive strategies within the family. These gendered perspectives highlight the need for targeted resilience-building efforts that consider the specific roles and capacities of men and women in adapting to climate change.

3.4.6 Absorptive Capacity

Absorptive capacity comprises of the ability of individuals or households to minimise exposure to shocks or stressors through preventive and appropriate coping strategies to avoid permanent negative effects (TANGO International, 2018). It is constructed from eight indicators including; availability of informal safety nets, bonding social capital index (0-2), access to cash savings, access to remittances, asset ownership index (35 assets), shock preparedness and mitigation (0-3), availability of and access to insurance, and availability of and access to humanitarian assistance.

The findings show low absorptive capacity of women in both study sites established at 25.1 of 100. This means that only 25% of the women in both study sites are able to minimise exposure to climate change shocks and stressors (see Table 28). A higher percentage of women in Katakwi (27%) than Lyantonde (23%) were able to minimise exposure to shocks by putting in place appropriate copying strategies.

Table 28: Absorptive Capacity Index and Components, by District

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Indicator	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Absorptive capacity (mean, range 0-100)	27.1[a]	12	23[a]	9.2	25.1	10.9
Sub-components						
Informal safety nets (mean, max 6)	2.6[a]	1.1	1.4[a]	0.9	2	1.2
Bonding social capital (mean, max 2)	1.4[a]	0.8	1.1[a]	0.9	1.2	0.8
Access to cash savings (no., %)	275	71.6[a]	223	57.9[a]	498	64.8
Access to remittances (no., %)	1	0.3	1	0.3	2	0.3
Asset ownership (mean, max 35)	7.7	4.9	7.8	4.1	7.8	4.5
Shock preparedness and mitigation (mean, max 3)	1.0[a]	0.8	0.6[a]	0.6	0.8	0.8
Availability of / Access to insurance (no., %)	1	0.3[a]	11	2.9[a]	12	1.6
Availability of / Access to humanitarian assistance (no., %)	10	2.6[a]	21	5.5[a]	31	4

[a,b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns. SD = Standard deviation.

3.4.7 Transformative Capacity

Transformative capacity involves the governance systems, policies/regulations, infrastructure, community networks, and formal and informal social protection mechanisms that constitute the enabling environment for systemic change (TANGO International, 2018). Transformative capacity Index is constructed from 12 indicators, namely: availability of/access to formal safety nets; availability of markets within 5km; availability of/ access to communal natural resources; availability

of/access to basic services (roads/trails, primary schools, health services, police/security force, financial services); availability of/access to infrastructure (water, electricity, public telephone, paved road); availability of agricultural extension/ veterinary services; bridging social capital; linking social capital, collective action; social cohesion; local government responsiveness; and gender index.

Interviews with women show low transformative capacity, with the transformative capacity index established at 24.8 out of 100, suggesting a weak environment for systemic change (see Table 29). The findings suggest that Katakwi had a better transformative capacity with an index of 29.1 compared to Lyantonde of 20.4.

Table 29: Transformative Capacity Index and Components, by District

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Indicator	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Transformative capacity (mean, range 0-100)	29.1[a]	10.8	20.4[a]	9.4	24.8	11
Sub-components						
Availability of/access to formal safety nets (mean, max 6)	0.04	0.2	0.04	0.2	0.04	0.2
Availability of markets (mean, max 3)	0.7[a]	0.9	0.4[a]	0.8	0.5	0.9
Availability of/access to communal natural resources (mean, max 4)	1.8[a]	1.3	0.3[a]	0.7	1	1.3
Availability of/access to basic services (mean, max 5)	1.1[a]	1.1	1.4[a]	1.2	1.2	1.1
Availability of/access to infrastructure (mean, max 4)	1.1	0.8	1.1	1	1.1	0.9
Availability of agricultural extension/veterinary services (no., %)	17	4.4[a]	36	9.4[a]	53	6.9
Bridging social capital (mean, max 2)	1.2[a]	0.9	0.4[a]	0.7	0.8	0.9
Linking social capital (mean, max 4)	1.3[a]	1.1	0.8[a]	1.1	1.1	1.1
Collective action (mean, max 10)	0.8[a]	1.4	0.3[a]	0.6	0.5	1.1
Social cohesion (mean, max 5)	2.2[a]	2.1	1.8[a]	1.6	2	1.9
Local government responsiveness (mean, max 6)	3.4	1.1	3.6	0.9	3.5	1.1
Gender index (mean, max 5)	3.1[a]	1.6	3.4[a]	1.4	3.3	1.5

[a,b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns. SD = Standard deviation.

3.4.8 Overall Resilience Capacity

The overall resilience capacity index for the two districts is very low, estimated at 26.4 out of 100 with an observed higher index for Katakwi at 29.3 than Lyantonde at 23.5 which is statistically significant at 5% as shown in Table 30. It is observed that in all the three capacities – absorptive, adaptive and transformative, Katakwi District has higher capacities with the highest difference in the district means in the transformative capacity.

Table 30: Overall Resilience Capacity by District

	Katakwi (n=384)		Lyantonde (n=385)		Overall (n=769)	
Indicator	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Overall resilience capacity (mean, range 0-100)	29.3[a]	9.2	23.5[a]	6.6	26.4	8.5

[a] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns. SD = Standard deviation.

At sub-county level, in Katakwi District, Kapujan and Ngariam have the highest resilience capacity index of 31, followed by Usuk at 27.7 and Magoro at 27.6 as shown in Table 31. In Lyantonde District, Mpumudde and Kinuuka have the highest resilience capacity index of 24.4, followed by Lyantonde rural at 22.8 and Lyakajura at 22.4.

Table 31: Overall Resilience Capacity by Sub-county

District	Sub-county	N	Mean	SD	Median	Min	Max
Katakwi	Usuk	96	27.7	8.7	27.2	11.6	48.2
	Magoro	96	27.6	9.5	27.2	12.2	51.3
	Kapujan	96	31.0	9.7	30.9	11.8	52.6
	Ngariam	96	31.0	8.6	29.3	14.1	49.0
Lyantonde	Lyakajura	96	22.4	7.3	21.5	8.9	51.4
	Lyantonde	96	22.8	7.0	22.7	9.6	52.9
	Kinuuka	97	24.4	5.8	24.4	8.3	37.7
	Mpumudde	96	24.4	5.8	24.2	9.0	40.0
Overall		**769**	**26.4**	**8.5**	**25.3**	**8.3**	**52.9**

3.5 Access to Digital Technology

District profiling showed limited internet access in both Lyantonde and Katakwi, with only district and town council offices connected to the national fibre optic cable. Internet access relies mainly on telecom networks, which are better in urban areas but poor in rural areas (0.5% in Lyantonde, 1% in Katakwi). However, FM radio access is relatively good (73% in Lyantonde, 70% in Katakwi).

In both districts, the largest percentage of the respondents use basic phones for calls, SMS (Short Message Service), USSD(Unstructured Supplementary Service Data) services and FM radio), with Katakwi at 47.5% (where 34.4% of these are women) and Lyantonde at 73.2% (67.5% of them women). Figure 8 below shows the type of mobile phones used by gender to access information in the two districts.

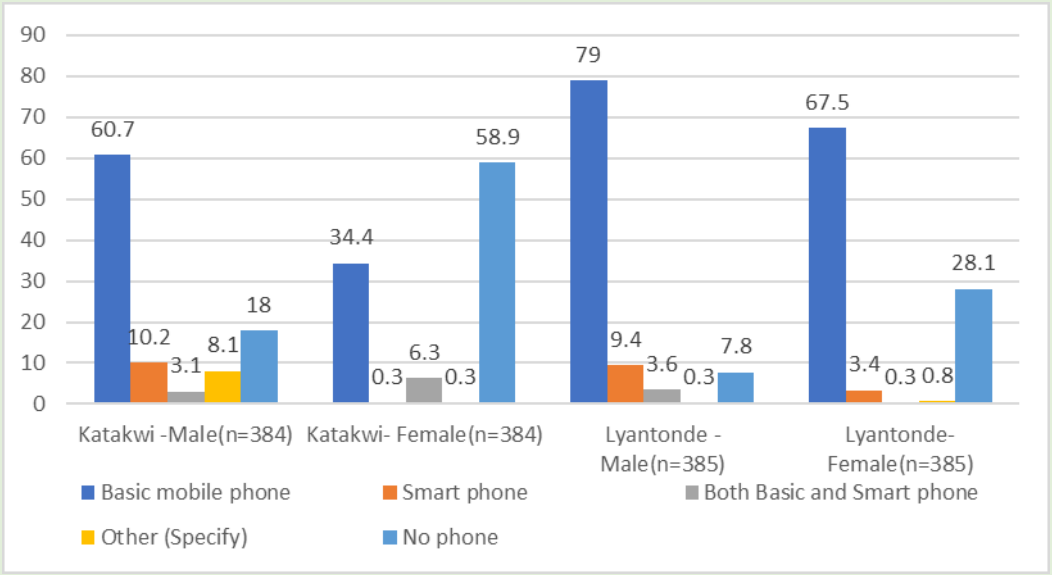

Figure 8: Type of Mobile Phone Used by Gender to Access Information

Access to digital technologies such as mobile phones is no longer a luxury in this digital era. From easing communication to accessing information and edutainment, digital technologies can be important tools for women smallholder farmers in transforming their farming practices to increase yields and their household income. The study assessed the extent to which women and men smallholder farmers accessed, used, and controlled digital technologies and information on weather conditions and agricultural practices in the two districts.

Most of the respondents largely use mobile phones for making calls, SMS messaging, mobile money services and FM radio access across the two districts. The findings presented in Table 32 below show that very few of the respondents (Katakwi: 2.1% men and 0% women, Lyantonde: 1.6% men and 0% women) receive climate information on their mobile phones and also very few use their mobile phones to access internet (Katakwi: 4.7% men and 0.3% women, Lyantonde: 3.6% men and 0.5% women). Indeed, this justifies the need to provide weather information to women smallholder farmers in both districts as one of the interventions to enhance their resilience against climate change shocks.

Table 32: Use of Mobile Device by District and Sex

Use of device	Katakwi		Lyantonde	
	Male(n=384)%	Female (n=384)%	Male (n=385)%	Female (n=385)%
Phone calls	85.7	76.3	92.5	74.5
Mobile money	59.9	27.6	60	30.4
SMS text messaging	45.1	20.8	22.1	21.6
Radio	40.4	26.3	24.4	6
Entertainment (music, videos)	10.9	3.6	3.4	1.3
Payment of bills	8.6	2.3	3.6	1.3
Social media	3.1	0.5	7.3	1
Internet access	4.7	0.3	3.6	0.5
Receive agricultural advisory services	1.6	0.3	2.3	0
Receive climate information	2.1	0	1.6	0
Point Of Sale (POS) services	0.5	0	2.6	0
Payment of group savings	1.6	0.5	0.5	0

Most of the respondents (Katakwi: 78.6% men and 30.7% women, Lyantonde: 91.2% men and 62.6% women) move with their mobile phones (see Table 33), while others are able to use the mobile phone on a weekly basis. This also implies that a mobile phone would be a good channel for sharing weather information to women smallholder farmers in the two districts as they are able to get the information instantly. This study also confirmed the earlier findings on network accessibility during the district profiling.

Table 33: How Often Do You Use Your Device?

How often?	Katakwi		Lyantonde	
	Male(n=384)%	Female (n=384)%	Male(n=385)%	Female(n=385)%
I am with my device all the time	78.6	30.7	91.2	62.6
At least once daily	6.3	21.6	2.6	12.2
At least three times a week	15.1	47.7	6.2	25.2

3.5.1 Women Smallholder Farmers Digital Autonomy

Across the two districts, it is generally considered normal for a woman to own a digital device such as a mobile phone or a radio. From the study, the largest percentage of respondents (Katakwi: 65.9% men and 84.6% women, Lyantonde: 92.2% men and 98.4% women) accept that women should own mobile phones across the two districts (see Table 34).

Table 34: Should Women Own Telephones?

	Katakwi		Lyantonde	
Should women own telephones?	**Male(n=384)%**	**Female(n=384)%**	**Male(n=385)**	**Female(n=385)**
Yes	65.9	84.6	92.2	98.4
No	34.1	15.4	7.8	1.6

However, concern should be on the percentage of men who do not believe that women should own phones. For a successful use of mobile phones to disseminate weather information to women smallholder farmers, they should be empowered to own mobile phones and men should see the urgency of women using mobile phones. Secondly, women should be trained on responsible use of mobile phones to reduce the bias that men have towards women owning mobile phones.

Women smallholder farmers generally lack full control over digital technologies. Often, a man only allows his wife to own a device if he has one, and she may have to surrender it if his fails. Women typically access radios or phones based on their husband's preferences. Rare cases of women owning phones without their husbands were only reported in Lyantonde, not in Katakwi.

The findings show that most of the mobile phones owned by women smallholder farmers are basic phones mainly for making calls, listening to FM radios, and SMS services, while a few women own smartphones in both Katakwi and Lyantonde. In cases where a woman buys the mobile phone herself, she has control, while when a man buys the phone for his wife, such a man has control over the mobile phone. It was noted that the type of phone owned by a woman smallholder farmer determines her status in the community, as one respondent mentioned: *"Women with basic phones are considered to be of low level. A woman with a smartphone is considered to be of high level"* (KII, male, Mpumudde in Lyantonde District). In some cases, women fear to buy themselves smartphones because they fear that their husbands will control them. For example, a KII in Kinuuka Sub-County in Lyantonde District said that *"even if she has her money, what will she tell the husband that she is buying smartphone for?"*

Across both districts, men generally hold more decision-making power over digital devices, even when women are the primary users or buyers. Cultural norms often allow men to control device use, with some believing phones 'spoil' women by enabling contact with other men, leading to mistrust and conflict.

Barriers to using digital devices for weather and agriculture include poverty, illiteracy, and cultural norms. Some men believe women should not own phones. Many women struggle with phone functions beyond calls or mobile money, reflecting high illiteracy levels among smallholder farmers.

Restricted Access to Digital Tools such as Radio: Men often take digital devices like radios with them, limiting women's access to weather and agricultural information. Most women and men also own basic phones, which only support SMS, restricting access to multimedia content. Expanding access to smartphones is essential for effectively reaching women smallholder farmers.

In a nutshell, in Katakwi and Lyantonde, women smallholder farmers have limited control over digital devices, with usage often dictated by husbands. Most own basic phones for calls and SMS, while few have smartphones, which are seen as status symbols. Socio-cultural norms, low literacy, poverty, and male control further restrict women's access and use. Interventions

are needed to expand smartphone access and digital literacy for women to support agricultural and weather-related information use.

3.5.2 Perceptions of Women's Ownership and Control Over Mobile Devices

Generally, the local communities under study believe that a woman can own, use and control a mobile device. However, their approval is conditioned around "responsible" use of the digital devices. The definition of "responsible" use of digital devices is associated with the perception that digital tools, particularly phones (smartphone), are time wasters and encourage extramarital liaisons. A district official from Lyantonde District Local Government reported that women who own smart phones "are perceived as proud people who want to show off, extravagant; and also some are regarded as prostitutes since they believe such phones are too expensive for a woman, and are supposed to be held by men..." (KII, male district official, Lyantonde District). Similar views were echoed in the interviews and FGDs with women and men smallholder farmers:

> *"...women who have phones are prostitutes, spoilt... some men do not want their wives to have phones because she can have contacts of other men...." (FGD, female, Katakwi)*
>
> *"Smart phones are seen as a route for trouble sighting... TikTok is a big time waster, causes domestic misunderstanding, and divided attention which is viewed as disrespectful, hence, trouble....there is an assumption by men as to the existence of extramarital affairs due to a woman's constant use of social media..."(FGD, female, Lyantonde)*
>
> *"Most people say that phones spoil women, mostly those smartphones can destroy their families. A woman can be on WhatsApp, chatting with men who start deceiving her, promising her what they cannot even give her. Once the partner finds out, the marriage either ends there or domestic violence starts. Most men prefer a woman having only a basic phone and not a smartphone...." (IDI, male, Lyantonde).*

With the digital revolution at the door, there were voices that pointed to positive changes with some people now appreciating the importance of women owning and using digital tools – the phone. For example, a respondent said:

> *...since the technology and civilisation is reaching everywhere on the globe, perceptions are systematically beginning to change. So, people see a woman having a phone as empowered, educated, and has some money at the community level, especially those with smartphones. However, there is still influence of social cultural norms that are provocative to women empowerment and rights. (KIIs, male, district local government, Katakwi*

A similar view was expressed thus:

> *...there was a financial institution that supported women saving groups with five million [shillings]. They used and paid the bank back the money well. The bank supported them with smartphones in form of appreciation. So, those kind of women receive a lot of respect in the society. (KII, male, Kapujan in Katakwi)*

The study has found out that while communities accept women's ownership of mobile devices, this is often conditional on "responsible" use, with smartphones linked to negative stereotypes such as infidelity and pride. Some men restrict usage to prevent conflict. However, perceptions are slowly shifting, with empowered women using smartphones for business or education, thus gaining community respect, although cultural norms still limit full digital autonomy.

Social-cultural Influences on Women's Digital Access

Across the two districts, social-cultural factors tend to favour men over women in terms of access, use, and control of digital devices in the community. According to a respondent:

> *"Gender norms and stereotypes affect women's access to and use of mobile phones. The community perceives men to be technologically superior to women. Women may sometimes face challenges like limited education or restrictions which hinders their ability to fully use smartphones..." (KII, Usuk in Katakwi).*

Similarly, a district official from Lyantonde observed that "culturally, they [men] think it is not okay because they [men] believe women have nothing to use phones for. It's men who should have smartphones." Another official from Lyakajura Sub-county says that "even when a woman has a phone, it is mainly controlled by a man." Another official from Ngariam Sub-county in Katakwi District, took it further:

> *"...as long as a husband has a phone, a woman is not supposed to own one. That's competition and when you look at our society setting, it is not right for a woman to have a phone first before the husband. The cultural influence in men is still visible and women are inferior according to the societal understanding..." (KII, male, Ngariam in Katakwi).*

Apart from cultural factors, some religious beliefs influence women's acceptance, adoption and control of digital devices. For example, a KII with a female respondent from Lyakajura Sub-county in Lyantonde District revealed that *"there is a religion in this sub-county that does not allow its people to own phones, to attend meetings, also involvement in programmes".* Such issues can be addressed by local leaders through sensitisation and dialogue and where possible apply the law to protect government's community development programmes from being affected by such beliefs.

3.5.3 Access to Weather and Agricultural Advisories

a) Women and Men Access to Climate and Weather Information

FM radio was the main source of weather information in both districts, although poor signals in some rural areas limited access. Other sources included village meetings, church gatherings, and community events where leaders shared updates. A few women with smartphones accessed weather information online, but no respondents reported using SMS-based services.

According to a male official from Abokodia Parish, Usuk Sub-county in Katakwi District, "*the type of information received ranges from daily weather forecasts to seasonal climate predictions.*" Meanwhile, during a KII, another male respondent noted that *"the information commonly received is about early warning, animal diseases and much more; and such information is used for preparing seeds, gardens, store some food or any shock."*

b) Women and Men Access Agricultural Information

Like access to climate information, access to agricultural information was predominantly through FM radio stations across the two districts, followed by mass gatherings such as village functions convened by local leaders. Additionally, agricultural extension workers conduct trainings in communities where such agricultural information is disseminated. According to one of the male district officials from Katakwi District, *"for the case of agricultural information, people are using radios, extension workers and fellow farmers. But the main and reliable source is the extension workers."* Another source of agricultural information, according to a male official from Mpumudde Sub-county in Lyantonde District is "the dealers here where they sell their production, from neighbours, friends and relatives". In some areas, the network is poor to support internet access and community members hung the phones in big trees to enhance the network as shown in Figure 9.

Figure 9: Telephone Network Enhancement Technology in Katakwi Local Communities

The type of agricultural information received was majorly on agricultural market prices, good agricultural practices, and agricultural mechanisation, among others. The information was mainly used to help the farmers prepare on what to plant and when, and how to handle the season.

Women smallholder farmers in both districts face persistent barriers in accessing, using, and controlling digital devices for weather and agricultural information. Social and gender norms limit their digital autonomy, hindering their resilience to climate shocks. Urgent interventions are needed to improve digital access, literacy, and challenge gender disparities to ensure inclusive, climate-resilient agricultural development.

3.6 Climate Change Adaptation Trade-offs

Climate change adaptation trade-offs refer to the compromises and difficult choices that individuals, communities, and governments encounter when implementing strategies to adapt to the impacts of climate change. These trade-offs arise because adaptation measures can have both positive and negative consequences for different aspects of society, the economy, and the environment. They often involve balancing immediate needs with long-term goals and weighing the benefits for some groups against the costs or disadvantages faced by others.

Adaptation and creation of resilient communities are vital elements for addressing the complex challenges posed by climate change. There are various policy and programme initiatives that have been put in place to support climate adaptation and enhance resilience of communities in Uganda. Programme initiatives include rainwater harvesting, small-scale water reservoirs, and irrigation schemes for drought-prone areas; climate-resilient farming practices such as conservation agriculture, drought-resistant crops, and agroforestry; and flood management through trenches and water diversion. Efforts also promote renewable energy (solar, hydro, non-woody biomass) to reduce reliance on charcoal and fossil fuels, alongside ecosystem conservation (reforestation, wetland protection, bans on charcoal burning), and income diversification through off-farm activities. Implementing these adaptation strategies comes with trade-offs – social, economic and political. This study explored the various trade-offs associated with climate adaptation efforts in Uganda.

3.6.1 Social Trade-offs

The findings from the interviews and FGDs identified significant social trade-offs associated with climate adaptation measures in Uganda. Social trade-offs involve conflicts arising from the implementation of climate change adaptation strategies that often disadvantage certain community members. For example, in Katakwi

District, in areas where land was restored for wetland protection, families were displaced, disrupting their livelihoods and creating tensions over land access as illustrated in the following excerpt from a respondent:

> *"Conflicts and inequalities have arisen from the implementation of specific climate change adaptation measures. For instance, when people were displaced from the wetland to restore its ecological balance, it led to tensions and disputes over land and livelihoods. Additionally, there were instances of unfair distribution of agricultural inputs, where some farmers received more support than others, creating feelings of injustice and resentment within the community. Furthermore, some livestock died after vaccination, leading to suspicions that the vaccines may have been spoiled or improperly administered, creating conflict between farmers and veterinary services." (IDI, male, Ngariam in Katakwi)*

Similarly, restrictions on tree cutting for charcoal and firewood have led to income loss, especially for cattle keepers and charcoal burners as pointed by one of the female respondents: *"We also face conflicts over things like water or land for livestock to graze as people are adopting to planting trees"* (IDI, female, Usuk in Katakwi District).

Tensions have arisen over climate adaptation measures such as tree planting and restrictions on tree cutting, wetland use, and bush burning. Farmers feel excluded from decisions that affect their livelihoods, fearing reduced crop yields, loss of grazing land, and income, despite recognising long-term environmental benefits.

Participants also reported inequitable distribution of adaptation resources, with politicians and local elites often benefiting more than the general community. One of the male respondents stated:

> *"I think leaders and politicians benefit the most from our adaptation plans because they control resources. But, for common people like us, we might lose out if they don't ask us about our needs. Sometimes decisions are made without talking to us, and that can make things harder for the community. So, while leaders gain, we might miss out on the help we really need..." (IDI, male, Ngariam in Katakwi)*

A female participants concurred thus: "The people who benefit the most are the politicians and local council one and two, and relatives of the people engaged in adaptations strategic programmes..." (IDI, female, Magoro in Katakwi District). This disparity in benefits leads to resentment and conflicts among those who feel excluded or disadvantaged.

Gender differences in views on climate adaptation were evident. Women often face greater challenges due to limited access to productive resources such as land and finance. One respondent noted that women's limited access to land and resources like water and improved seeds directly impacts their income and ability to adapt to climate change. Women farmers also struggle with the burden of household responsibilities and limited access to support, while men, with more access to resources like land titles, benefit from subsidies and financial support:

> *"There is a challenge of access to productive resources which the women do not have like land, modern technology, water for production, improved seeds which are not easy to access for the women farmers...It is also not a levelled ground for both the men and women farmers for some opportunities, e.g. the man has a land title, he can get his irrigation equipment at a subsidised price and able to get finances to do whatever interventions... again access to interventions like water and soil conservation are long term. Access to land for most rural women is short term and so they cannot invest in something for a full year or five years like the trees..."(KII, female, CSO official, Kampala).*

The voice above points to compromised gender-responsive adaptation - focusing solely on agricultural productivity without considering women's access to land, credit, or decision-making power marginalises women farmers, compounding social inequities within households and communities**.** Women's lack of inclusion in decision-making further exacerbates their vulnerability to climate shocks, as decisions are often made without consulting them, leaving their needs unmet.

Women in single-headed households are particularly affected, as they face additional challenges such as family neglect during climate shocks, with men often abandoning families to seek alternative livelihoods. One of the female respondents testified thus:

> *"It's very common during dry seasons, people go too far places of Angisa, Ngariam, to cut grass, leaving the family behind most especially women who are single and at times they return to find more problems in the family such as girls getting pregnant and boys making people daughters pregnant. This has exacerbated the situation in their families. Sometimes during difficult moments of shocks, our men abandon us with children, then go to concubine women elsewhere, leaving us suffering with children, livestock, and many associated problems." (IDI Female, Ngariam in Katakwi)*

The findings reveal that suppression of traditional farming practices and cultural heritage in the interest of promoting drought-resistant, high-breed crop and livestock varieties has led to neglect or abandonment of indigenous varieties, affecting biodiversity and cultural diversity as illustrated by one of the male respondents in Katakwi:

> *"We are losing our traditional ways of life; we are losing the local varieties of crops, for instance, the new variety of cassava is not suitable for atap (our local millet bread) but there is nothing we can do. Also socially, we are giving up our grass-thatched huts for corrugated-iron-roofed houses because thatch grass is increasingly becoming extinct. We are losing our cultural identity. Also, because of flooding, households have been displaced from the areas that they have called home for long. We no longer have granaries because even shrubs for making granaries have disappeared. Farmers prefer the use of sacks and these are susceptible to pests like weevils..." (IDI male Magoro in Katakwi)*

Another social trade-off revolves around the hard choice of taking up alternative farming such as livestock farming, as one of the male respondents revealed:

> *"We've encountered social challenges and trade-offs. For instance, we decided to focus on keeping goats and sheep instead of other livestock because it's more manageable. However, this choice has its own challenges, like dealing with grazing and health care needs. So, while it helps us adapt, it also brings new difficulties that we have to navigate as a community..." (IDI, male, Ngariam in Katakwi).*

Climate change adaptation measures are generating conflicts and inequalities, particularly within households and communities. Tensions arise over trade-offs between long-term resilience – such as buying drought-resistant seeds, conserving swamps, or planting trees – and immediate needs such as food, education, health care, and grazing land, leading to livelihood insecurity and resource disputes.

Overall, the findings echo the difficulty in balancing investment in climate resilience and talking immediate socioeconomic needs of smallholder farmers, which creates social conflicts, livelihood insecurities, and economic burdens. Furthermore, the findings suggest compromise equity and

access to technology and other resources (land, water, credit) for the privileged social groups, such as wealthy individuals, and men who have better access to such resources, which compounds existing gender and economic inequalities.

These social and gender disparities underscore the need for inclusive decision-making and equitable distribution of resources to ensure that all community members, especially women, can equally benefit from climate adaptation strategies.

3.6.2 Economic Trade-offs

Study participants highlighted key economic trade-offs in climate change adaptation, including financial constraints, income loss, market challenges, and competing priorities. They pointed out that strategies such as water harvesting, solar pumps, and drought-resistant seeds are often prohibitively expensive. As one male key informant noted, such technologies remain out of reach for many farmers, limiting their ability to cope with climate-related risks.

> *"With some of these technologies, the farmers cannot afford like water harvesting using the roofs with iron sheets, also they cannot afford the solar pumps; they are expensive for the farmers. This makes the farmers not be able to address the issues of climate change because they cannot afford these technologies. Also investing in women's access to resources and opportunities, which may require reallocating resources or shifting priorities within the agricultural sector which sometimes is difficult to do. Our rural women, the smallholder farmers, can't access money like loans from the financial institutions. They want collateral like the land title... There is also a challenge of getting good affordable credit facilities. The banks are also far from them." (KII, male, government official, Kampala).*

The findings indicate that households also struggle with competing financial demands, such as paying school fees, medical bills, and other basic needs, which often take precedence over climate adaptation investments. For example, drought-resistant seeds are expensive, and families might forgo them to pay for more immediate needs.

Investing in some adaptation strategies has been associated with loss of income sources. The study participants in Katakwi and Lyantonde highlighted how some households have had to give up traditional income sources such as charcoal burning or brick-making, due to the policy ban on tree cutting for charcoal burning and degradation of wetland for brick-making. While these activities provide immediate financial relief, they are often environmentally harmful, and their cessation has led to economic hardship. For example, a male respondent from Ngariam Sub-county had to stop selling charcoal, which significantly reduced his income; and similarly, those dependent on wetland use for income have had to adapt. Additionally, the costs of implementing adaptation measures, such as constructing water trenches or switching to sustainable agriculture, can burden already struggling households.

Respondents also revealed the economic trade-off associated with poor access to markets and limited financial services, which create economic stress. They reported that farmers often sell their produce at low prices due to lack of storage facilities and market access, as seen in the example of cowpea prices dropping significantly after harvest:

> *"There is inadequate market for the produce, coupled with poor storage; you find that farmers are always suffering with pests such as weevils. So, they end up selling the produce at a giveaway price. For instance, a tin of cowpeas seeds was 18,000/= but after harvest, we ended up selling them at 5000/=. And access to financial services is difficult; this has made diversification of livelihood activities to be difficult. You cannot access money if you are not in any SACCO or group. SAACCOs cannot lend money to non-members for fear of making losses..." (IDI, male, Magoro in Katakwi).*

SACCOs remain largely inaccessible, and financial support for adaptation is limited. Women face added barriers, including lack of collateral, exploitative lenders, and the burden of repaying misused loans.

The women smallholder farmers also highlighted that adaptation investments, such as buying pumps for irrigation, often come at the cost of other essential household needs such as school fees. Additionally, the decision-making power within households regarding these investments often falls on male members, leaving women with the economic burden of managing the repayments and coping with the consequences of failed investments:

> *"Loans are available, but the challenge is in paying back. For most bad loans, the men convince their wives to get loans on their behalf, but the wives are left to pay on their own. Men lie to you to get a loan that you start a business and yet after signing off that money, you will never see him again and yet you signed because you wanted to get some money to care and buy food for your children at home...The loans are usually used for school fees and paid back at a slow pace using earnings got through digging [casual labour] in the community. A man can tell you that you go for me to BRAC and get me some money to pay fees for our children since the season was bad. You find yourself trusting this man and yet he will use the money for drinking in the bar. The men really don't mind and care at all. They just want you to be on your own and yet we are economically unstable." (FGD, female, Kinuuka in Lyantonde).*

Adaptation efforts often trigger household and community tensions due to competing priorities. Some households prioritise immediate income (e.g., charcoal burning) over long-term goals like wetland or tree conservation, leading to migration, food insecurity, and economic strain. Women and men in Katakwi noted that adaptation measures, such as trench digging or buying drought-resistant seeds, are costly and compete with essential needs such as school fees and health care. Poorer households are especially affected, facing conflicts over land, water, and livelihood resources.

In sum, the findings emphasise significant economic trade-offs in climate adaptation efforts, particularly the high costs of technologies and investments that many households cannot afford, especially when basic needs and traditional income sources are prioritised. Climate-smart agricultural practices to enhance crop yields and resilience to climate variability often require higher initial costs for inputs such as seeds, fertilisers, and irrigation equipment and, hence, smallholder farmers often weigh the potential benefits of increased productivity against the upfront investments required and other household welfare expenses. Renewable energy technologies are costly and often inaccessible to low-income communities in Uganda, benefiting mainly the wealthy. Ecosystem-based adaptation competes with resource-extractive activities such as farming and charcoal burning, creating trade-offs between short-term income and long-term sustainability. Limited affordability worsens energy poverty, especially for women and girls. Gender differences are evident in how women bear a disproportionate share of financial burdens, including dealing with loan repayments and managing the fallout of failed investments. The lack of financial support, market access, and the conflicting priorities of adaptation versus survival exacerbate the challenges faced by women and vulnerable communities.

3.6.3 Political Trade-offs

The study reveals significant political trade-offs in climate change adaptation, highlighting opportunity costs in decision-making processes. At the national level, some government programmes are conditional – resources may be allocated to politically prioritised projects such as road construction, while more urgent local needs, such as water access, are overlooked.

One of the KIIs, observed that while addressing the impacts of climate change is essential, efforts are overshadowed by numerous political priorities. For instance, "climate change and women's resilience may not be high on the agenda compared to other competing issues (KII, male, government official,

Kampala). Another participant added: "They prioritise vaccines because it is an emergency; that is why when the floods occur the people are just advised to divert the water..." (Community profile, Kapujan in Katakwi District). In addition, the study participants noted the existence of policies to protect the environment, but implementation is often inadequate, compounded by insufficient resource allocation, and efforts like reporting environmental destruction are rarely followed up (Community Profile, Usuk in Katakwi District).

Concerns from Katakwi and Lyantonde pointed to the politicisation of climate change programmes as a major challenge. They reported instances where politicians may divert funds for personal gain or campaign promises, such as distributing tree seedlings during elections that never materialise:

> *"Quite often, politicians during their campaigns have pledged distributing tree seedlings for free. This sounds a good strategy to fight climate change adaption, but after the campaigns, we don't see any seedlings... Another, during local council I and local council II elections, committees on environment are instituted which comprises both men and women with their different roles but after assuming the office, issues of climate will never feature anywhere." (IDI, female, Cheleuko in Katakwi).*

Respondents highlighted opportunity costs linked to resource allocation, household dynamics, and cultural norms. Political decisions often lead to unequal distribution of resources such as land and trees, creating tensions – especially when based on political ties. These challenges disproportionately affect women, children, and the elderly, who have limited say or access.

Besides, respondents noted a lack of institutional support for accessing resources or training, and that resource allocation is often influenced by cultural norms that exclude women, children, PWDs, and the elderly. Decisions are typically made by male heads without broader consultation, leading to family conflicts, separations, and hardship. Vulnerable groups are rarely involved in climate adaptation decisions, undermining policy effectiveness.

Respondents also highlighted the fact that allocations of resources to the community are often politically motivated and lack fairness, questioning the equitable allocation of resources to fight climate change-related shocks (IDI, Male, Kokorio in Katakwi District). Another participant concurred: "Decision making is not inclusive at all. Most of decisions are made from government offices but real people are not involved. We are stakeholders in climate change also; we should be consulted as well..." (IDI, male, Ngariam in Katakwi District).

The study findings reveal glaring opportunity costs that present gender concerns. These concerns revolve around resource allocation, participation in decisions related to adaptation and family dynamics. Women, children, and PWDs are often disadvantaged in the allocation of resources due to political favouritism and systemic bias associated with cultural expectations. One female respondent noted that resources are allocated based on relationships rather than need, leaving vulnerable groups, particularly women, underserved (IDI, female, Kokorio, Katakwi District). Furthermore, despite the presence of both men and women in local environmental committees, the effectiveness of these bodies is limited, and climate change rarely becomes a priority once the election campaigns are over. Women's roles in these committees are often marginalised, and decisions are made by a small group of individuals with little community involvement (IDI, female, Cheleuko, Katakwi District).

The findings further reveal gendered tensions within families over climate adaptation strategies, particularly in cases where men, often forced by financial stress, are more likely to engage in harmful practices such as cutting down trees for charcoal, leading to conflicts with female family members who support environmental conservation (IDI, male, Olupe Sub-county, Katakwi District). These disputes reflect broader

societal gender roles where men's economic needs for family provisioning are prioritised over environmental concerns.

Respondents highlighted the lack of inclusive institutions to support climate adaptation, with women especially marginalised. Financial services require collateral like land titles, which most rural women lack, while cultural norms further limit their access to resources and decision-making.

Political trade-offs in climate adaptation are shaped by competing priorities, weak implementation, and the politicisation of resources – often undermining environmental protection. Women are frequently excluded from decision-making and resource allocation, despite their key role in environmental stewardship. These challenges highlight the need for more inclusive, gender-responsive climate policies that balance competing interests within Uganda's limited resource envelope. The country's hybrid governance system – centralised and decentralised – further complicates efforts to align large-scale national projects (e.g., roads, dams) with community-based adaptation strategies, particularly for smallholder farmers.

Climate change adaptation trade-offs involve difficult choices that balance immediate needs with long-term goals, often benefiting some groups while disadvantaging others. In Uganda, various policies and programmes support adaptation and resilience, including water resource management, climate-resilient agriculture, flood control, renewable energy promotion, ecosystem conservation, and income diversification. However, these efforts come with social, economic, and political trade-offs, which this study explored in depth.

3.7 Group Participation and Social Capital

In rural Uganda, community/social groups are vital for financial, emotional, and developmental support. This study explored men's and women's involvement in such groups in Lyantonde and Katakwi, examining group types, activities, leadership roles, and climate change activism. While both genders contribute actively, cultural and socioeconomic barriers limit full participation, especially for women.

3.7.1 Types of Social Groups

The findings reveal that women and men are involved in multiple social groupings, ranging from savings and credit associations, funeral/burial associations, and community support networks/ groups that comprise specific categories of people such as motorcycle riders commonly known as *boda-boda* riders.

Savings and Credit Groups: The findings indicate that savings and credit associations (e.g. cash rounds) are the most common groups in the two districts. Most of the savings' groups are dominated by women who are often leaders within them. These groups provide financial assistance through savings, loans, and shared resources to the members. Among the savings and credit associations, there are also youth and disability groups established by the youth and people with disabilities.

Funeral and Burial Groups: These are predominantly community-based groups, providing logistical and emotional support to members when a family member dies. Women are particularly active in funeral and burial groups, where they take on caregiving, food provision, and financial management roles.

Community Support Groups: These groups include fundraising and emergency labour support groups (e.g., community fellowships), often with both men and women as members. However, women are usually the majority and more active in organisational and caregiving roles. Some groups focus on providing paid manual labour to members or the wider community. Men tend to dominate groups involving physically demanding work (e.g., *boda-boda* associations, business groups) or those centred on financial and economic guidance.

There are also business and religious/church groups. According to the interviews and FGDs, the majority of the groups are predominantly for women with a few groups that have men. In both districts, there were no groups involved in climate

activism – informal or formal. However, the findings indicate the existence of community initiatives in environmental awareness and informal individual-based leadership in tree planting, especially men.

3.7.2 Activities or Services Offered, Roles Performed and Leadership

a) Activities and Services Offered by the Groups

Emerging findings from the interviews and FGDs with women and men smallholder farmers in Katakwi and Lyantonde districts reveal a wide range of activities and services provided by community social groups to their members and the broader community. These activities and services revolve around financial support, emotional aid, and practical assistance during times of need, along with women's empowerment initiatives.

Financial Support: Community groups such as burial and VSLA, provide loans to members for various purposes, including personal emergencies, funeral-related expenses, farming, or business development. One of the female respondents in Katakwi stated: "I am a member of the community saving group and the mourners group. In the saving group, we save and lend to each other when needed..." (IDI, female, Usuk in Katakwi District). These loans often come with low or no interest rates. For example, in groups such as the "Mwezikye", "Kwezika" groups (burial groups), members can borrow money for medical emergencies or funerals.

The community groups allow members to save money, lend it to one another and share resources, which enables members to improve their household welfare by enabling them to purchase goods such as plates, mattresses, or medical assistance. The savings groups also contribute to education by providing loans for school fees. Some groups, such as "Eganganakinos Bonik ka Bonik" group, help members by offering essential items for events, such as plates and saucepans, while others assist with medical bills or funeral costs:

> *"We offer services such as plates and saucepans. We are advancing to buy tents and we do this to help families come out of this poverty. All occasions such as parties or ceremonies, the community gets services of plates, tables, and saucepans. In another one called Solar Silk Group, we save money and at the end, we divide the money among the group members. The members enjoy privileges of taking loans at no cost and interest, in case of sickness by the members. Group members assist in paying medical bills. During burials, members contribute money to help their group members." (IDI, male, Abyelut in Katakwi.*

Emotional Support: Social groups often provide crucial emotional and logistical support during funerals. For instance, the Kwagalana Group in Lyantode District helps organise food, tents, and labour during funerals, and the Bataka Mweyambe Group provides tents and chairs for funerals or events. When a member loses a loved one, the group comes together to collect money for the funeral expenses. These groups offer comfort and physical assistance, such as food or labour.

Community Engagement and Development: Groups engage in collective efforts to address broader community needs not only supporting funerals (labour, food, and even cash donations to help families in need) as mentioned above but also addressing agricultural development concerns by lending money to members for farming and conducting sensitisation/education session for members as illustrated: ***"Members contribute money and give it to a member to use it to strictly do agricultural activities. Other members benefit when they come and work on my garden for pay"*** (IDI, female, Lyakajura in Lyantonde district).

In the interviews and FGDs, participants reported that groups offer training in farming techniques, especially related to climate change and good farming practices. Farming and agricultural groups are actively involved in offering training on better farming practices, environmental conservation, and sustainable agriculture. They also provide seeds, tools, and collective farming support to enhance productivity. *"The local farmer organisation offers farming advice, shares seeds and tools, and sometimes organises group farming*

activities" (IDI, male, Magoro in Katakwi District). Some groups are also involved in environmental efforts such as tree planting.

Empowerment Support Initiatives: Women's groups focus on empowering members, addressing issues such as domestic violence, and providing leadership opportunities for women in these groups. Leadership roles in most mixed-gender groups tend to be dominated by men, while women are often appointed as treasurers, reflecting a gendered division of roles as noted: *"Men are normally the leaders in this (burial group) especially the one comprising of both men and women and women tend to be treasurers since they are trusted. For the group comprising only women, they occupy all the positions*" (IDI, male, Cheleuko in Katakwi District).

Practical Support for Social Events: Groups provide resources for social events, such as parties or ceremonies, by lending equipment like chairs, tables, or cooking supplies. This helps reduce costs for community members hosting these events.

Social Integration: Participation in these groups provides members with a sense of belonging, knowledge sharing, and opportunities to contribute to decision-making processes. This creates a supportive environment where individuals can learn new skills, access resources, and connect with others.

Financial Literacy: Groups promote financial literacy, where members teach others how to manage loans and savings.

Insurance and Security: Groups act as a safety net, offering support for emergencies or personal crises. For example, it was observed that members contribute money regularly, which can be accessed when needed, whether for health issues, funerals, or other urgent needs.

In summary, the groups offer a range of services that improve individual and community well-being, especially through savings, loans, and social support. The activities and services offered foster community solidarity, through emotional and practical support during challenging times. Such services foster social cohesion and contribute to broader community development and environmental sustainability.

b) Roles Performed and Leadership

The findings reveal clear gendered patterns in leadership and participation across community groups in Lyantonde and Katakwi. Women are more active in savings, funeral, and community support groups, often holding key leadership roles such as chairperson, treasurer, or secretary – particularly in women-only and informal groups. They also take on caregiving and logistical responsibilities during communal events such as funerals, including organising food and providing emotional support.

As one female participant noted, *"In those groups, women are chairpersons and secretaries in women's groups, and in burial groups, women serve as treasurers and handle food"* (IDI, female, Kokorio, Katakwi). Men, by contrast, are more involved in physically demanding or business-oriented groups such as *boda-boda* and youth groups, and tend to play advisory or financial roles rather than occupy leadership positions. One male participant explained, "*I work as an advisor in a village savings group. I teach members about borrowing, repayment, and financial planning"* (IDI, male, Ngariam, Katakwi).

Men's leadership in savings groups is less common, though they often serve as chairpersons in formal associations such as SACCOs. In mixed-gender groups, such as the "Twezimbe" group in Lyantonde, both men and women participate, but women are more likely to hold leadership roles related to finances and caregiving. A male respondent confirmed this: *"Mostly men are elected as chairpersons, and women take on roles like vice chairperson or treasurer"* (IDI, male, Kokorio, Katakwi).

There was limited mention of youth or persons with disabilities (PWDs) having dedicated groups, although they sometimes participate in mixed-age or gender groups. Women-only groups often focus on empowerment, financial literacy, addressing domestic violence, and offering social support.

Overall, the study highlights how traditional gender roles shape community group dynamics – women lead in savings and caregiving, while men are more active in advisory, business, or labour-intensive roles.

3.7.3 Benefits of Belonging to and Engaging in Community Social Groups

On the benefits of collectives, according to the interviews and FGDs, women seemed to benefit more directly from economic groups, using the savings and loans for children's education and other household needs.

Financial Support and Access to Resources: Both men and women benefit from economic assistance through group activities such as saving and loan schemes; *"A savings group helps financially when in crisis, provides you with financial knowledge and helps you to save"* (IDI, male, Ngariam in Katakwi District). These groups provide financial support for basic needs such as school fees, medical bills, and business investments. "*They save and lend to each other when needed"* (IDI, female, Usuk in Katakwi District). "*At the end of a saving cycle, the profits the group has accrued through loans is shared to members" (*IDI, male, Akisim in Katakwi District).

While both women and men seemed to experience more immediate benefits, which help them pay for children's education, funeral expenses, or other family needs, men mentioned other broader financial aspects, such as being advisors in groups where financial literacy is shared; a male participant highlighted: *"In my savings group, I work as an advisor...I guide the group members in borrowing money (financial literacy), I teach them to have both expenditure and repayment plan...* (IDI, male, Ngariam in Katakwi District).

This suggests men's additional roles in managing or guiding the economic activities. The voices above further illustrate how these groups empower women and men through improving their financial decision-making along with immediate access to funds. Respondents indicated that access to financial resources has improved the economic stability of members.

VSLAs provide access to low-interest loans, which is a significant benefit compared to commercial loans from banks. A male participant said: "*This has helped us to avoid the exploitative rich men who charge high interest rates" (*FGD, male, Lyakajura in Lyantonde District). VSLAs provide essential financial services to both men and women, particularly in communities lacking banks, providing community members an opportunity to save money, borrow, and share profits to cover essential needs (school fees, medical bills, and business investments).

Access to financial resources boosts women's economic empowerment, thus increasing their financial security and independence. Women particularly benefit from access to loans without collateral, which is often a barrier in formal financial institutions: *"Most women don't have collateral to use in financial institutions to secure credit but with these VSLAs, they get loans basing on their savings and membership..."* (Community Profile for Kinuuka, in Lyantonde District).

Women's participation in these groups also contributes to family and community welfare by helping secure loans for schooling, health care, and small businesses: "*Both members and non-members equally benefit on loans borrowed for school fees for their children and also invest in farming and their business and also help in the treatment of family members..."* (IDI, female, Cheleuko, in Katakwi District).

SACCOs and farming cooperatives, provide members with access to credit and loans, helping them manage financial needs such as farming costs or community emergencies. One participant from a SACCO noted*: "They offer credit services and we comfort each member who loses a dear one"* (IDI, male, Ngariam in Katakwi District). Similarly, farming groups allow easier access to loans, facilitating agricultural initiatives: "Members can get loans with relative ease" (IDI, male, in Kapujan in Katakwi District).

Social Support in Crisis: A clear benefit of belonging to social groups is the collective support in times of personal or family crises, such as sickness or death. Members provide labour, food, psychological support, and financial assistance. A male respondent mentioned:

> *"When a member loses a beloved person in the family, the other members come in to support in almost everything to help you bury. They dig the grave, buy coffin, solicit food, money, cook, and console. In my burial group every member contributes UGX 7,000 to help in the burial and feeding process." (IDI, male, Ngariam in Katakwi District).*

Participation in social groups, therefore, provides emotional and practical (logistical) support in times of crisis, such as death in the family, where groups contribute towards funeral costs, labour, and food provision. Further, funeral/bereavement groups also play a crucial role in community support, ensuring that members have access to items such as tents, chairs, and utensils. Such financial and emotional support can greatly alleviate the stress associated with personal crises.

The social support and networking that social groups offer, promote a sense of belonging. The collective support during emergencies such as sickness or funerals, ensure members do not face financial hardships alone. The shared responsibility helps maintain social cohesion and solidarity, thus reducing individual burdens.

Women's groups, in particular, reportedly address specific gender issues concerning domestic violence, and in a way help women in distress by providing comfort and security: *"Women groups address issues of empowerment and domestic violence"* (IDI, male, Ngariam in Katakwi District).

In the groups, women share knowledge, experiences, and skills with one another, thus fostering belonging and connections. As one participant notes: *"It provides a sense of belonging and connection with others; some make friendships and social support networks"* (IDI, female, Abyelut, Katakwi District). Another respondent emphasised the importance of social connection, stating that the savings groups "share love among their members" and create a supportive environment where people help each other in times of need, such as during emergencies. This strengthens their social networks and enhances personal development.

For men, belonging to groups such as farmers' groups provides social cohesion and solidarity: *"It helps farmers feel connected, giving them a sense of solidarity and support"* (IDI, male, Kapujan in Katakwi District).

While both men and women benefit from collective group support, especially in times of crisis, women, in particular, appear to be at the forefront of mobilising resources for the care of sick family members or funeral arrangements. This gendered division aligns with traditional roles where women are expected to manage domestic and emotional labour within the family.

Empowerment and Leadership Opportunities for Women and Men: Social groups, especially savings groups, have empowered women through giving them opportunities to participate in leadership roles and have control over financial decisions. Women's participation in leadership roles was highlighted as empowering, with women serving as chairpersons, treasurers, or vice-chairpersons in savings groups as stated by one of the participants*: "Women lead themselves, comprising of a chairman, vice-chairman, treasurer"* (IDI, male, Kapujan in Katakwi District). *"These groups have also helped women to become strong to lead and be elected in committees"* (IDI, male, Kokorio in Katakwi). The voices illustrate how women's participation in groups enhances their influence, confidence, and leadership/ decision making capabilities as well as promoting gender equality within the groups.

Women's groups, in particular, offer networking opportunities, enabling women to share problems, learn from one another, and receive support. They also contribute to women's empowerment by providing resources to improve their household status, such as buying essential items for their homes.

Group participation further enables knowledge exchange, skill-building, and learning from others' experiences. A respondent emphasised: *"Being part of a group can also provide opportunities for sharing knowledge, skills, and experiences" (*IDI, male, Ngariam in Katakwi District). The exchange of knowledge and skills in areas such as farming, financial management, and business development helps members to improve their livelihoods and contribute to community prosperity. In addition, the emotional support and sharing of knowledge and experiences by the social groups highlighted in the voices above, facilitate personal and skills development.

Resilience against Climate Shocks: Social groups also offer resilience against environmental shocks. For example, respondents indicated that they used group savings to invest in livestock and non-farm enterprises such as small business, which could serve as a buffer during periods of drought or crop failure. A respondent noted: *"I bought a pig and a goat...In case of drought or any terrible climate change, those animals can*

support" (IDI, male participant, Mpumudde in Lyantonde).

Support for Climate Change and Environmental Action: Some community groups, especially farmers' organisations, have integrated climate change activism into their activities. This includes tree planting, promoting sustainable farming practices, and raising awareness about environmental issues.

> *"There are groups in our community working on climate change issues with a focus on things like sustainable farming and tree planting...They've achieved success in educating people and promoting climate-resilient farming...I participated in local awareness campaigns where we organised workshops and events to educate people about climate change. We focused on things like planting trees and using sustainable farming methods..." (IDI, male, Kapujan in Katakwi)*

Awareness raising about climate change and adoption of sustainable farming methods illustrates community advocacy and activism efforts. Groups engaged in climate change activism contribute to community resilience by promoting climate-conscious practices.

The findings show that social groups offer valuable benefits to both women and men in rural areas, including financial support, social connection, emotional solidarity, and leadership opportunities. While men often hold more leadership roles in mixed-gender groups, women have additional responsibilities that can limit participation. However, increased female leadership in finance and management signals progress. Group involvement enhances women's agency and community resilience, although structural barriers remain.

3.7.4 Challenges to Belonging and Participating in Community Social Groups

While the findings reveal great benefits of being part of the community social groups, respondents reported challenging experiences. They include:

Financial Constraints: Both men and women reported challenges related to meeting financial obligations, including the regular weekly/monthly contributions required for savings or repayment of loans: "*There are financial challenges as some individuals may not be able to afford membership fees and saving regularly*" (IDI, male participant, Ngariam in Katakwi District). These financial constraints eventually lead to members dropping out of the group or facing tension over missed contributions.

Defaulting on loan repayment results in a loss of money for the group, reduces dividends or causes embarrassment for those involved. The inability to afford membership fees or meet saving requirements causes exclusion, frustration and, in some cases, results in people dropping out of the groups. The issue of defaulting on loans by group members and the financial strain this causes to others was a recurring theme in the interviews and FGDs in both Lyantonde and Katakwi districts. For example, participants (women and men) in a community profile concurred:

> *"Some women have acquired loans on behalf of their husbands from their groups but when it comes to paying back, their husbands have refused and this becomes a burden to the woman who signed for that money. Some group members default after acquiring loans. Some women can fail to get what to save on a weekly basis as the group requires and this affects her credit worth..." (Community Profile, Kinuuka in Lyantonde)*

Loan defaults undermine the stability and trust within the groups, which affects both individual and collective benefits. In this regard, a respondent noted:

> *"Some members in the group borrow money and refuse to pay back. This leads to loss of our money during the sharing period which leads to low dividends for us..." (FGD, female, Lyakajura in Lyantonde).*

Furthermore, respondents reported that "*lack of transparency*" was a common concern, with some members worried about the misuse of funds or unequal treatment. As one participant mentioned:

> *"There are financial challenges as some individuals may not be able to afford membership fees and saving regularly costs associated with group activities as well as lack of transparency..." (IDI, male, Ngariam in Katakwi).*

Lack of transparency within groups can create distrust and hinder effective participation. These issues may disproportionately affect women who are often in charge of financial matters within groups. Participants reported inconsistencies related to loan payments – where the money you apply for is not what you are given but also inability to stick to the budget. As one participant shared:

> *"The challenge we find in borrowing... you budget for things worth 2 million shillings, but they give you 1.7 million, and by the time you reach here, you have 1.5 million... it causes you trouble..." (FGD, male, Lyakajura in Lyantonde).*

Insufficient money in the group to lend out to members when they have financial needs, particularly during critical moments like planting season is frustrating. Other financial inconsistencies were associated with saving, especially when members face financial constraints or cannot meet the agreed-upon saving schedules.

> *"Some of us want to borrow money but sometimes there is no adequate money in the group mainly during the times we would like to borrow. This hinders us from accessing finances to carry out activities like farming..." (IDI, female, Lyakajura in Lyantonde).*

Respondents also raised concerns around the hostile demands regarding loan repayments which can also discourage participation along with the bureaucratic difficulties of accessing financial resources from the formal financial institutions such as Banks. Men, for instance, expressed frustration with the security requirements for loans, fearing that their land could be seized as one of the participants shared: *"One challenge we face is the security which the banks require. Sometimes we fear that they can take away our land"* (FGD, male, Ngariam in Katakwi District). Another respondent observed: "*The biggest challenge is borrowing money and then crops fail in the gardens and then you fail to pay back...this at times has put people in trouble of losing their properties...*" (IDI, female, Nsiika in Lyantonde District).

Women often lack the personal finances to contribute regularly to savings groups, and sometimes must seek permission to act independently regarding finances. As one woman pointed out: "We can decide but sometimes we lack enough money to fulfil what we usually decide" (FGD, female, Kinuuka in Lyantonde District).

The findings reveal a lack of trust within some groups, particularly in relationships where financial assets are involved. In this aspect, men are sometimes accused of taking advantage of women's savings. One man confessed:

> *"Most times women are more trustworthy than the men because for the men, we are more interested in alcoholism and we don't fear domestic property... you can see that your wife has gone to fetch water and you get the hen and sell it then later in the evening you go into the bar..." (FGD, male, Lyakajura in Lyantonde).*

Men's risk-taking behaviours, such as spending group funds on alcohol or not repaying loans, cause tension and breakdown in group cohesion, especially when financial decisions are made without transparency. Women reported issues of theft by appointed group leaders or poor decision-making processes, which can undermine group operation as raised by this respondent: "*There is also the issue of stealing money by group members appointed as signatories, quarrels, and some members are very slow in decision making…*" (IDI, female, Kokorio, Katakwi District).

Loan repayment challenges affect both women and men, but women face harsher consequences, including loss of household assets and marital conflict. Failure to repay loans also strains group participation and solidarity. While both genders struggle with financial demands such as membership fees and savings, women are more adversely impacted. Additionally, men expressed concern over stringent loan security requirements, particularly the risk of losing land.

Group Dynamics and Tensions: Both men and women experience interpersonal conflicts within these groups, often related to money management, loan repayment, or unequal treatment of members. These tensions can lead to hostility and dissatisfaction, particularly when some members feel they are being treated unfairly.

> *"Things like insults, quarrels, those are part of it, and they cannot miss. Here you have not done well, someone can come maybe wants to borrow some money and you find the amount he is requesting is either not available or he may not be able to pay it and when you tell him… he gets angry with you…" (IDI Male, Lyantonde Rural, in Lyantonde)*

Conflicts among group members, especially those connected with loan repayments, were noted to be common. Members sometimes fail to repay loans, causing financial loss, embarrassment and tension within the group. *"Borrowing money from these saving groups and failing to pay at the end of the day, this makes other members of the group to follow him sometimes to his home*" (IDI, male, Ngariam in Katakwi District). The voices point to strained relationships within groups and discourage future participation due to defaults on loan repayment and members' failure to meet their monthly contributions.

Inadequate Information and Limited Community Mobilisation: A significant challenge, particularly for women, is the inadequate information or lack of proper mobilisation efforts within communities. One of the respondents noted: *"Challenges to participation [include] inadequate information due to limited mobilisation in our community*" (IDI, female, Angisa in Katakwi District). Limited information and poor mobilisation, particularly in rural communities, restrict members' ability to fully participate or benefit from social groups. Furthermore, a lack of communication on important issues such as climate change or good farming practices can hinder the group's effectiveness.

Gender Discrimination and Family Dynamics: Some women have faced domestic violence after sharing their dividends or earnings with their spouses, who may demand the money and resort to violence if it is not handed over: *"Some women have experienced domestic violence after sharing their dividends. The man demands to have the money that the woman has shared and once she refuses, violence begins…"* (Community Profile, Kinuuka in Lyantonde District).

Women face greater barriers to group participation due to domestic violence, household duties, and needing spousal permission. Their leadership is often limited by societal perceptions tied to education and gender norms. Exploitation within families – such as men misusing loans or demanding women's earnings –further discourages women's involvement and fuels marital conflict.

Women's Limited Autonomy: While social groups offer women income opportunities, many face restrictions on financial decisions and must seek spousal permission to use or contribute money. This limits their autonomy and full participation. In some cases, women need approval to join or remain in groups, and men may control or withhold funds, reducing women's ability to save or benefit from group membership.

Gender and Leadership Dynamics: Power dynamics within social groups often disadvantage women. In mixed-gender groups, men typically occupy top leadership roles such as chairpersons, while women are mostly assigned secondary positions such as treasurers or vice-chairpersons, often based on perceived trust or education. Internal competition for leadership can create conflict and discourage participation. Women-only groups offer more leadership opportunities, but challenges remain, including slow decision-making, mistrust, and financial mismanagement. In some cases, male leaders misuse funds, undermining group trust. These gendered leadership norms and structural barriers limit women's visibility, decision-making power, and ability to fully benefit from the groups' opportunities for empowerment.

Time Constraints due to caregiving, domestic work, and farming limit women's full participation in groups. Many struggle to balance meetings with household duties, often facing spousal restrictions that further reduce their agency. Men also reported time challenges, particularly in agricultural settings, but the burden is heavier and more gendered for women.

Exploitation and Mismanagement

Social groups offer important benefits but face challenges such as mismanagement, theft, poor coordination, and lack of participation. Leadership collusion and inadequate financial skills undermine trust and sustainability. Women face additional barriers – household duties, limited autonomy, and domestic violence – while men report leadership conflicts and financial risks. These gendered dynamics, combined with limited institutional support and weak group structures, reduce the groups' ability to build resilience and promote equitable participation.

3.7.5 Climate Activism in the Study Areas

The study explored whether individuals or social groups were involved in climate change activism – specifically efforts to raise awareness, promote solutions, and influence policies on mitigation, adaptation, and resilience. Findings revealed limited activism across the study sites. However, some individual and group efforts were noted, particularly around tree planting and sustainable farming involving both men and women. In Ngariam Sub-county, Katakwi District, participants highlighted the role of local councils in promoting environmental sustainability by discouraging tree cutting and charcoal burning, and encouraging sustainable farming practices. Overall, both men and women reported low levels of engagement in climate change activism.

In Lyantonde District, there were reports of a few members who were actively involved in climate change activism, primarily focusing on tree planting, discouraging tree cutting, and promoting environmental preservation were reported. They were involved in grassroots education, although these activities were not often supported financially by outside entities. According to the findings, women appeared to be more involved in communal efforts linked to resource management such as tree planting or saving money for emergency responses. Men, meanwhile, reported less direct involvement in climate change activism, with their roles more focused on labour and economic survival. This suggests that men may be more focused on immediate financial survival, while women are more engaged in collective community resilience, including environmental sustainability.

Although some respondents are involved in raising awareness about climate change, most groups do not prioritise environmental issues. Those who do engage tend to act individually, focusing on dangers such as deforestation and promoting tree planting. Local councils were commended for their efforts to discourage tree cutting and charcoal burning. As one female participant from Kapujan in Katakwi District noted: "*The local council one and two are discouraging cutting down trees and burning charcoal.*"

These efforts aim to educate the community on climate change, mitigate its effects, and build resilience. Although some participants are actively involved in climate change activism, particularly advocating tree planting, there is a noticeable absence of structured social groups focused on climate change. There is limited involvement in climate change and environmental conservation awareness or policy advocacy, and those who try to engage often do so without support and resources.

There are no formal social groups engaged in climate change activism in the study areas. Efforts

are mostly individual, with participants raising awareness or stopping deforestation on their own. Tree planting is needed, but there is a lack of seedlings and support. In Katakwi, environmental initiatives such as wetland mapping face hostility due to inadequate compensation and land disputes. Local councils attempt to discourage tree cutting and charcoal burning, but their impact is limited by community resistance and lack of resources. Overall, minimal support and logistical challenges hinder organised climate action and outreach, especially in remote areas.

3.8 Access to Use, and Control of Credit and Other Financial Services

3.8.1 Source of Financial Credit/Loans

In both Lyantonde and Katakwi, access to credit is crucial for supporting farmers amid increasing climate shocks. Formal credit sources were seen as more accessible and aligned with farmers' needs, while informal lenders – known as *"kafuna"* in Lyantonde – were viewed as exploitative due to high interest rates and harsh collateral terms. VSLAs, managed by community members, were the preferred credit option, offering small loans (up to one million shillings) at low interest rates (5% in Katakwi, up to 10% in Lyantonde District). VSLAs also provide social support, networking, and learning opportunities, benefiting especially women's groups across the districts – as these two female respondents ascertain:

> *"...it provides a sense of belonging and connection with others, some make friendships and social support networks. Being part of a group can also provide opportunities for sharing knowledge, skills, and experiences, particularly in areas like farming or business..." (IDI, female,USUK in Katakwi)*
>
> *"The only financial resource available for most of us in the community is the village saving groups because they don't ask for collateral like the banks and SACCOs which most of us don't have. So, we can access small loans that cannot do much to support farmers in agricultural investments..." (IDI, female, Mpumudde in Lyantonde)*

Secondly, formal institutions such as microfinance (SACCOs) and banks are available but are located far from the community. Besides, they are less accessible and affordable for the majority of women and men farmers. These institutions charge higher interest rates with some of the lending modalities/conditions often cumbersome. Both men and women farmers expressed dissatisfaction with the institutions, as discussed in more detail in the next section. Formal financial institutions are mainly accessed by the elite and economically well-off. In Katakwi, these institutions include BRAC, Opportunity Bank, Financial Trust, and Tujenge Finances. In Lyantonde, they include Centenary Bank, BRAC, and ASSA. Respondents of the community profile mentioned that most of these institutions prefer offering their services to women groups because they are believed to be more credit-worthy than the men, given that they *"don't run away or shift easily as the men"* (Community Profile, Lyantonde Rural in Lyantonde District). Across all study sites, there was no credit institution dedicated to financing activities that specifically targeted climate change-related shocks and needs.

3.8.2 Use of Credit

Credit is mainly acquired for agriculture investments such as kitchen gardening for women, and non-agricultural businesses, paying school fees, food, health, and other urgent basic needs. Non-agricultural micro-businesses in Katakwi include selling silverfish, and food and vegetable products such as tomatoes and onions dominated by women. Most voices alluded to the critical role of credit (mainly from VSLAs), in addressing abject poverty and educating children as examples depicted below. There was no reference for accessing credit for the purpose of countering climate shocks:

> *"We have been battling poverty but these saving and loan groups have greatly helped change our families. Previously, we could not afford to take our children to school but now we can get loans and take them, then pay later." (FGD, female, Magoro in Katakwi)*
>
> *These savings groups have enabled most families to educate their children because of savings loans offered to the members. Members can borrow and pay back with small interest; and, in a way, the family is benefiting. Sometimes, when the group is organised, it becomes easy to lobby for assistance as a group from other donors or helpers. (IDI. female, Kokorio in Katakwi)*

3.8.3 Challenges of Access to Credit/Loans

In both Lyantonde and Katakwi districts, several challenges to credit access were identified as constraining both men and women farmers. These were mainly: lack of collateral; inability to pay back the credit/loan; severe poverty that limits the use of credit for the intended purpose; high interest rates, and financial illiteracy. These are further elaborated on below.

Lack of Collateral: Both men and women farmers across the two districts mentioned the lack of collateral required before accessing credit/ loans. In addition, the agreements and related conditionalities were often unscrupulous and exploitative, especially, with the money lenders. Box 1 highlights study respondents' views about the collateral.

Box 1: Respondents' Views about Collateral

Accessing financial resources or support for climate change adaptation initiatives in our community has been challenging. Even community savings and credit cooperatives (SACCOs) have limited funds available for such initiatives. The primary barrier is the limited collateral that community members can provide, hindering their ability to secure loans for climate change adaptation projects. The challenge of accessing funds has restricted our capacity to diversify income sources or engage in new economic activities arising from climate change adaptation efforts. (IDI, male, Ngariam in Katakwi)

Like in my place, if you want money, you, in most cases, have to be with a property that you use as collateral which most people sometimes don't have and it is the biggest challenge. (Community Profile, Lyantonde rural in Lyantonde)

Some of the households have no collateral; so, the bank can't allow them because people don't have the assets and this applies to both men and women. (Community Profile, Lyakajura in Lyantonde

Surely, I even feared taking loans from both banks and businessmen because as they give you a loan they make you sign an agreement showing that you are selling, let's say, a motorcycle or land in cash; and that after certain period of time when you fail to comply, you should never complain about your property. But these saving groups have really helped us. The loan from businessmen has an interest rate of 40% while that of a saving group is only 10%. (IDI, male, Lyakajura in Lyantonde)

When he is lending you some money, you make an agreement in that the collateral is presented in a way that he has sold me this property, let's say, a chair (sofa-sets), and I will take it from him on the 30th (specific date agreed). It means that if you don't give him his money by the 30th, he will go with the chairs. It can be like, Mr. so and so, has sold me his cow but I will take it on the 15th. It means you've to pay back the loan before that date. If a cow costs about one million and he realises that the cow is indeed worth a million shillings, he lends you 500,000UGX and then you make an agreement that he has sold to me his cow, and in the agreement, you write one million instead of 500,000UGX. (IDI, male, Kinuuka in Lyantonde)

Some processes and the documents needed take long to access money and we end up leaving the money. (Community Profile, Lyakajura in Lyantonde).

I have ever tried to get a loan for farming but I did not get it because the requirements during loan processing are many; like they wanted a land title or land agreement to show that you are the owner of the land so that in case you fail to pay the loan, they will have the authority to sell the land. They also wanted security of a person who will stand in for you on a loan; and my husband does not want things like that and I also do not have power over the land. (IDI, female, Usuk in Katakwi)

The voices above highlight a number of challenges in accessing financial resources. Lack of collateral, prevents many community members from securing loans. This is compounded by the high interest rates and risky terms associated with alternative lending options, such as from individual money lenders. The loan application process is often cumbersome, with requirements such as land titles or third-party guarantees that are difficult to meet, especially for women who may not have control over property. These financial barriers limit the ability of communities to diversify income sources and engage in climate adaptation activities, perpetuating a cycle of financial exclusion and vulnerability.

Fear of the Inability to Pay Back

Another challenge is the fear of being unable to pay back, leading the lender to take over the committed collateral or committing the borrower to court and jail. Failure to pay is a result of different factors such as increased climate shocks like drought that may result in lower yield than expected; use of the credit for unintended borrowing reasons; low rewarding income-generating enterprises to make enough payback resources; and internal family challenges that may disrupt payment flows. In Katakwi (Usuk Sub-county, in particular), there was a perception that when women get loans, their spouses take them over, but when they (men) fail to pay them back, women are tasked to pay the loans alone.

Inaccessible Formal Financial Institutions

In both districts, respondents indicated that formal banks and microfinance institutions were located far from the rural farmers, with no chance for them to benefit from their services. The extra costs in the form of transportation were a push factor. This was compounded by the cumbersome loan processing requirements that were way beyond the reach of rural men and men farmers. In Usuk Sub-county, Katakwi, the average distance to formal financial services was estimated at 47-70 kilometres. For mobile banking services, it was an average of 5 kilometres; and village SACCOs are about half a kilometre away. The story was similar to experiences in Lyantonde District, where for instance, from Lyakajura Sub-county to formal banks and other microfinance institutions in Lyantonde Town, there was a distance of about 40 kilometres.

The above dynamics leave women and men smallholder farmers to predominantly depend on exploitative and monopoly community-based money lenders (*kafuna*), whose operations are equated to "prisons." They put in place exorbitant conditionalities and agreements intended to confiscate the collateral offered such as land, and motorcycles, among others. The following are examples of voices from mainly men, who use the service.

Box 2: Use of Formal Financial Institutions

... it is true *kafuna* (money lenders) help us but it overexploits us mainly because we don't have a bank in the village that knows your property. So, moving from here up to Lyantonde Town, you need about 30,000 to 40,000UGX; yet, that money would help you to buy a sack of maize flour. So, instead of going to the bank, you resort to money lenders because of the distance challenging you. So, we have that as a challenge as we don't have a specific point that it is the one visible and helps us. (FGD, male, Lyakajura in Lyantonde)

The challenge we face is that you might go to the rich person to lend you some money but before he lends, he first makes an agreement with you. But when making an agreement, he doesn't make it in terms of borrowing instead it is 'I am selling'. Secondly, he confiscates your national identity card, meaning you can no longer travel to Masaka or Kampala because he has already confiscated the national identity card. So, you live in such a dilemma, that you become like an inmate. That's the challenge we encounter. (FGD with men, Lyakajura, Lyantonde)

...in case he lends you one million shillings, it means you have to add interest of about 400,000UGX; and in the agreement, you say, 'I have sold my motorcycle at a fee of 1,400,000UGX and they have paid me all the money, there is no any debtor'. And then you give him the logbook and he also keeps the agreement. It is now upon him who has lent you to be with humanity that once you get his 1,400,000UGX, then you take to him his money and he gives you the motorcycle and the logbook and then the motorcycle turns to be again your property. (FGD with men, Lyakajura, Lyantonde)

In my savings group, when you borrow money, your guarantor or collateral may be land. So, if you fail to refund the money, the group takes over your property. I have lost an acre of land because of the loan. All that you have worked for is just lost in that manner. (FGD, male, Magoro in Katakwi).

High Interest Rates from Formal Institutions and Money Lenders

High interest rates and rigid loan terms discourage borrowing from both formal institutions and VSLAs. Respondents reported rates of UGX 3,000–4,000 per UGX 10,000, aggressive loan recovery tactics, and fear of arrests. VSLA loans can carry monthly interest rates of 10%, making repayment difficult. Formal banks also deduct fees upfront, reducing the actual loan received, leading to undercapitalised businesses, household tension, and risk of asset loss.

To circumvent the high interest rates and repercussions, farmers, especially men, diversify their income sources by keeping livestock especially pigs, goats, and poultry to be able to pay back the credit/loan. This enables them to be less dependent on crops that are highly susceptible to drought and crop failure. However, livestock, especially cattle is also prone to thefts/rustling from the neighbouring Karimojong warriors. Some voices about these barriers are represented below:

> *"I see that if you get that money and you are not affected by the situation, then you buy five piglets and you keep them. They can grow fast and reproduce; then you make some more money and be able to pay back the rich who lent you..." (FGD, male, Lyakajura in Lyantonde)*
>
> *"For the goats, you can rear because for them even during the dry season, that's when they look healthier..." (FGD male, Lyakajura in Lyantonde)*

Financial Illiteracy

Both men and women expressed a challenge of financial illiteracy that exposes them to exploitative loan conditionalities that increase their vulnerability to loss of their property and high interest rates. It also limits their ability to make informed investments and follow them through. Although both men and women smallholder farmers are affected, generally, women face more financial literacy barriers than men.

> *"The main challenge includes financial policies, low financial education, and low literacy levels. Also, we do not have financial institutions apart from village savings groups which give limited amounts of loans to its members. There is a lack of knowledge and skills needed for effective use of finance..." (IDI, male, Abyelut, Katakwi)*

In both Lyantonde and Katakwi districts, smallholder farmers face multiple barriers to accessing credit. These include lack of collateral, high interest rates, limited financial literacy, and fear of loan default. Collateral requirements – such as land or property – are often beyond reach, particularly for women who may not own assets. Many loan agreements, especially with local money lenders, are exploitative, featuring high interest rates and risky conditions. The application process is also complex and often excludes women who lack control over property. Financial illiteracy further limits farmers' ability to understand loan terms or make sound financial decisions. Moreover, formal financial institutions are often inaccessible, pushing farmers to rely on costly informal lenders. These barriers prevent farmers from investing in climate adaptation, diversifying income, or managing climate-related shocks.

4. Conclusion and Recommendations

4.1 Conclusions

Gender disparities are evident in both Lyantonde and Katakwi districts, with women having limited access to productive resources and being disproportionately affected by food insecurity. The study reveals that food insecurity is more acute in Katakwi, where a larger share of respondents are classified as severely food insecure. While starchy foods, vegetables, and legumes form the dietary staples in both districts, the consumption of animal products, fruits, and dairy is notably low – reflecting significant gender-based differences in access to diverse and nutritious foods. Broader challenges across education, health, agriculture, and governance – exacerbated by inadequate infrastructure and entrenched gender inequalities – further constrain socioeconomic development, especially for women and other marginalised groups. Seasonal rainfall variability also influences food availability and household dynamics, deepening vulnerabilities within these communities.

A clear gender disparity in empowerment exists, with women significantly more disempowered than men, particularly in decision-making, income control, and work-life balance. Women face gendered barriers rooted in social norms around domestic violence, mobility, and economic decision-making. Although men also experience disempowerment – mainly in self-efficacy and autonomy – women carry a heavier burden of agricultural and household work while remaining underrepresented in decision-making and income generation. Men dominate decisions on land and crop management, thus reinforcing inequality. Women's empowerment is often confined to family and community roles, with societal norms limiting their potential. Achieving meaningful empowerment requires shifting attitudes towards gender equality, leadership, and autonomy, alongside promoting women's financial independence and asset ownership.

The findings indicate that both men and women's empowerment is tied to economic self-sufficiency and responsible family leadership. Men's empowerment is often defined by their ability to provide and lead, while disempowerment is linked to neglecting responsibilities and financial instability. For women, shared decision-making and economic independence are crucial for true empowerment.

Climate and non-climate shocks severely affect household resilience, with women – especially in Katakwi – bearing the greatest burden. Climate shocks worsen food insecurity, poverty, and gender inequality, as women juggle farming and household roles. While men pursue structural solutions, women rely on household-level adaptations. Limited access to resources and climate-resilient technologies, along with gender and economic disparities, heighten women's vulnerability and risk reinforcing social inequality.

Gender disparities, particularly in Katakwi, significantly limit women's recovery and adaptive capacities, undermining their resilience to shocks. Lyantonde shows relatively stronger resilience, underscoring regional differences. However, both districts exhibit critically low absorptive and transformative capacities, pointing to the need for stronger community systems, improved access to resources, and responsive governance.

A high incidence of "do nothing" responses and reliance on short-term coping strategies – such as loans, gifts, savings, or selling livestock – reflects low resilience among women. These approaches are unsustainable and highlight deeper structural vulnerabilities.

Women smallholder farmers also face major barriers in accessing timely climate and agricultural information, largely due to limited control over digital technologies and persistent gender norms. While mobile phones are common, their use for climate or agricultural information is minimal. Local FM radio remains the most trusted and accessible source, especially in rural areas. Enhancing women's access to and control over digital tools and relevant information is critical for building long-term resilience and productivity.

To enhance the resilience of women smallholder farmers to climate change and improve their livelihoods and food security, targeted interventions are urgently needed. Social groups, particularly savings groups, play a vital role in building resilience and financial stability, but gendered leadership dynamics limit women's influence in decision-making. Despite agriculture being the primary livelihood – women tending food crops and men cash crops – productivity is undermined by poor soil, limited inputs, and land fragmentation, while unsustainable farming practices threaten environmental health. Women remain underrepresented in climate action due to limited support and social barriers. Access to affordable credit is also a major constraint, with most relying on informal loans, as formal financial systems remain costly and inaccessible, hindering long-term adaptation and investment in sustainable agriculture.

4.2 Recommendations

a) To Government

1. **Promote gender equity in asset ownership and decision-making** by enforcing laws and policies that ensure women have equal access to land, credit, income-generating opportunities, and leadership roles.
2. **Tailor policies and programmes to district-specific vulnerabilities,** with targeted support for high-risk areas such as Katakwi.
3. **Invest in rural infrastructure, health systems, and social protection mechanisms** to improve community resilience and facilitate long-term development.
4. **Support agricultural diversification and sustainability** through incentives for climate-smart agriculture, sustainable livestock rearing, and improved soil fertility.
5. **Strengthen formal financial systems** by making credit more affordable and accessible to women smallholder farmers.

b) To Development Partners

1. **Support resilience-building programmes** focused on women, including training in adaptive agricultural practices, financial literacy, and climate risk management.
2. **Fund long-term interventions** in skills development, diversified livelihoods, and access to resources for sustainable adaptation.
3. **Expand access to digital and physical infrastructure** (e.g., internet, farm roads, market access) to support knowledge dissemination and market integration.

c) To Civil Society Organisations (CSOs)

1. **Implement community-based empowerment programmes** that address barriers such as work-life imbalance, mobility constraints, and limited income control for women.
2. **Promote women's participation in social groups** and strengthen gender-sensitive leadership within savings and farmer groups.
3. **Raise awareness on climate change and gender issues** through community dialogues, radio programmes, and digital campaigns.
4. **Facilitate access to information, networks, and services** by working with both women and men to challenge harmful norms and practices.

d) To Private Sector

1. **Develop inclusive financial products and services** tailored to the needs of rural women farmers, such as flexible credit and micro-insurance.
2. **Invest in local agribusinesses** that promote value chains for nutritious foods (e.g., dairy, fish, eggs) and offer fair market access to women farmers.

3. **Partner with telecom providers** to improve rural internet access and deliver climate and agricultural advisories via SMS, apps, or mobile platforms.

e) To Community Leaders

1. **Champion gender equality** by promoting shared leadership and decision-making in community institutions.
2. **Encourage inclusive participation** in development projects, ensuring women's voices are heard and considered.
3. **Mobilise communities for local resilience-building efforts**, including savings groups, food security initiatives, and health preparedness.

f) To Community Women and Men

1. **Support women's ownership and responsible use of mobile phones** to access agricultural and climate information.
2. **Engage actively in local groups and savings schemes** to build social capital, financial security, and knowledge exchange.
3. **Adopt sustainable farming practices** and diversify livelihoods to reduce vulnerability to shocks.
4. **Use local FM radio and mobile phones for timely information** on weather, markets, and health alerts – and advocate for better access to these tools.
5. **Encourage women's leadership and equitable task sharing** at home and in the community to build resilience and promote well-being.

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