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RESEARCH PAPER

Assessing Village and Savings Associations (VSLA's) Contribution to Urban Resilience

Evidence from Northern Ghana

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Table of Contents

Acronyms

ACDEP	Association of Church Development Projects
ADB	African Development Bank
CBO	Community-Based Organization
CCA	Climate Change Adaptation
CSO	Civil Society Organization
DRR	Disaster Risk Reduction
E4D	Empowerment for Development
EWS	Early Warning Systems
FAO	Food and Agriculture Organization

FGD	Focus Group Discussion
GHG	Greenhouse Gas
GIS	Geographic Information System
GSS	Ghana Statistical Service
IPCC	Intergovernmental Panel on Climate Change
KII	Key Informant Interview
LDC	Least Developed Country
LG	Link Ghana
M&E	Monitoring and Evaluation
MESTI	Ministry of Environment, Science, Technology, and Innovation
MMDAs	Metropolitan, Municipal, and District Assemblies
MoFA	Ministry of Food and Agriculture
MoGCP	Ministry of Gender, Children and Social Protection
NGO	Non-Governmental Organization
PRA	Participatory Rural Appraisal
SDGs	Sustainable Development Goals
SHF	Smallholder Farmer
UDS	University for Development Studies
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNDRR	United Nations Office for Disaster Risk Reduction
WVG	World Vision Ghana
VRA	Vulnerability and Risk Assessment

Abstract

This study explores the role of Village Savings and Loan Associations (VSLAs) in enhancing urban resilience to climate change in Northern Ghana, focusing on the cities of Tamale and Bolgatanga. Drawing from a mixed-methods approach involving 600 survey respondents (300 VSLA members and 300 non-members), 30 in-depth interviews, and 30 focus group discussions, the research evaluates the socio-economic and environmental benefits of VSLAs and their effectiveness as community-based adaptation mechanisms. The findings reveal that VSLA membership significantly improves financial resilience, access to credit, climate knowledge, and preparedness. About 85% of VSLA members demonstrated financial resilience, compared to 54% of non-members, and 100% received climate resilience training, compared to 48% of non-members. VSLA participants reported greater access to savings, insurance, and emergency funds, leading to enhanced household income, livelihood diversification, and business expansion. Moreover, VSLAs strengthened social capital, trust, and collective action, essential for community-level disaster response and recovery.

Key drivers of VSLA adoption included financial inclusion, simplicity of the model, risk reduction, and positive community testimonies. The study concludes that VSLAs are vital platforms for building climate resilience, economic empowerment, and social cohesion in rapidly urbanizing and climate-vulnerable regions. It recommends integrating VSLA structures into national climate adaptation frameworks, urban development planning, and social protection policies to enhance their scalability and sustainability across Ghana and sub-Saharan Africa.

Keywords: Savings, Associations, Urban, Resilience, Climate, Adaptation

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1. Introduction

1.1 Context

Urbanization in Northern Ghana is accelerating, mirroring trends across sub-Saharan Africa. While urban growth can drive economic development, it also presents serious challenges in the context of climate change. The region is already vulnerable to climate-related hazards prolonged droughts, erratic rainfall, heatwaves, and flash floods which are intensifying with global climate change (Pealore, 2020; Yaro & Hesselberg, 2016). When combined with rapid, unplanned urban expansion, these hazards create heightened vulnerabilities, especially for informal settlements and low-income communities. Urban centers like Tamale, Bolgatanga, Wa, and Bawku have experienced rapid population growth over the last two decades, but infrastructure and urban planning have lagged (Songsore, 2017). Many residents live in substandard housing, with limited access to water, sanitation, drainage, and health services conditions that increase exposure to environmental risks and hinder recovery from climate shocks (Nyantakyi-Frimpong & Bezner-Kerr, 2015).

Poor urban residents are often rural migrants fleeing climate or economic stress settle in flood-prone zones with insecure land tenure and little access to financial or social protection services (Cobbinah & Niminga-Beka, 2017). Community-based mechanisms like Village Savings and Loan Associations (VSLAs) have emerged as critical tools for building urban resilience. Originally rural in focus, VSLAs now support urban women, youth, and informal workers with savings, microloans, and collective action (Bannor, 2020; Adatuu et al., 2021). VSLAs build financial buffers, diversify livelihoods, and foster social cohesion key for navigating climate shocks (Moser & Satterthwaite, 2008; Hendricks & Chidiac, 2011). Yet, their role in urban adaptation remains underexplored (Amponsah et al., 2023). Given increasing climate risks, research on how VSLAs support urban resilience in Northern Ghana is urgently needed to inform scalable, community-based climate adaptation strategies across the region.

1.2 Problem Statement

Urban centers in Northern Ghana are increasingly vulnerable to climate-induced risks such as extreme rainfall leading to flooding, rising temperatures resulting in heat stress, and prolonged dry spells. These climate challenges are compounded by rapid urbanization, inadequate infrastructure, and widespread poverty. Despite the growing threats, formal climate adaptation mechanisms and financial safety nets remain largely inaccessible to the urban poor. This leaves many low-income households unprepared and exposed to climate-related shocks. Village Savings and Loan Associations (VSLAs) have emerged as informal,

community-based financial institutions that provide critical access to savings, credit, and emergency funds for economically marginalized groups. Traditionally implemented in rural contexts, VSLAs are now gaining traction in urban areas, where financial exclusion remains prevalent. These groups not only offer financial services but also promote social cohesion, trust, and collective action—key components of community-based climate adaptation. However, while the role of VSLAs in rural livelihood resilience has been extensively explored, their contribution to urban climate change adaptation remains under-researched. There is a lack of empirical evidence on how urban-based VSLAs support climate resilience among households, particularly in Northern Ghana where urbanization and climate vulnerability intersect acutely. This knowledge gap limits the integration of informal financial systems like VSLAs into urban resilience strategies and planning frameworks.

Given these dynamics, it is critical to investigate how VSLAs contribute to urban household and community-level adaptation to climate risks. This study aims to fill that gap by generating evidence on the adaptive functions of VSLAs in urban contexts. The findings are expected to inform policy, development programming, and local governance strategies aimed at enhancing the resilience of urban communities to climate change in Northern Ghana and similar contexts across sub-Saharan Africa.

1.3 Research Objectives and Questions

1.3.1 Research Objectives

This study aimed to explore the role of Village Savings and Loans Associations (VSLAs) in enhancing urban resilience to climate change in Northern Ghana. Specifically, it pursued the following research objectives:

1. To evaluate the socio-economic and environmental benefits of VSLA membership in the context of urban climate resilience in Northern Ghana.
2. To assess the effectiveness of VSLAs as a community-based strategy for urban climate change adaptation.
3. To identify the key success factors that influence the adoption and sustainability of VSLAs as an urban climate adaptation mechanism.

1.3.2 Research Questions

To address the research objectives, the study was guided by the following research questions:

1. In what ways do VSLAs contribute to the financial and climate resilience of their members in urban settings?

2. How effective are VSLAs in mitigating the impacts of climate change in urban communities?
3. What factors contribute to the successful adoption and implementation of VSLAs as a climate adaptation strategy in urban Northern Ghana?

2. LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant literature on the contribution of Village Savings and Loan Associations (VSLAs) to urban resilience. It explores the conceptual framework and empirical evidence surrounding VSLAs within the context of urban settings, particularly their role in enhancing the adaptive capacity of vulnerable communities. The review begins by examining the concept and structure of VSLAs in urban environments, followed by a discussion on the concept of climate resilience. It then presents two complementary major theoretical perspectives on climate resilience. Subsequently, the chapter analyzes how VSLAs contribute to urban resilience, with particular attention to their socioeconomic and environmental impacts. The review aims to establish a clear understanding of how VSLAs can serve as grassroots mechanisms for building resilience against the multiple stresses associated with urbanization and climate change.

2.2 Conceptualizing VSLAs within the Urban Context

The Village Savings and Loan Association (VSLA) model was first piloted by CARE International in Niger in 1991 to empower economically marginalized rural communities in sub-Saharan Africa by providing an accessible, self-managed alternative to formal banking systems (Allen & Panetta, 2010). At the time, formal financial institutions were largely inaccessible to rural residents particularly women and informal workers due to high transaction costs, lack of collateral, limited financial literacy, and geographic remoteness. The VSLA model presented an innovative, self-managed, and low-cost mechanism for savings, credit, and mutual support within communities. It is imperative to argue that there is growing empirical evidence demonstrating the significant role of VSLAs in mitigating and adapting to the impacts of climate change globally. The Abdul Latif Jameel Poverty Action Lab (n.d.-a) evaluated VSLA programs across several African countries and revealed systematic increases in household savings and access to credit following group formation. In peri-urban Accra and other towns in Ghana, VSLAs have accumulated substantial pooled savings used to cover medical expenses, rent during income shocks, and relocation costs after floods, thus creating a city-scale, community-owned safety net. Similarly, Munthali et al. (2022) found that VSLAs provide emergency liquidity and extend flexible

small loans for home repairs, restocking microenterprises, and investing in resilience measures such as waterproofing and sanitation. These short-term, member-funded loans are more adaptable than formal microloans, enabling faster recovery and reducing long-term income losses. In Nairobi's informal settlements, including Kibera and Mathare, VSLA members have used such loans to repair flood-damaged shops, replenish stock, and secure temporary shelter, thereby reinforcing household resilience to urban shocks (Munthali et al., 2022).

During the COVID-19 pandemic, multiple studies by CARE (2022) and the Evidence Consortium on Women's Groups found that active VSLAs enabled members to maintain consumption, access emergency loans, and coordinate mutual support through pooled food purchases and shared services. Although some groups experienced reduced contributions due to mobility restrictions, well-managed VSLAs demonstrated strong short-term resilience and recovery capacity amid widespread economic disruptions. According to Adegbite et al. (2022), panel data from Nigeria and Uganda collected between 2020 and 2021 showed that households in active VSLAs were significantly more likely to access emergency funds, obtain credit, and share critical public health information compared to non-members. These mechanisms enhanced urban households' ability to manage income losses, meet medical expenses, and navigate pandemic-related economic challenges. CARE's global VSLA programs further emphasize training on group governance, bookkeeping, and the establishment of emergency and social funds. By integrating health messaging and disaster preparedness into regular VSLA activities, these programs have strengthened local resilience capacities. In Bangladesh and the Philippines, such enhanced VSLAs have been shown to play a central role in coordinating community responses to floods and cyclones, promoting collective action, and fostering adaptive capacity in disaster-prone areas (CARE, 2022).

Munthali et al. (2022) observed that in Manila, Philippines, community savings federations such as DAMPA have leveraged regular meetings to coordinate flood responses, advocate for drainage improvements, and operate community kitchens during disasters. Their strong governance structures have facilitated rapid mobilization and effective communication of community needs to municipal authorities, enhancing collaborative resilience. Similarly, the Global Platform (2013) reported that in Mzuzu, Malawi, and other peri-urban African contexts, savings groups financed income-generating ventures such as food stalls, tailoring businesses, and motorcycle taxi services. These diversified livelihoods helped families maintain consumption during climate-induced shocks and supported both recovery and long-term adaptation.

Furthermore, Adegbite et al. (2021) observed that linking VSLAs to microinsurance schemes and municipal social registries facilitated faster relief distribution during floods

and pandemics. In Burkina Faso and Ghana, pilot programs that connected savings groups with formal banks and government data systems expedited emergency grants, improved coordination, and minimized exclusion from formal social protection mechanisms. Adegbite et al. (2021) further noted that in urban Ghana and East Africa, women in savings groups collectively pooled resources to pay school fees during income shocks, purchased communal grain stocks for lean seasons, and led neighborhood sanitation and safety initiatives. These collective actions not only reduced immediate vulnerabilities but also enhanced long-term adaptive and community resilience capacities demonstrating that VSLAs are a practical, community-driven approach to building urban resilience in the face of climate change.

Unlike microfinance institutions (MFIs), which typically rely on external capital and enforce formal lending criteria, VSLAs operate on principles of self-governance, mutual trust, and group accountability. VSLAs are generally led by women while membership is open to community members aged 18 and above who are trusted, willing to save regularly, and able to attend meetings consistently. Members must accept and adhere to the group's constitution, contribute to the social fund, and demonstrate honesty and cooperation. VSLAs often prioritize women, youth, and vulnerable individuals. Prospective members are vetted and approved by existing members to ensure commitment, trustworthiness, and shared responsibility within the group.

Members contribute regularly to a pooled savings fund, from which they can borrow at agreed-upon interest rates. The core features of the VSLA model according to CARE, 2023 include the following as shown in table 1 below.

Table 1 Features of VSLAs

Self-Managed	*Savings Pool*	*Loan Accessibility*	*Social Fund*	*Operating Cycle*
Small, autonomous groups that function without external supervision	Member contributions form the basis for internal lending and emergency funds.	Short-term loans are provided with flexible, group-determined repayment terms	A designated portion of the pool is reserved for emergencies and social welfare.	A typical savings-and-loan cycle spans 9–12 months, ending in a share-out of accumulated savings and interest.

Source: CARE, 2023

Although originally rooted in rural development, the VSLA model has been increasingly adapted to urban contexts in response to rapid urbanization and rising economic inequality. Urban poor communities often comprising informal workers, internal migrants, and unemployed youth face similar, if not more complex, barriers to financial services. These include unstable incomes, lack of formal identification, and limited trust in formal

financial institutions (Munthali et al., 2022; Ritchie, 2021). In urban settings, VSLAs have evolved to meet a broader range of financial needs by introducing greater flexibility in savings amounts, loan sizes, and repayment structures. They also address the socio-economic heterogeneity of urban populations by leveraging trust-based networks to foster financial inclusion. According to Mayoux, (2017), while VSLAs have proven effective in rural contexts, their transferability to urban contexts presents notable caveats. Mayoux, (2017) argues that urban communities are often more transient and socially fragmented, weakening trust and cohesion essential for group savings models, especially face to face meetings. Adegbite, et al (2022) on the other hand highlights high mobility, rental housing, and informal employment patterns which makes regular meetings and contributions difficult to sustain. Mayoux (2017) further notes that urban livelihoods involve higher and more unpredictable expenses, limiting disposable income for savings. Competition with existing microfinance institutions and digital lending platforms can also dilute participation. Adegbite, et al (2022) states that governance challenges emerge when groups span heterogeneous populations without strong social ties, increasing risks of default and fraud. Additionally, urban regulatory environments may not readily accommodate informal savings mechanisms. Therefore, successful adaptation requires hybrid models that integrate digital finance, flexible contribution systems, and partnerships with formal institutions while maintaining the participatory governance and mutual accountability that underpin VSLA effectiveness in rural areas (CARE, 2022). This hybrid system is reflected in many urban VSLAs as they now integrate digital technologies such as mobile money platforms to facilitate savings and loan disbursements, thereby enhancing security and convenience (CARE, 2023; van Rooyen et al., 2020). Furthermore, these associations are increasingly linked with livelihood and entrepreneurship programs, providing capital for microenterprises, educational expenses, rent, and healthcare issues that are particularly pressing in urban contexts. The emergence of urban VSLAs as drivers of social change is evident in their role in empowering women, involving young people, and enhancing community resilience in response to economic shocks, including those caused by the pandemic (Agyeman, 2018; Zennou et al., 2022). As of 2023, VSLAs have reached more than 25 million individuals worldwide, with a growing proportion operating in urban and peri-urban environments (CARE, 2023). The continued relevance of VSLAs in urban areas lies not only in their capacity to promote financial inclusion among low-income and informal populations but also in their role as grassroots resilience mechanisms. In times of crisis and economic downturns, they enhance social cohesion and foster community-based development, even in transient and diverse urban neighborhoods. Although born out of rural necessity, the VSLA model has demonstrated considerable adaptability and impact when reimagined for the urban landscape. As urbanization accelerates and socio-economic disparities widen, VSLAs represent a locally driven, inclusive, and sustainable pathway to economic empowerment and poverty reduction.

2.3 Concept of Climate Resilience

Climate resilience is a key concept in climate change response, referring to the ability of social, ecological, and economic systems to withstand, adjust to, and recover from climate-related disruptions (Center for Climate and Energy Solutions, 2025). Originally rooted in ecological science, resilience referred to the ability of ecosystems to recover from shocks (Delettre, 2021). Over time, the concept of resilience has broadened to encompass human systems, acknowledging the intricate connections between environmental, social, and economic factors (Marrakech Partnership for Global Climate Action, 2020). The Intergovernmental Panel on Climate Change (IPCC) defines resilience as "the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and functioning, the capacity for self-organization, and the capacity to adapt to stress and change" (Denton et al., 2014). This definition reflects a shift from mere recovery to adaptation and transformation, highlighting resilience as a continuous process of learning and innovation. Contemporary frameworks describe resilience through three interrelated capacities: absorptive, adaptive, and transformative (Turchi et al., 2023). Absorptive capacity refers to the ability to endure climate shocks such as floods or heatwaves without system collapse. Adaptive capacity involves adjustments in behaviors, infrastructure, and technologies to manage evolving risks. Transformative capacity entails profound structural changes to policies, institutions, or social norms when existing systems are insufficient to cope (WeADAPT, 2023).

Resilience is closely tied to vulnerability, which refers to a system's susceptibility to harm from climate hazards. Effective resilience-building must begin with vulnerability assessments that identify the most at-risk populations, ecosystems, or sectors (Hung et al., 2024; Shockley, 2023). In contexts where incremental change is inadequate, transformation becomes essential to achieving long-term sustainability (United Nations & Secretariat, 2024). Transformational here suggests a deep, systemic change that redefines structures, behaviors, and relationships to ensure sustainability. It involves shifting institutional norms, governance systems, and livelihood practices to create new, more resilient pathways when existing systems can no longer cope with emerging risks or sustain long-term adaptation (United Nations & Secretariat, 2024; CARE, 2022).

Ultimately, building resilience involves an integrated strategy that strengthens the capacity to absorb shocks, adapt incrementally, and transform fundamentally. This multidimensional approach is key to reducing climate risks and advancing sustainable development (Situmorang et al., 2024). Enhanced resilience helps communities and ecosystems recover faster, reduce losses, and adapt proactively to shifting climatic conditions promoting well-being and long-term sustainability (Esperon-Rodriguez, 2024).

2.4 Factors Influencing Climate Resilience

Climate resilience refers to the capacity of societies, ecosystems, and communities to resist, adapt to, and recover from climate-related disturbances. Building resilience requires an understanding of the multifaceted drivers that shape adaptive capacity. These can be broadly categorized into four domains: social, economic, environmental, and institutional factors (Rölfer et al., 2022). Social determinants including poverty, inequality, and unequal access to basic resources play a critical role in shaping climate resilience. Households living in poverty often cannot afford investments in resilient infrastructure or adaptive technologies, making them more vulnerable to the impacts of climate-related shocks (Favretto & Stringer, 2024; Samways, 2023). Inequality further limits marginalized populations' access to critical resources and participation in decision-making (Dupont & Roy, 2024; Wildowicz-Szumarska & Owsiak, 2024). On the other hand, equitable access to assets like land, water, and finance improves adaptive capacity, though more research is needed on how resource distribution affects resilience across urban and rural areas (Akuba, 2024). Economic factors are equally important. Economic stability enables investment in infrastructure, emergency response, and climate-smart technologies (Adger et al., 2011; Cimellaro et al., 2016). Access to financial tools including credit, savings, and insurance enables households to build buffers that help them withstand climate-related risks and economic disruptions (Zetterli et al., 2023). Secure employment and income streams enhance long-term adaptation (Chong, 2014). Infrastructure like roads and communication networks also supports timely response and recovery (Atkins et al., 2016; Filho et al., 2024). Environmental factors, including ecosystem health and biodiversity, underpin both human and ecological resilience. Healthy ecosystems deliver essential services including water purification, flood control, and carbon storage that help buffer communities against the adverse effects of climate change (Bernhardt & Leslie, 2012; Morecroft et al., 2012). Biodiversity enhances ecosystem functionality and recovery during stress events (Thompson et al., 2009; Smith et al., 2015).

Institutional and governance factors form the foundation for coordinated resilience strategies. Robust policy frameworks, institutional capacity, and inclusive governance enable effective adaptation (Ojea et al., 2016; Cid & Lerner, 2023). Community engagement through participatory planning and climate education builds local ownership and awareness, though more evaluation is needed on their long-term impact (Krantzberg et al., 2025; Kangana et al., 2024). Effective climate resilience depends on strengthening these interconnected dimensions to create adaptive, inclusive, and sustainable systems in a changing climate.

2.5 Climate Change Impacts

Developing nations face heightened vulnerability to climate change due to their dependence on rain-fed agriculture, constrained financial capacity for adaptation, and underdeveloped institutional frameworks (Francis & Adebayo, 2024). Although urban areas in these countries contribute over 70% of greenhouse gas emissions (Yu et al., 2024), they also face heightened risks due to dense populations, intensive energy use, and concentrated economic activities (Türe & Ar, 2024; Tatlonghari, 2025). Projections indicate that rising temperatures in Africa expected to increase by 1.5°C to 3°C pose significant risks to both human communities and natural ecosystems (Dajuma et al., 2023; Nwokolo et al., 2023). Vulnerability to climate change is shaped by access to resources, poverty levels, public health, and rapid urbanization (Okoro & Knight, 2024). Limited adaptive capacity is especially evident in informal settlements, where inadequate infrastructure and social safety nets compound risks. As urbanization accelerates in developing regions, it is estimated that more than 2 billion people will inhabit informal settlements by 2030 spaces often located in high-risk zones and ill-prepared for the impacts of climate change (Nassar et al., 2024; Nadimpalli et al., 2024).

In Ghana, climate change intensifies environmental degradation and poverty. From 1961 to 2000, average temperatures rose while mean annual rainfall declined (Arfasa et al., 2023; Abbam et al., 2018). Though Ghana contributes only 0.07% of global emissions and ranks 151st in per capita emissions (Kila, 2023), it remains highly vulnerable ranked 101st in the ND-GAIN Index (2016). Sea-level rise, unstable rainfall, and frequent extreme weather are compromising Ghana's land, water, forests, and farming productivity (Government of Ghana et al., 2021; Dunee et al., 2024). These climatic changes threaten food security and jeopardize the livelihoods of millions who rely on climate-sensitive sectors, including agriculture and fisheries (Müller-Kuckelberg et al., 2012).

2.6 Theories on climate resilience

The study adopts two complementary theories: the Asset-Based Community Development (ABCD) and Sustainable Livelihoods Approach (SLA). The choice of these theories is made for their direct relevance to understanding resilience-building through adaptive and transformational capacities. The ABCD approach emphasizes leveraging community strengths and social capital key elements in how VSLAs mobilize local assets for resilience and adaptation. The SLA framework provides a holistic lens to assess how VSLAs enhance access to financial, social, and natural resources critical for coping with and recovering from climate impacts. Together, these theories align with the research questions by explaining how VSLAs contribute to financial and climate resilience, assess their effectiveness in mitigating urban climate impacts, and identify enabling factors for

successful adoption and implementation in urban Northern Ghana, ensuring conceptual coherence, practical applicability, and replicability for future comparative analyses.

2.6.1 Asset-Based Community Development (ABCD)

This section presents an overview of the Asset-Based Community Development (ABCD) approach, a people-centered framework that offers a powerful lens for understanding and advancing community resilience and development. ABCD emphasizes leveraging local strengths, capacities, and resources to drive sustainable change from within. Rather than focusing on needs or deficiencies, ABCD shifts attention to what communities already have their skills, networks, institutions, and knowledge and how these assets can be mobilized for collective growth (Krusdewinta & Ajhuri, 2025). At its core, ABCD is about empowerment and self-determination. It empowers communities to assume control over their development, strengthen self-confidence, and promote lasting sustainability by leveraging their internal strengths and capacities (Syafiih et al., 2024). The approach begins with listening and storytelling community members share experiences to reveal hidden or overlooked assets. A core group of committed individuals then maps these assets, identifies key connectors and leaders, and strengthens relationships within the community. ABCD emphasizes participatory development, involving local people, associations, and institutions in all stages of planning and action. External stakeholders, NGOs, government bodies, and donors support the process but do not drive it. Their role is to offer resources and technical support only when necessary, ensuring that local leadership and ownership remain central (Capitani et al., 2024). The process culminates in a community-driven plan, grounded in shared priorities and built around identified assets. This plan tackles core issues not by imposing solutions but by leveraging community strengths. In doing so, ABCD reduces dependency on external aid and encourages communities to pursue solutions through their own initiative and ingenuity (Alamri et al., 2024; Ma et al., 2024). Ultimately, ABCD fosters lasting, inclusive development by emphasizing empowerment, collaboration, and internal agency, ensuring that change is meaningful, context-specific, and sustained from within.

2.6.2 Sustainable livelihood approach

The Sustainable Livelihoods Approach (SLA), developed by Chambers and Conway in the 1980s, is a widely used framework for analyzing poverty and vulnerability. It focuses on five key assets—financial, physical, social, natural, and human capital which individuals and communities draw upon to manage risk and recover from shocks. SLA emphasizes local capacity and empowerment, aiming to enhance both current livelihoods and future opportunities. It also considers how vulnerability, asset interactions, and institutions shape livelihood strategies. By integrating cultural, ecological, and economic dimensions, SLA

supports long-term poverty reduction and resilience-building in diverse development contexts (Kollmair et al., 2002; Morse, 2025).

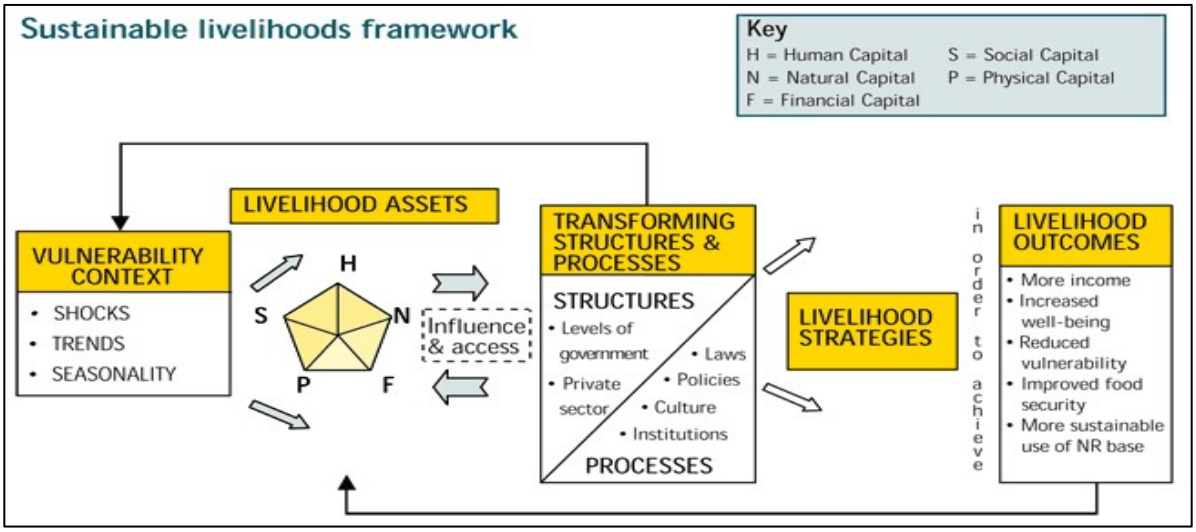

Figure 1 Sustainable Livelihood Framework

Source: DFID UK,1999; and Elizondo, 2017

As shown in Figure 1 above, the five livelihood capitals human, social, natural, physical, and financial are foundational to the Sustainable Livelihoods Approach. Human capital encompasses the knowledge, skills, education, health, and labor capacity within a household. It is shaped by demographics such as age, gender, and household size. High-quality human capital enables better use of other assets and adaptability to change, while limited education and skills can constrain livelihood options (Sari & Prasetyani, 2025). Social capital refers to the networks, relationships, and social structures that facilitate cooperation, trust, and mutual support. It includes formal and informal associations, community ties, and shared norms that enable access to resources and collective action (Malhotra et al., 2024). For example, community-trust relationships in tourism enterprises enhance local employment and shared economic benefits. Natural capital includes resources like land, water, and biodiversity. These underpin agricultural and pastoral livelihoods, particularly in rural areas. For instance, farmers in wetlands benefit from better water access and pasture productivity (Fleming et al., 2024). Physical capital involves infrastructure roads, buildings, and equipment that supports access to services and markets. Improved roads reduce costs and increase rural productivity. Financial capital

comprises monetary resources cash, savings, remittances, insurance that enhance resilience and enable investment in livelihoods and emergencies (Yadav, 2023b).

2.7 Challenges to Building Climate Resilience

Building climate resilience is becoming ever more urgent as climate-related disasters grow in frequency and severity and environmental uncertainty deepens globally. Even where countries have made international commitments to adaptation and resilience, significant barriers persist especially in developing and lower-income contexts. Among the most persistent of these are financial constraints, institutional and policy weaknesses, inadequate infrastructure, and limited technical or data capacity (OECD, 2023; UNFCCC, 2024; Tamasiga et al., 2023). One of the most acute challenges is limited access to adequate and appropriate financing for adaptation and resilience. Developing countries face a substantial "adaptation finance gap," meaning the funding required to build resilient infrastructure, support livelihoods and absorb shocks significantly exceeds what is currently available (OECD, 2023). The architecture of climate finance is skewed toward mitigation (reducing emissions) rather than adaptation (managing impacts), even though adaptation is critical for vulnerable nations (UNFCCC, 2024). For example, least developed countries (LDCs) often struggle to secure concessional finance or grants; instead, they are offered loans, which can impose long-term debt burdens (UNFCCC, 2024). The challenge is especially pronounced for sectors such as housing, transport and energy, where resilient design often costs more up front and returns are long-term. Furthermore, weak credit ratings, high risk perceptions and lack of de-risking mechanisms discourage private investment in adaptation projects (Tamasiga et al., 2023). As a result, local governments, municipalities and communities often cannot mobilize the resources needed to integrate adaptation measures such as flood-proofing, heat-resilient infrastructure or climate-smart urban planning. Without access to green finance that is flexible and targeted, resilience remains elusive (Tamasiga et al., 2023).

Another major barrier lies in weak governance, fragmented institutional mandates and poor coordination across sectors and levels of government. The UNFCCC's latest synthesis report highlights that many developing countries have governance arrangements that are under-resourced, lack coherent frameworks and face challenges with stakeholder engagement, institutional coordination and technical capacity. (UNFCCC, 2024). Institutional fragmentation where climate adaptation is treated separately from development, disaster management, infrastructure and social protection leads to duplication, inefficiencies and gaps (Frontiers, 2025). In urban contexts, this challenge is amplified: municipal governments often have limited authority or budgets for resilience initiatives; climate risk may be poorly integrated into city planning; and overlapping jurisdictions (city, regional, national) can make implementation inconsistent. Meanwhile,

institutional capacity may be weak (few trained staff, limited data systems, inadequate budgets (OECD, 2023). These obstacles undermine evidence-based adaptation planning and delay the translation of policy commitments into action (OECD. (2023).

Effective resilience requires adequate data, risk assessment, modelling of climate impacts and monitoring mechanisms. Yet many developing countries and many urban localities lack strong technical capacity, up-to-date climate information, or reliable monitoring and evaluation frameworks. The UNFCCC report underscores the persistent data and technical limitations that hinder adaptation planning (UNFCCC, 2024). This deficiency means that identifying priority interventions, tracking progress or assessing vulnerability becomes difficult. In addition, local knowledge and community-level data may be under-utilised or unevenly integrated. This challenge extends to the realm of finance where, identifying bankable adaptation projects, preparing project documents and structuring investment packages requires capacity that many jurisdictions lack. Without project readiness, access to finance (public or private) is curtailed (OECD., 2023).

Vulnerability of populations is shaped by livelihoods, access to financial services and ability to adapt income streams. In many developing urban settings, a large proportion of households work in informal economies and have limited access to credit, savings or insurance (OECD., 2023). Alluding to OECD (2023), Frontiers. (2025) stipulates that, financial inclusion is a major challenge to resilience: without access to loans, savings mechanisms or micro-insurance, vulnerable households cannot invest in adaptive technologies, diversify their livelihoods, or recover after shocks (Frontiers. (2025). This barrier is compounded by the fact that informal workers often have low savings, unpredictable incomes and limited safety nets (Frontiers, 2025). As argued by Tamasiga et al (2023), the lack of accessible and affordable financial services for vulnerable groups therefore undermines resilience efforts. Adaptation measures such as retrofitting homes, installing cooling systems, or investing in flood-resistant infrastructure may remain unreachable. Financial exclusion thus perpetuates vulnerability (Tamasiga et al., 2023).

Another dimension of the challenge relates to equity and social inclusion. According to Frontiers (2025) and Tamasiga., et al (2023), vulnerable and marginalised women groups, youth, migrants, informal settlement dwellers often face heightened climate risks and more limited adaptive capacity. Yet adaptation planning may overlook these groups or fail to integrate community-based participation and inclusive governance. The complexity of urban vulnerability, heterogeneous populations, mobility, informal tenure, diverse employment makes standard rural-based models less effective. Building resilience in such contexts requires deep engagement, trust-building and locally tailored interventions, yet the speed and scale of urban change complicate this (Frontiers.,2025 & Tamasiga., et al, 2023). In addition, Mugabi et al., (2024) conjecture that social capital and community

cohesion important for collective resilience may be weaker in transient, densely packed urban settings, making collective adaptation interventions more difficult. Mugabi et al., (2024) further argue that, even where adaptation projects succeed in the short term, maintaining them over the long-term poses a challenge. Many resilience initiatives depend on external funding, pilot-based approaches or short-term project cycles. Without sustained institutional support, governance frameworks, financing mechanisms and community ownership, resilience gains may evaporate. Tamasiga et al (2023), proposes adaptation needs to evolve over time as climate impacts deepen, meaning long-term planning and flexible systems are needed. Thus, building systems that combine incremental adaptation and transformational change is vital but daunting (Tamasiga et al, 2023). Frontiers., (2025) argue that cities and countries must overcome institutional inertia, build adaptive governance, embed resilience into ongoing development processes and ensure that adaptation becomes part of everyday planning rather than an add-on (Frontiers., 2025).

2.8 Contribution of VSLA to Urban Resilience

Climate change presents a growing threat to urban resilience, particularly in developing countries (Dulal, 2016). Rising temperatures, erratic rainfall, and more frequent climate-related hazards are compounding existing urban challenges such as poverty, inequality, overcrowding, and inadequate infrastructure (Dodman & Satterthwaite, 2008; Khan, 2010). Rapid urban growth places increasing pressure on public services and undermines the capacity of urban communities to respond effectively to shocks (Parnell et al., 2007). In response, there is increasing interest in community-based strategies like Village Savings and Loan Associations (VSLAs), traditionally rural but now adapted for urban settings (Beyene, 2018).

VSLAs are self-managed financial groups that provide members with access to savings, credit, and mutual support. They help urban households manage financial risk, invest in small enterprises, and respond to emergencies (Pienaah & Luginaah, 2024). By fostering financial self-reliance and reducing dependency on subsidies, VSLAs promote responsible financial behavior and improve socio-economic security (Dasgupta, 2001; Chivasa, 2021). In cities where access to formal banking is limited, VSLAs offer inclusive financial tools and build trust-based social networks. They enhance community solidarity and empower marginalized groups, especially women, through collective decision-making and increased participation in local governance. Studies in Tanzania and Ethiopia show that VSLA members experience higher income, food security, credit access, and household stability (Ashenafi, 2017; Wu et al., 2022). As climate change intensifies, integrating VSLAs into urban development strategies provides a scalable, low-cost approach to enhance resilience and strengthen both economic and social capital in vulnerable communities.

2.9 Conceptual Framework

Figure 2 below illustrates the pathways through which Village Savings and Loan Associations (VSLAs) contribute to building resilience among urban households and communities in the face of climate change in Northern Ghana. The conceptual model integrates three core dimensions.In expounding the research, the conceptual framework was developed by the research team to provide a coherent structure that guides the study's focus, methodology, and analytical process. It establishes the logical relationships between key variables, ensuring alignment between the study's objectives, methods, and anticipated outcomes. By doing so, the framework enhances analytical rigor and provides a clear lens through which findings can be interpreted within the context of climate resilience and community development. It is critical to emphasis here also that, existing theoretical models, when applied individually, such as the Asset-Based Community Development (ABCD) and Sustainable Livelihoods Approach (SLA), offer valuable insights but fail to holistically capture the study's multidimensional focus. The decision to develop a new, integrated framework emerged from the recognition that neither model alone sufficiently addresses the intersections of financial inclusion, resilience building, and community empowerment within Village Savings and Loans Associations (VSLAs). In line with this, the developed framework combines the strengths of the ABCD and SLA to offer a more realistic and context-specific foundation for analysis making this framework unique and provocative thought in blending academic and practice. It situates VSLAs as critical community assets that can be strategically leveraged to strengthen adaptive capacity, promote economic inclusion, and foster locally led development. By positioning VSLAs at the center of the framework, the research underscores their role not only as financial mechanisms but also as platforms for collective action, social cohesion, and resilience building. The conceptual framework is therefore unique, integrating theoretical relevance with practical applicability to effectively address the study's objectives and contextual realities (Krusdewinta & Ajhuri, 2025).

As critical community assets, VSLAs provide members with access to savings, microloans, and emergency funds, thereby enhancing their financial stability. In addition, VSLAs function as forms of social capital, built on the foundations of group cohesion, trust, peer accountability, and collective action. These qualities foster a strong sense of mutual support and resource sharing among members. Due to their structural design and developmental goals, VSLAs also serve as platforms for capacity building, offering members training in skills development, financial literacy, and entrepreneurship (Capitani et al., 2024). Furthermore, VSLAs facilitate knowledge exchange, particularly around climate adaptation. As Morse (2025) notes, VSLAs provide an effective channel for disseminating climate-related information, early warning systems, and locally relevant adaptation practices. Together, these dimensions position VSLAs as community-driven

institutions that not only enhance financial inclusion and empowerment but also play a critical role in building climate resilience in rapidly urbanizing and climate-vulnerable regions like Northern Ghana.

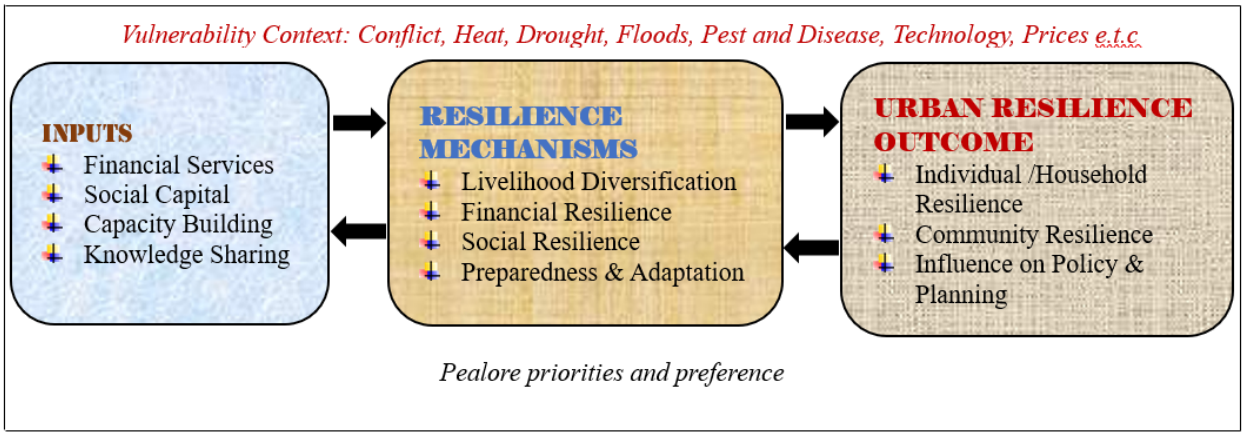

Figure 2 Conceptual Framework

Source: Authors Construct, 2025

As a key community asset, Village Savings and Loan Associations (VSLAs) empower individuals and households to address diverse priorities through a range of resilience mechanisms. The conceptual framework is flexible and has a feedback loop reflecting the realities of the framework. The resilience outcomes as depicted in the framework reinforces the existing assets mirroring the feedback loops found in the Sustainable Livelihoods Approach, where improved livelihood outcomes enhance household and community assets. This cyclical dimension emphasizes the dynamic nature of resilience-building processes and the continual interaction between outcomes and inputs. It reflects the dynamic and interdependent nature of resilience-building across multiple levels such as individual, household, VSLA, and community. At the individual level, members acquire financial literacy, savings discipline, and adaptive skills that enhance their capacity to respond to shocks. These individual gains translate to the household level, where increased income stability, diversified livelihoods, and improved access to resources strengthen household resilience. At the VSLA level, collective savings, mutual support systems, and social cohesion act as resilience mechanisms that pool risks, foster innovation, and facilitate access to financial and social capital. The cumulative effects of these group-level mechanisms extend to the community level, where VSLAs contribute to broader social resilience through enhanced cooperation, shared learning, and locally driven development initiatives. Communities become better positioned to withstand and recover from environmental, economic, or social disruptions. The cyclical nature of the framework is demonstrated when resilience outcomes such as improved livelihoods, enhanced

adaptive capacity, and strengthened social networks feed back into the system as renewed assets. These outcomes reinforce the foundational capitals (financial, human, social, and natural) within the SLA, creating a continuous feedback loop. Thus, resilience is not a linear progression but an ongoing process where achievements at one level amplify capacities at others. The framework highlights how VSLAs serve as a bridge linking individual and collective agencies, ensuring sustainability and long-term adaptive transformation within urban and peri-urban settings.

3. Methodology

3.1 Research Design

The study adopted an interdisciplinary approach, integrating both quantitative and qualitative methods to generate a comprehensive understanding of the contribution of Village Savings and Loans Associations (VSLAs) to urban resilience in Northern Ghana. Anchored in the pragmatic research paradigm, the study acknowledged the value of multiple ways of generating and interpreting data for complementary insights. This approach enabled the research team to work across disciplinary boundaries and apply diverse but complementary research traditions to generate relevant knowledge aligned with the study objectives. Mixed methods of research and analytical techniques were employed to transcend the traditional qualitative-quantitative divide and provide a nuanced understanding of the research questions (Acharya, 2013).

The study commenced with a scoping exercise involving a comprehensive review of literature on VSLAs operating in various urban centers across Northern Ghana. This review helped establish foundational knowledge on the number and geographical distribution of VSLAs in the region. It also provided a database of key stakeholders and institutions involved in promoting VSLAs. Furthermore, the scoping study offered insights into similar research efforts, informing methodological refinement and helping the team appreciate varying perspectives and approaches.

For the quantitative component, stratified random sampling was employed to ensure the inclusion of diverse urban populations. A total of 400 VSLA members were sampled from two key urban centers. The two urban areas were purposely selected due to their rapid urbanization, high concentration of informal livelihoods, and vulnerability to climate and economic shocks (Amoako & Frimpong, 2020). Both cities host strong VSLA networks and active women's groups, providing an ideal context to assess how community-based financial systems enhance urban resilience and inclusive economic development (Amoako & Frimpong, 2020). These cities were also considered due to their exposure to climate

variability, urban vulnerability, and high poverty indices making them critical for assessing the effectiveness of VSLAs as a resilience-building tool.

Structured questionnaires were administered to collect data on economic activities, savings behavior, participation in VSLA operations, and indicators of individual, household, and business resilience. Key variables included income stability, asset accumulation, savings rates, access to credit, responsiveness to climate risks, and participation in community-based adaptation initiatives.

The qualitative component involved in-depth interviews with 30 key informants, including VSLA leaders, community leaders, urban planners, and climate experts. Additionally, six Focus Group Discussions (FGDs), each comprising 8–10 participants, were held with VSLA members to explore their experiences in coping with climate-related shocks. VSLAs were selected through a clustering approach to ensure representation across diverse social, economic, and geographical contexts in Tamale and Bolgatanga. Within each cluster, VSLAs were chosen using simple random sampling to minimize bias. Subsequently, individual VSLA members were randomly selected from the sampled groups for participation in interviews and discussions. VSLAs were identified in collaboration with local NGOs and community facilitators based on their operational maturity, membership diversity, and engagement in climate adaptation activities. Key informants such as VSLA leaders, community heads, urban planners, and climate experts were chosen for their in-depth knowledge of local resilience dynamics and policy implementation. Focus Group participants were drawn from long-established and newly formed VSLAs to capture varied perspectives on coping strategies and adaptive practices. To complement these efforts and further address the research questions, the study conducted detailed case studies of successful urban VSLAs, highlighting specific strategies employed to enhance climate resilience.

3.2 Data Collection Tools

The research team deployed four primary data collection tools to gather comprehensive and reliable information. Survey questionnaires were used to collect quantitative data from 600 (300 VSLA members and 300 non-VSLA members). These questionnaires captured key indicators related to economic activities, savings patterns, access to credit, and household or business resilience. Interview guides with semi-structured questions were then employed to facilitate in-depth interviews with 30 key informants, including VSLA leaders, community representatives, urban planners, and climate experts. This tool allowed for flexibility in probing emerging issues while maintaining consistency across interviews. A total of 30 FGDs guides containing open-ended questions were conducted to explore key themes and shared experiences among 15 VSLAs and 15 Non VSLAs participants with a total of 270 members with average group size of 9. The FGDs enabled

the researchers to capture group dynamics, collective perspectives, and deeper insights into community-level coping mechanisms and resilience strategies. Finally, observation checklists were utilized to document real-time interactions, behaviors, and operations of VSLAs within their community settings. This non-intrusive tool provided valuable contextual data and helped validate information obtained through other methods. Together, these tools ensured a robust and triangulated approach to data collection, enhancing the reliability and validity of the study findings. All checklists were developed by the research team based on the study objectives, literature review, and key themes from the Sustainable Livelihoods Approach and Asset-Based Community Development models. They were pilot-tested and refined through consultations with local facilitators and community representatives to ensure contextual relevance. While participants and VSLA members were not directly involved in developing the checklists, their inputs during pre-field discussions and validation meetings informed revisions, ensuring the tools reflected local realities, priorities, and culturally appropriate terminologies. In going about the data collection, data was collected by a trained multidisciplinary research team comprising field officers and facilitators familiar with the local context. To minimize bias, standardized interview guides and random selection were applied. Gender and cultural sensitivity were ensured through gender-balanced teams, same-gender interview options, use of local languages, and culturally appropriate engagement practices respecting community norms and inclusivity.

3.3 Data Analysis Techniques

In analyzing the data, the research team employed a combination of quantitative and qualitative analytical techniques. Quantitative data were analyzed using descriptive statistics, including frequencies, means, and percentages, to summarize the demographic and economic characteristics of the sample. To explore the relationship between VSLA participation and household-level resilience indicators such as income stability, asset accumulation, and climate preparedness regression analysis was applied. To further isolate the specific impact of VSLA participation on resilience outcomes, the study used Propensity Score Matching (PSM) to compare VSLA members with non-members. This technique helped control for selection bias and allowed for a more accurate estimation of the effects of VSLA involvement. For the qualitative data, thematic analysis was conducted. This involved coding and categorizing the data into major recurring themes such as resilience strategies, economic empowerment, social networks, and collective action (Babbie, 2016). In addition, content analysis was used to interpret the narratives from in-depth interviews and focus group discussions, helping to identify recurring patterns, viewpoints, and underlying meanings expressed by participants. Finally, cross-validation between the qualitative and quantitative findings was undertaken to ensure consistency and accuracy. This triangulation enhanced the reliability of the results and

deepened the understanding of the role VSLAs play in building urban resilience in Northern Ghana.

3.4 Ethical Considerations

VSLAs are identified as self-managed, community-based groups that provide members with a safe and secure means to save money, access small loans, and obtain emergency insurance. The fundamental principles of VSLAs trust, transparency, and accountability were carefully considered in the study's ethical framework. Due to the sensitivity of personal financial data and data protection concerns, all participants were fully informed about the purpose, scope, and objectives of the study prior to the commencement of data collection. Informed consent was obtained from all VSLA members and key informants. Participation was entirely voluntary, and participants were made aware that they could withdraw from the study at any time without consequence. To ensure the anonymity and confidentiality of participants, personal identifiers were removed from all data, and unique codes were assigned to each respondent. This helped safeguard the security of participants and encouraged their willingness to provide honest and accurate responses. In line with data protection protocols, the research team ensured that all data collected were securely stored in password-protected digital formats and restricted physical files. Access to the data was limited strictly to authorized members of the research team. These measures were undertaken to comply with national and institutional ethical standards, ensuring the privacy, dignity, and rights of all study participants were fully respected throughout the research process. Ethical clearance was also secured from the University for Development Studies Ethical Clearance Board.

4. Results And Findings

4.1 Demographic Characteristics

The study engaged 600 respondents, including 300 VSLA and 300 non-VSLA members. Tamale and Bolgatanga exhibit similar demographic trends. Both have equal VSLA and Non-VSLA representation with 26% with no formal education, and 14% with basic education. Senior High School completion is 29% in Tamale, 28% in Bolgatanga. Vocational/technical skills account for 23%, while only 8% attained tertiary education in both cities. In exploring the relationship between respondents' educational level and their household preparedness to handle climate-related shocks, the Spearman's rank-order correlation yielded a coefficient of $\rho = -0.014$.

Table 2 Demographics of Respondents

Variables	Freq	%
Age		

Below 18 years (Children)	14	2
18 – 64 years (Working Population)	581	97
65 + Years (Older Population)	5	1
Gender		
Male	164	27
Female	436	73
Educational		
No Formal Education	156	26
Primary / JHS	85	14
Senior High School	175	29
Vocational / Technical Skills	138	23
Tertiary	49	8
Occupation		
Carpentry & Masonry	10	2
Dress making, weaving, fashion and design	52	8
Electricals, motor mechanic and welding	19	3
Teaching	11	2
Trade and processing (groundnuts and shea butter)	272	45
Farming (Crops and livestock)	220	37
Unemployment	16	3
Household Size		
Average HH Size	8	

Source: Field survey, 2025

As presented in table 2 above, the gender composition reveals that 72% of non-VSLA members are female and 28% male, while among VSLA members, 73% are female and 27% male. The survey covered 600 respondents from both groups. A significant 97% fall within the economically active age group (18–64 years), with only 2% below 18 and 1% aged 65 and above. Occupationally, 45% engage in trade and 37% in farming. Carpentry, masonry, and teaching each account for 2%, while 8% are in dressmaking, weaving, or fashion design. Other professions represent 3%. The average household size reported among respondents is eight people.

4.2 Socio-Economic and Environmental Benefits of VSLAs

A high proportion of VSLA members (48%) reported a significant household income increase, with 5% non-members reporting a similar increase. Conversely, as seen in Figure 3 below, 70% reported a moderate rise in household income, against 48% of the VSLA members in that category. Whereas 22% of non-members reported no change in household income, 4% of VSLA members reported no change. Also, 3% reported a decrease in household income with no VSLA member reporting a decrease. In examining the relationship between changes in household income and household preparedness for

climate-related shocks, Spearman's rank-order correlation showed a moderate positive correlation, ρ = +0.407, which was statistically significant ($p < .001$, $n = 600$).

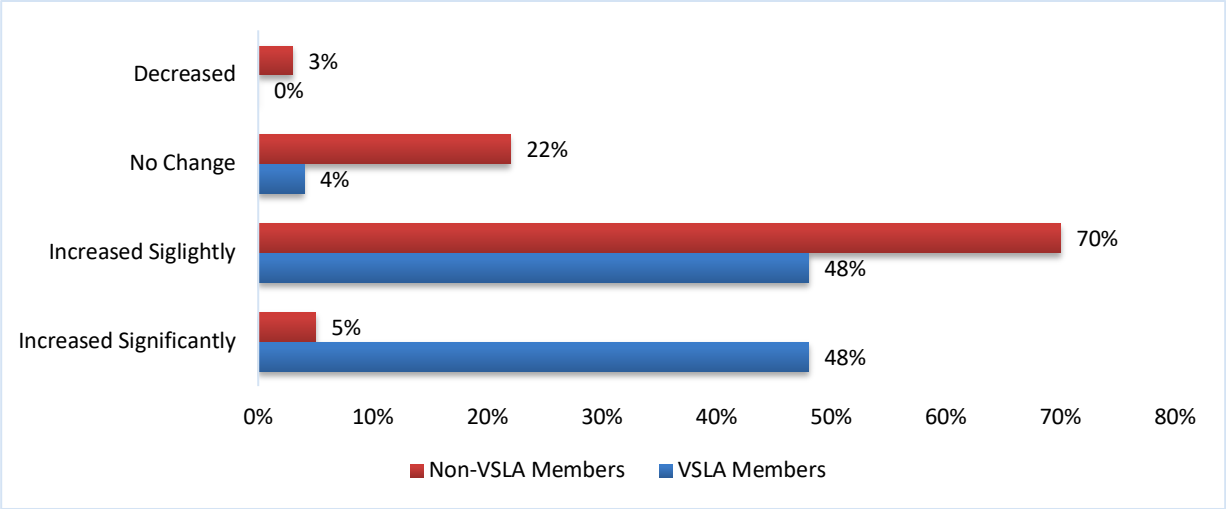

Figure 3 Household Income Change
Source: field survey, 2025

Access to financial services is significantly higher among VSLA members. About 94% reported good or full access to loans, compared to just 19% of non-members, while 58% of non-members reported limited or no access, versus only 2% of VSLA members. Additionally, 89% of VSLA members had good or very good access to financial services including savings, credit, financial literacy, and insurance compared to only 5% of non-members. In contrast, 53% of non-members reported poor access, with none among VSLA members doing so. A chi-square test of independence showed a statistically significant association between VSLA membership and access to financial credit, χ^2 (4, N = 600) = 347.56, p < .001 with a likelihood ratio being significant, G^2 (4) = 413.43, p < .001, with a strong linear-by-linear association, χ^2 (1) = 317.62, p < .001. Credit utilization for business is similar across groups (56% VSLA, 52% non-members). Education credit use is higher among non-members (17% vs. 12%), while emergency use is equal (20%). As seen in figure 4 below, slightly more VSLA members (6%) use credit for asset acquisition than non-members (5%). To assess the impact of VSLA membership on training access, findings show 100% of members reported good or very good access, versus 11% of non-members.

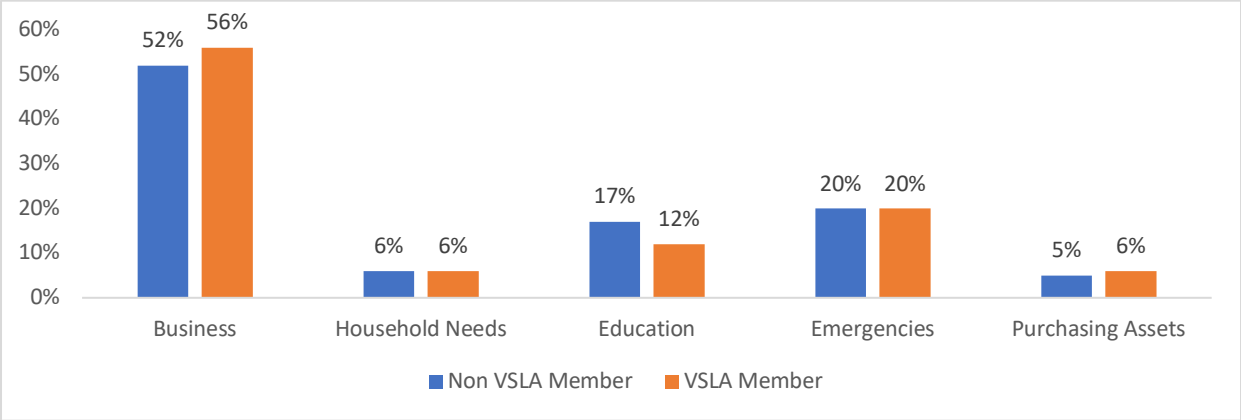

Figure 4 Primary Utilization of Financial Credit
Source: field survey, 2025

The data shows that 79% of VSLA members own businesses compared to 39% of non-members. Among them, 47% of VSLA members are in trading and processing, versus 22% of non-members, while 16% engage in dressmaking, weaving, and design, compared to 7% of non-members. Business expansion is higher among VSLA members (79%) than non-members (39%), with 58% employing others, against 38% of non-members. In establishing VSLA membership and business establishment, χ^2 (1, N = 600) = 95.94, p < .001 was established with a likelihood ratio test G^2 (1) = 99.10, p < .001 confirming the association. Confidence in decision-making is also stronger among VSLA members (90%) than non-members (60%). Additionally, 100% of VSLA members participate in community activities, with 74% very active, compared to 91% and 29% respectively among non-members as shown in figure 5 below. In assessing the relationship between VSLA membership and participation in community decision-making, Spearman's rank-order correlation revealed, ρ = 0.461, which was statistically significant (p < .001, n = 600).

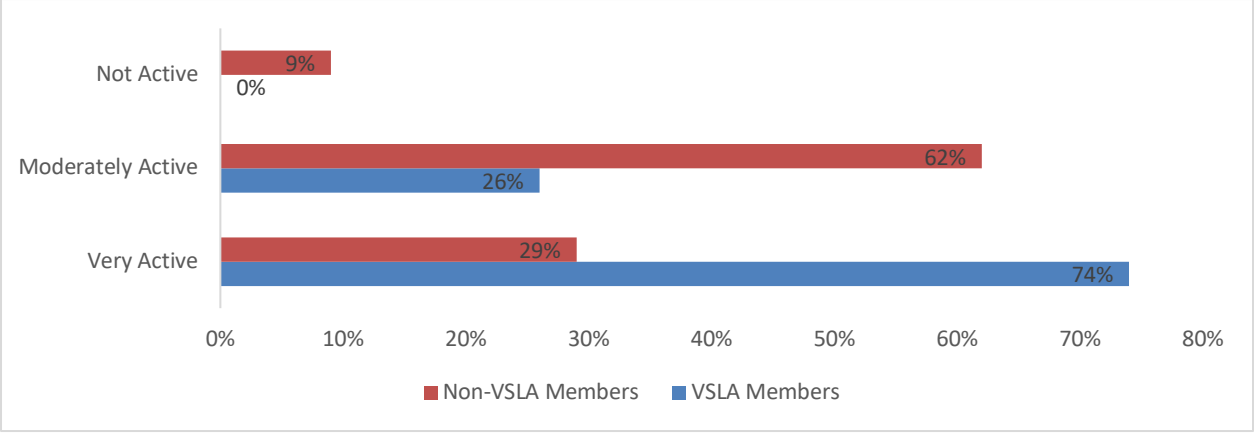

Figure 5 Participation in Community Decision Making

Source: Field Survey, 2025

Trust, cooperation, and social capital are essential for climate resilience. The data shows that 66% of VSLA members reported high or very high trust and cooperation, compared to 19% of non-members. Additionally, 95% of VSLA members demonstrated strong collective action, versus only 37% of non-members.

4.3 Effectiveness of VSLAs as an urban climate-change adaptation strategy.

The data presented in figure 6 below shows that 69% of VSLA members reported good knowledge of climate change, compared to just 20% of non-members, as shown in Figure 4. Notably, 100% of both groups reported being affected by climate shocks, highlighting widespread vulnerability. Similarly, 100% VSLA members received climate resilience training, compared to only 48% of non-members.

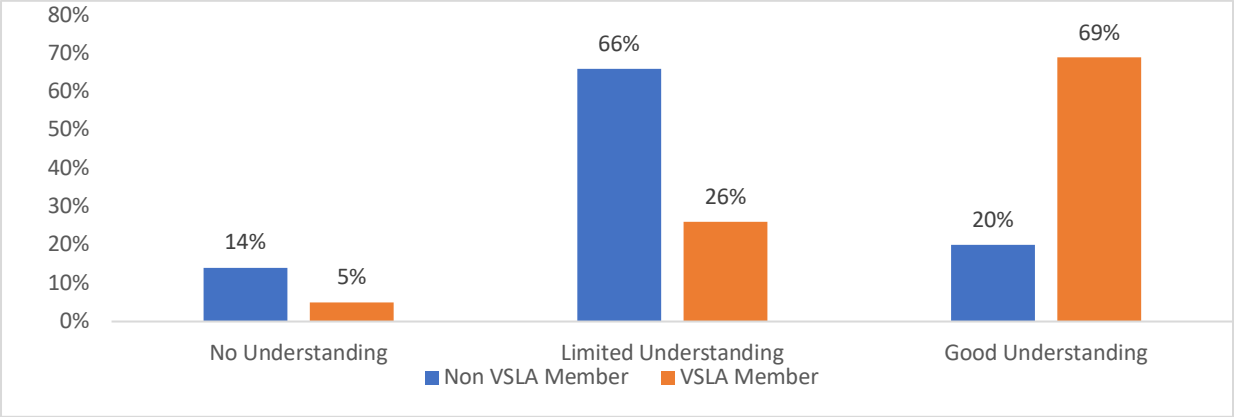

Figure 6 Understanding of Climate Change
Source: field survey, 2025

The data shows that 22% of VSLA members are very financially resilient, compared to only 3% of non-members as illustrated in figure 7 below. Additionally, 63% of VSLA members are moderately resilient, versus 52% of non-members. This results in a total of 85% of VSLA members being financially resilient, compared to 54% of non-members. Conversely, 46% of non-members reported not being financially resilient, while only 15% of VSLA members reported the same, as shown in figure 7 below.

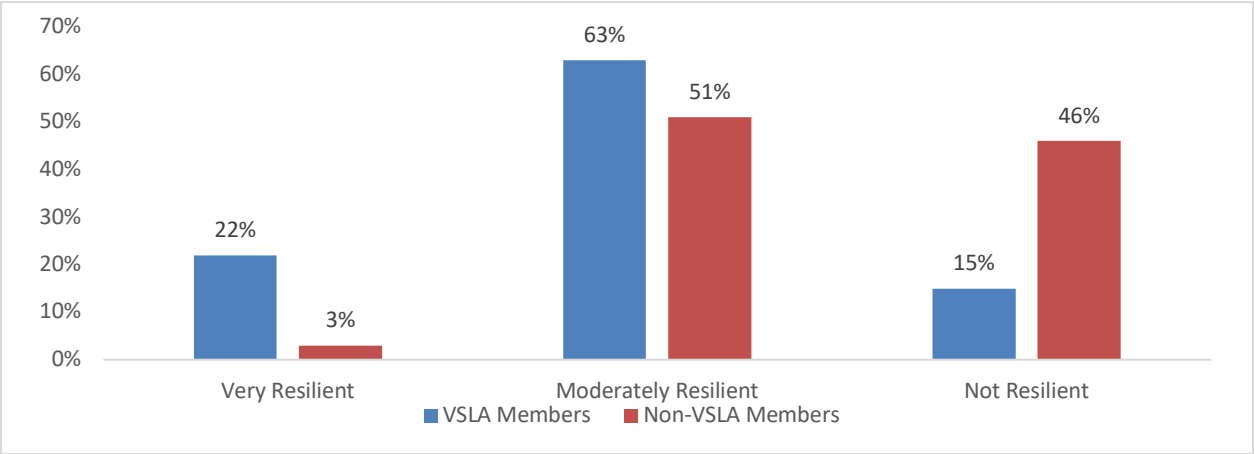

Figure 7 Financial Resilience to Climate Shocks
Source: field survey, 2025

To assess financial resilience improvement, 85% of VSLA members reported moderate or high improvement, compared to 53% of non-members. Notably, 43% of VSLA members experienced high improvement, while only 6% of non-members did. Furthermore, figure 8 below shows that 47% of non-members saw no improvement over the past three years, compared to just 15% of VSLA members, indicating that VSLA participation significantly enhances financial resilience among members over time.

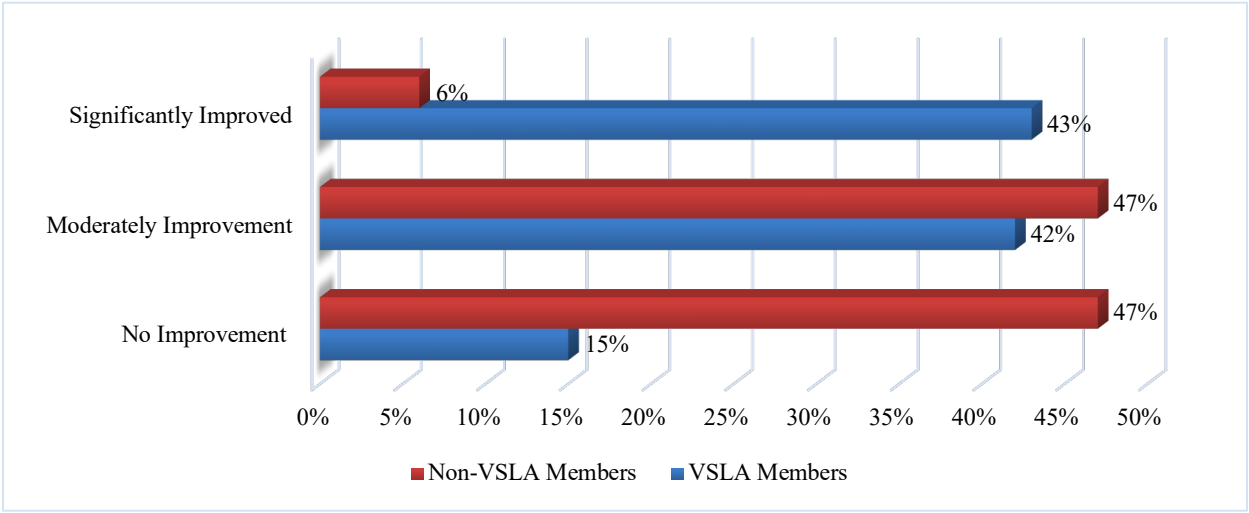

Figure 8 Financial Resilience to Climate Disasters
Source: field survey, 2025

The study also sorts to understand whether or not, respondents' resilience to climate disaster has improved over the past three or more years. Also, as demonstrated in Figure 9 below, majority of VSLA members (89%) reported moderate or great improvement, as compared to 48% of non-members with moderate improvement and none with great

improvement. Notably, 53% of VSLA members reported significant improvement with Non VSLA members reporting no significant improvement.

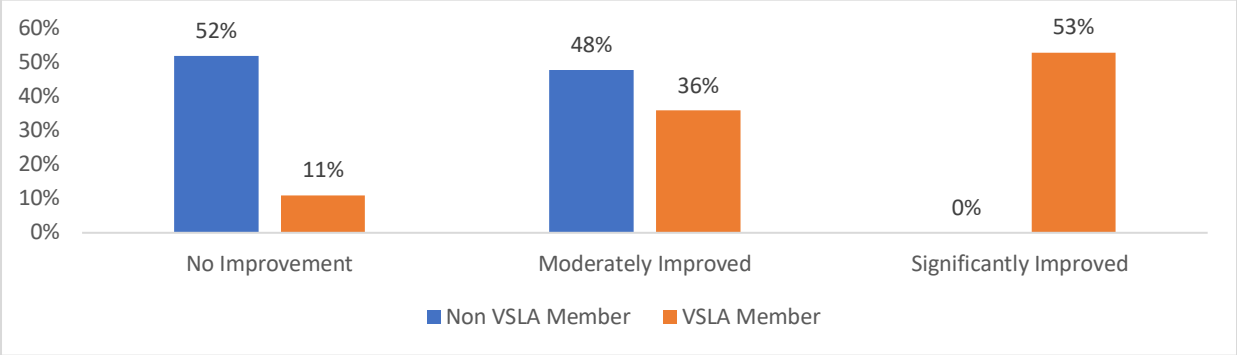

Figure 9 Resilience to Climate Disasters
Source: field survey, 2025

Community responsiveness during climate-related disasters is essential. The findings reveal that 81% of VSLA members perceive their communities as responsive or very responsive to their needs, compared to just 21% of non-members. Only 3% of VSLA members view their communities as very unresponsive, with none reporting unresponsiveness. In contrast, 10% of non-VSLA members felt their communities were unresponsive. Additionally, 62% of non-members remain neutral, while 17% described their communities as either unresponsive or very unresponsive as seen in figure 10 below. A chi-square test of independence was used to assess the level of VSLA membership and communities' responsiveness to their needs during disaster which revealed, χ^2 (4, N = 600) = 263.28, p < .001 with a likelihood ratio test of G^2 (4) = 331.11, p < .001 confirming the level of significance of the association.

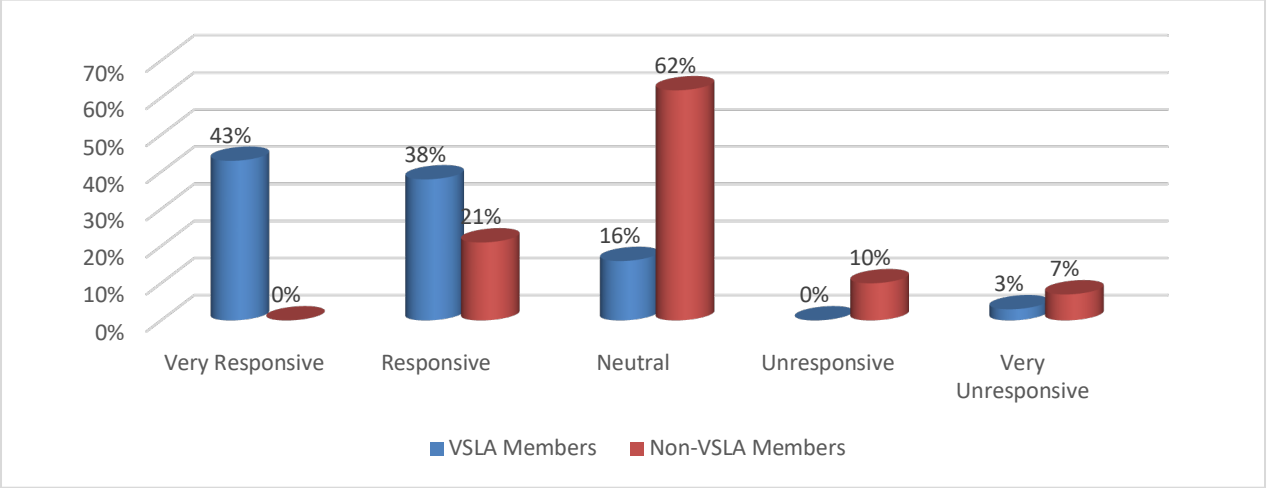

Figure 10 Community Responsiveness During Climate Disasters

Source: field survey, 2025

Assessment of respondents' ability to recover from climate-related events reveals significant differences between VSLA and non-VSLA members. As shown in figure 11 below, a substantial 84% of VSLA members reported either good (57%) or very good (27%) recovery ability, compared to only 11% of non-VSLA members, none of whom rated their recovery as very good. Among non-VSLA members, 68% described their recovery ability as moderate, compared to just 16% of VSLA members. Additionally, 16% of non-members reported poor recovery ability, with none observed among VSLA members. Very poor recovery was reported by 5% of non-VSLA respondents and only 2% of VSLA members. In establishing the relationship between VSLA membership and individuals' ability to recover from climate-related events, Spearman's rank-order correlation yielded $\rho = +0.733$, at a significant level of ($p < .001$, $n = 600$).

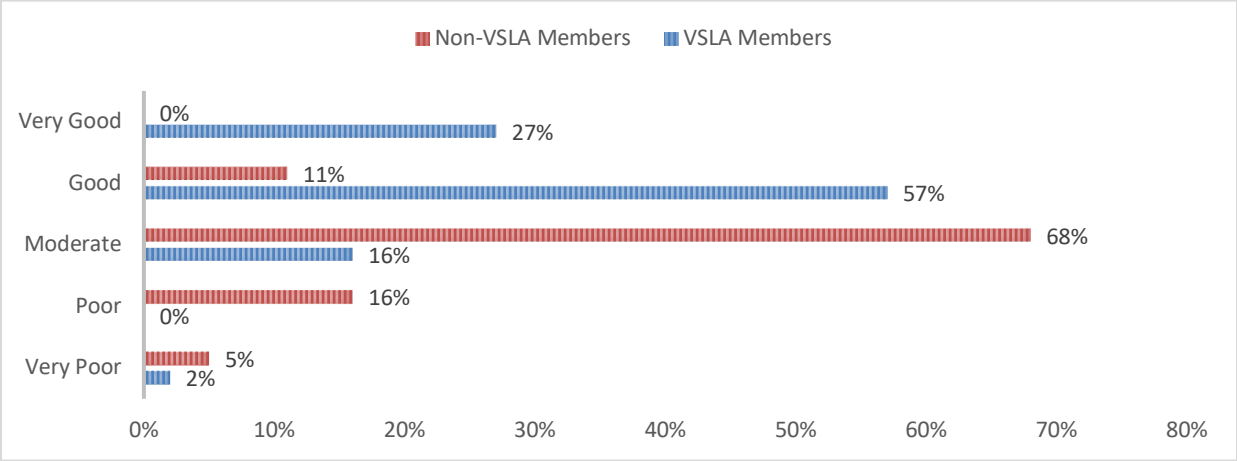

Figure 11 Ability to Recover from Climate Change Impacts
Source: Field Survey, 2025

The study also sorts to explore the preparedness of households to handle climate change shocks. As seen in Figure 12 below, a significant 73% of VSLA members reported being very prepared for climate-related events, while none of the non-members did. In contrast, 53% of non-members felt poorly prepared, compared to 27% of VSLA members. Additionally, 47% of non-members reported moderate preparedness, whereas no VSLA member indicated the same.

A chi-square test of independence indicated, χ^2 (2, N = 600) = 387.56, $p < .001$ association between VSLA membership and household disaster preparedness with a likelihood ratio of, G^2 (2) = 527.88, $p < .001$, and an observed linear-by-linear association of χ^2 (1) = 371.81, $p < .001$.

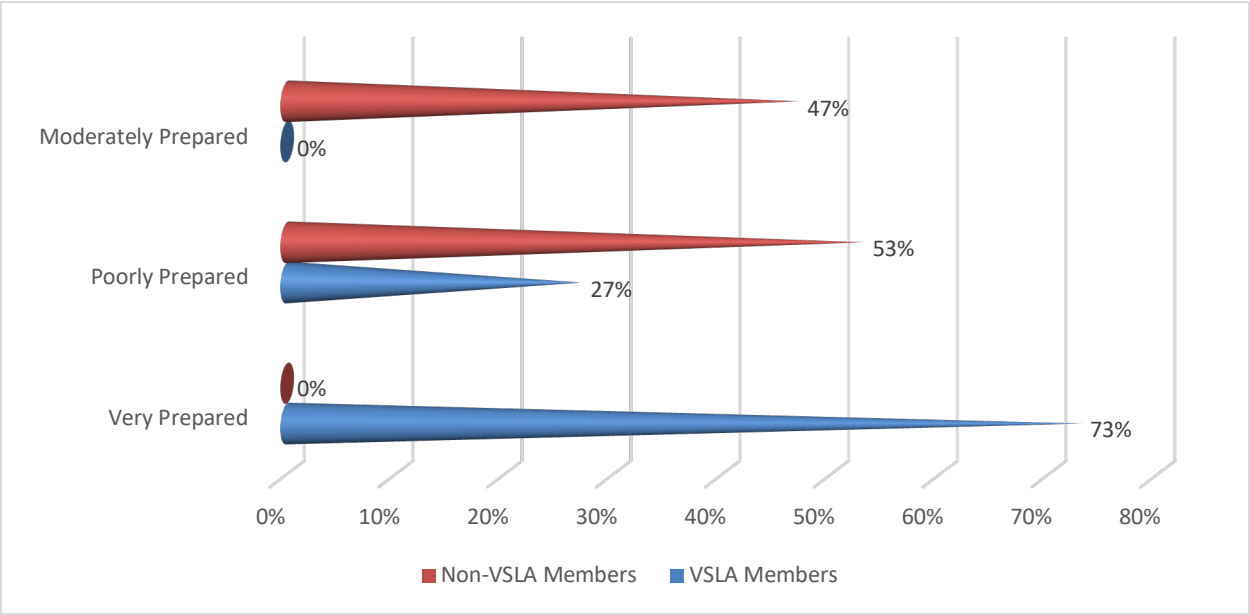

Figure 12 Preparedness to Climate Change Shocks
Source: Field Survey, 2025

The findings reveal that VSLA members have significantly greater access to climate adaptation plans / strategies than non-members. As high as 95% of VSLA members reported having moderate to full access, compared to just 47% of non-members. Notably, while 11% of non-members indicated having no access at all, no VSLA member reported such a limitation. Additionally, 42% of non-members had only limited access, whereas this figure was 5% for VSLA members. Furthermore, 63% of VSLA members reported moderate access compared to 43% of non-members, and 32% of VSLA members reported full access versus 5% of non-members. In assessing the relationship between VSLA membership and access to climate adaptation plans / strategies, the Spearman's rank-order correlation yielded, $\rho = +0.556$ at a significant level of $p < .001$, $n = 600$.

4.4 Examine factors driving adoption of VSLAs for climate change adaptation

In exploring the factors driving adoption of VSLAs for climate change adaptation, the study gathered insights from VSLA members and key stakeholders including the Department of Social Welfare, District and Municipal Assemblies, LINK Ghana, World Vision Ghana, and Empowerment for Development. The findings revealed that financial inclusion and access to credit were the most significant drivers, cited by 100% of respondents as a key factor influencing VSLA adoption as shown in Figure 13 below.

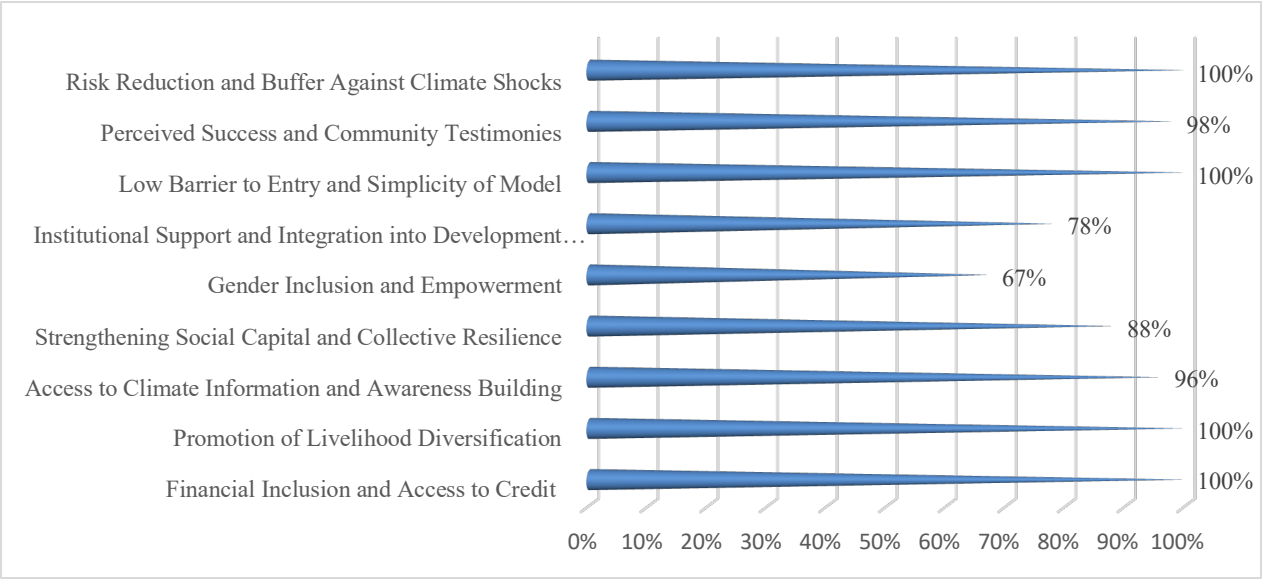

Figure 13 Factors Driving Adoption of VSLAs for Climate Change Adaptation
Source: Field Survey, 2025

Other highly prioritized factors driving the adoption of VSLAs for climate change adaptation, each scoring 100%, include the low barrier to entry and simplicity of the VSLA model, its role in promoting livelihood diversification, and its function as a risk reduction mechanism and buffer against climate shocks. Additionally, 96% of respondents noted that VSLAs enhance access to climate information and awareness building. Also, as seen in Figure 13 above, a significant 98% of VSLA members cited perceived success and positive community testimonies as key motivators for adoption. Moreover, 88% of respondents viewed the strengthening of social capital and collective resilience as essential, while 78% emphasized the importance of institutional support and integration into broader development programs. As shown in Figure 11, gender inclusion and empowerment were recognized by 67% of respondents as a vital factor, particularly for adapting the VSLA model to address climate shocks in urban settings, where vulnerability dynamics differ from rural areas.

5. Discussion And Implications

5.1. Demographic Characteristics

Understanding the demographic characteristics of research participants is foundational to interpreting any development study, particularly one focused on climate change adaptation and community-based financial models such as Village Savings and Loan Associations (VSLAs). In this study, 600 respondents were engaged, comprising 300 VSLA members and 300 non-VSLA members, drawn equally from the urban centers of Tamale

and Bolgatanga. The demographic data reveals several key patterns related to education, age, gender, and occupational engagement. These variables not only influence individual and household vulnerability to climate shocks but also determine the extent to which people can participate in and benefit from adaptive initiatives like VSLAs.

A closer examination of the educational background of the respondents shows that 26% have no formal education, while 14% have only completed primary or junior high school. Furthermore, 29% have attained senior high school education, and 23% hold vocational or technical skills training, with a small minority (8%) having completed tertiary education. These statistics indicate that a large portion of the population operates with limited formal education, which has implications for both economic productivity and the capacity to comprehend and adopt complex climate adaptation strategies. This is consistent with research by UNESCO (2017) highlighting the importance of education in enhancing adaptive capacity. The implications of low formal education are manifold. First, individuals with little to no education often lack access to formal employment opportunities and are more likely to engage in informal or subsistence activities such as petty trading and small-scale farming sectors highly sensitive to climate variability. Second, low education levels can hinder understanding of climate-related risks and the importance of long-term resilience planning. Although only 23% of respondents reported having vocational or technical training, this signals a potential opportunity for skill-based economic empowerment, especially when leveraged through support mechanisms like VSLAs. The analysis further examined the relationship between respondents' educational level and their household preparedness for climate-related shocks. The Spearman's rank-order correlation yielded a very weak negative association ($\rho = -0.014$), which was not statistically significant. This indicates that formal education level has no meaningful influence on household climate preparedness within the study population.

These findings suggest that preparedness for climate shocks is likely shaped by other factors such as income levels, access to targeted training, and participation in community-based support systems like VSLAs rather than by formal education alone. The absence of a positive correlation may be due to the lack of climate-specific content in general education curricula, or the fact that adaptation practices require localized, practical knowledge and access to relevant resources. Therefore, improving household climate resilience may depend more on practical exposure, vocational skills, community engagement, and financial inclusion, rather than on educational attainment alone. This underscores the importance of integrating climate adaptation content into vocational and informal education platforms and using community structures like VSLAs to deliver both knowledge and resources that enhance preparedness.

Importantly, the relatively even distribution of educational attainment across both cities suggests that literacy and training interventions targeted at VSLA members could have widespread applicability (Johnson et al., 2018). For example, tailored financial literacy and climate-smart training materials can be introduced using simplified language and participatory methods to ensure comprehension and inclusiveness. While the specific data on the age distribution in this section is limited, the broader findings in the report indicate that 97% of respondents fall within the 18–64 age group, placing them squarely in the economically active segment of the population. Only 2% are below 18, and 1% are aged 65 and above. This working-age concentration is significant because it reflects a population with the potential to actively engage in productive activities, save income, and contribute to community development (Banerjee et al., 2015). The predominance of working-age individuals within both VSLA and non-VSLA groups makes the case for targeted economic interventions such as microfinance and skills training (Karlan & Appel, 2011). This group is also more likely to be responsible for household income and decision-making, and thus their participation in VSLAs can have ripple effects across family units. Moreover, this age group is at the forefront of climate exposure, as they engage in farming, trading, and small businesses that are vulnerable to environmental disruption (Morton, 2007). Gender analysis is essential when evaluating community-based interventions. The study reveals that women constitute 73% of all respondents, indicating a strong female presence across both VSLA and non-VSLA groups. Specifically, 72% of non-VSLA members are women, and 73% of VSLA members are women. This female dominance reflects broader trends in development where women are increasingly taking active roles in community resilience efforts (Denton, 2002). The participation of women in such high numbers has profound implications. Firstly, it highlights the gender-sensitive nature of VSLAs. In many cases, VSLAs serve as an alternative or complement to formal banking systems, where women are typically excluded due to lack of collateral, formal employment, or banking history. By offering savings and loans without such barriers, VSLAs provide women with the financial tools necessary to support household needs, invest in small businesses, and participate in community planning. Moreover, women's active participation in VSLAs helps to shift gender dynamics by enhancing their economic agency and decision-making power (Kabeer, 2005). As women become financially independent and gain access to training and information particularly on climate change adaptation, they are better positioned to lead resilience efforts at both household and community levels. This demographic characteristic underscores the need for gender-inclusive planning in all climate-related programming.

The gender composition of the study reveals a strong female majority among both VSLA (73%) and non-VSLA (72%) members. This reflects the growing involvement of women in community-based financial and livelihood programs, particularly in contexts where women

traditionally face financial exclusion (Johnson et al., 2018). The dominance of female participation in both groups highlights the relevance of VSLAs as a platform for women's economic empowerment. Given women's central roles in managing household welfare and responding to livelihood shocks, their participation in VSLAs presents an opportunity to enhance household and community resilience to climate change. The age structure, with 97% of respondents within the economically active bracket (18–64 years), indicates a population with the capacity to engage productively in resilience-building efforts. This age distribution suggests that interventions targeting VSLAs can harness the energy and labor of a working-age population, enhancing sustainability and scalability (Banerjee et al., 2015). As alluded to by CARE (2022) and Adegbite., et al (2022), VSLAs are Female dominated or led. This is the case within Tamale and Bolgatanga cities which generally reflects both socio-economic realities and deliberate gender empowerment strategies in northern Ghana. Women often face limited access to formal financial services and productive assets, making VSLAs an inclusive platform for savings, credit, and social support (CARE, 2022). Development organizations and NGOs have also intentionally promoted women's participation as part of gender equality and livelihood programs, recognizing VSLAs as a tool for economic inclusion and social cohesion (OECD,2023). Adegbite., et al (2022), further contends that, cultural norms in these regions encourage women's collective action through self-help and mutual support networks, further reinforcing female participation. While this pattern is consistent across many rural and peri-urban areas of Ghana, participation levels may vary elsewhere depending on local gender dynamics, livelihood structures, and access to financial services. Thus, the strong presence of women in VSLAs demonstrates both structural gender gaps and the success of community-based models in fostering women's agency and resilience.

Occupationally, the concentration in trade (45%) and farming (37%) reflects economic dependence on sectors highly vulnerable to climate variability (Morton, 2007). This emphasizes the need for financial mechanisms like VSLAs that enable investment in livelihood diversification, climate-smart practices, and asset protection. The 8% engaged in dressmaking and related crafts indicate potential for expanding into climate-resilient microenterprises. The average household size of eight indicates high dependency ratios, which can exacerbate household vulnerability to shocks. This reinforces the importance of building financial safety nets and income-generating capacity through VSLAs.

The demographic profile of the respondents provides a solid foundation for the effectiveness of VSLAs as climate adaptation tools. First, the presence of a predominantly economically active, female-driven population with varying levels of education and skills makes it ideal for grassroots financial and resilience-building interventions. These demographic characteristics also mean that with the right support through tailored training, institutional backing, and strategic partnerships VSLAs can be scaled to provide

even more inclusive benefits. The large proportion of people engaged in vulnerable sectors such as trade and farming further emphasizes the need for economic shock absorbers. VSLAs, when combined with climate-smart training and improved access to services, can play a central role in transforming these livelihoods into more adaptive, diversified, and sustainable forms. Additionally, the existing vocational and technical training among a segment of the population suggests that there is a foundation on which to build more resilient micro-enterprises. For example, promoting green businesses, renewable energy solutions, or sustainable agro-processing could be done within VSLA structures, particularly targeting those already possessing relevant skills. It also suggests that expanding VSLAs could significantly impact poverty reduction, gender empowerment, and climate adaptation. Policy and development programs should leverage this gender and age composition to tailor financial literacy, skills development, and climate adaptation training. Supporting female-led VSLAs, particularly in trade and agriculture, will enhance community resilience and foster inclusive development across Northern Ghana.

5.2 The socio-economic and environmental benefits of VSLA membership

The data presents a compelling case for the transformative impact of Village Savings and Loan Associations (VSLAs) on economic empowerment, social inclusion, and community resilience. The differences between VSLA members and non-members across various socioeconomic dimensions provide rich insights into the value of such informal financial institutions particularly in resource-constrained and climate-vulnerable settings. This discussion explores the key findings across income, financial access, entrepreneurship, training, social capital, and resilience, and draws key implications for policy and programming.

5.2.1 Household Income and Economic Stability

The finding that 48% of VSLA members experienced significant increases in household income, compared to just 5% of non-members, underscores the strong economic impact of VSLA participation. Notably, none of the VSLA members reported a decrease in income, whereas 3% of non-members did, suggesting that VSLAs provide not only a platform for income growth but also a financial buffer against economic shocks. These outcomes are consistent with CARE (2023), which highlights the role of VSLAs in improving household incomes and building financial resilience.

Through access to affordable credit, VSLA members are better able to invest in small-scale enterprises, stabilize household consumption, and consistently meet essential needs. These mechanisms demonstrate the effectiveness of VSLAs as instruments for improving

livelihoods and reducing poverty, particularly in low-income urban and peri-urban communities, as also noted by Zennou et al. (2022). To further assess the relationship between economic status and climate resilience, the analysis examined changes in household income and preparedness for climate-related shocks. Spearman's rank-order correlation yielded a moderate positive correlation, $\rho = +0.407$, which was statistically significant ($p < .001$, $n = 600$). This finding indicates that households with improved income over time are more likely to be better prepared for climate shocks reinforcing the critical link between economic empowerment and climate resilience. These insights underscore the importance of integrating livelihood improvement, income generation, and financial inclusion strategies into climate adaptation and disaster preparedness programs. Special attention should be paid to women and youth, who often face systemic barriers to financial access and economic participation. As Turchi et al. (2023) argue, empowering these groups through VSLAs not only strengthens household income security but also contributes to long-term community resilience and inclusive economic development. Scaling up the VSLA model presents a strategic opportunity to promote inclusive growth, especially when integrated into government-led social protection programs and livelihood support schemes, as recommended by the Center for Climate & Energy Solutions (2025). Leveraging VSLAs in this way can accelerate poverty reduction, enhance local adaptive capacity, and ensure that the most vulnerable are not left behind in resilience-building efforts.

5.2.2 Access to Financial Services and Inclusion

Access to financial services is another domain where VSLAs significantly outpace formal institutions. A remarkable 94% of VSLA members reported good or full access to loans, compared to just 19% of non-members. This is consistent with Karlan et al. (2017) argument in Ghana that VSLAs significantly increased access to financial services for rural communities, particularly for women. The Mastercard Foundation (2020) report on VSLAs promoting financial inclusion in Africa, particularly in rural areas, also supports the study findings that 89% of VSLA members had good access to comprehensive services including savings, insurance, and financial literacy versus a mere 5% of non-members. Despite similar rates of credit use for business (56% for members vs. 52% for non-members), the terms, reliability, and structure of access vary greatly. Many non-members rely on informal networks or high-interest sources that do not offer financial literacy support or consistent reliability. This is consistent with Aryeetey (2018), who found that many individuals in rural Ghana rely on informal financial sources due to limited access to formal financial institutions. One focus group discussant from the VSLA group noted that: "I used to

struggle to make ends meet. But then I joined Aduuligo Women Group VSLA. I took a loan and started a small business selling vegetables at the market. It's been good for me. VSLAs are helpful because they are convenient and reliable. Now, I'm able to take care of my family and even save some money."

Another member from the VSLA FGDs also mentioned that:

“When the drought came last year, my crops were destroyed. I was worried about how I would feed my family. But our VSLA, Gaabisi Women Group, helped me. I took a loan and replanted my crops. VSLAs help us save money for emergencies, and I'm grateful for that. Now, my crops are growing well, and I'm able to feed my family”.

“I'm a member of a VSLA, and it's been a blessing. I can save my money safely, and when I need it, I can take a loan to invest in my business. Our VSLA also has an insurance component that helps us in times of emergencies. I feel more secure and stable now”. (VSLA FGD participant)

“As a farmer, I face many risks, but with my VSLA, I can access loans to buy seeds and fertilizers. I can also save my money and access insurance in case of crop failure or other emergencies. It's given me peace of mind and helped me grow my business”. (VSLA FGD participant)

Discussions with the non VSLA groups also revealed the challenges they face in times of adversity. One discussant of the FGD revealed that:

“I own a small business, selling goods at the market. It's hard to get loans, so when my business had problems, I borrowed from friends and family. I wish we had access to loans like VSLA members. It would make a big difference for my business and my family. Maybe one day, I will be able to join a VSLA and get the help I need”.

“I'm tired of living from hand to mouth. When unexpected expenses come up, I'm forced to borrow from friends and family, and it's stressful. If I had access to a VSLA or other financial services, I could save for emergencies and plan for the future. It would be a huge relief to have that kind of stability in my life". (non VSLA FGD participant)

"As a teacher, I get a steady income every month. I'm able to save a small portion of my salary at GCB, which gives me some sense of security. However, I wish I could access other financial services like loans or investment opportunities to help me achieve my long-term goals, like buying a house or starting a side business”. (non VSLA FGD participant)

Another discussant also revealed that:

"I live in a flood-prone area. When the floods come, we lose everything. Our crops are destroyed, and our homes are damaged. I wish we had financial support like VSLAs. It would make life easier. We wouldn't have to worry so much about the floods. Maybe the government can help us start a VSLA or something. That would be a big help".

The testimonies from both VSLA and non-VSLA participants powerfully illustrate the transformative role of Village Savings and Loan Associations in improving livelihoods, enhancing resilience, and fostering financial inclusion, especially among vulnerable populations such as women, smallholder farmers, and informal traders. From the accounts of VSLA members, it is clear that these associations provide a lifeline during crises and a platform for economic advancement. The story of a woman from the Aduuligo Women Group who used a loan to start a vegetable business reflects how access to credit through a VSLA can catalyze financial independence, improved household welfare, and savings behavior. Similarly, the Gaabisi Women Group member's ability to recover from drought by replanting her crops underscores the value of VSLAs as buffers against climate shocks. Additional testimonies point to the security and confidence members feel, thanks to reliable savings mechanisms and access to emergency funds or informal insurance resources largely inaccessible to non-members. In contrast, non-VSLA participants express frustration and vulnerability, underscoring a critical gap in access to financial services. Small business owners and farmers frequently report relying on friends or family during emergencies—an unstable and often unreliable coping mechanism. This aligns with Karlan et al. (2017), who argue that limited access to formal financial services exacerbates vulnerability to economic shocks. Several participants also describe the psychological toll of financial insecurity, expressing a deep yearning for the stability and opportunities that VSLA membership affords.

One salaried teacher, for instance, noted the lack of access to credit and investment avenues for achieving long-term goals, while a resident from a flood-prone area called on the government to support the formation of VSLAs to mitigate disaster-related losses. These narratives highlight that VSLAs are not merely savings groups; they function as community-based systems of resilience, social inclusion, and hope. This finding resonates with Nanor and Agyei (2020), who emphasize the role of VSLAs in promoting financial inclusion and adaptive capacity.

Quantitative analysis supports these qualitative insights. A chi-square test of independence revealed a statistically significant association between VSLA membership and access to financial credit, $\chi^2(4, N = 600) = 347.56$, $p < .001$. The likelihood ratio was similarly significant, $G^2(4) = 413.43$, $p < .001$, along with a strong linear-by-linear association, $\chi^2 (1) = 317.62$, $p < .001$. These findings suggest that increased involvement in

VSLAs whether in frequency of participation, group cohesion, or contribution correlates strongly with improved access to financial credit.

VSLAs thus operate as alternative or supplementary financial systems, providing members with more accessible loans, flexible borrowing terms, and peer-backed guarantees rooted in social trust. Comparative narratives affirm that VSLA members are better equipped to respond to emergencies such as droughts or floods through pooled resources. Non-members, by contrast, remain largely exposed and unsupported. Overall, these results underscore that VSLA membership offers both tangible economic benefits and psychological security. Expanding access to VSLAs is not merely a financial intervention, it is a pathway to dignity, resilience, and inclusive development.

5.2.3 Entrepreneurial Growth and Business Expansion

According to Allen et al. (2014), microfinance programs promote entrepreneurship and stimulate economic growth an assertion supported by this study's finding that 79% of VSLA members own businesses, compared to only 39% of non-members. Moreover, VSLA members are more likely to engage in diverse and productive sectors such as trading, agro-processing, tailoring, and design. This diversification is vital for enhancing household resilience and reducing dependence on subsistence farming or precarious informal labor. Further, 79% of VSLA entrepreneurs reported having expanded their businesses, and 58% now employ others. In comparison, only 39% of non-member entrepreneurs reported business expansion, and just 38% had hired employees. A chi-square test of independence revealed a statistically significant association between VSLA membership and business ownership, χ^2 (1, N = 600) = 95.94, $p < .001$. The likelihood ratio test also confirmed the robustness of this association, G^2 (1) = 99.10, $p < .001$. These findings indicate a strong, positive relationship between VSLA participation and entrepreneurship. This evidence confirms that VSLAs function as effective catalysts for small business creation and growth. Membership likely enhances access to startup capital, fosters peer learning and mentorship, and builds social networks that facilitate business development. These outcomes underscore the dual economic impact of VSLAs at both the individual and community levels as incubators for micro- and small-scale enterprises, especially for women and youth. Additionally, the role of VSLAs in fostering human capital development is notable. Access to training is significantly higher among VSLA members, with 100% of them reporting "good" or "very good" access to training opportunities, compared to only 11% of non-members. This includes training in business management, financial literacy, and vocational skills, which equips members to manage resources effectively and take informed risks. As Asiedu et al. (2018) argue, such training is a critical enabler of economic transformation and adaptive capacity in the face of climate and livelihood shocks. These findings suggest that VSLAs serve as platforms not only for financial inclusion but also for

the development of critical skills needed for economic mobility. As such, future VSLA programming should intentionally integrate technical training, digital tools, and value chain development into their models. This would further enhance their potential as drivers of resilient, inclusive, and sustainable local economies transforming communities from survival-based livelihoods to thriving enterprise ecosystems.

5.2.4 Confidence, Participation, and Social Capital

VSLA membership strongly correlates with higher levels of self-confidence and community participation. About 90% of members reported confidence in decision-making, compared to 60% of non-members. This is consistent with findings by Karimli et al. (2017) that highlight the role of savings groups in promoting women's empowerment and decision-making. Moreover, 100% of VSLA members participated in community activities, and 74% were considered very active, almost triple the rate among non-members (29%). Trust and cooperation key aspects of social capital were reported by 66% of members as high or very high, compared to only 19% of non-members, consistent with research by Deininger and Liu (2009) that emphasizes the importance of social capital in promoting collective action and community development. Collective action, critical in crisis response and development efforts, was evident among 95% of VSLA members but only 37% of non-members. An assessment of the relationship between VSLA membership and participation in community decision-making revealed a statistically significant moderate positive correlation using Spearman's rank-order test, $\rho = 0.461$, $p < .001$ ($n = 600$). This finding indicates that individuals who are members of VSLAs are more likely to actively engage in community decision-making processes compared to non-members. Thus, beyond promoting financial inclusion, VSLA participation appears to foster civic engagement and local governance involvement.

These results suggest that economic empowerment through VSLAs may translate into increased social and political agency, particularly within marginalized or underserved communities. Participation in VSLAs not only enhances financial capabilities but also contributes to the development of cohesive, cooperative societies. In this way, VSLAs serve as strategic platforms for promoting social cohesion and post-conflict peacebuilding. Moreover, qualitative evidence from focus group discussions (FGDs) and key informant interviews (KIIs) further reinforces these findings. Many VSLA members reported heightened confidence in decision-making, improved financial management, and increased motivation for business development. This enhanced self-efficacy is attributed to the collective knowledge-sharing, peer support, and trust built through group participation. Members consistently noted that their engagement in VSLAs empowered them with the skills and mindset necessary to make informed personal and financial decisions.

These findings highlight the broader developmental value of VSLAs not only as mechanisms for financial inclusion but also as platforms for leadership, empowerment, and resilience-building. Integrating VSLA models into broader community development and governance initiatives could, therefore, yield transformative outcomes in both economic and social spheres.

“I'm a pretty confident person when it comes to making decisions. I trust my instincts and feel like I can make good choices that align with my goals and values." (VSLA FGD participant)

"I have learned to trust myself and my decision-making abilities over time. I feel confident in my ability to weigh options and make choices that are right for me." (non VSLA FGD participant)

The study indicates that membership in VSLA may enhance greater community participation and decision-making participation. This brings to fore the potential benefits of VSLA programs towards social cohesion, community development, and collective action. Respondent from the FGD remarked that:

“I'm interested in joining a community group or club, participating in initiatives that benefit the community, and exploring opportunities to make a difference and meet like-minded people who share my passion for community development”. (non VSLA FGD participant)

“I have always been passionate about making a difference in my community, so I attend town hall meetings, participate in discussions, and collaborate with others to shape community decisions and create a brighter future for everyone”. (VSLA FGD participant)

Respondent from the FGD remarked that:

“Being part of a VSLA has shown me the power of trust and cooperation. We work together, support each other, and trust that everyone will do their part. It's amazing to see how much we can achieve when we work together." (VSLA FGD participant)

"I have noticed that VSLA members are very cooperative and trustworthy. We help each other out, share knowledge, and work together to achieve our goals. The VSLA has built a sense of community and trust among us." (VSLA FGD participant)

"Our VSLA is more than just a financial group - it's a family. We trust and support each other, and we have built strong relationships. The VSLA has helped us create a sense of community and social capital that's invaluable." (VSLA FGD participant)

"I have noticed that some community members are more willing to help each other out, but it's not always consistent. I think VSLAs do a great job of building trust and

cooperation among members, and maybe that's something we could learn from." (non VSLA FGD participant)

This highlights the potential utility of VSLAs in sustaining climate change adaptation and community development initiatives. Respondent from the FGD remarked that:

“As a VSLA member, I have seen how collective action can make a big difference in responding to climate change. We have worked together to establish tree nurseries and plant trees to reduce soil erosion and promote sustainable land management. We have also received training on climate-resilient agriculture practices and developed business plans to access climate finance by Link Ghana."

"Our community is coming together to respond to climate threats. We're organizing a clean-up initiative to reduce flood risks and promote sustainable waste management. By working together, we're building stronger collective action and resilience in the face of climate change." (non VSLA FGD participant)

A chi-square test of independence revealed a statistically significant association between VSLA membership and receiving community support during disasters, χ^2 (4, N = 600) = 263.28, $p < .001$. This strong association suggests that VSLA members are significantly more likely to receive assistance from their communities in times of crisis. This may be attributed to the trust, solidarity, and collective action cultivated within VSLA groups. The likelihood ratio test further confirmed the strength of this relationship, G^2 (4) = 331.11, $p < .001$. These findings highlight that the benefits of VSLA participation extend beyond financial inclusion. By strengthening social bonds and promoting a culture of mutual support, VSLAs contribute meaningfully to local emergency response networks. Their embeddedness within communities enables rapid, collective mobilization during shocks such as floods, droughts, or health emergencies. As such, programs aiming to strengthen community-based disaster response systems should recognize and leverage VSLAs as vital platforms for mobilizing timely and localized support. The evidence affirms that VSLAs serve not only as economic mechanisms but also as engines of social protection, enhancing both resilience and community solidarity during times of crisis. Participation in these groups builds confidence, improves decision-making capabilities, and fosters a sense of belonging and agency among members. Qualitative insights from focus group discussions (FGDs) further reinforce the quantitative findings. Respondents consistently spoke of how VSLA participation has improved their ability to respond to emergencies, manage resources wisely, and support one another in times of need. Collectively, these findings underscore the transformative impact of VSLA membership driving empowerment and resilience at both individual and community levels.

5.3 Effectiveness of VSLAs as an urban climate-change adaptation strategy

The data provides compelling evidence that Village Savings and Loan Associations (VSLAs) play a crucial role in enhancing climate awareness, preparedness, resilience, and recovery among their members. The findings underscore the significant disparities in climate knowledge, training, financial resilience, and access to adaptation strategies between VSLA and non-VSLA members. This section explores the key dimensions of these findings and their broader implications for climate adaptation, community development, and policy.

5.3.1. Climate Knowledge and Training

The data shows that 69% of VSLA members reported good knowledge of climate change, compared to only 20% of non-members, despite 100% of both groups being affected by climate shocks. This finding highlights the widespread vulnerability to climate-related events and underscores the need for targeted interventions to enhance community resilience. This finding highlights the widespread vulnerability to climate-related events and underscores the need for targeted interventions to enhance community resilience, as emphasized by Antwi-Boasiako et al. (2018). Respondent from the FGD remarked that:

“We are feeling the effects of climate change every day. It's hard to make ends meet when our crops are failing and our livestock are sick. I wish we had more support and resources to help us cope with the impacts of climate change." (non VSLA FGD participant)

"As a farmer, I have seen firsthand the impact of climate change on our crops and livelihoods. Droughts and floods have affected our yields”. (VSLA FGD participant)

The non-VSLA participant expresses deep concern and a sense of helplessness reflecting the reality for many individuals in underserved areas who, despite experiencing severe climate-related stocks such as crop failure and livestock loss, lack structured mechanisms for adaptation and recovery. This is consistent with findings by Below et al. (2015) that highlight the vulnerability of communities without access to financial and social support. Their vulnerability is compounded by the absence of reliable financial resources, training, or community safety nets. In contrast, the VSLA member, while also acknowledging the adverse effects of climate change, does so from a position of experience and awareness, not only in recognition of the challenge, but also implies a greater level of engagement and informed understanding likely due to participation in VSLA-supported climate resilience training and collective problem-solving. These statements affirm that while climate impacts are universal, the capacity to cope and adapt is uneven, strongly influenced by social and financial support structures such as VSLAs as emphasized by Asadullah and

Rahman (2016). VSLA members, through savings, credit access, and group-based climate education, are better positioned to anticipate, absorb, and respond to climate shocks. The testimony of the non-member underscores the critical need to expand VSLA coverage and ensure that the most climate-vulnerable populations are reached. This includes not only farmers but also herders, fisherfolk, and informal traders. Governments and NGOs should integrate VSLAs into climate adaptation strategies and rural resilience programs, ensuring they are resourced to deliver training, small grants, and support to at-risk communities.

Furthermore, 100% of VSLA members received climate resilience training, compared to only 48% of non-members. This is consistent with research by Ampaire et al. (2017) that highlights the effectiveness of group-based approaches in promoting climate change adaptation and resilience. This suggests that VSLAs are effective conduits for climate education and training, providing structured spaces for learning and information dissemination. The findings indicate that VSLA programs can provide individuals with the opportunity to learn and acquire information and knowledge regarding climate change, and thus improve their knowledge and awareness about the same. This implies the potential benefits of VSLA programs in support of climate change mitigation and adaptation. Respondent from the FGD remarked that:

“I used to think climate change was a distant issue, but the workshops and training sessions conducted by Meta Foundation have enlightened me. As a VSLA member, have learned about climate change adaptation and mitigation strategies, and I'm more confident in my ability to make informed decisions to support my community. I'm grateful for the knowledge and skills gained through this partnership."

“I wish I had more knowledge about climate change and its impacts. I have heard that VSLA programs provide training and support for climate change adaptation. Maybe I will look into joining a VSLA to learn more and take action to protect my community."

Through regular meetings and community engagement, VSLA members become more informed and better equipped to respond to environmental risks. VSLA platforms can therefore be used to scale up climate education and awareness, particularly in urban and climate-vulnerable areas. Partnerships between VSLAs, local governments, and NGOs can integrate climate training into routine VSLA programming, enhancing reach and sustainability.

5.3.2 Financial Resilience

The findings reveal that 85% of VSLA members are financially resilient, with 22% classified as very resilient. In contrast, among non-members, only 54% report any financial resilience, with just 3% considered very resilient, while 46% report no financial resilience

at all. These findings are consistent with Karlan et al. (2017), who highlights the critical role of savings groups in strengthening household financial resilience. Furthermore, 85% of VSLA members reported moderate or high improvement in financial resilience over time, with 43% indicating high improvement. This compares to just 6% among non-members, further validating Beaman et al.'s (2014) argument on the transformative impact of savings interventions on household stability. Financial resilience here refers to a household's ability to absorb shocks, maintain consumption, and recover without resorting to asset depletion or harmful coping strategies. The evidence strongly indicates that Village Savings and Loan Associations (VSLAs) significantly contribute to this resilience by providing access to financial capital, emergency savings, peer support, and financial literacy training.

This is illustrated through testimonies from focus group participants:

"When the floods hit, many of us were affected, but our VSLA helped us recover quickly. We had savings and emergency funds to fall back on, and we were able to support each other. I'm grateful for the financial resilience our VSLA has given us." (VSLA FGD participant).

"As a VSLA member, I have learned to manage my finances better and prepare for climate-related shocks. We have had training on financial planning and emergency preparedness. When the drought came, I was able to adjust my business and finances accordingly." (VSLA FGD participant).

"Being part of a VSLA has given me the financial stability and confidence to face climate-related challenges. For example, during the last drought, I accessed an emergency loan from our VSLA to buy fodder for my livestock, which helped me recover quickly. I've also diversified my income and invested in climate-resilient agriculture." (VSLA FGD participant).

"Our VSLA has been a safety net during difficult times. We've supported each other financially and emotionally. I've seen firsthand how collective efforts can build long-term financial resilience." (VSLA FGD participant).

These experiences underscore how financial literacy, emergency preparedness, and access to credit when combined in a supportive group setting enables members to make informed decisions, absorb shocks, and adapt to changing conditions with confidence. In sharp contrast, non-VSLA participants reported limited access to financial tools, knowledge, or support:

"I'm still recovering from last year's drought, and I'm worried about the next one. I don't have much savings, and I'm not sure how I'll cope. Maybe joining a VSLA or getting

support from NGOs or government would help me build resilience." (Non- VSLA FGD participant).

"I've been trying to save for disasters, but it's hard. I wish I had access to financial training and support to help me recover more quickly." (Non- VSLA FGD participant).

"My resilience to climate shocks hasn't improved because I have no financial safety net. When my shop got flooded in Tamale market, I lost a lot of stock. I had to take a high-interest loan to recover, and the process was slow. If I had access to a support system, I'd have bounced back faster and with less stress." (Non- VSLA FGD participant).

These reflections emphasize the resilience gap between VSLA members and non-members, revealing how lack of access to financial services, training, and social support structures leaves many vulnerable to shocks. Given these insights, VSLAs should be integrated into national and local strategies for poverty alleviation, disaster recovery, and resilience building. Governments and development partners should consider supporting VSLA expansion in urban areas, embedding VSLAs within urban climate adaptation programs and linking VSLAs with formal financial services and social protection schemes. By doing so, VSLAs can serve as critical building blocks for sustainable development, climate resilience, and inclusive economic recovery.

5.3.3 Climate Disaster Resilience and Recovery Capacity

The data reveals that 89% of VSLA members reported moderate or significant improvements in climate disaster resilience, with 53% indicating significant progress. In contrast, 48% of non-members reported only moderate improvement, and none reported significant gains. This aligns with Ahmed et al. (2019), who argue for the critical role of community-based initiatives in promoting climate resilience. Regarding recovery from climate events, 84% of VSLA members reported having good or very good recovery capacity, compared to only 11% of non-members. This supports the findings of Smith et al. (2020), who emphasize the importance of social and financial support systems in enhancing adaptive capacities. These findings suggest that VSLAs enhance both anticipatory and absorptive capacities enabling members not only to prepare for climate shocks but also to recover from them more effectively. Access to credit, savings, group solidarity, and shared knowledge facilitates timely replanting, restocking, or business continuity after climate-related disruptions. Consequently, VSLA participation should be mainstreamed into national disaster risk reduction (DRR) and climate adaptation frameworks. Climate finance mechanisms should increasingly consider community-based financing through VSLA structures to support localized resilience and recovery systems.

Spearman's rank-order correlation further validated this relationship, revealing a strong positive correlation between VSLA membership and self-reported recovery ability, $\rho = 0.733$, $p < .001$, $n = 600$. This statistically significant relationship indicates that individuals involved in VSLAs are far more likely to report strong resilience and recovery capabilities following climate shocks. The findings underscore that VSLA participation through financial access, social capital, and collective learning substantially enhances household-level climate resilience.

Qualitative findings from focus group discussions (FGDs) provide compelling support for the quantitative analysis. VSLA members consistently expressed increased preparedness, confidence, and well-being in the face of climate challenges. For instance, one participant stated:

"Before joining the VSLA, I felt vulnerable to climate disasters. But now, I feel more resilient and prepared. We have learned new strategies to adapt to climate change, and I have seen improvements in my livelihood and well-being. The VSLA has been a lifeline for me and my family." (VSLA FGD Participant).

Such testimonies reflect personal transformation, driven by access to financial services, climate-smart training, and communal support networks. Participants frequently referenced gains in climate-related knowledge and skills, improved planning, and collective action underscoring the multi-dimensional benefits of VSLAs. In stark contrast, non-members expressed feelings of anxiety and exclusion. One non-VSLA participant shared:

"I'm worried about the future, especially with climate change getting worse. I wish I had the knowledge and skills to build resilience and adapt to climate-related shocks." (Non-VSLA FGD Participant).

This statement illustrates the resilience gap between VSLA members and non-members, and the urgent need to expand access to VSLA structures, especially in vulnerable, climate-affected communities.

5.3.4 Preparedness for Climate Shocks

A striking 73% of VSLA members reported being very prepared for climate-related events, compared to none among non-members a compelling indication of the significant preparedness gap. In contrast, 53% of non-members felt poorly prepared, reinforcing the disparity in adaptive capacity. This is consistent with Ampaire et al. (2017), who highlight the effectiveness of group-based approaches in enhancing climate adaptation and resilience. However, these findings also contrast with Vincent et al. (2018), who caution that self-reported preparedness may not always reflect actual resilience behaviors or

practices on the ground. Quantitative analysis supports these patterns. A chi-square test of independence revealed a statistically significant association between VSLA membership and household disaster preparedness, χ^2 (2, N = 600) = 387.56, p < .001. The likelihood ratio test was similarly significant, G^2 (2) = 527.88, p < .001. Furthermore, a strong linear-by-linear association, χ^2 (1) = 371.81, p < .001, demonstrated a clear directional trend: as engagement in VSLA activities increases, disaster preparedness also improves. These findings strongly suggest that VSLAs play a crucial role in enhancing household resilience, likely due to members' improved access to emergency savings and credit, participation in group-based training, and the existence of trusted social support systems.

Focus Group Discussions (FGDs) further substantiate these findings. VSLA members consistently describe transformative experiences tied to their participation. One participant shared:

"Before joining the VSLA, I felt vulnerable to climate disasters. But now, I feel more resilient and prepared. We have learned new strategies to adapt to climate change, and I have seen improvements in my livelihood and well-being. The VSLA has been a lifeline for me and my family." (VSLA FGD Participant)

Another added:

"Our VSLA has helped us build resilience to climate disasters. We have learned to plan and prepare for climate-related shocks, and we have supported each other through tough times. I'm grateful for the great improvement we have made and feel more hopeful about our future."

These testimonials affirm the multi-dimensional value of VSLAs not only as financial support mechanisms but also as platforms for climate-smart learning, peer support, and psychosocial empowerment. Members frequently report improved livelihoods, stronger community ties, and greater emotional and mental security amidst growing climate uncertainty.

In contrast, non-members remain isolated from these support structures. One non-member remarked:

"I'm worried about the future, especially with climate change getting worse. I wish I had the knowledge and skills to build resilience and adapt to climate-related shocks." (Non-VSLA FGD Participant)

This response underscores the resilience gap between VSLA members and non-members. As Below et al. (2015) argue, communities lacking access to financial and social networks remain highly vulnerable to climate shocks. Similarly, the findings resonate with Asadullah

and Rahman (2016), who emphasize the role of community-based adaptation mechanisms in reducing vulnerability and enhancing proactive risk management. To maximize their impact, VSLAs should be systematically integrated into national and local climate adaptation strategies. This includes equipping VSLA groups with early warning systems, preparedness training, and risk communication tools. Local government structures and civil society organizations can partner with VSLAs to co-create community-based disaster preparedness and resilience plans. Such collaboration would enhance localized responses and ensure that even the most marginalized populations are included in adaptation processes. Ultimately, VSLAs serve as hubs of resilience-building, going beyond savings and credit provision. Through shared learning, collective planning, and mutual support, VSLA members gain the knowledge, skills, and confidence to adjust their livelihoods to a changing climate. These adaptive strategies include drought preparedness, modified farming practices, and emotional support during recovery phases. The stark contrast between members and non-members illustrates the urgent need to scale up VSLA programs and ensure that all community members especially the most vulnerable gain access to the tools and networks necessary for climate resilience.

5.3.5 Access to Climate Adaptation Plans / Strategies

The findings reveal that 95% of VSLA members reported moderate to full access to climate adaptation strategies, in stark contrast to only 47% of non-members. Notably, no VSLA member reported having no access, whereas 11% of non-members did. This reinforces the argument by Niles et al. (2020) that community-based initiatives significantly enhance access to climate information, services, and adaptive resources. These results underscore the role of VSLAs as gateways to both formal and informal adaptation planning facilitating members' access not only to climate-related information, but also to essential services such as climate-resilient agricultural inputs, microinsurance, and small grants. Accordingly, VSLAs should be recognized as critical entry points for implementing national and subnational adaptation strategies at the grassroots level, as also recommended by the International Fund for Agricultural Development (IFAD, 2020). Climate programs and government agencies should build the capacity of VSLA groups to participate in, inform, and influence local adaptation planning processes.

Quantitative analysis supports these findings. A Spearman's rank-order correlation revealed a moderately strong positive association between VSLA membership and access to climate adaptation strategies, $\rho = +0.556$, $p < .001$, $n = 600$. This statistically significant result suggests that VSLA members are substantially more likely to have access to adaptation strategies than their non-member counterparts. The implication is clear: VSLAs are evolving into multidimensional platforms not only for savings and credit but for collective learning, community organizing, and climate resilience building.

Qualitative data from focus group discussions (FGDs) and key informant interviews (KIIs) further reinforce these insights. Respondents consistently highlighted how VSLAs function as localized channels for knowledge exchange, resource mobilization, and group preparedness all essential components of sustainable adaptation strategies. One participant noted:

"As a VSLA member, I have had access to climate adaptation plans that have helped me prepare for climate-related challenges. Our VSLA provides training and resources on climate-resilient agriculture, which has improved my farming practices and reduced my vulnerability to climate shocks." (VSLA FGD Participant)

This testimony illustrates how VSLAs go beyond financial services to provide actionable training in crop diversification, water resource management, and emergency preparedness. These capacity-building efforts not only improve productivity and reduce exposure to climate risks but also enhance members' confidence and sense of control over their future.

In contrast, a non-member reflected:

"I wish I had access to climate adaptation plans like some of my neighbors who are part of a VSLA. They seem more prepared and confident in their ability to handle climate-related challenges. I hope to find a way to access similar resources." (Non-VSLA FGD Participant)

This statement exposes the exclusion gap experienced by non-members many of whom lack access to vital adaptation information, training, and support networks. Their vulnerability reflects the broader consequences of being outside participatory community structures like VSLAs, which increasingly serve as resilience enablers in climate-vulnerable contexts.

5.3.6 Community Responsiveness and Collective Action

Community responsiveness to climate-related needs is another area where VSLA members show stronger outcomes: 81% of VSLA members perceive their communities as responsive or very responsive, versus only 21% of non-members. This is consistent with research by Pelling et al. (2018) highlighting the importance of social capital in enhancing community resilience. A majority of non-members (62%) felt neutral, and 17% perceived their communities as unresponsive. VSLAs foster trust, collaboration, and collective responsibility, encouraging members to organize and support one another during crises. This builds social capital, a crucial but often overlooked aspect of resilience. This is consistent with research by Jones et al. (2019) emphasizing the importance of social capital in climate adaptation.

VSLA activities create regular spaces for interaction, cooperation, and trust-building. This is also consistent with Mathbor et al. (2017) who argued that community-based initiatives can foster social cohesion and collective action. These repeated engagements foster deep interpersonal relationships and a sense of shared responsibility among members, which translates into collective responses during shocks, such as droughts or floods. Statements from FGDs vividly illustrate the power of Village Savings and Loan Associations (VSLAs) to foster social cohesion, collective action, and community-level resilience in the face of climate-related challenges. The experiences shared by both VSLA and non-VSLA participants highlight the critical role that VSLAs play not only in improving individual financial resilience but also in strengthening the social fabric of communities.

A VSLA member stated:

“During the drought, our community rallied around those who were most affected. As a VSLA member, I saw firsthand how our community members responded with generosity and kindness. We have built a network of support that helps us cope with climate-related disasters."

This reflects how VSLAs function as more than financial mechanisms they are social institutions that promote trust, empathy, and solidarity. Through their structured group dynamics and shared goals, VSLA members develop a culture of mutual aid and collective problem solving, which becomes especially valuable during periods of crisis.

Likewise, the non-member’s comment:

“I have seen how VSLA members work together to support each other during tough times. It inspires me to see such community responsiveness. Maybe our community could learn from their example and build stronger support systems”. (non VSLA FGD participant)

This statement also demonstrates that the social impacts of VSLAs extend beyond their immediate membership, influencing broader community behavior and sparking aspirations for stronger support systems.

The findings decisively demonstrate that VSLA membership significantly improves climate resilience, financial stability, and disaster preparedness. This is consistent with research by Smith et al. (2020) who note that "community-based initiatives, such as VSLAs, play a crucial role in enhancing climate resilience. VSLAs are not just financial structures they are community-based resilience systems that equip members with knowledge, resources, and networks to survive and thrive amid growing climate uncertainty. VSLAs are proving to be effective, scalable, and community-driven platforms for building adaptive capacity and securing climate-resilient futures. Supporting their expansion and strengthening their

linkages with formal systems will be critical in responding to the increasing frequency and severity of climate-related shocks.

5.4 Factors driving adoption of VSLAs for climate change adaptation

Village Savings and Loan Associations (VSLAs) are gaining prominence as localized, community-driven mechanisms for promoting climate change adaptation, especially in vulnerable communities across Ghana. This study sought to understand the drivers behind the adoption of VSLAs for adaptation purposes, drawing on insights from VSLA members and key stakeholders, including the Department of Social Welfare, District and Municipal Assemblies, LINK Ghana, World Vision Ghana, and Empowerment for Development. The findings highlight a convergence of economic, social, and institutional factors that collectively influence the uptake and sustained use of VSLAs in climate resilience strategies.

5.4.1 Financial Inclusion and Access to Credit

Among all factors assessed, financial inclusion and access to credit emerged as the most significant, cited by 100% of respondents. This is consistent with research by Ledgerwood et al. (2019) which argued that "financial inclusion is critical for enhancing the resilience of vulnerable populations." This finding affirms that the fundamental appeal of VSLAs lies in their ability to provide simple, local, and reliable financial services in areas where formal financial institutions are either absent or inaccessible. Climate change often disrupts income streams and erodes asset bases, particularly for smallholder farmers, traders, and informal workers. In such contexts, timely access to credit enables VSLA members to replant crops after floods or droughts, restock businesses aftershocks, smooth household consumption during lean periods and invest in climate-resilient livelihoods such as dry-season farming or agroforestry. This is consistent with Dercon et al. (2018) who emphasize the importance of access to finance in building resilience to climate-related shocks and found that financial inclusion can have a positive impact on resilience. By bridging the credit access gap, VSLAs help members to avoid negative coping strategies (e.g., selling productive assets) and instead pursue adaptive behaviors that improve long-term resilience.

5.4.2 Low Barrier to Entry and Simplicity of the VSLA Model

Another universally cited factor (100%) was the **ease of joining and operating VSLAs**. Unlike formal banks, VSLAs do not require identification documents, collateral, or minimum balances. They are based on simple principles of group trust, savings mobilization, and rotational lending. This inclusivity makes them particularly attractive to

women, who may face systemic barriers in formal finance as well as youth, who often lack stable income or assets. The model is also ideal to illiterate or semi-literate individuals who are excluded from bureaucratic processes. The simplicity of VSLAs thus lowers structural and psychological barriers to entry, enhancing their scalability and replicability. This is consistent with research by Allen et al. (2016) who note that community-based financial initiatives can be particularly effective in reaching underserved populations. In the context of climate change, this inclusiveness ensures that even the most vulnerable can participate in building resilience, reinforcing equity in adaptation efforts.

5.4.3. Livelihood Diversification and Income Stability

Respondents (100%) also identified livelihood diversification as a key driver of VSLA adoption. This is especially crucial in climate-vulnerable regions where traditional livelihood systems such as rain-fed agriculture or seasonal trading are increasingly unstable. VSLA participation enables members to start new businesses (e.g., processing, crafts, petty trading), invest in non-agricultural skills and combine farm and off-farm income sources. Such diversification reduces dependency on climate-sensitive sectors and contributes to household income stability, even during adverse weather events. This is consistent with Ellis (2000) who argue that livelihood diversification is a key strategy for managing risk and uncertainty. Stakeholders emphasized that diversified livelihoods are essential not only for survival but also for adaptive flexibility, allowing individuals to shift strategies in response to environmental and economic changes.

5.4.4 VSLAs as Risk Reduction Mechanisms

Another unanimous driver (100%) was the perception of VSLAs as community-based risk buffers. Members can access emergency funds, draw on collective savings, and rely on peer support during times of distress. VSLAs thereby function as informal social safety nets, reducing the impact of crop failure due to drought, loss of income due to market disruptions and health crises linked to extreme weather. The availability of funds through VSLAs strengthens members' ability to absorb and recover from shocks, a core component of climate resilience. This is also consistent with research by Carter et al. (2017) who found that social protection programs, including informal safety nets, can play a critical role in building resilience to climate-related shocks. This collective protection enhances the perception of VSLAs as not just financial tools but resilience platforms a perspective shared across community members and institutional actors alike.

5.4.5 Climate Awareness and Access to Information

An impressive 96% of respondents identified Village Savings and Loan Associations (VSLAs) as key channels for climate information dissemination and awareness building. This finding aligns with the work of Stathers et al. (2020), which underscores the critical role of community-based groups in promoting climate literacy and facilitating adaptation practices. VSLA members reported regularly sharing and receiving information on weather forecasts, improved seed varieties, agricultural technologies, and natural disaster preparedness. Through their trusted group structure and consistent meetings, VSLAs have evolved into localized hubs for climate-smart agriculture training, early warning systems, and adaptation planning dialogues. Their trusted, grassroots nature gives VSLAs a unique advantage as platforms for peer-to-peer learning, behavioral change, and sustained climate engagement. By embedding climate information into routine group interactions, members are better equipped to anticipate, understand, and respond to climate threats, integrating adaptation into their daily decision-making processes. This is reflected in the testimony of a VSLA member:

“LINK-Ghana and World Vision Ghana have worked with us for over five years. They have trained us on reducing post-harvest losses, developing household and community adaptation plans, and improving crop yields.” (VSLA Respondent)

An NGO respondent further emphasized:

“VSLAs are our main entry point in the communities we work in. They are strong social groups when you give them information, it reaches every household, and the impact is felt.”

These perspectives reinforce the strategic role of VSLAs in scaling climate information and adaptation practices, particularly in rural and vulnerable settings where formal information channels are limited. By leveraging the social capital and coordination strengths of VSLAs, development actors can improve the reach, relevance, and uptake of climate services. In this way, VSLAs can serve as scalable, cost-effective, and community-owned vehicles for building climate literacy and strengthening urban climate adaptive capacity.

5.4.6 Positive Community Testimonies and Perceived Success

A substantial 98% of VSLA members indicated that positive testimonies and visible success stories were key motivators for adoption. This is consistent with research by Kristjanson et al. (2017) who found that observing peers' success can inspire others to adopt new practices. Seeing peers improve their farms, grow businesses, or recover from shocks instils confidence and aspiration. Word-of-mouth and observed results thus serve as powerful recruitment tools, reinforcing the peer-led and self-replicating nature of the VSLA model. This pattern suggests that demonstration effects are central to VSLA scaling.

When members succeed, they influence others to join, creating momentum that can be leveraged by NGOs and local governments to drive wider adoption without intensive external input.

5.4.7. Strengthening of Social Capital and Collective Resilience

The findings show that 88% of respondents consider social capital and mutual support essential elements driving VSLA participation. This is consistent with research by Aldrich and Meyer (2015) who highlight the critical role of social capital in enhancing community resilience to disasters and climate change. VSLAs build trust, foster cooperation, and enhance interpersonal networks qualities that are crucial for collective action in managing shared resources, mutual aid during climate emergencies and social cohesion in times of community stress. In the context of climate change, where coordination and shared responsibilities are vital (e.g., in managing water, planting trees, responding to floods), VSLAs serve as ready-made structures for collective resilience. This social dimension strengthens both the functionality and sustainability of VSLAs as climate adaptation mechanisms.

5.4.8. Institutional Support and Integration into Broader Development Programs

78% of respondents cited the role of institutional support and programmatic integration as a key driver. This is also consistent with research by Harvey et al. (2018) who emphasize the importance of institutional support and integration in enhancing the effectiveness and sustainability of community-based adaptation initiatives. Support from organizations like LINK Ghana, World Vision, and Empowerment for Development, as well as alignment with municipal and district-level development plans, reinforces the legitimacy and sustainability of VSLA initiatives. Institutional backing often brings training and capacity building, seed funding or startup kits and linkages to markets, financial institutions, or social services. This integration ensures that VSLAs are not isolated grassroots activities but part of a coherent adaptation and development ecosystem, enhancing their effectiveness and policy relevance.

5.4.9. Gender Inclusion and Urban Adaptation Potential

Finally, 67% of respondents emphasized gender inclusion and empowerment as vital to the adaptability and impact of VSLA models, particularly in urban settings. This is consistent with research by Resurrección et al. (2019) who highlight the importance of gender-sensitive approaches in climate change adaptation. Urban poor communities often experience different vulnerabilities such as housing insecurity, market volatility, and

informal employment risks that require customized responses. VSLAs have proven effective in empowering urban women, providing them with financial independence, social support, and climate-relevant knowledge. By adapting VSLA structures to urban realities while maintaining their core features development actors can extend their benefits to city dwellers facing climate stress, thereby enhancing urban resilience and gender equity.

The findings highlight a rich interplay of economic, social, and institutional factors that drive the adoption of VSLAs as tools for climate change adaptation. Financial inclusion, livelihood security, low entry barriers, and collective support are at the core of their appeal. At the same time, the added benefits of climate awareness, institutional support, and gender empowerment position VSLAs as multi-dimensional platforms for resilience building. As climate risks intensify, scaling and strengthening VSLAs offer a cost-effective, community-centered pathway for equitable adaptation and inclusive development. The broad-based support for VSLA adoption across members, local authorities, and NGOs demonstrates that VSLAs are not only relevant but essential pillars in climate adaptation strategies, particularly for marginalized and climate-exposed populations.

6. Conclusions

In assessing the role of VSLAs in addressing urban resilience, the study concludes VSLAs significantly improve members' access to credit, savings, insurance, and emergency funds services that are often inaccessible through formal financial institutions. This access enhances members' capacity to absorb and recover from economic and climate-related shocks. VSLA members reported higher household incomes, better financial decision-making, and improved livelihood stability compared to non-members. VSLA members demonstrated greater knowledge of climate change, stronger preparedness, and better recovery outcomes in the face of climate disasters such as floods and droughts. The inclusion of climate resilience training and access to adaptation strategies makes VSLAs important platforms for localized climate adaptation and risk reduction. The study found that VSLA participation strengthens trust, cooperation, and community responsiveness. These social dynamics enhance collective action in responding to crises and undertaking community development initiatives. VSLAs thus serve not only as financial institutions but also as vehicles for building social capital and solidarity.

In assessing the drivers of VSLA as an adoption models, the study concludes that the key drivers of VSLA are Multifaceted and Community-Oriented. The most cited drivers of VSLA adoption included financial inclusion, the simplicity and low barrier to entry of the model, livelihood diversification, risk reduction, and positive community testimonies. Institutional support from NGOs and integration with government development programs further incentivize participation. VSLAs have been particularly impactful for women and

youth, offering financial independence, leadership opportunities, and a platform for civic engagement. In urban settings, where climate vulnerability intersects with informal employment and social exclusion, VSLAs serve as tools for both empowerment and resilience. Non-VSLA members consistently reported weaker financial resilience, limited access to training and support, and less confidence in managing climate shocks. However, many expressed a strong desire to join VSLAs, indicating that scaling and inclusion efforts could have broad and transformative impacts.

While traditionally focused in rural areas, VSLAs are proving effective in urban contexts as well. They offer scalable, low-cost, community-led models for enhancing resilience among informal workers and poor urban populations where climate-related vulnerabilities are increasing. The effectiveness and sustainability of VSLAs improve when they are integrated into broader development frameworks, such as district planning, urban resilience programs, and national climate adaptation strategies. Partnerships with local governments, NGOs (e.g., LINK Ghana, World Vision), and donor agencies can support scale-up and long-term impact.

VSLAs in Northern Ghana serve as effective tools for promoting urban resilience, financial inclusion, livelihood diversification, social cohesion, and climate adaptation. Their flexibility, accessibility, and community-driven nature make them highly suitable for expanding resilience strategies in both urban and peri-urban areas. Scaling up VSLA models while ensuring inclusion of the most vulnerable can significantly contribute to Ghana's broader efforts in building adaptive capacity and achieving sustainable development goals. The statistical evidence clearly demonstrates that VSLA membership is significantly associated with higher income levels and financial inclusion, better access to climate adaptation knowledge and tools. VSLA membership is also associated with increased community participation and social cohesion as well as enhanced resilience to both economic and environmental shocks.

7. Practical Applications and Recommendations for Humanitarian Work

7.1 Applications for Humanitarian Work

Based on the insights from the research on VSLAs and their role in building urban resilience in Northern Ghana, this section provides details on Practical Applications of VSLAs for Humanitarian Work and Recommendations for consideration.

Integrate VSLAs into Humanitarian Response and Recovery Programming. VSLAs can serve as community-led financial safety nets during humanitarian crises (e.g., floods, droughts, conflict displacement). Humanitarian actors can support existing VSLA groups with emergency funds or grants during shocks, help establish VSLAs in affected communities as a first step toward recovery and long-term resilience. Actors could also leverage VSLA meetings as platforms for delivering humanitarian information and services as they have strong social network or capital.

Use VSLAs as Entry Points for Climate Risk Communication and Preparedness. Because of their regular meetings and trusted group dynamics, VSLAs can be used to disseminate early warning systems (EWS), weather forecasts, or health alerts, deliver climate-smart agricultural training and preparedness education. They could be used to encourage community-led adaptation planning as they are part of the community and often have a strong social, financial and political power.

Strengthen Women's Economic Empowerment and Protection. VSLAs are often women-led and gender-inclusive, making them ideal platforms for promoting gender-based violence (GBV) awareness and referral services. They are also appropriate for building economic empowerment pathways for women and girls in humanitarian settings as well as enhancing women's roles in leadership and decision-making in community responses.

Support Livelihood Diversification in Protracted Crises. Humanitarian agencies can partner with VSLAs to promote livelihood recovery and diversification in conflict-affected or climate-stressed urban areas by linking VSLA members to vocational skills training, providing start-up kits for microenterprises and as well as offering agricultural inputs or market linkages.

Use VSLAs to Build Social Capital and Community Cohesion. VSLAs foster trust, collective action, and inclusion critical ingredients in fragile settings. They can support peacebuilding and post-crisis recovery by encouraging inter-ethnic or inter-faith collaboration through inclusive VSLA groups, creating safe spaces for community dialogue and joint problem-solving and serving as platforms for youth engagement and local governance participation.

Recognizing the potential significant role of VSLAs in humanitarian work, the following recommendations are made to fully utilize this potential.

7.2 Recommendations

Mainstream VSLA Models into Urban Humanitarian and Development Programming. Humanitarian actors should recognize the versatility of VSLAs as tools not only for rural development but also for urban poverty reduction, climate resilience, and social cohesion. Programming in informal settlements and flood-prone urban areas can use VSLAs to stabilize income, reduce aid dependency and facilitate self-reliance in crisis-prone communities.

Ensure Inclusion of Vulnerable Groups in VSLA Expansion. Targeted efforts should be made to include women-headed households, youth not in education or employment, persons with disabilities as well as displaced populations and migrants. This requires adapting VSLA structures (e.g., flexible savings terms or language use) and working with local facilitators to reduce barriers to entry.

Develop Partnerships Between Humanitarian Agencies, Local Authorities, and VSLAs. Multi-sectoral collaboration can enhance the reach and effectiveness of VSLAs. Humanitarian organizations should coordinate with local government departments (e.g., Social Welfare, Agriculture), involve NGOs like LINK Ghana and World Vision for technical support and integrate VSLA data into vulnerability assessments and community planning.

Invest in VSLA Capacity Building for Risk Reduction and Emergency Preparedness. Provide technical support for VSLAs to develop group-level emergency response plans, incorporate climate risk reduction into their lending decisions and access mobile banking and digital finance tools for improved liquidity and shock response.

Pilot and Scale Digitized VSLAs for Crisis-Affected Urban Areas. Digital savings platforms, mobile money integration, and e-learning tools can help improve the transparency and efficiency of VSLA operations, reach urban populations who are mobile or dispersed as well as enhance accountability and access to broader financial systems.

VSLAs offer a resilient, community-led solution to the complex challenges faced in humanitarian settings especially in the context of climate change, urbanization, and increasing socio-economic vulnerability. Supporting their integration into humanitarian frameworks will not only enhance aid effectiveness but also empower communities to lead their own recovery and resilience journeys.

7.3 Future Research Areas

The research also suggests future research areas that can further enhance the academic knowledge and practice of scaling the use of VSLAs or replicating VSLA in other geographic areas. These include;

1. Exploring the influence of socioeconomic, institutional, and environmental factors on the resilience of VSLA members in urban cities of Northern Ghana.

2. Adapting Village Savings and Loans Associations (VSLAs) to Foster Youth Entrepreneurship, Agribusiness, and Innovation for Urban Resilience in Northern Ghana

3. Investigate how VSLA models can be modified to fit urban informal economies, focusing on migration, housing insecurity, and social cohesion challenges.

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Appendices

Data collection tools

University for Development Studies

Faculty of Sustainable Development Studies - FoSDs

(Quantitative Survey Questions for VSLA and Non VSLA Members)

Introduction

My name is _____, and we are conducting research on Assessing Village and Savings Associations (VSLA's) Contribution to Urban Resilience; Evidence from Northern Ghana in other to improve urban resilience policies and programming.

Benefits/Risks of the Study: There are no direct benefits to you for participating in the study, however, information collected in this study may benefit you and others in the future by improving urban resilience programming.

Confidentiality: Your participation in this study is voluntary and you may choose not to answer a specific question or end the interview at any time. If you choose to participate, your responses will be strictly confidential. Neither you nor your household will be individually or collectively identified or named in any reports. Any papers or electronic data with personal identifying information will be stored on password-protected electronic devices or in a locked room and no person outside of the research team will have access to this information. Upon conclusion of the study, all personal identifying information will be destroyed.

Contact for Additional Information: If you have any questions regarding this interview or this research project in general, please contact Dr. Zachary Pealore on 0206151928

Your Rights as a Participant: If you agree to participate in the research kindly grant your consent.

[ ] Granted [ ] Not Granted

Section A: Demographic Information

Age:

What is your age?

[ ] Below 18 years (Children) [ ] 18 –64 years (working population) [ ] 65+ years (Older population)

Gender:

What is your gender? [ ] Male [ ] Female [ ] Other

Education Level:

What is the highest level of education you have completed?

[ ] No formal education [ ] Primary [ ] Secondary [ ] Vocational / Technical Skills [ ] Tertiary

What is your occupation? *(Farmer, trader, artisan, unemployed, etc.)*

[ ] Farmer [ ] Trader [ ] Unemployed [ ] Others *(please specify)*

Household Size:

How many people live in your household?

OBJECTIVE 1: THE SOCIO-ECONOMIC AND ENVIRONMENTAL BENEFITS

Financial Stability & Economic Growth

Has your household income changed for the past 3 or more years?

[ ] Increased significantly [ ] Increased slightly [ ] No change [ ] Decreased

How would you rate your current access to financial loans?

[ ] No access at all [ ] Limited access [ ] Moderate access [ ] Good access [ ] Full access

How do you primarily utilize financial credit (e.g., loans, credit lines)? (tick where applicable)

[ ] For business or income-generating activities [ ] For household needs (e.g., food, utilities, rent)

[ ] For education expenses [ ] For emergencies or health-related costs

[ ] For purchasing assets (e.g., land, livestock, equipment) [ ] Other options (please specify)

How would you best describe your current access to financial services (e.g., savings, loans, insurance)?

[ ] Very poor access [ ] Poor access [ ] Moderate access [ ] Good access [ ] Very good access

Have experienced any climate shocks before? (explain climate shocks to respondents) [ ] Yes [ ] No

How resilient are you financially to climate shocks (e.g., floods, droughts)?

[ ] Very Resilient [ ] Moderately Resilient [ ] Not Resilient

To what extent has your financial resilience to climate-related disasters improved over the past three or more years? [ ] Not at all improved [ ] Moderately improved [ ] Significantly improved

To what extent has your resilience to climate-related disasters improved over the past three or more years?

[ ] Not at all improved [ ] Moderately improved [ ] Significantly improved

Employment & Business Growth

Have you established any business of your own? [ ] Yes [ ] No

If you have your own business, what type of business? [ ] Agriculture [ ] trade [ ] services [ ] Others

Have you expanded any business of your own? [ ] Yes [ ] No

How many employees (if any) have you been able to hire?

Social Capital & Empowerment

Please indicate how confident you feel in your ability to make decisions. [ ] Not confident [ ] Moderately confident [ ] Very confident

How actively do you participate in community decision-making? *(Rate the respondents based on their response)* [ ] Not active [ ] Moderately active [ ] Very active

How would you rate your current ability to access training programs on financial literacy, business management, or climate adaptation? [ ] Very poor access [ ] Poor access [ ] Moderate access [ ] Good access [ ] Very good access

How responsive are community members to your needs during climate-related disasters? [ ] Very unresponsive [ ] Unresponsive [ ] Neutral [ ] Responsive [ ] Very responsive

How do you feel about the level of trust and cooperation you receive from other community members? [ ] Very low [ ] Low [ ] Neutral [ ] High [ ] Very high

How would you rate your community's collective action in addressing climate risks (e.g., floods, droughts, extreme weather)? [ ] Very weak [ ] Weak [ ] Moderate [ ] Strong [ ] Very strong

Climate Change Awareness & Adaptation

Please describe what you understand by climate change *(Climate change refers to a long-term shift in temperatures and weather patterns, primarily caused by human activities that release greenhouse gases into the atmosphere, leading to global warming)*

[ ] No understanding at all [ ] Limited understanding [ ] Good understanding

Have you received training or awareness on climate resilience? [ ] Yes [ ] No

To what extent do you have access to climate adaptation strategies (e.g., drought-resistant crops, early warning systems, water conservation techniques, insurance)?

[ ] No access [ ] Limited access [ ] Moderate access [ ] Full access

How would you rate your ability to recover from climate-related events (e.g., floods, droughts)? (Rate the respondents based on their response) [ ] Very poor [ ] Poor [ ] Moderate [ ] Good [ ] Very good

How prepared is your household to handle climate related shocks (e.g., floods, droughts)? (Rate the respondents based on their response) [ ] Very prepared [ ] Limited prepared [ ] Moderate [ ] Not prepared

Thank you

University for Development Studies

Faculty of Sustainable Development Studies - FoSDs

(Focused Group Discussion for VSLA Members)

Introduction

My name is _____, and we are conducting research on Assessing Village and Savings Associations (VSLA's) Contribution to Urban Resilience; Evidence from Northern Ghana in other to improve urban resilience policies and programming.

Benefits/Risks of the Study: There are no direct benefits to you for participating in the study, however, information collected in this study may benefit you and others in the future by improving urban resilience programming.

Confidentiality: Your participation in this study is voluntary and you may choose not to answer a specific question or end the interview at any time. If you choose to participate, your responses will be strictly confidential. Neither you nor your household will be individually or collectively identified or named in any reports. Any papers or electronic data with personal identifying information will be stored on password-protected electronic devices or in a locked room and no person outside of the research team will have access to this information. Upon conclusion of the study, all personal identifying information will be destroyed.

Contact for Additional Information: If you have any questions regarding this interview or this research project in general, please contact Dr. Zachary Pealore on 0206151928

Your Rights as a Participant: If you agree to participate in the research kindly grant your consent.

[ ] Granted [ ] Not Granted

Thank you for your consent and thank you for being here. Before we get started, I'd like to know a little about you

SECTION FOR VSLA MEMBERS

Section A: Demographic Information

Name of VSLA

Location of VSLA: Region, District and Community

Years of VSLA existence

What is the average group membership age?

What is the sex composition of group members

Male .....

Female .....

Others.....

How many of you have attended school? Please raise your hand if you have attended school. (*note the number of hands that are raised)*

Attended

Not attended

Membership occupation

Majority occupation……

Other occupations……

Section B: Contribution of VSLAs to the financial resilience of their members in the context of climate change

What does financial resilience mean to you, especially in relation to climate-related challenges like floods, droughts, or heatwaves?

How have climate-related events affected your household's finances or livelihood?

How do VSLAs help members prepare financially for unexpected climate-related events?

Can you share examples of how savings or loans from VSLAs were used to cope with or recover from a climate shock?

Section C: Effectiveness of VSLA's in addressing urban climate change impacts?

In what ways have VSLAs made you or your community more resilient to repeated climate events?

Compared to other types of support (e.g., government aid, NGOs), how effective are VSLAs in helping people recover or adapt?

What are the main limitations of VSLAs in addressing urban climate change impacts?

Are there types of climate risks or emergencies where VSLAs are not helpful?

Section D: Successful factors for the adoption of VSLA's as urban climate change adaptation strategy

What makes VSLAs an attractive or relevant solution for coping with climate change in urban areas?

Are there any policies or regulations that help or hinder the functioning of VSLAs as a climate adaptation tool?

What are the main challenges or obstacles that prevent wider adoption of VSLAs in urban areas?

How can these challenges be addressed to improve adoption and sustainability?

Section E: Recommendation

What do you suggest could be done to make VSLAs members financially resilient in the context of climate change

What changes or improvements would you suggest to make VSLAs a more effective tool for urban climate change adaptation?

Is there anything else you would like to add about your experience on urban climate resilience

This is the end of the discussion. Thank you for your time

University for Development Studies

Faculty of Sustainable Development Studies - FoSDs

(Focused Group Discussion for Non-VSLA Members)

Introduction

My name is _____, and we are conducting research on Assessing Village and Savings Associations (VSLA's) Contribution to Urban Resilience; Evidence from Northern Ghana in other to improve urban resilience policies and programming.

Benefits/Risks of the Study: There are no direct benefits to you for participating in the study, however, information collected in this study may benefit you and others in the future by improving urban resilience programming.

Confidentiality: Your participation in this study is voluntary and you may choose not to answer a specific question or end the interview at any time. If you choose to participate, your responses will be strictly confidential. Neither you nor your household will be individually or collectively identified or named in any reports. Any papers or electronic data with personal identifying information will be stored on password-protected electronic devices or in a locked room and no person outside of the research team will have access to this information. Upon conclusion of the study, all personal identifying information will be destroyed.

Contact for Additional Information: If you have any questions regarding this interview or this research project in general, please contact Dr. Zachary Pealore on 0206151928

Your Rights as a Participant: If you agree to participate in the research kindly grant your consent.

[ ] Granted [ ] Not Granted

Thank you for your consent and thank you for being here. Before we get started, I'd like to know a little about you

Section A: Demographic Information

Location of FGD: *[ ] Region, [ ] District [ ] Community*

Sex distribution of group: *[ ] Male [ ] Female [ ] Others*

How many of you have attended school? Please raise your hand if you have attended school. (*note the number of hands that are raised): [ ] Attended [ ] Not attended*

Membership occupation*[ ] Majority occupation…… [ ] Other occupations……*

Section B: financial resilience in the context of climate change

What does financial resilience mean to you, especially in relation to climate-related challenges like floods, droughts, or heatwaves?

How have climate-related events affected your household's finances or livelihood?

How do you prepare financially for unexpected climate-related events?

Can you share examples of how you cope with or recover from a climate shock?

Have you heard of VSLA before? If yes, explain it

Why have you not joined any VSLA?

If there is any opportunity, would you like to join any VSLAs? Give reasons for your response.

Section C: Recommendation

What do you suggest could be done to make you financially resilient in the context of climate change

What suggestions can you make to make you more resilient / adaptive to urban climate change?

Is there anything else you would like to add about your experience on urban climate change resilience?

This is the end of the discussion. Thank you for your time

Chi-Square Test (χ^2) and Correlations (rs)

Chi-Square Test (χ^2)

χ^2: *Relationship between VSLA Membership and Access to Financial Loan*

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	347.557[a]	4	.000
Likelihood Ratio	413.428	4	.000
Linear-by-Linear Association	317.619	1	.000
N of Valid Cases	600		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.00.			

χ^2: *Relationship Between VSLA Membership and Disaster Preparedness*

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	387.563[a]	2	.000
Likelihood Ratio	527.880	2	.000
Linear-by-Linear Association	371.811	1	.000
N of Valid Cases	600		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 71.00.			

χ^2: *Relationship Between VSLA Membership and Community Response to Members Needs During Climate Relates Disasters*

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	263.282[a]	4	.000
Likelihood Ratio	331.112	4	.000
N of Valid Cases	600		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.00.			

χ^2: *Relationship Between VSLA Membership and Business Establishment*

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)

Pearson Chi-Square	95.935[a]	1	.000		
Continuity Correction[b]	94.316	1	.000		
Likelihood Ratio	99.097	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	600				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 123.00.					
b. Computed only for a 2x2 table					

Correlations (rs)

rs: Relationship between Educational Level and Household preparedness to handle climate-related shocks

Variable A	Variable B	ρ (rho)	p-value (2-tailed)	N
Educational Level	Household preparedness to handle climate-related shocks	-0.014	0.723	600

rs: Relationship between VSLA Membership and Community Decision Making

Variable A	Variable B	ρ (rho)	p-value (2-tailed)	N
Community Decision-Making	VSLA Membership	0.461	0.000	600

rs: Relationship between VSLA Membership and Ability to recover from climate related events

Variable A	Variable B	ρ (rho)	p-value (2-tailed)	N
VSLA Membership	Ability to recover from climate-related events	+0.733	0.000	600

rs: Relationship between Access to climate adaptation strategies and VSLA membership

Variable A	Variable B	ρ (rho)	p-value (2-tailed)	N
Access to climate adaptation strategies	VSLA Membership	+0.556	0.000	600

rs: Relationship between Household Income and Climate Preparedness

Variable A	Variable B	ρ (rho)	p-value (2-tailed)	N
Household income change	Household climate preparedness	+0.407	0.000	600