

ACAMI PROJECT REPORT

Meso-level organizations as key actors in effective and equitable climate change adaptation interventions in Africa: A landscape analysis

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Image by Ekuah Odoom

ABOUT THE ACAMI PROJECT

Accelerating Climate Adaptation via Meso-level Integration (ACAMI) is an innovative 2-year transdisciplinary project focusing on the roles and functions of public, private, and non-profit organizations involved in implementing climate change adaptation interventions intended to benefit agricultural small-scale producers in Africa. These organizations are critical intermediaries between small-scale producers and the policy, and finance communities. They thus have a significant impact on adaptation through the diverse knowledge they integrate, the decisions they make, and the resources they provide. ACAMI aims to create tools and approaches that help ensure that the diverse roles, capacities and functions of these organizations are leveraged effectively in support of more resilient and sustainable livelihoods for the men and women in farming communities across Africa.



This report was prepared for the Bill & Melinda Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the Bill & Melinda Gates Foundation.

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GLOSSARY OF TERMS

Meso-level organization (MLO): ACAMI defines Meso-level organizations as public, private, and non-profit organizations involved in implementing climate change adaptation interventions intended to benefit agricultural small-scale producers in Africa. These organizations are critical intermediaries between small-scale producers and the policy, and finance communities.

MLO Function: is a systematic suite of methods through which an organization orchestrates its resources and capacities to accomplish a specific goal.

Small-scale producers (SSPs): includes small-share producers, small-scale farmers, smallholder farmers, subsistence farmers. These refer to individuals or groups engaged in agricultural activities at a local or community level, typically with limited capital, resources, and market access. They often operate on a small plot of land or within a small-scale enterprise, producing goods or services for local consumption or markets.

Relational database (RD): is a type of database that organizes data into tables, which consist of rows and columns. The key feature of a relational database is the ability to establish relationships between these tables based on defined constraints, such as primary keys and foreign keys. This structure allows for efficient querying and retrieval of data using a language called SQL (Structured Query Language). Relations between tables enable complex queries and ensure data integrity through normalization techniques.

EXECUTIVE SUMMARY

The purpose of the Meso-Level Organization (MLO) Landscape Analysis (LA) is to provide a high-level assessment of organizations involved in climate change adaptation with a specific focus on small-scale producers (SSPs) in four African countries: Ghana, Kenya, South Africa and Malawi. The LA, which is based on data contained in the ACAMI relational database, is an important initial step for understanding characteristics of MLOs and the projects they implement. Results show that the meso-level is populated by numerous, diverse organizations that span sectors and geographies, and have multiple roles and entry points in climate change adaptation (CCA) projects. Despite this rich diversity, findings also provide initial evidence showing some patterning of characteristics and functions, and uncover complexities of contribution to CCA for SSPs. Taken together, the LA provides a basis for further examination of MLOs as critical actors in climate change adaptation. Specific findings presented here include: (i) local non-profit/community-based organizations are the most common type of MLO in the four countries; (ii) MLO functions are performed by locally-based MLOs such as local NPOs/CBOs; (iii) some MLOs are highly versatile, able to undertake multiple different functions; (iv) even though MLOs on the same project may have overlapping capabilities, on large projects they adopt complementary functions potentially minimizing overlaps and enhancing collaboration; (v) there is a general lack of sizable private sector involvement in Climate Change Adaptation (CAA) activities across all focus countries; (vi) medium- and large-size CCA projects are typically implemented by more than one MLO; (vii) external funders such as multilateral and bilateral funders provided the biggest share of investments in CCA across all four countries; (viii) projects implemented in Kenya were bigger in terms of budget than in Ghana, Malawi and South Africa; (ix) a significant proportion of projects implemented in all four countries incorporate climate information and services (CIS) components and gender. Overall, the LA demonstrates that MLOs involved in CCA targeting SSPs were diverse, and they take up a range of roles and responsibilities, indicating that they do far more than simply transmitting resources to beneficiaries.

INTRODUCTION

Climate change increasingly impacts the lives and livelihoods of small-scale producers (SSPs) in Africa (Abegunde et al., 2019; Trisos et al., 2022; Van den Berg et al., 2022). In response, a mix of local and international climate change adaptation interventions are being implemented at different scales (Ford et al., 2011). These interventions, driven by diverse funding sources, policy priorities and other intervention goals, typically involve public, private, and civil society actors, including local non-governmental organizations (NGOs). We refer to these organizations as meso-level organizations (MLOs).

MLOs operate in the space between the ultimate beneficiaries (i.e., small-share farmers; small-share producers; small-scale producers, agriculturally dependent communities) and the macro-level actors such as policy-makers and financial institutions. MLOs work independently or in partnership, significantly influencing farmers and farming communities through the knowledge they integrate, decisions they make and the resources they provide. Despite their critical role, there has been little attention on the characteristics, roles, and impacts of MLOs involved in adaptation interventions targeting SSPs. This Landscape Analysis (LA) aimed at exploring the similar or dissimilar roles of MLOs in climate change adaptation (CCA) and their impact on SSPs. Understanding MLOs, their size, funding sources, thematic foci and sectoral positions can enhance the effectiveness of adaptation financing. This helps the funders to better identify capacities and potential roles of MLOs, as well as enhance planning around the project scope and expectations (Manuamorn et al., 2020). Critically, this helps funders to identify ways to reduce investment risk associated with CCA interventions targeting SSPs (Mostafa et al., 2016; Campillo et al., 2017).

Additionally, focusing on MLOs is important for understanding how CCA interventions can address local needs such as inequality, inequity and injustice (Leach et al., 2018; Fuso Nerini et al., 2019; Eriksen et al., 2021). Literature shows that climate change disproportionately impacts vulnerable groups such as indigenous women and children (Leichenko & Silva, 2014; Schipper et al., 2022; Trisos et al., 2022). Thus, studying MLOs and their role in adaptation to climate change can respond to calls for more work ensuring that CCA interventions address critical issues of equity and justice (e.g. Leach et al., 2018; Fuso Nerini et al., 2019; Eriksen et al., 2021). Specifically, as equity issues such as gender are often highly specific to cultural contexts, MLOs can play important roles in mediating access to resources, navigating local norms and enabling women and other vulnerable groups to be recognized in policy processes (Chingarande et al., 2020). Furthermore, MLOs often play a role in ensuring that project outcomes empower women and reduce their vulnerabilities while respecting local traditions, norms and practices (Ifejika Speranza, 2011; Acosta et al., 2021).

Focusing on MLOs also helps us to understand their role in the provision of climate information and services (CIS), which is an important dimension in CCA interventions targeting SSPs. More broadly, CIS involves the production, translation, transference, and use of climate information for individual, group and societal decision-making (Carr et al., 2020). The primary aim of CIS is to provide users such as SSPs with timely, tailored, and targeted climate information that may be used to adapt to climate change and variability (Vaughan & Dessai, 2014). In addition, CIS provides users with information critical for rapid response to weather and climate extremes (Abily et al., 2020; Lemos et al., 2020). Currently, there is limited understanding of the diverse organizations, networks and institutional relationships central to the provision of CIS in the context of CCA for SSPs.

The Accelerating Climate Adaptation via Meso-level Integration (ACAMI) project seeks to examine how MLOs can improve the effectiveness and scalability of CCA investments. This project identifies leverage points for enhancing MLO effectiveness in aligning climate adaptation objectives with agricultural development goals. By focusing on the nexus of MLOs and projects to which they are affiliated, the ACAMI project provides urgently needed insights into an unexplored but critical component of climate adaptation in the agriculture sector in Africa. Thus, through explicit attention to the roles, capacities and contributions of MLOs in CAA, inclusive and climate resilient agricultural transformation in Africa will be greatly enhanced.

The landscape analysis (LA) was conducted as part of the ACAMI project and provides initial insights into the characteristics and functions of MLOs in CCA across four countries: Ghana, Kenya, Malawi and South Africa. These countries are in Africa's three regions, i.e. East (Kenya), West (Ghana) and Southern (Malawi and South Africa). These countries, representing the diverse social-economic and political contexts in East, West and Southern Africa, offer a comprehensive view of CCA interventions targeting SSPs.

The LA adopted an exploratory approach underpinned by two parallel processes, (i) conceptual: involved review of various literatures, policy implementation, organizational theory and transformative adaptation to provide an intellectual foundation of the work (ii) empirical: identification and analysis of various MLOs operating in four countries. This approach aims to understand the nexus between MLOs and the projects they are associated with. Annex A provides the detailed methodology adopted for the LA.

The following section outlines the socio-economic contexts of Ghana, Kenya, Malawi and South Africa, highlighting the environments in which MLOs operate. Key similarities and differences across these countries are discussed, providing a backdrop for understanding certain ways MLOs operate in a particular country. The findings from the LA are presented in ways that allow us to unpack the MLO landscape. The discussion section interprets these results further, providing plausible explanations and insights. The final parts of the LA report contain an annexes with longer country contexts, the methods section, the code book and a country comparative table.

SETTING THE SCENE: COUNTRY CONTEXTS

The four countries that are the focus of ACAMI's work represent a range of economic, social, and sectoral conditions that shape SSP vulnerability, determine adaptation needs, and frame MLOs decisions and actions. Country profiles help contextualize the environments in which MLOs operate and can help interpret CCA processes and outcomes, roles and functions and partnership formation.

Table 1: Summary Of Country Contexts

	Definition	Ghana	Kenya	Malawi	South Africa
Population	Millions (2021)	32.83	53.01	19.89	59.39
GDP per Capita	GDP per Capita (Worldbank,2023)	2,319	2,176	430	6,532
Multidimensional Poverty Index	Based on UNDP data	0.111	0.171	0.231	0.025
Gini coefficient	Overall Inequality (World Bank)	43.5	38.7	38.5	63.0
Human Development Index	Overall Human Development Index (UNDP, 2022)	0.602	0.601	0.508	0.717
Gender	Gender Development Index(UNDP, 2022)	0.933	0.948	0.926	0.985
Small-scale farmers	Proportion of SSPs relative to the Agriculture sector(IFAD 2024)	80%	75%	84%	15-20%

Table 1 above presents an overview of various socio-economic indicators for Ghana, Kenya, Malawi, and South Africa, encompassing population, GDP, poverty index, and other socio-economic indicators. These variables were selected because they are key indicators of the socio-economic situation of any given country. In comparing the four countries across the various metrics, several key differences and similarities emerge. In terms of size, South Africa has the highest population at 59.39 million, followed by Kenya at 53.01 million, Ghana at 32.83 million, and Malawi at 19.89 million. This indicates the varying demographic sizes of these countries. Similarly, South Africa has the largest GDP per capita at \$6,532, followed by Ghana (\$2,319), Kenya (\$2,176), and Malawi (\$430). This demonstrates the diversity of countries included in the study, from South Africa which is larger and stronger economically to Malawi which is the smallest and economically poorest of the four. In terms of poverty index, South Africa has the lowest poverty index at 0.025, while Malawi has the highest poverty index at 0.231, reflecting significant socio-economic disparities. This demonstrates the diversity of countries included in the study range from South Africa which is larger and economically stronger to Malawi which is the smallest and economically poorest. Similarly, the Gini coefficient indicates high inequality in South Africa (63.0), compared to the other countries, which all have Gini coefficients below 45.

BOX A: A COMMUNICATION EXPERT ORGANIZATION

Farm Radio Trust (FRT) (Local NPO/CBO)
Functions: knowledge producer, knowledge supplier, trainer/educator

Farm Radio Trust (FRT) is a Malawian non-profit organization dedicated to enhancing agricultural development through innovative communication technologies. Its mission is to empower SSPs with the knowledge and information they need to improve their livelihoods, enhance food security, and promote sustainable agricultural practices. FRT was established in 2009 based on a study conducted by Farm Radio International, which confirmed the role radio plays as a powerful and accessible communication medium for promoting and improving agricultural practices. FRT utilizes radio, information and communication technologies, and mobile platforms to deliver critical agricultural information to farmers across Malawi.

FRT provides a range of services designed to support farmers. These include broadcasting educational radio programs that cover best farming practices, climate change adaptation, weather information, market prices, and health information. The organization also engages farmers through interactive call-in shows and mobile messaging services, sending timely and relevant agricultural information directly to their phones.

South Africa also scores highest on the Human Development Index (HDI) (0.717) and the Gender Development Index (GDI) (0.985), indicating better overall living conditions and less gender disparity. In contrast, Malawi faces more significant challenges, with the lowest HDI (0.508) and GDI (0.926). Digital connectivity varies widely; Kenya has the highest number of internet users, showcasing substantial digital engagement, followed by South Africa, Ghana, and then Malawi, which lags considerably behind the others (See Annex F for details). Mobile subscription rates are highest in South Africa, whereas Malawi has the least. These findings indicate substantial differences in and technological readiness for digital climate information and services.

These personalized advisory services help farmers implement best practices in their own specific situations. Additionally, FRT leverages digital platforms to create an interactive community of farmers, fostering peer-to-peer learning and collective problem-solving.

Beyond information translation and dissemination to farmers, FRT conducts training for broadcasters and radio stations. It also engages in research and development to continuously update the content and assess the impact of its' programs. FRT works closely with government, international funders and other MLOs on specific projects/programs to help complement the extension work on the ground.

Agriculturally, Malawi dedicates the largest share of its land to arable farming, integral to its economy, while South Africa, though having the least percentage of arable land, leads significantly in agricultural exports, underscoring a more developed agricultural export sector. SSPs dominate the agricultural sector in Ghana, Kenya and Malawi accounting for 80%, 75% and 84% respectively. In South Africa SSPs represent around 15-20% of the agricultural sector, with the majority of production coming from large-scale commercial farms. Malawi's unique challenges include tropical storms alongside droughts and floods. South Africa contends with a broad array of climate risks including drought, floods, heatwaves, fires, and storms, reflecting its diverse climate and geography. (See [Annexes B, C, D & E](#) for more details on country contexts).

According to the IPCC report (Trisos et al., 2022), the East African region is expected to face declining yields of basic food crops due to increased drought and flooding. West Africa is expected to become drier with an increased frequency of drought. Southern Africa is expected to experience extreme drought events, heatwaves and other extreme weather events, negatively impacting agricultural outputs and worsening the state of food security.

UNPACKING THE CURRENT MLO LANDSCAPE IN GHANA, KENYA, MALAWI AND SOUTH AFRICA

This section presents emerging findings regarding MLOs and projects implemented in the four countries. The MLOs and projects examined in the LA are part of a newly developed relational database (Annex A) for the ACAMI project. The relational database provides information about 195 MLOs, 109 projects and 192 people ([Figure A1 - Annex A](#)). For the purposes of the LA, we selected 178 MLOs who are associated with projects implemented in Ghana, Kenya, Malawi and South Africa. MLO variables such as types, functions, project funding, project size, gender and CIS were analyzed. For details on the process of selecting organizations and projects, see Annex A.

Types of MLOs involved in Climate Change Adaptation in Ghana, Kenya, Malawi and South Africa

The overview provided the country context section demonstrates that CCA projects targeting SSPs take place in heterogeneous contexts, implying different needs and a multitude of actors to be involved to fulfill them. Existing literature on CCA in the African region does not analyze MLOs as an explicit unit of analysis, nevertheless, available literature has identified a range of MLO types involved in CCA targeting SSPs in Africa (e.g Kita, 2017; D'haen & Nielsen, 2017; Omukuti, 2020; Zoetbrood, 2022). Importantly, we ask: What are the most frequently identified types of MLOs in Ghana, Kenya, Malawi and South Africa? What functions do typically perform? To answer the first part of the question, we carried out an analysis of the types of MLOs, using available literature to guide our classification of the data.

Figure 1 presents the types of MLOs identified in the four selected countries. It should be noted that some organizations are classified as more than one type, which means that in some cases the total percentage may add up to more than 100%.

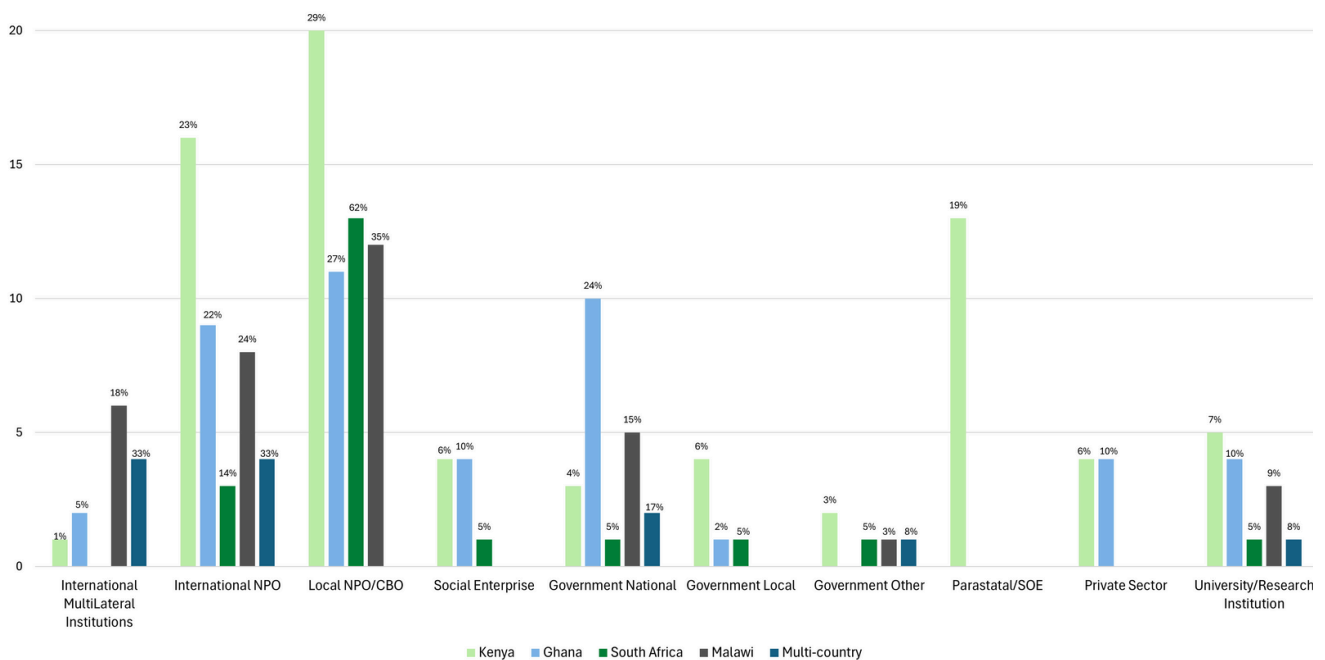


Figure 1: MLO by types and percentage of the total number of MLOs in each of the 4 countries

Figure 1 shows that across the four countries, the most common MLO type is local non-profit organization (NPO)/Community-based organization (CBO). Results show that in South Africa 62% of MLOs are local NPO/CBO, a share that drops to 35% for Malawi, 29% for Kenya and 27% for Ghana. The highest proportion of international multilateral institutions and international NPOs are associated with 'multi-country'; these types of MLOs typically have broad agendas and most likely substantive resources to implement these agendas in multiple countries.

BOX B: A GRASSROOTS-BASED COMMUNITY BASED ORGANISATION

Women's Leadership Training Program [WLTP] Water Project (Local NPO/CBO)

Key functions: *knowledge supplier, trainer/educator, resource distributor, community organizer and advocacy*

The Women's Leadership Training Program [WLTP] Water Project is a small community-based organization operating in the rural communities of Centocow and Hlokozi in KwaZulu-Natal, South Africa. WLTP was founded by local women with an intention to advocate for women's and girls' rights in areas governed by traditional authorities.

¹ Multi-country: Our analysis found that some MLOs who were associated with projects were based in various countries, other than Ghana, Kenya, Malawi and South Africa. e.g CARE International.

Compared to the other three countries, Malawi has the highest proportion of international multilateral institutions and international NPOs (18% and 24% respectively), suggesting a relative paucity of locally based and domestic organizations active in the CCA space. Significantly, 24% of Ghana's MLOs are represented by the national government, a higher proportion compared to the other countries. In addition, only Ghana and Kenya recorded significant roles played by the private sector in CCA at 10% and 6% respectively. The relative lack of private sector involvement in CCA activities is notable across all the countries analyzed. Notably, social enterprises were identified in Ghana, Kenya and South Africa. Examples of social enterprises include FarmWorks in Kenya and Esoko in Ghana.

Key Functions performed by MLOs in Ghana, Kenya, Malawi and South Africa

MLOs involved in CCA targeting SSPs perform various roles and functions (Vaughan & Dessai, 2014; Wyborn et al., 2019). In this LA, we define a function as a systematic suite of methods through which an organization orchestrates its resources and capacities to accomplish a specific goal (Salaman, 1978; Alsted & Haslund, 2019). We sought to answer the question: what are the range of functions performed by MLOs in relation to CCA in Ghana, Kenya, Malawi and South Africa? In Table 2, below, we define the functions based on available literature.

The societal issues addressed include kidnapping of girls for forced marriage, uneven household labor, and others. The WLTP also works with women farmers to train them on farming techniques, applying agro-ecology principles and climate change adaptation strategies. It is also involved in educational activities, with a special focus on using the local environment to better understand science subjects.

Over the past several years, WLTP's work has expanded to include training of girls and women leaders to participate in local community water issues. As part of citizen science, WLTP advocates for access to clean water, cleaning of water sources like streams and rivers, and conducting testing of water quality and safety. As part of its interventions, WLTP seeks to highlight the impact of climate change on women and girls. The organization has also been advocating for women and girls to be included in traditional leadership structures, which are currently dominated by men. Through initiatives such as Authentic African Women, WLTP advocates for girls and women to assume rightful roles as leaders of their communities and take action to address the many issues they face. WLTP works in collaboration with other local NGOs, networks such as Adaptation Network and government departments.



Image by Darlington Sibanda

Table 2: MLO functions

Function	Definition
Harvest Broker	Specifies an organization that helps SSPs to process and access market products (forward linkages) as well as supplying credit, inputs and other services (backward linkages), e.g. FarmWorks Company in Kenya.
Knowledge Producer	Produces knowledge and innovation for use by actors, including SSPs, other MLOs, government etc. e.g. Kenya Meteorological Department.
Knowledge Supplier	Supplies knowledge products/ serves as knowledge intermediary between producers and users of knowledge and adaptation interventions. e.g. Farm Radio International supply CIS to farmers in Ghana .
Community Organizer	Mobilizes communities towards a common goal or to carry out a joint activity Eg. National Smallholder Farmers' Association of Malawi (NASFAM)
Resource Distributor	Distributes resources for use by actors (incl. SSPs, MLOs, etc.), such as seeds and equipment. Eg. Ministry of Food and Agriculture (MOFA)
Trainer/Educator	Provides training and capacity building on new or innovative methods such as training on farm management, livelihood diversification, marketing training and training in infrastructure. Eg. Kosmos Innovation Centre (KIC)in Ghana
Finance Supplier	Provides finance for adaptation activities (capital). Eg. Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)
Advocacy	Publicly recommends a particular cause or approach. Eg. National Youth Network on Climate Change (NYNCC)

Besides simply finding out the most common functions performed by MLOs in Ghana, Kenya, Malawi and South Africa, we also sought to understand which types of MLOs were associated with specific functions. [Figure 2](#) below presents key highlights of this analysis.

BOX C: MLOS AS HARVEST BROKERS

Harvest brokers are important in channeling or extending resources to beneficiaries. MLOs performing the function of a harvest broker are often not limited to being intermediaries between SSPs and the market, but also perform other functions. Some studies have shown that “apart from the forward linkages such as processing and marketing agro-processing market actors, agents and brokers help to create backward linkages by supplying credit, input and other services to primary producers” (Mburu, 2021: 1). Examples of MLOs performing harvest brokering functions include;

(i) **Kruger to Canyons NPC (K2C)** in South Africa assists SSPs to access both formal and informal markets for their products. K2C also performs a range of other functions, which include knowledge supplier; educator/trainer; resource distributor and community organizer r.

(ii) **Ghana Development Communities Association (GDCA)** seeks to increase access to finance and support for micro, small and medium enterprise development of women and farmer groups to enhance their productive and economic capacities. In addition to the harvest brokering role, other functions performed by GDCA include knowledge supplier; educator/trainer; resource distributor; community organizer.

(iii) **FarmWorks Company in Kenya** seeks to serve both SSPs and the market. It seeks to build the next generation of regenerative climate-smart farmers, creating a structure and consistency to the markets, deepening use of technology while ensuring food security for the next generation. Some additional functions played by FarmWorks include knowledge producer; knowledge supplier; resource distributor; community organizer.

(iv) **National Smallholder Farmers' Association of Malawi (NASFAM)** was established to primarily support market access for participating SSPs. To date, NASFAM has a membership of about 100,000 SSPs in Malawi and currently performs a range of functions which include knowledge producer, supplier, community organizer, resource distributor, trainer/educator and advocacy.

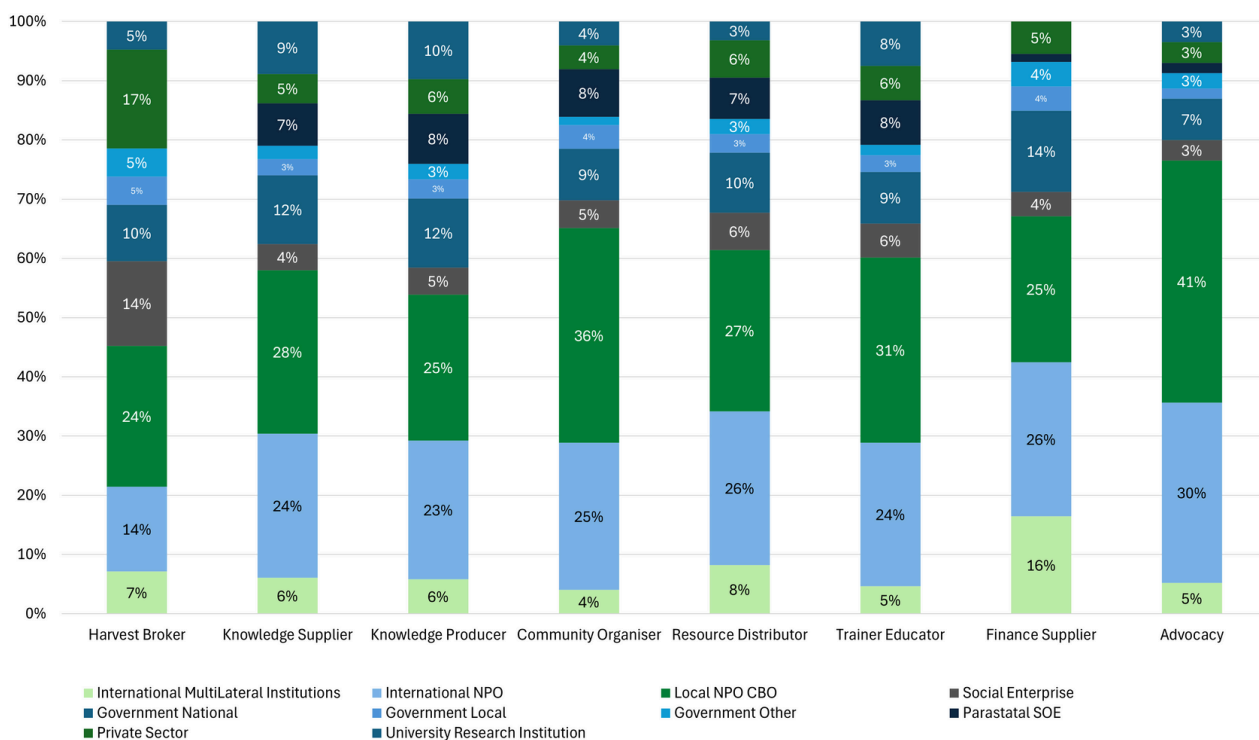


Figure 2: MLO types and functions

Among the MLOs who perform advocacy functions, 41% are local NPOs/CBOs. Figure 2 also shows that 36% of organizations who perform the function of community organizing are local NPOs/CBOs. Interestingly, 30% of MLOs who perform advocacy functions are international NPOs.

As expected, among the MLOs who perform community organizer functions, only 4% are international multilateral institutions. This signifies that this function relies more on MLOs closer to SSPs such as local NPOs/CBOs (see Box B). Among MLOs who performed harvest broker functions, 24% are local NPOs/CBOs, followed by the private sector at 17%. Furthermore, among MLOs who performed harvest broker, finance supplier and advocacy functions, parastatals/state-owned enterprises (SOE)² had the least percentage of functions performed. A key takeaway is that some MLO types perform a wide range of functions, while others carry out fewer functions.

² Parastatal/SOE specifies an entity or organization which is owned by a country's government and often has some political power. In South Africa, these are commonly known as state-owned enterprises (SOE).

BOX D: A CLIMATE ADVOCACY ORGANIZATION

EcoCare Ghana (Local NPO/CBO)
Functions: *advocacy, knowledge producer, knowledge supplier, community organizer, resource distributor, trainer/educator*

EcoCare Ghana is a non-governmental organization dedicated to environmental conservation and sustainable development in Ghana. The organization focuses on protecting natural ecosystems, promoting biodiversity, and ensuring the sustainable management of natural resources. Their key activities include advocacy for environmental policies, capacity building through training and resources for sustainable resource management and conducting research to inform conservation strategies. They implement community-based projects on sustainable land use, forest conservation, and climate change adaptation. EcoCare Ghana collaborates with local and international organizations, government agencies, and other stakeholders to enhance their conservation efforts. Additionally, they work closely with SSPs, providing them with the knowledge and tools to adapt to climate change, improve their farming practices, and develop sustainable livelihoods. They provide training on climate-resilient farming techniques, facilitate access to resources like drought-resistant seeds and efficient water management systems, through collaborations with national and international organizations, they are able to extend the reach to their project beneficiaries, which helps improve the effectiveness of their initiatives, ultimately increasing farmers' resilience to climate change and ensuring sustainable agriculture.

Key sources of funding for Climate Change Adaptation Interventions in Ghana, Kenya, Malawi and South Africa

In this LA we also seek to unpack the sources of funding for CCA interventions targeting SSPs. Recent literature (e.g UNEP, 2023) identifies over five broad categories of sources of funding which includes multilateral, bilateral (country to country), international NPO, specific government sources, private sector and other sources. Figure 3 below provides a cumulative list of key sources of funding.

The Figure shows that most projects across the four countries were funded by multilateral and bilateral institutions. Most significantly, 59% of the projects in Malawi were funded by bilateral institutions such as the Government of Flanders, Government of Scotland and GIZ. In Ghana, more than half (55%) of the projects were funded by multilateral institutions such as the World Bank. In Kenya the biggest proportion of projects were funded by multilateral institutions (43%), while in South Africa bilateral institutions fund the biggest proportion of projects (42%). Interestingly, funding from the private sector remains minimal. Of the projects captured in the RD, only a small percentage in Kenya and South Africa was funded by the private sector. Overall, external funding (multilateral and bilateral) is critical in CCA interventions across the four countries.

BOX E: AN INTERNATIONAL NPO OPERATING IN CCA TARGETING SSPs

Self Help Africa (International NPO)

Key functions: Knowledge producer, Knowledge supplier, Trainer/Educator; Finance Supplier, Resource Distributor, Advocacy

The mission of the MLO is to alleviate hunger, poverty, social inequality and the impact of climate change. This is done through community-led, market-based and enterprise focused approaches to agricultural development. The core focus areas for Self Help Africa include:

1. sustainable landscapes, resilient food systems and healthy communities;
2. sustainable businesses, decent employment and thriving economies;
3. crisis response and resilience; and
4. system strengthening and an enabling policy environment;

To achieve the mission, Self Help Africa works through both its staff based in Africa, and through local partners. Together with partners, Self Help Africa's interventions are associated with the following broad themes: enterprise development, gender, climate change, agriculture & nutrition, microfinance and cooperatives.

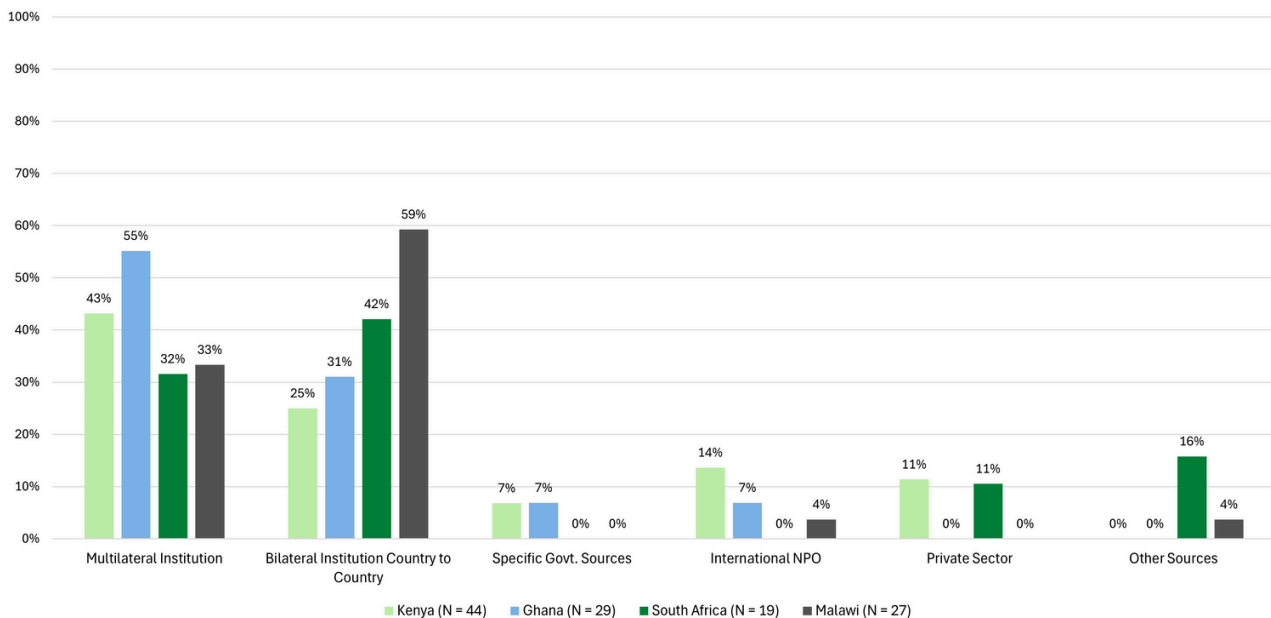


Figure 3: Sources of project funding in Ghana, Kenya, Malawi and South Africa

Project size and MLO partnerships in Ghana, Kenya, Malawi and South Africa

We explore the degree to which CCA projects tend to be associated with multiple or single MLOs, as a proxy for the extent to which MLOs are involved in partnerships in project implementation activities. Table 3 below indicates that 28% of the 109 projects in the RD were associated with a single MLO, while the remainder involved multiple MLOs. In this table, projects are not differentiated by project size or complexity.

Table 3: Partnerships in projects

Projects	Number	%
Projects with single MLO involved	30	28
Projects with more than one MLO involved	79	72
Total number of projects	109	100

We also examined if the number of MLOs partnering on each project depends on project size (measured as total budget size). For this effort, we established five project budget categories, where category one represents projects with no total budget information and category two represents the first quartile made up of small projects with a total budget of less than USD 1,081,591. Category three represents the second quartile, which includes projects with total budgets of between USD 1,081,591 and USD 8,985,000. Category four represents the 3rd quartile, which includes projects in the range of between USD 8 985 000 - USD 33 050 000. The last category (five) represents the fourth quartile, which includes projects with a total budget of more than USD 33,050,000 (large projects).

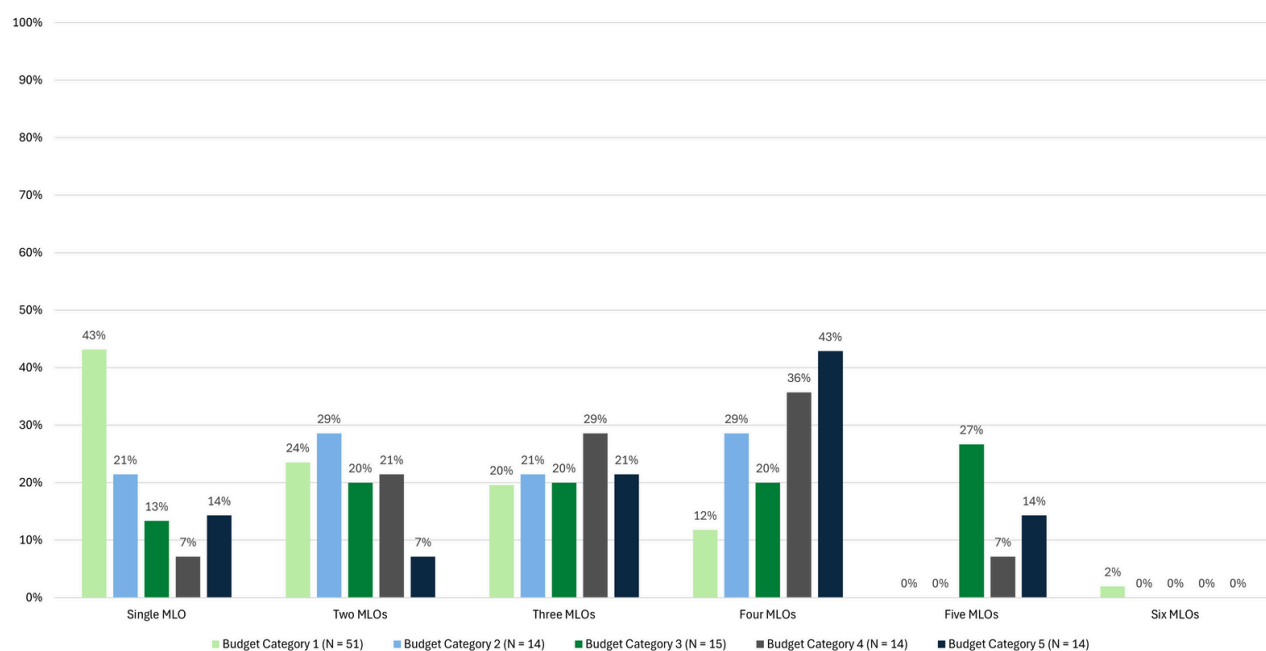


Figure 4: MLOs involved per project and budget category

As shown in [Figure 4](#) above, of the projects which fall into category 1, a single MLO was involved in 43% of the projects, two MLOs were involved in 24% of the projects, and three MLOs were involved in 20% of the projects. As pointed out earlier, category 2 represents the first quartile, comprising small-sized projects with a total budget of less than USD 1,081,591. In category 2, four MLOs are involved in 29% of the projects, three MLOs were involved in 21% of the projects, two MLOs were involved in 29% of the projects and a single MLO was involved in 21% of the projects. There is a significant difference when it comes to projects which fall under category 3. In category 3, five MLOs are involved in 27% of the projects, while there is an even distribution of projects where four MLOs, three MLOs and two MLOs are involved respectively. In addition, a single MLO was involved in 13% of the project. In category 4, four MLOs were involved in 36% of the projects, while three MLOs were involved in 29% of the projects, two MLOs in 21% of the projects, and a single MLO was involved in 7% of the projects. Interestingly, five MLOs were involved in 14% of the projects in category 5, while four MLOs were involved in almost half of the projects in this category (43%), three MLOs were involved in 21% of the projects, two MLOs in 7%, while a single MLO was involved in 14% of the projects under category 5. Our results demonstrate that larger, more complex projects are more likely to involve more than one MLO in their execution. This is because in our prior analysis, these partners often bring multiple functions to projects.

Project funding source by project size

To explore whether project size is somehow related to the source of funding, we analyze funding source by funding category (budget size). [Figure 5](#) below presents the results. Multilateral funding agencies were almost exclusively associated with larger projects in the category 4 range (88%). Category 4 projects were also supported by bilateral donors and specific government sources at 6% for both. The largest, category 5 projects were also funded by multilateral (56%), bilateral (31%), and government sources (6%), with the addition of some projects having private sector (6%) contributions. This shows that the larger projects may often be a focus of attention, but the smaller projects, due to the diversity of funding sources and potential approaches and agendas, may also be an important focus of future work.

BOX F: AN ORGANIZATION WORKING IN PARTNERSHIP WITH SEVERAL MLOS

Kruger to Canyons Biosphere Region NPC (K2C) (Local NPO)

Key functions: *knowledge supplier, trainer/educator, resource distributor, community organizer, advocacy and harvest broker*

[Kruger to Canyons Biosphere Region NPC \(K2C\)](#), was established in 2011 to coordinate the implementation of Biosphere activities. Its mission is to 'support, promote and demonstrate within the Kruger to Canyons Biosphere Landscape a balanced and sustainable relationship between socio-economic development, the conservation of biodiversity and the sustainable use of natural resources on which people's livelihoods depend'. K2C has experience in implementing projects within the biodiversity stewardship framework which works with private, communal, and corporate landowners to better manage and formally protect critical ecosystems and biodiversity areas. K2C works in partnership with other MLOs such as Conservation South Africa (CSA), Hoedspruit Hub, World Wide Fund for Nature-South Africa and United Nations agencies.

K2C's interventions are focused on the interface of vulnerable communities, water, biodiversity and ecosystem services, where climate change stresses are particularly acute. Communities include small-scale producers in former homelands. To achieve this, K2C works in partnership with various actors, which include all spheres of government, private sector, traditional leadership and non-governmental organizations. K2C devised the From the Region for the Region (fRfR) initiative, which seeks to create an all-inclusive circular economy within the K2C Biosphere Region. As part of the fRfR initiative, K2C promotes market access for SSPs by connecting them with formal and informal traders. Local producers are also linked to Hoedspruit Food Network, which includes linkages with the local tourism sector. Other activities that K2C is involved in include capacity building, awareness and career path development within the environmental sector, with a particular focus on youth and women.

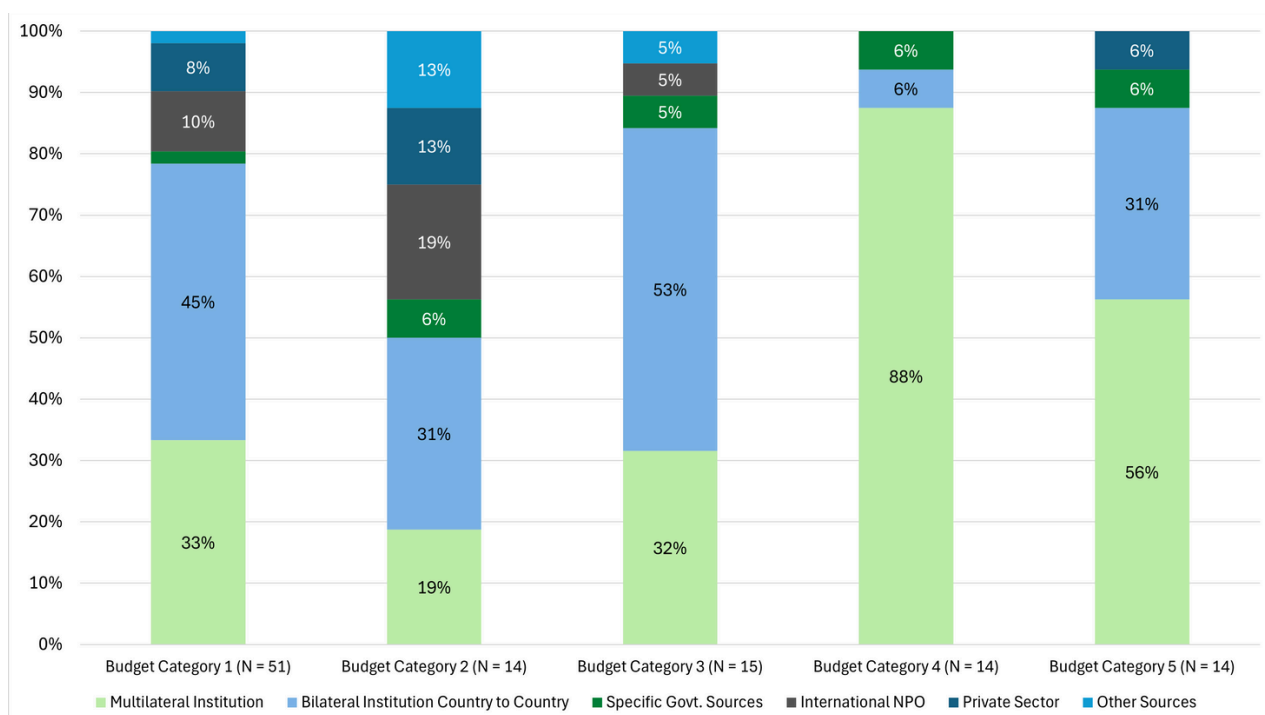


Figure 5: Project budget vs type of funder

Size of projects per country

We conducted an Analysis of Variance (ANOVA) statistical test to determine if there are any significant differences in budget size allocated to projects across the four countries (Table 4).

Table 4: Anova test

ANOVA	Degrees of Freedom	Sum of Squares	Mean Sum of Squares	F-Value	P-Value
Country	3	691	230,3	3,848	0,0117
Residuals	105	6284	59,85		

Tukey Test	Difference	P-value
Kenya-Ghana	5,119564	0,046185
Malawi-Ghana	0,405593	0,997456
South Africa-Ghana	-1,02741	0,971461
Malawi-Kenya	-4,71397	0,087044
South Africa-Kenya	-6,14698	0,033509
South Africa-Malawi	-1,43301	0,930561

Results suggest that there is a significant difference between the logarithmic transformation of the budgets in the four countries ($p < 0.05$). In particular, a Tukey test suggests that projects in Kenya are significantly larger than those in Ghana ($p < 0.05$), Malawi ($p < 0.1$), and South Africa ($p < 0.05$).

Incorporating Gender and Climate Information and Services in Climate Change Adaptation interventions

Our LA also seeks to find out how gender is integrated in the implementation of projects in Ghana, Kenya, Malawi and South Africa.

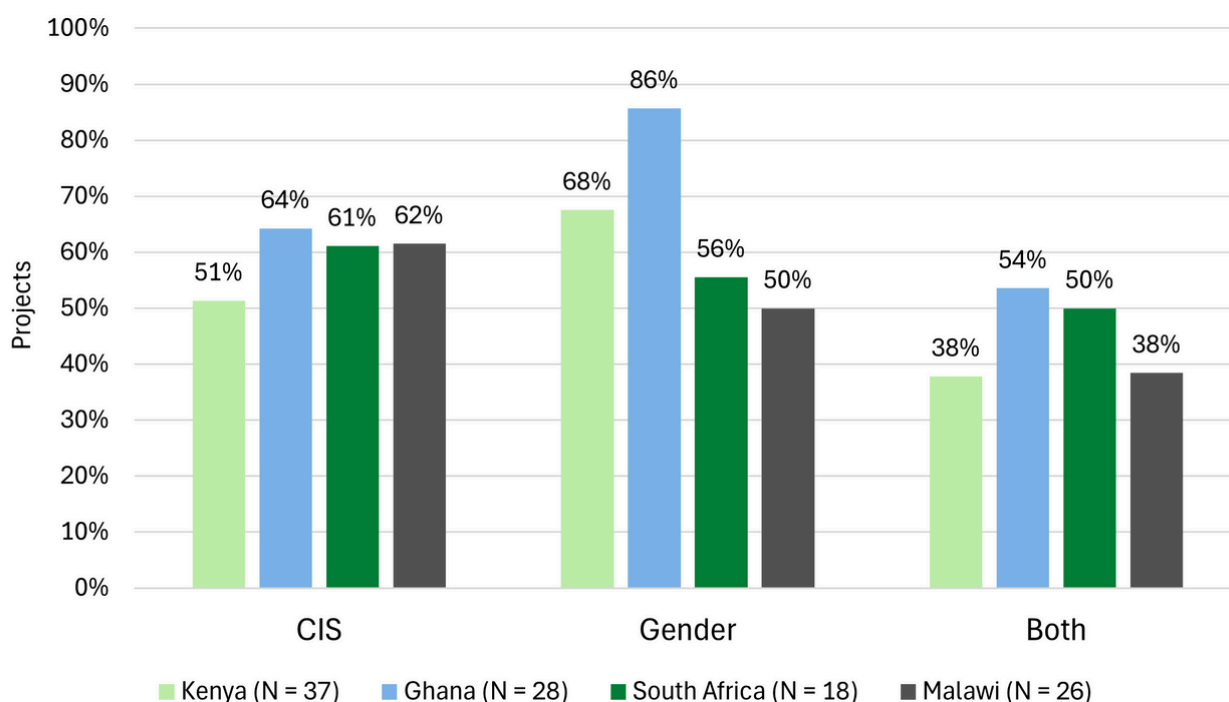


Figure 6: Inclusion of Gender and CIS in Projects, disaggregated by country.

Figure 6 above shows that across all countries, gender is often a component of CCA interventions targeting SSPs. For example, a majority of projects implemented in Ghana (86%) and Kenya (68%) integrate gender components. Box B on the right provides an illustration of MLO incorporating gender into their CCA interventions.

Studies have shown the importance of incorporating CIS in CCA targeting SSPs (McNie, 2013; Tall et al., 2018; Carr et al., 2020). In this LA, we examine the extent to which CCA projects implemented across the four countries integrate CIS. Figure 6 above shows that over half of the 109 projects implemented in Ghana, Kenya, Malawi and South Africa incorporated CIS as a key component or suite of activities targeting SSPs. In Ghana, Kenya and Malawi, over 60% of all projects in the RD incorporated CIS components.

BOX G: A GENDER ORIENTED MLO

GROOTs Kenya (*Local NPO*)

Key functions: Advocacy, community organizer, resource distributor, trainer/educator

The GROOTS Kenya gender model, also known as "Champions for Transformative Leadership," is a program that empowers grassroots women through leadership and advocacy. It mobilizes women in communities, providing them with training and support to become effective advocates and leaders. The model aims to amplify women's voices in decision-making processes and challenge institutional structures that hinder gender equality and community development. Key components of the GROOTS Kenya model include leadership training, mentoring, community mobilization, policy advocacy, and economic empowerment.

We also analyzed the proportion of projects that incorporated both gender and CIS. Figure 6 shows that half or more of the projects in Ghana (54%) and South Africa (at 50%) incorporated both, fewer projects incorporated both gender and CIS in Kenya (38%) and Malawi (38%). This shows there are less CCA interventions that incorporate both CIS and gender across all four countries. Box H below provides an illustration of a project that has a strong focus on CIS.



Image by Nadine Methner

Women are trained to lead and advocate for their communities, focusing on public speaking, community mobilization, and policy advocacy. They are encouraged to engage in policy advocacy, ensuring that women's perspectives and needs are considered in policy formulation. The model also emphasizes economic empowerment (i.e., education/training, advocacy, resource distribution) supporting women's involvement in income-generating activities. GROOTS believes that women's economic independence is vital for enhancing their leadership roles and advocacy effectiveness. The GROOTS Kenya gender model has had a significant impact on women, as they have successfully taken on leadership roles, influencing policy changes, and improving socio-economic conditions. The model has been recognized for its effectiveness in promoting gender equality and fostering sustainable community development.

BOX H: AN ORGANIZATION INCORPORATING CIS IN CCA TARGETING SSPS THROUGH THE PARTICIPATORY INTEGRATED CLIMATE SERVICES FOR AGRICULTURE (PICSA) APPROACH

MLOs involved:

1. **University of Reading** - Key functions include Knowledge producer, knowledge supplier, trainer/educator
2. **Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH(GIZ)** - Key functions include: finance supplier, resource distributor
3. **Department of Climate Change and Meteorological Services of Malawi (DCCMS)** - Key functions include knowledge producer, knowledge supplier, trainer/educator
4. **District Agricultural Extension Services System (DAES)** - Key functions include knowledge supplier, resource distributor, trainer/educator, advocacy

The Participatory Integrated Climate Services for Agriculture (PICSA) was developed by the University of Reading. PICSA combines historical climate data and forecasts with farmers' knowledge of what works in their context, and then uses participatory planning methods to help them make informed decisions about their agricultural practices. This approach was implemented in several countries across Africa and Asia. In Malawi, the PICSA approach is embedded in large projects such as the MCLIMES project, funded by the Green Climate Fund. More recently, the PICSA approach has been further advanced through the E-PICSA App, which offers location-specific historical climate information and forecasts for agricultural field staff and farmers. More specifically, the German Federal Ministry for Economic Cooperation and Development (BMZ), under i4g Fund is currently funding the project titled: Digital Climate Services for Smallholder Farmers in Malawi & Zambia. That project has adopted the E-PICSA App. The overall objective of the project was to 'empower smallholders in making better decisions in order to improve resilience against climate change and improve yields and food security'. The total budget for the project in both Malawi and Zambia is EUR 2 million Euro. The project is being implemented in Kasungu and Nkhhotakota districts in Malawi, where key partners are DCCMS and DAES. Primary complete areas activities include: (i) trained over 5,000 farmers to increase resilience against climate change through better information basis; (ii) trained 64 agriculture field staff to use E-PICSA to support farmer decision-making; (iii) provided location-specific historical climate information and forecasts on the E-PICSA app for use by agricultural field staff and farmers; and (iv) publicly provided open source, open standards, locally managed E-PICSA app.

DISCUSSION

Our results show that across the four countries, the most common MLO type is local NPO/CBO (South Africa-62%; Malawi-35%; Kenya-29% and Ghana-27%). Other studies conducted by Smith & Jones (2017) also revealed that the majority of MLOs that work closely with SSPs or beneficiaries are typically local NPOs or CBOs, and this occurrence was attributed to a myriad of factors. Among such factors is that local NPOs and CBOs have a deep understanding of the specific needs and conditions of the communities they serve, enabling them to tailor their interventions effectively. Their proximity allows them to build trust and establish strong relationships with community members, which is crucial for the successful implementation of initiatives (UNDP, 2016). In comparison to other countries, Malawi has a greater proportion of international NPOs involved in CCA. Studies carried out by Thokozani & Guta (2018) and Kita (2017) attribute a combination of factors to explain Malawi's high reliance on international NPOs, including limited government capacity and a lack of trust in the ability to deliver by local institutions and local non-governmental organizations.

Our results also show that the three most common functions played by MLOs in Ghana, Kenya, Malawi and South Africa are knowledge producer, knowledge supplier and trainer/educator of SSPs. Results demonstrate that fewer MLOs take on harvest broker and finance supplier functions. This is despite the fact that harvest brokering is a critical function linking SSPs with markets and reducing inefficiencies in the supply chain (Hampton et al., 2024). Our analysis further demonstrates that MLOs that are harvest brokers often perform key forward linking processing and marketing, and backward linking for supplying credit, input and other services to primary producers (Mburu, 2021), as well as other functions such as trainer/ educator and knowledge supplier. Ultimately, harvest brokers are important for integrating SPPs into value chains and markets.

Our analysis shows that most projects are carried out by MLOs working in partnership with others. A closer look at the size of projects and number of partnerships revealed that medium-sized and larger projects were most likely to be implemented by at least two MLOs.

BOX I: A SDG CHAMPION

AHADI ACHIEVERS, Makueni County, Kenya (CBO)

Key functions: community organizer, resource distributor, trainer/educator, knowledge supplier Knowledge Producer

The AHADI Achievers CBO is known as the Sustainable Development Goal (SDG) champions in Makueni County, Kenya. This is attributed to its employment schemes, which create assets that support an ecosystem of stewards working towards the conservation of land, water and soils, and recovery from climate-related disasters. Most of its adaptation efforts against climate risks are geared towards agroforestry since Makueni County is generally a semi-arid area. Since its inception in 2021, AHADI Achievers has managed to plant approximately 50,000 trees with a survival rate of 55%. Most of these trees are fruit trees, which are drought resilient hence enhancing the county's adaptation capacity against food insecurity. This achievement is attributed to its strategic partnerships with the County Government of Makueni, the SDG Kenya Forum, and local philanthropists. Within its climate action programs, AHADI Achievers acknowledges the importance of engaging women and youth in the county. This is aimed at bridging the socio-economic gap among the locals. To this end, AHADI Achievers has been playing a key role in creating green jobs or rural income-generating activities (RIGA) such as the establishment of tree nurseries and their commercialization. The green jobs are tailored to sustainably alleviate rural poverty. They leverage on the youthfulness of children in schools and youths in churches to grow fruit trees due to their enthusiasm for nurturing trees to maturity. Through its partners, AHADI Achievers has provided Information and Communication Technologies (ICT) programs to women and youth to catalyze knowledge management on environmental conservation. This has led to the establishment of ICT centers in specific wards within the county. These ICT centers as well as scheduled field days have enabled the organization to disseminate technical skills in crop husbandry and grafting fruit trees such as passion fruits, pixies, mangoes, and oranges. This has been a key factor against crop diseases, a contributing factor to high fruit yields and therefore attracting adequate household incomes from markets. As the organization strives to implement successfully its climate actions, especially in reclaiming degraded lands, it experiences huge budget gaps that hinder the upscaling of its adaptation initiatives.

BOX J: AN INTERNATIONAL NPOS OPERATING IN CCA TARGETING SSPS

Syngenta Foundation for Sustainable Agriculture (SFSA) (*Private Sector*)

Key functions: *knowledge supplier, trainer/educator; finance supplier, resource distributor, harvest broker.*

The Syngenta Foundation for Sustainable Agriculture (SFSA) has been in existence in Kenya since 2009, with an aim to bridging the gap between agricultural research and practical implementation for smallholder farmers. This is through providing world-class science and innovative crop solutions that aim to safely and sustainably feed the population. Therefore, this underpins their mission of strengthening smallholder farming and food systems, catalyzing market development, and delivering innovations while building capacity across the public and private sectors. In one of its efforts to realize this, SFSA in collaboration with the Alliance for Green Revolution in Africa and Farmers to Market Alliance has established farmers' hubs that provide a platform for the dissemination of new and existing agricultural technologies to farmers. This platform has been leveraged by farmers to improve their Agricultural practices as well as easily access high-yielding and disease-resistant seeds for better harvest. This is under their program called 'Seeds To Be'. Through the 'Seeds To Be Program', SFSA in partnership with International Potatoes Centres and Kenya Agricultural and Livestock Research Organization (KALRO), developed heat-tolerant potatoes to be grown in mid-altitude areas such as Samburu County. It is with initiative that most Women and girls in Samburu County have taken part in diversifying their household incomes besides the livestock. In addition, through the farmers' hub, SFSA is dedicated to training farmers on effective water management such as drip irrigation instead of flood irrigation. The foundation has further invested in water-harvesting infrastructures such as Communal water Tanks, Boreholes and making sure farmers have access to solar water pumps, and soil management in a way that they retain little moisture. To further build farmers' resilience against the unpredictable nature of weather patterns, SFSA has derisked farmers through index insurance. This service is being sold to farmers through the organization's trained Village Based Entrepreneurs. To this end, through SFSA's commercial experience from working with growers and implementing innovative research and sustainable development projects, it is dedicated to enhancing smallholder farmers' household income through access to quality seeds, Water, crop Insurance, and dissemination of Good Agro-practices.

Possible reasons for this include the fact that working in the highly complex and dynamic context of CAA requires a range of skills, experience or geographic scope and single MLOs rarely possess all these. Thus, larger projects enable both a broader scope of activities, and thus likely demand a greater diversity of functions in implementation. Larger projects are also more likely to have multiple implementation sites, which can also demand a larger number of partners. These larger projects are likely to also have sufficient resources to enable partners to play diverse and complementary roles.

We find that across the four countries most projects, and the largest projects in terms of dollars, are funded by multilateral institutions and bilateral institutions. Few projects are funded by local sources, such as domestic private sector organizations or local governments. The prominence of external sources of funding of CCA targeting SSPs in Ghana, Kenya, Malawi and South Africa is a global policy role developed countries are expected to play as outlined in global treaties such as the Paris Agreement. The Paris Agreement and other treaties widely recognized concern that many vulnerable countries do not have sufficient domestic resources to ensure CCA is adequately incentivized and supported. For instance, the Paris Agreement, in Article 7.1, establishes the Global Goal on Adaptation (GGA) which aims at boosting adaptive capacity and resilience while supporting vulnerable nations to achieve resilience (UNFCCC, 2015). Support, which includes climate finance, was to come from developed nations and other international finance institutions because South Africa is often considered as a mid-income country, multilateral and bilateral institutions fund fewer CCA projects as compared to countries like Malawi which are considered to be 'least-developed country'.

Our results also show that projects in Kenya have larger total budgets as compared to Ghana, Malawi and South Africa. There are several reasons for this. First, as shown in the country studies, Kenya is one of the countries most affected by the impacts of climate change (Renner, 2020) and is attracting a variety of actors including the private sector and other international funders (Odhengo et al., 2019; Gannon et al., 2022). This may be related to Kenya's reputation as a politically stable and reliable country for investment (Cheeseman et al., 2014), in particular for agricultural initiatives (Gerdin, 2002).

Our analysis demonstrated that gender is included as a key component in most projects captured in our database, particularly in Ghana and Kenya. This demonstrates increased attention on gender and equity by MLOs and funders. For instance, key UNFCCC funding instruments such as the Green Climate Fund and the Adaptation Fund require that gender is mainstreamed in the projects they fund. With regards to CIS, more than half of the projects in our database incorporated CIS. This shows that CIS is acknowledged as a critical component of interventions targeting SSPs (Tall et al., 2018; Carr et al., 2020). In addition, MLOs and projects captured in our database indicate that CIS is not a stand-alone activity, but rather integrated into an overall project design and linked to other project activities. Finally, our analysis found that CCA interventions targeting SSPs are increasingly incorporating both, gender and CIS, thus potentially resulting in more benefits for local communities.

CONCLUSION

This LA sought to provide an overarching description of the characteristics or attributes of MLOs in the climate change adaptation (CCA) for SSPs in Ghana, Kenya, Malawi and South Africa. MLOs are more diverse than perhaps imagined (not just local and international non-governmental organizations) and include government and private sector and academia. They play a range of functions, indicating that they do far more than simply transmit resources to beneficiaries. Most common functions performed by local NPOs/CBOs include community organizer, knowledge supplier and training and education provider. International MLOs such as multilateral and international NPOs commonly provide finance and distribute resources to SSPs. In addition, MLOs work in partnership, and these partnerships depend on the size of the project budget. However, how these partnerships work, including what trade-offs and synergies are and what makes them effective is not evident in this dataset and will require a more in depth investigation. Overall, key attributes of MLOs and the projects they are involved in will assist in the creation of typology of MLO attributes and functions for the ACAMI project. The typology will assist in effective and appropriate interventions for improved policy, planning and investment in CCA targeting SSPs in Africa.

BOX K: AN ORGANIZATIONAL NETWORK FOR CLIMATE INFORMATION DISSEMINATION AND WOMEN FARMERS' EMPOWERMENT

The Coalition of Women Farmers (COWFA)

(Local NPO)

Key functions: *knowledge supplier, trainer/educator, resource distributor, community organizer, advocacy*

The Coalition of Women Farmers (COWFA) is a member organization of over 300,000 farmers organized in clubs and cooperatives in Malawi. COWFA serves to enable women farmers' empowerment and self-reliance as small-share producers. Founded in 2006, the organization is funded on a project-by-project basis and run by volunteers. COWFA undertakes various functions to achieve its mission, including facilitating training for women and girls in productive activities, organizing women into Village Savings and Loans groups, and helping members access resources necessary for more resilient agriculture. Through domestic and international partnerships with non-profits such as Action Aid and Oxfam, COWFA can leverage its network of farmer groups to reach large numbers of farmers across Malawi in climate adaptation. COWFA's relationship with the Southern Africa Rural Women Assembly (founded in 2010) extends this network to reach neighboring countries.

COWFA was introduced to climate information and services through interaction with another Malawian non-profit, the Civil Society Network on Climate Change (CISONECC), that is dedicated to fostering climate action. CISONECC reached out to COWFA to facilitate the dissemination of climate information to farmers. COWFA leadership now participates with the Malawian Meteorological Service and CISONECC to package and disseminate climate information via COWFA's WhatsApp groups with district leaders, who, in turn, communicate the information to COWFA's local members. In turn, COWFA helps communicate information back to CISONECC and the Meteorological Department, about what adaptation choices farmers are interested in, what information farmers need, and what aspects of the climate forecasts need clarification. COWFA's distributed network, based in strong ties of trust with women farmers across the country, has provided a flexible and responsive channel of knowledge production and dissemination for climate change adaptation.

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ANNEX A: METHODOLOGY

This Landscape Analysis (LA) presents summarized information from a new relational database (RD) designed and developed by the ACAMI project team to systematically record information on meso-level organizations and the projects they are involved in. The relational database contains 195 MLOs, 109 projects and over 192 contact people from Ghana, Kenya, Malawi and South Africa, which was then used to carry out the LA. The RD provides the basis for establishing a network of relationships among MLOs, projects and people. In addition, the RD is organized such that it can be used as the basis for an inventory of organizational data on MLOs operating in the adaptation space.

The process of developing the RD began with a scoping exercise of projects, MLOs, and organizational contacts involved in the implementation of climate change adaptation targeted at SSPs in the period 2015-2023 in the four selected countries. The criteria for selection of MLOs and associated projects to include in the database are listed in Table a (1) below.

Table a (1) Inclusion and Exclusion Criteria for selecting projects and MLOs

Inclusion	Exclusion
MLO is involved in interventions targeting SSPs in Ghana, Kenya, Malawi & South Africa	MLO is not involved in interventions targeting SSPs in Ghana, Kenya, Malawi & South Africa
MLO involved in Climate Change Adaptation interventions (projects) targeting SSPs	MLO is not involved in Climate Change Adaptation interventions targeting SSPs. This also includes government programmes and strategies targeting CCA.
MLO projects which were initiated not earlier than 2015 or were ongoing in 2015 ³	MLO Projects/related activities which ended before 2015
Macro-level (funders) organizations that play a dual role of funding and implementing of interventions targeting SSPs	Macro-level (funders) organizations which fund projects but do not implement interventions targeting SSPs

In addition to the criteria outlined in Table (a1) above, a codebook (Annex E) provided the parameters, categories, and subsets used in populating data in the ACAMI database. This protocol guided the removal of duplicates as well as ensuring that entries were properly captured on the relational database.

Several strategies were used to identify MLOs for the LA (Figure A1). The entry point was selecting MLOs and projects from the Transforming Social Inequalities through Inclusive Climate Action (TSITICA) database.

³ The intention was to discuss ongoing or recently completed projects. If projects ended quite a few years ago then people can't remember, but also did not want to focus on projects that just started, and very little implementation has taken place.

⁴ The Transforming Social Inequalities Through Inclusive Climate Action (TSITICA) project investigated how climate change action can be socially transformative in three contrasting African countries: Ghana, Kenya and South Africa. <https://tsitica.uct.ac.za/>

The TSITICA database contains Climate Change Adaptation (CCA) and Mitigation projects implemented during the period 2000 to 2020 Ghana, Kenya and South Africa. In total the TSITICA database contains 126 projects in Ghana, 157 in Kenya, and 652 in South Africa. From this database, the ACAMI team drew an initial list of CCA projects, including only CCA projects from 2015 to 2020. (The team excluded mitigation focused projects and projects not focused on SSPs, as well as all projects with end dates prior to 2015). Malawi was not part of the TSITICA project, so the team searched funder websites and other known sources.

In addition, specialized databases were acquired and reviewed for Malawi with the assistance of an advisory board member. These include: (i) Malawi Adaptation Inventory; (ii) Malawi Stakeholder Mapping; and (iii) Database of Development Partners working in the Agriculture Sector. Other databases accessed to expand the inventory of MLOs and projects for all four countries included Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA), Bill & Melinda Gates Foundation (BMGF), Adaptation Fund, and Climate Funds Update (CFU), among others. Furthermore, in the context of South Africa, contacts from the Department of Forestry, Fisheries and the Environment provided an updated centralized database from which more MLOs, projects and contact people were selected.

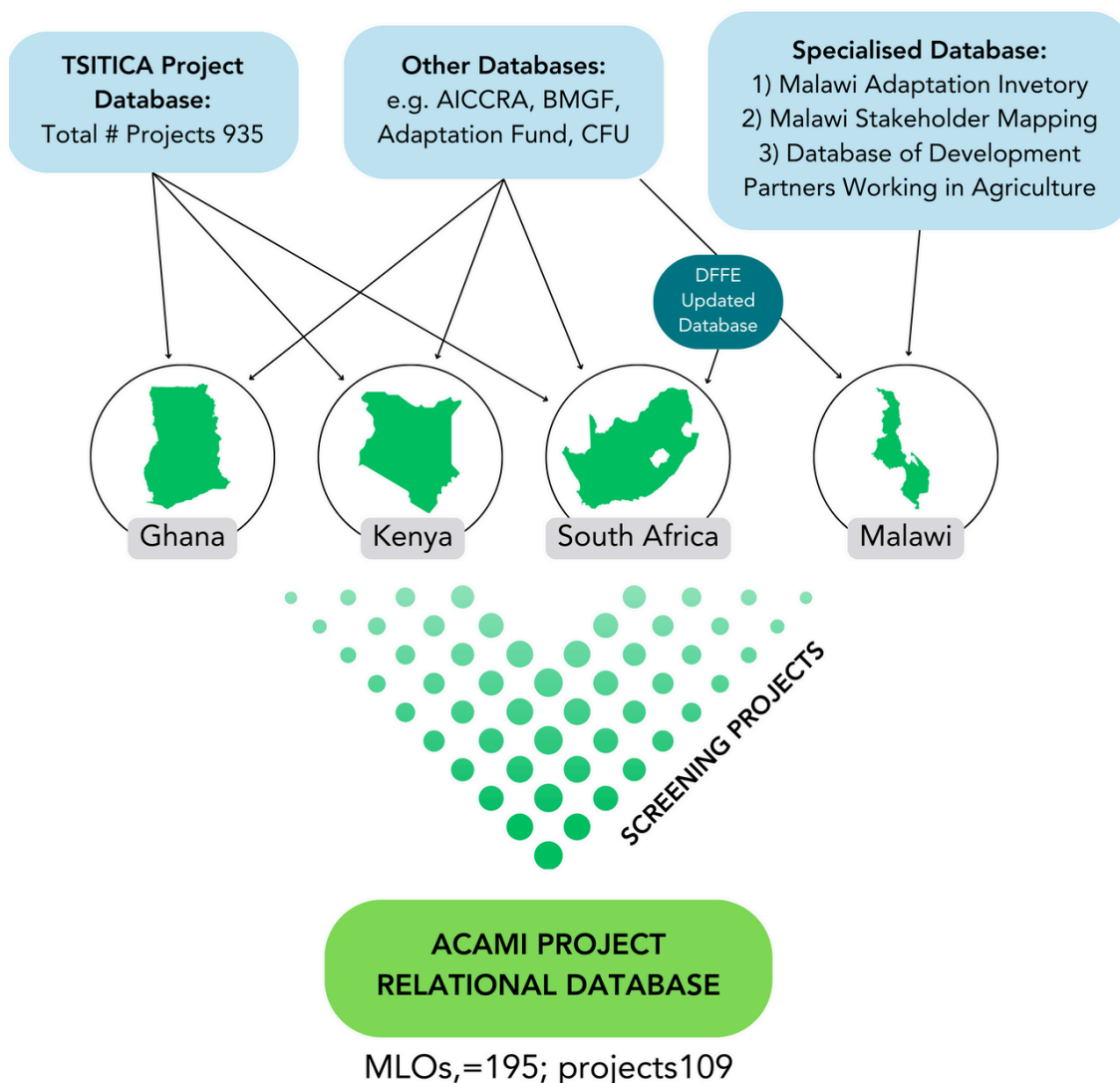


Figure A1: Identification and selection of MLOs, projects and contacts for the LA.

Data were captured from the databases and complemented by publicly available information such as websites. This data was initially captured in three separate files, which were merged at a later stage. A protocol was developed to guide the cleaning process, which included removing duplicates of merged RD. Table a(2) below provides a breakdown of the number of MLOs and projects per country captured in the relational database.

Table a(2): Number of MLOs and projects per country

Country	Number of MLOs	Number of Projects
Ghana	51	28
Kenya	72	37
Malawi	36	26
South Africa	22	18
Other	14	-
Total	195	109

A key limitation of this approach is the potential over-reliance on publicly available information such as project summaries and MLO information on existing MLO websites, as well as on the data that was captured in the various databases. It is possible that some of the data used was inaccurate or outdated. Another key limitation is that we used a convenience sample and that we do not know the full population. It is possible that the RD systematically under- or over-represents MLO types, roles, and funding sources or that it under- or over-represents certain types of projects. Despite these potential limitations, the RD provides a robust set of diverse MLOs and related projects from which it is possible to glean insights.

It is also important to note that the number of MLOs captured in the database exceeds the number of captured projects because some projects had more than one MLO, and all these were included. In addition, there was evidence that some of the MLOs were involved in CCA, though they may not have captured recent projects (e.g., FAO-Malawi).

ANNEX B: OVERVIEW OF COUNTRY CONTEXT - GHANA

Ghana's Socio-economic Context

Ghana is located on the West African coast and has a population of approximately 33.46 million people (2022). The country is divided into ten regions, each encompassing various agro-ecological zones ranging from Sudan Savanna and Guinea Savanna in the north to Transition Zone, Semi-deciduous Forest zone, Rain Forest Zone, and Coastal Savanna Zone in the middle and southern parts. Agriculture is a vital sector of the Ghanaian economy, employing approximately 57% of the labor force and contributing around 44% to the Gross Domestic Product (GDP) (MoFA 2007). In 2017, the GDP of Ghana was estimated at \$79.52 billion USD, with a per capita GDP of \$5435 USD (World Bank, 2021). Despite ongoing efforts to combat poverty and inequality, Ghana still grapples with multidimensional poverty, as evidenced by a Multidimensional Poverty Index (MPI) of 0.111 (UNDP, 2022). Additionally, Ghana exhibits moderate overall inequality, with a Gini coefficient of 43.5 (World Bank, 2021). Ghana's Human Development Index (HDI) stands at 0.602, indicating medium levels of human development (UNDP, 2022).

The Structure of the Agrifoods System in Ghana

Ghana's agricultural food systems are structured as a result of a complex interaction between environmental, cultural, and economic variables. The bulk of farmers in Ghana cultivate small pieces of land for local markets and sustenance, making up the country's smallholder agricultural sector (Asante-Poku et al., 2018). Ghanaian agriculture relies heavily on traditional products such as cassava, maize, yams, and cocoa, with the latter serving as a major cash crop and export good (Gyasi et al., 2020). The difficulties facing Ghana's agricultural food systems have been brought to light in a number of studies (Akoto-Danso et al., 2019). These concerns include limited access to modern farming inputs, inadequate infrastructure, and climate variability. These difficulties frequently reduce output and increase food insecurity, especially in rural regions. To address some of these issues, the government has structured agricultural food systems through initiatives like the Planting for Food and Jobs programme, which links smallholder farmers to markets, extension services, and subsidies (Owusu et al., 2020). However, there are still gaps in access to markets and resources, especially for marginalized groups like women and youth, and the efficacy of these interventions varies (Akudugu et al., 2019). Furthermore, Ghana's agricultural environment is changing due to the growing impact of globalization and shifting consumer preferences, which are driving up demand for value-added products and deepening Ghana's involvement in international supply chains (Dossou et al., 2021).

Ghana's Climate and Environmental Context

In Ghana, annual temperatures remain above 24°C, and rainfall patterns vary across agro-ecological zones, with increasing aridity from coastal to northern areas. Mean annual rainfall ranges between 800 and 2,400–2,800 mm, with the Guinea and Sudan Savanna zones experiencing one rain season, while other parts of the country have a bi-modal rainfall system (GSS 2013).

Like other African nations, Ghanaian communities are becoming increasingly susceptible to climate change due to a number of factors, including: i) their reliance on rain-fed agriculture; ii) increasing rates of poverty; iii) a shortage of capital and human resources; and iv) inadequate infrastructure (Care Report, 2017).

Future climate change projections for Ghana indicate a rise in annual mean temperatures and a decline in mean annual rainfall. This anticipated warming and drying trend will be accompanied by greater rainfall variability, resulting in more frequent and intense droughts and floods. Higher temperatures will increase evaporation rates, and along with reduced rainfall, will further decrease water availability, shortening the crop-growing season (Lobell et al., 2011). This reduction in the growing season will negatively affect crop yields and food security, particularly in the Guinea and Sudan Savanna agro-ecological zones, which are vulnerable to increasing drought events. (Antwi-Agyei et al., 2012).

Ghana's Political and Policy Context

Ghana's post-independence history has been marked by military rule and human rights abuses. However, in the late 1980s, pressures led to the promulgation of a liberal constitution and the inauguration of a multiparty democracy. Since 1992, Ghana has held four successful multiparty elections, with the fifth set scheduled for December 7, 2008. The peaceful transfer of power from the National Democratic Congress to the New Patriotic Party in 2000 demonstrates progress towards democratic consolidation. Ghana's democratization has been praised as one of Africa's political success stories, but the democratic development is still work in progress due to several democratic deficiencies at national, regional, and local levels (Gyimah-Boadi 2008; Whitfield and Jones 2008). The National Climate Change Policy (NCCP) is Ghana's integrated response to climate change and provides strategic direction and coordinates issues of climate change in Ghana. The NCCP has been designed to tackle climate change challenges and foster sustainable development by focusing on adaptation, social development, and mitigation. It targets critical sectors like agriculture, disaster preparedness, natural resource management, social development, and energy infrastructure. The policy seeks to enhance food security, infrastructure resilience, environmental management, and economic growth while reducing greenhouse gas emissions⁵

Cross-cutting Challenges Faced by MLOs in Ghana

MLOs in Ghana face numerous challenges in addressing socio-economic and developmental issues. These include limited financial resources, capacity constraints, inadequate infrastructure, weak policy support, limited collaboration and networking, gender inequality and social norms, climate change and environmental degradation, and political instability and conflict. Limited funding and capacity can hinder their ability to mobilize communities, provide training, and undertake advocacy efforts. Inadequate infrastructure can limit access to transportation, communication networks, and basic amenities, while weak policy support and limited government engagement can impede their efforts. Limited collaboration and networking can limit their ability to leverage resources and share best practices. Addressing these challenges requires concerted efforts by MLOs, government authorities, donors, and other stakeholders to strengthen capacity, foster collaboration, and create an enabling environment for sustainable development (Amoako et al., 2019; Owusu et al., 2018).

⁵ <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC169292/#:~:text=The%20National%20Climate%20Change%20Policy,thematic%20areas%20have%20been%20identified>

Overview of Gender and Equality development Index in Ghana

In 2021, Ghana achieved a score of 0.98 in health and survival, 0.67 in overall gender gap, ranking 23rd in the sub-Saharan African region. However, it only achieved 0.6 points in economic participation and opportunity. The Global Gender Gap Index measures gender-based disparities, with the highest possible score indicating total equality between women and men⁶. In terms of gender dynamics, Ghana demonstrates relatively high gender development, reflected in its Gender Development Index (GDI) score of 0.933 (UNDP, 2022).

Ghana's gender policies aim to achieve gender equality and empower women and girls, as mandated by the 1992 Constitution, which prohibits discrimination based on gender, race, religion, and ethnicity. The Ministry of Women and Children's Affairs is responsible for policy development and implementation. The National Gender Policy seeks to integrate gender equality into national development by improving conditions for women, girls, children, the vulnerable, people with special needs, persons with disabilities, and the marginalized. Strategic actions will address barriers like unequal access to social protection, poverty, education and training gaps, high maternal mortality, and persistent discrimination against women and girls. (National Gender Policy Report, 2015).

State of Climate Information and Services in Ghana

Climate information and services (CIS) in Ghana are vital for providing timely and relevant climate data to various stakeholders, including government agencies, NGOs, farmers, and the general public. The effectiveness of CIS is crucial for climate adaptation and resilience, especially as Ghana faces increasing climate variability and change. One of the main challenges for CIS in Ghana is the availability and quality of climate data due to the limited number of weather stations and observational networks, resulting in gaps in data coverage and reliability (Niang et al., 2014). Additionally, the technological infrastructure is inadequate, which hinders the collection, processing, and dissemination of climate information. Limited access to telecommunications, internet connectivity, and computing facilities further exacerbates this issue (Mugambiwa & Tirivangasi, 2019). Capacity constraints in government agencies, research institutions, and meteorological services hinder the development and implementation of effective CIS. These include a lack of skilled personnel, inadequate funding, institutional fragmentation, communication and accessibility challenges, and limited awareness and literacy levels (Ochieng et al., 2019; Adger et al., 2018). The Ghana Meteorological Agency (GMet) is a key player in Ghana's climate change (CIS) landscape, collecting, analyzing, and disseminating climate data. NGOs also play a crucial role in bridging gaps in climate information services, particularly in underserved communities. Research institutions contribute through scientific research, data analysis, and modeling, improving the accuracy and reliability of climate information (Owusu et al., 2020; Frempong et al., 2017; Archer et al., 2016). The draft policy on climate information services in Ghana highlights the country's commitment to utilizing climate information for decision-making, risk reduction, and adaptation strategies. It emphasizes the importance of ensuring accurate and timely weather forecasts, climate monitoring, and disaster risk reduction services.

⁶ <https://www.statista.com/statistics/1247286/gender-gap-index-in-ghana-by-category/#:~:text=Gender%20gap%20index%20in%20Ghana%202021%2C%20by%20category&text=In%202021%2C%20Ghana%20scored%200.98,the%20sub%2DSaharan%20African%20region.>

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ANNEX C: OVERVIEW OF COUNTRY CONTEXT - KENYA

Kenya's Socio-Economic Context

Kenya, with a population of 47 million, has a GDP of USD 115.08 billion. 38.6% of its population lives in absolute poverty primarily in rural areas (Kenya's Poverty Report, 2021) yet it attained a lower middle-income status in 2014 (FAO, 2015). The agricultural sector is the backbone of the economy, accounting for 20% of the GDP and 27% indirectly (CBK, 2023). However, the sector is 98% rainfed, making it vulnerable to climate change impacts (Kalele et al., 2021). It is due to this fact that Kenya's Economic Survey (2023) reported a 2% decrease in agricultural revenues in the period 2020 to 2022. This was due to unfavorable weather conditions at the time. According to the Kenya Institute for Public Policy Research Analysis Report (2019), 75% of the country's 7.5 million small-scale producers in Kenya are women (Farm to Market Alliance, 2022). This workforce is responsible for 80% of Kenya's food basket (Ministry of Agriculture 2022), with farm sizes ranging from 1 to 5 acres. To break this down further, findings from Kenya's Population Census of 2019 state that the country has a total of 6.4 million farming households of which 1.7 million are vested in crop farming, 3.9 million are in mixed farming, and 760,000 are livestock farmers.

In as much as the Smallholder Producers are critical to the country's food security, they face barriers such as: expensive farm inputs, poor physical infrastructure limiting access to the market dependence on rainfall, and inadequate access to agricultural finances (Manana, 2014). These factors stifle their potential to achieve optimum crop yields. Unpacking socio-economic challenges and opportunities for adaptation investment strategies among vulnerable communities is crucial as it helps to establish a symbiotic ecosystem, allowing for sound agricultural value chain structures (Wangu and Githuku, 2022). Adequate incomes earned by small-scale producers can improve the socio-economic status of households, by improving the quality of nutrition, health, and education (Nanjala et al., 2022). It is to this end that commercializing Kenya's agricultural sector from grassroots to national levels can be a sustainability strategy for climate change adaptation initiatives in Kenya.

The Structure of the Agrifood System in Kenya

Agricultural produce from small-scale producers is the backbone of the country's food security. The GeoPoll 2018 report on the characteristics of Kenya's Agriculture sector found that 44% of the interviewed farmers practiced subsistence farming while 56% were in commercial farming. With regards to the target market, 93% of the farmers reported that they sell their produce to the local market while 7% are linked to the export market. Among the Small-scale producers in Kenya, maize is the most grown crop. Other crops include beans, tomatoes, and potatoes. Fruit farming is rarely undertaken by small-scale producers in Kenya mainly because of inadequate farming knowledge of the fruit, the long maturity period required for the harvest, as well as its need for intensive capital.

Livestock farming, especially in the ASAL region, is part of the Country's food systems. According to the 2018 GeoPoll report on Kenya's Agricultural sector, cows, goats, and poultry are the most common domesticated animals. They are often farmed for meat, milk, and eggs. Most pastoralists follow continuous grazing practices, where the livestock have no restrictions on certain portions of land. Due to the country's long coastline and numerous freshwater lakes on land, fisheries have been part of its food systems. Tilapia and catfish are the most harvested fisheries. They are known for their omega-3 fatty acids nutritional value.

Processing food for value added and improved durability has been critical in significantly reducing post-harvest losses in food crops, especially with regard to maize milling for flour, which is the country's staple food. Small-scale producers in the dairy sector have benefited from food processing technologies for yogurts, butter, and cheese. These products are often distributed to the nearest retail stores.

Kenya's Climate and Environmental Context

Kenya faces two major climatic risks: floods and drought. Droughts are primarily experienced in the Arid Semi-Arid Lands (ASAL) areas, which account for 89% of Kenya's land mass (Kenya Country Situation Assessment, 2016) and are home to 38% of the country's total population. The region additionally experiences flash floods due to scarce and intense rainfall events. As a result of the recurring climatic risks in the region, most Meso-Level organizations (MLOs) have set up satellite offices throughout the region. Despite these harsh conditions in ASALs, it has great potential to contribute to the National GDP as it is home to 60% of the country's livestock population (Agricultural Policy, 2021) valued at Ksh. 70 billion.

Kenya experiences bimodal rainfall patterns, with high amounts in March, April, and May and short rains in late October, November, and December. The Western, Central, and Coastal parts receive an average of 1000mm of rainfall and above; extreme rainfall events are associated with flood disasters. The ASAL regions are known to experience an average rainfall amount of below 500 mm with some zones experiencing as low as 100 mm of rainfall annually (State of Climate Kenya, 2020). The distribution of rainfall in the country is directly correlated to agriculture and food security as the sector is rainfed. With regard to forest cover, the Kenyan government is working to increase forest cover to 30% from 8.8% as of 2021. This has been scheduled in the government's National Program for Accelerated Forestry and Rangelands Restoration.

Kenya's Political and Policy Context

Kenya's Constitution of 2010 establishes a legislative framework for climate change adaptation and mitigation strategies. Article 11 (b) acknowledges the role of science and indigenous technologies in the nation's development, promoting the co-creation of adaptation strategies. Article 42 guarantees citizens' right to a clean and healthy environment, emphasizing on nature-based solutions. Article 43 (c) protects citizens' economic and social rights, ensuring food insecurity. Article 69 outlines the government's obligations to conserve and protect the environment, encouraging the co-creation of strategies. The National Climate Change Response Strategy (2010) initiated the climate change strategies agenda, across all socio-economic sectors. The National Adaptation Plan, 2015-2030, and the National Climate Change Action Plan, 2018-2022, aimed to streamline disaster risk response and improve crop yields in ASAL regions. The Agricultural Policy, (2021), was formulated to commercialize the sector and promote stable Public-Private-Partnerships.

Cross-cutting Challenges Faced by MLOs in Kenya

Kenya's Meso-Level Organizations face challenges in accessing adaptation funds as most funding agencies prefer mitigation interventions mostly due to their high Return on Investment (ROI) (Adger et al., 2007). Further, capacity constraints among Meso-Level organizations have hindered the effectiveness of the adaptation initiatives especially in accessing and leveraging climate information and establishing pathways for sustainability (Musafiri et al., 2021). Increased inter-community conflicts in ASAL regions due to competition for limited resources have often interrupted the implementation of adaptation projects (Sax et al., 2022).

This has led to beneficiaries disengaging from the process hence significantly watering down the gains made in enhancing their adaptive capacity. Therefore, organizations often integrate conflict resolution mechanisms and co-creating fair access to natural resources into the project design.

Overview of Gender and equality index development index in Kenya

Kenya has made progress in gender mainstreaming and its governance through its National Land Policy, National Policy on Gender and Development, and Agricultural Policy on land tenure systems. However, only 3% of Kenyan women hold land titles, despite accounting for 75% of the agricultural labor force (Kenya Demographic and Health Survey, 2022). This disparity affects women's bargaining power in climate change adaptation decision-making processes (National Policy on Gender and Development, 2019). Therefore, a multifaceted approach is needed to improve women's land ownership and resilience against climate risks. According to Kenya's submission to SBI 48 on gender and climate change, the country is yet to develop a National Gender Assessment tool to measure the effectiveness of adaptation projects with regard to enhancing adaptive capacity among women and youth. This has created a gap in the formulation of uniform adaptation metrics for gender equality and social inclusion in the country (Ruijven et al., 2013).

State of Climate Information and Services in Kenya

Over the past decades, the demand for Climate Information and Services has risen, especially among small-scale producers and Meso-level organizations due to the need to make informed adaptation decisions in farming. It is to this end that the Kenya Meteorological Department (KMD) has been devolved to 47 County Governments to improve access to weather and climate information and improve data collection accuracy. It leverages a 3-way approach, including observation and network design, climate data management, and climate analytical services, to collect and analyze data. The climate information is then disseminated through social and print media as well as its website with a 7-day weather forecast.

In Kenya, KMD is the only mandated institution to provide climate information and services, but other organizations like IGAD Climate Prediction and Application Centre (IPAC), Kenya Agricultural and Livestock Research Organization (KALRO), Regional Centre for Mapping of Resources For Development (RCMRD), and National Disaster Manager Authority (NDMA) can also provide meteorological data as stipulated in the National Framework for Climate Services (NFCS), 2023. These partnership networks are crucial for collecting meteorological data, but they face inadequate technical equipment, such as automated weather stations, due to inadequate government funding and lack of interest from the donor community. Twenty-three out of Twenty-four counties in the country do not have automatic weather stations.

One of the transformational products of meteorological data in Kenya is the Kenya Agricultural Observatory Platform (KAOP) launched by KALRO to empower small-scale producers with information on weather, agronomics, and analytics. However, the platform faces challenges in interpretation and adoption, as well as limited access to smartphones among small-scale producers, particularly among aged farmers. The KMD's partnership networks are crucial for collecting meteorological data, but it lacks inadequate technical equipment (automated weather stations), due to inadequate government funding and a lack of interest from the donor community.

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ANNEX D: OVERVIEW OF COUNTRY CONTEXT - MALAWI

Malawi's Socio-economic Context

Malawi is located in the Southern African region and has a population of around 19.89 million people. Malawi is currently classified as a Least Developed Country with high National Poverty levels (51.5 percent as of 2017). The UNDP Multidimensional Poverty Index looks beyond income and identifies multiple deprivations at household level. Malawi is ranked at 0.231, indicating that the country is among the poorest countries in the world. Inequality has also remained high, with a Gini coefficient of 0.6. Poverty and inequality are twin-structural development challenges Malawi faces.

The government of Malawi acknowledges that the country has largely relied on development aid and credit to finance development programmes (National Planning Commission, NPC of Malawi, 2020). Compared to the other countries under this study, the economy of Malawi has the largest dependence on agriculture.

The socio-economic development of the country was also threatened by public debt, which stood at 59% of the national income (around US\$5.5 billion). This results in spending cuts at a time when there is growing demand for public spending due to the acceleration of natural disasters (National Planning Commission, NPC of Malawi, 2020). These challenges have further been exacerbated by high corruption levels. According to the National Planning Commission of Malawi (2020), the Corruption Perception Index ranked the country 31 out of 100 in 2019.

The Structure of the Agrifood System in Malawi

The agri-food system is a critical sector in Malawi. Agriculture contributes most to the country's Gross Domestic Product (GDP) and employs over three quarters of the total population, more than those of other countries, with the largest area of arable land. However, productivity is the lowest, as agricultural value added per worker is only 338 US dollars, equaling 4.5% that of South Africa. According to Malawi's Department of Crop Development (2021), 70% of agricultural GDP comes from small share producers. Agriculture is seen as a means to ending hunger and poverty, including driving the general development trajectory of the country. Nevertheless, public expenditure on agriculture remains low, and the availability of extension agents is also the worst when compared to Ghana, Kenya, and South Africa. In the 1990s, Malawi introduced the Farm Input Subsidy Programme (FISP), which consisted of grants or loans given to farmers to reduce the cost of acquiring a specific input used in agricultural production. In 2020, the new Malawi Government replaced the FISP with the Affordable Inputs Program (AIP), which extends the subsidy on maize seed and fertilizer to sorghum and rice seed, and is more universal, with all smallholder farmers eligible, rather than being targeted (Walls et al., 2023).

Malawi's Climate and Environmental Context

The agricultural sector is largely rain fed and very vulnerable to climate variability and shocks; almost 90 percent of Malawians depend on rain-fed subsistence agriculture for food (Chinsinga et al., 2012). Located in the Southern Africa region, Malawi is already experiencing higher temperatures, longer dry spells (droughts), more frequent and longer extreme heat waves, tropical cyclones, and flooding (Trisos et al., 2022).

The National Meteorological Policy of Malawi acknowledges that the country has a high risk of weather, climate and hydrological hazards including droughts, severe storms, floods and associated landslides (Department of Climate Change and Meteorological Services, DCCMS,2019). The sector's sensitivity to climate variability suggests that climate information and services may play an important role in climate change adaptation, and thus represent critical tools for MLOs working with SSPs.

Malawi's Political and Policy Context

Broadly, Malawi 2063 (MW2063) provides a broad vision for the country and ensures a clear roadmap which transcends the duration of political terms. MW2063 aims to transform Malawi "into a wealthy and self-reliant industrialized 'upper middle-income country' by the year 2063" (National Planning Commission, NPC of Malawi, 2020:3). Globally, it is aligned to key frameworks such the Sustainable Development Goals (SDGs), as well as Africa Union's Agenda 2063. The MW2063 is anchored on three pillars: Agriculture Productivity and Commercialization; Industrialization; and Urbanization. Currently, policy positions by the government of Malawi appear to shift attention from adequately supporting SSPs towards "mega farm approach". Under this approach, the government aims at "establishment of large-scale production units at one place with all necessary supporting resources i.e. human, capital, equipment and infrastructure from land preparation to marketing" (Ministry of Agriculture-Government of Malawi; 2021:4).

One of the structures critical for small holder farmers is the District Agricultural Extension Services System (DAESS). DAESS is a decentralized extension framework for enabling farmers and stakeholders to engage in a participatory process of identifying and organizing agricultural issues for collective action to be undertaken by farmers and or stakeholders. The DAESS has structures at Village area, and District levels as platforms for stakeholders in the agriculture sector to engage in dialogue and innovate for mutual agreement on taking collective action on issues of common interest. Most MLOs work with the district structures when implementing their interventions.

Cross-cutting Challenges Faced by MLOs in Malawi

One of the key challenges facing MLOs operating in Malawi is the difficulty in accessing funding. Malawi does not have a national development fund meant to fund local non-governmental organizations (Thokozani et al., 2018). This means donor funding becomes the only surviving means (Thokozani et al., 2018). This increases competition rather than collaboration over available funding sources. While successive political administrations have largely welcomed the operations of various non-governmental organizations in Malawi, statements by politicians show that there is a high level of distrust (Makuwira, 2011). Due to the non-organizations' dependence on 'Northern' aid agencies and international NGOs, non-organizations in Malawi have largely been viewed with suspicion and mistrust (Makuwira, 2011).

Recently, Malawi signed into law the amended Non-Governmental Organizations Act⁷ (2022). This Act is intended to regulate the operations of non-governmental organizations. The NGO Act was envisaged to provide guidance on "funding mechanisms, reporting systems, and how partnerships or subcontracting can be done" (Thokozani et al., 2018:77). Earlier versions of the Act were criticized for lacking clarity, and more specifically, for how to help operationalize the Act. In addition, poor management of resources and a lack of capacity have been highlighted as key challenges facing MLOs in Malawi (Thokozani et al., 2018).

⁷Non-governmental Organisation Act (Amended), 2022. <https://malawilii.org/akn/mw/act/2022/19/eng@2022-05-20/source.pdf>

Overview of Gender and equality index development index in Malawi

As much as Malawi has undertaken legal, political and economic reforms, gender inequality remains entrenched. Culture and related social norms are largely central to gender inequality. Scholars have argued this is related to ritualized social behaviors that create and perpetuate women's access to key resources such as education, employment and agriculture (Minton & Knottnerus, 2008). The Gender Equality Act was signed in 2014 with a primary objective "to promote gender equality, equal integration, influence, empowerment, dignity and opportunities, for men and women in all functions of society, to prohibit and provide redress for sex discrimination, harmful practices and sexual harassment, to provide for public awareness on promotion" (Laws.Africa, 2023:1). However, this has not resulted in significant changes in levels of gender inequality. According to the UNDP (2023), Malawi's gender inequality index has a value of 0.579, ranking it 148 out of 166 countries in 2022. This means that MLOs working as SSPs should ensure that gender and inclusivity are central to projects related to climate change adaptation.

State of Climate Information and Services in Malawi

Broadly, ICT is poorly adopted in Malawi. Compared to Ghana, Kenya and South Africa, Malawi has the least proportion of internet users (13.6%), as well as the least subscribers to mobile phone and landline internet (see Appendix G below). This has implications on access and adoption of CIS. Malawi started developing the National Framework for Climate Services in 2014. This process is currently at stage four, with endorsement of the national strategic plan and action plan for the NFCS are still outstanding. Malawi seeks to review the current framework to align with the provisions of the Malawi National Plan. According to Mamadi (2022), the implementation of the framework is currently being hampered by a lack of funding. Other barriers include a lack of legal frameworks (under development); lack of credible infrastructure; inadequate human capacity, among other challenges. The DCCMs acknowledges that currently, the system for meteorological observation and prediction is not robust enough to efficiently provide reliable, accurate and area specific weather and climate information to users. However, some of the opportunities identified in Malawi included:

- Enhanced user engagement
- improvement of climate services in order to raise developmental status,
- increase awareness of central role of climate services in national economic development,
- provision of increased services frequency and early warning services for extreme weather/ climate events,
- private public participation,
- availability of national met policy and
- establishment of district climate centers (Mamadi, 2022)

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ANNEX E: OVERVIEW OF COUNTRY CONTEXT - SOUTH AFRICA

South Africa's Socio-economic Context

South Africa has advanced industrialization and a highly productive commercial agriculture sector, contributing 2.5% to GDP and employment rate of 5.3%, alongside a coexistence of small-scale sectors (Mpundu & Bopape, 2022; Materechera-Mitochi & Scholes, 2022). Sulla & Zikhali (2018) also revealed that the nation is faced with poverty, inequality, and unemployment termed as the triple challenge of the country. The Common Country Analysis by the UN in the 2019 Multidimensional Poverty Index (SAMPI) revealed that the source of poverty in the country is attributed to unemployment (40%) and limited education (14%) among other factors. Youth between the ages of 15-34 constitute 37.8% of the population, and they face high unemployment among women (30.9%) compared to men (27.7%). The report also revealed that the Gini coefficient of the country, 0.68 reflects significant wealth disparities attributed to historical factors like Apartheid and xenophobia. Even with the slight decrease from 0.72 in 2006, inequality remains a challenge, worsened by the COVID-19 pandemic. Inequality disproportionately affects women, black populations, the uneducated, and residents of slum settlements.

The Structure of the Agrifood System in South Africa

The country's food system is irregular, even with its advanced industrialized agricultural setup. It's challenged with under- and overnutrition and unstable agriculture. These challenges persist because of the country's history of colonialism and apartheid. This is against a backdrop of highly uneven and racialized land ownership structures characterized by mainly white commercial farmers owning large tracts of land and small-scale black subsistence farmers under communal land ownership (Ntsebeza, 2013; Sibanda, 2023). This is despite the efforts made to integrate into the global food economy and adopt liberalized policies (Food Systems Profile - South Africa, 2022). In 2009, the country's agriculture sector contributed 2.2% to its gross, yielding 10% and 16.4% of agro-processing and manufacturing, respectively. The varied nature of agricultural production in the food system is accompanied by a large number of producers, and strong large-scale industrial production. Apparently, the agricultural producers in the country have a high percentage, resting on the Small-scale of industrial producers even with the wide base of producers at bay. Bormann (2019), states that the food industry is market concentrated with a few production, processing and retail companies that make the decisions, control supply and influence policy, commercial farms co-exist with a very large number of smallholder farms, mirroring the historic patterns of racial and gender coercion, land denial and economic segregation. Arguably, about 40,000 large-scale-capital-intensive commercial producers who are mostly whites have links to domestic and export corporate supply chains comparable to 1.3 million small-scale- labor-intensive, typically black producers. However, Mather (2005) attests that contract farming is crucial to agro-food systems, common to large-scale producers but not limited to smallholder contract structures, revealing the relationship among industrial agents—trade chains are increasingly through contract agreements but not to the open market. Mostly, people produce food solely for household use, while others produce just for markets with many combining the two. This is done by selling the remainders after household use and just making cash from cash crops. The main food commodities in the country are maize, poultry, cattle and citrus fruit, milk, vegetables, wheat, and sugar cane (PLAAS, 2010).

Two-thirds of households spend their food budget on meat (25%); bread and cereals (21%); milk, cheese, and eggs (10%); and 10% vegetables (Greyling, 2012). Bornman (2019) laments that the food system is very productive yet has caused more damage to the natural environment. Food production is the largest contributor to biodiversity loss, deforestation, desertification and soil degradation, with water scarcity intensifying. The Constitution of South Africa enforces the right to food and adequate nutrition, yet hunger is common even with sufficient food to meet calorie requirements - 22% of households have inadequate access to food. It's needless to say that some (33%) foods produced are wasted, implying the failure of the food system in the country with the attributing factors to increasing trends in food poverty, hunger and malnutrition etc. (Bornman, 2019).

South Africa's Climate and Environmental Context

South Africa is one of the countries in Sub-Saharan Africa that experiences water scarcity as it lies in a drought belt zone. Its agriculture sector uses up to 50% of the country's water, with its topography differing from desert to semi-desert in the northwestern region. Sub-tropical and temperate weather influence the country's climatic conditions (Alexander, 2023). The temperature and rainfall patterns are in response to changes in the high-pressure zone that circles the globe between 25° and 30° south latitude during the winter and low-pressure systems that occur during the summer. The nation is mainly seen as a harsh environment with vast land, almost 90% of the country is arid, with 80% semi-arid. Its surface water area is less than 0.4% of the total without natural lakes. Its water requirements are saved through surface runoff from rivers and dams. Due to limited supply, groundwater has increasingly been exploited for agricultural purposes. According to FAO, between 2016 and 2017, the country experienced one -in- a hundred-year extreme drought, resulting in the importation of maize (FAO, European Union, CIRAD and DSI-NRF, 2022). Agriculture in rural communities is largely rain-fed with farmers heavily dependent on it for their livelihood. The dependence on rainfed production makes them susceptible to the effects of climate change issues in either their variability or coping adaptation strategies. It also appears that the uneven rainfall patterns coupled with drought and floods affect farmers income diversification, and socio-economic factors such as riparian rights favor commercial farmers in these instances (Kuivanen, Alvarez, & Langeveld, 2015; Shikwambana, Malaza, & Shale, 2021). It is tough for smallholders to match up to large-scale commercial producers, particularly in staple crops like grains where production efficiencies are vital (PLAAS, 2010).

South Africa's Political and Policy Context

Khavhagali et al. (2023), in their study, concluded that South Africa's climate change policy has evolved over the past years and has a strong equity and social justice lens. In 2011, the country released its Integrated Development Plan which attempted to address the triple challenges faced by the country, poverty, inequality, and unemployment. While the IDP addressed climate change to a lesser extent, it was the National Climate Change Response Policy white paper (NCCRP) released in the same year that laid the foundation for climate change policy. Subsequent sectoral policies were based on the NCCRP (2011). As much as South Africa is among the top-20 greenhouse gas emitters in the world, its policies attempt to balance transition towards a greener economy through its 'Just Transition Framework' (Presidential Climate Commission, 2022).

This is anchored on an equity and justice lens; the framework recognizes the need to preserve jobs as the country gradually transitions towards a greener economy. Recently, the introduction of the National Climate Change Adaptation Strategy (NCCAS) in 2020 served as a substantial shift in the climate policy paradigm (CPP) in South Africa. Recently, the passing of the Climate Change Bill in both Houses of Parliament (awaiting signing into law by the President of South Africa) provides legislative guidance and enforcement across all levels of government. It also requires that climate change strategies and programmes are mainstreamed at all spheres of government. The NCCAS established distinct objectives that focused on building a climate-resilient economy and society, developing pathways for sustainable growth, and promoting innovative solutions across all sectors and levels of government in the country. The interest is a structured adaptation framework, thus boasting policy instruments and creating opportunities for stakeholders to contribute and coordinate among institutions, government, and global commitments related to climate change adaptation efforts. Under the USAID SA country profile, the country prioritizes climate adaptation and mitigation, with the government encouraging important activities like establishing a Presidential Climate Commission, implementing a Low Emissions Development Strategy, and adopting a National Climate Change Adaptation Strategy. The NDC was then upgraded to focus on important adaptation goals, improving institutional capacity, and fundraising.

Cross-cutting Challenges Faced by MLOs in South Africa

MLOs in climate change adaptation in South Africa faces numerous challenges, such as financial constraints, inadequate human capacity at province and local levels, lack of local political will, lack of understanding on adaptation issues by communities, inadequate management at the government sectors, absence of legal structures at the provinces and sustainable climate change units at district local levels, some local staff lacking knowledge of environmental tasks, inadequate plans, and outdated information (Sibiya et al., (2023). The confusing perceptions of climate change have become more prevalent both at the national and local levels. Both the government and private organizations seem not to show much urgency as required at every level to tackle the climate crisis. Although several institutional policies have been set up to tackle these challenges, there has been a lack of financial backing, management, and collaboration that fits into the wide-ranging objectives of environmental and socio-economic programs. Furthermore, the system for operations continues to be weak, coupled with distrust in controlling institutions thus hindering efficient policy operations. The cause of this frail institutional capacity in climate administration is not far from the obvious financial deficiency and investment in climate issues as a barrier to climate governance operations (Adom et al., 2023).

Overview of Gender and equality index development index in South Africa

In the last quarter of 2015, the unemployment rate among males stood at 22.3 percent, while females experienced a rate of 26.3 percent (Sulla & Zikhali, 2018). By September 2019, the unemployment rate was 29.1%, with women unemployment at 30.9% and men at 27,7% (UN CCA,2019). In rural South Africa, 29.67% of land (2.8 million hectares) is controlled by senior men under customary law, encouraging inequality among gender and race. This limits women's access to land, hinders agricultural production, and exacerbates food insecurity at the household level. Despite their vital role in agriculture, rural women still face discrimination due to restricted land ownership rights (Masuku et al.). The UN report, common country analysis (CCA) for 2019-2020 highlighted that the country ranked 90th out of 148 countries in the gender inequality index, indicating ongoing challenges.

Notwithstanding the policies on climate change adaptation, gender and Gender-Based Violence (GBV) continue to persist, leading to the initiation of an 'Emergency Action Plan' with a funding of R1 billion. South Africa's indifference extends far to the critical gap between women and men in accessing socio-economic resources, including opportunities for livelihood and enhancing their quality of life. Research reveals diverging perspectives on the history of traditional leadership in South Africa, considering the country's pre-colonial growth through colonial, apartheid, and post-apartheid democratic times. The post-apartheid democratic era began with the concurring global scrutiny of human rights and women's rights (South Africa, Commission on Gender Equality, 2018). This could potentially leverage its rapid development in traditional emancipation. The domineering powers of the traditional leaders were however disrupted by the emergence of colonial rule, inaugurating a new administration. The new administrative structures placed traditional leaders as channels for colonial rule. Thus, incorporating the traditional rulership system into colonial governance. The country's undeniable socio-economic distribution is rooted in its historical apartheid, linked to crime and poverty. This segregation influenced urban planning, and communities on the city outskirts, requiring residents to travel long distances for work and essential services. (Department of Human Settlements, 2019). According to the UN report (2019) the government seeks to promote investments, create employment, and promote partnerships in alignment with the SDGs.

State of Climate and Information and Services in South Africa

Weather and climate information originates from predictions based on observations, daily to seasonal forecasts, and inter-annual variations. Climate services use historical data sets to comprehend climate changeability and trends over time, as well as complex products such as monthly and seasonal predictions over time. It also entails more inspection, investigations, and estimates at different time progressions to assess the potential changes in climate variability. This also involves planning that is linked to risks while adjusting to the projected changes in the various socio-economic sectors. Climate information services deliver factual data relevant to end users like farmers (Lotter et al., 2018). These projections are usually derived from General Circulation Models (GCMs) with regional projections facilitated by institutions like the Climate System Analysis Group (CSAG) and Council of Scientific & Industrial Research (CSIR) in Southern Africa, which utilize statistical extent or Regional Climate Models (RCMs) to enhance accuracy. Collaboration with international partners aims to refine regional climate downscaling techniques for improved projections (Lotter et al., 2018). The Climate Information Services (CIS) provided by the South African Weather Service (SAWS) offers important weather forecasts and climate data. However, the challenges limit rural coverage and specific information gaps, prompting collaborative efforts for improvement. Access to climate information and services is essential for effective adaptation, meanwhile, the country is well advanced in mechanization and various technologies like remote sensing, drones for crop monitoring, and advanced irrigation systems.

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ANNEX F: COMPARATIVE TABLE OF GHANA, KENYA, MALAWI AND SOUTH AFRICA

Topic	Metric	Ghana	Kenya	Malawi	South Africa
Population	Millions (2021)	32,83	53,01	19,89	59,39
GDP	GDP (Billion USD, 2021)	79,52	110,3	12,63	419
	Per Capita, USD, (2017)	5435	4743	1491	13312
Financial Flows	ODA (DAC& Multilateral donors)	1 561 810 000	3 650 310 000	1 215 500 000	1 614 830 000
	% of total International Flows	10	29	72	3
	ODA as a proportion of National GDP (2021)	2,01%	3,31%	9,62%	0,39%
Multidimensional Poverty Index	Based on UNDP data	0,111	0,171	0,231	0,025
Gini coefficient	Overall Inequality (World Bank)	43,5	38,7	38,5	63,0
Human Development Index	Overall Human Development Index (UNDP, 2022)	0,602	0,601	0,508	0,717
Gender	Gender Development Index	0,933	0,948	0,926	0,985
	Female share of employment% (Public Sector)	37	36	32	56
	Share of male vs female employment in agriculture (2019)	22,1%(F); 36,38%(M)	59,34%(F); 49,55(M)	No data	3,79 % (F);6,46%(M)
Youth unemployment rate	Based on ILO data (World Bank, 2024)	6,7	12,3	6,7	50,5
Access to communication technologies	Number of people using the internet (2021)	14 767 818	46 870 422	2 717 243	38 195 165
	Internet Penetration (% of population)	45,90%	84,10%	13,60%	63,10%
	Mobile Cellular Telephone subscribers(2021 estimates)	40 454 073	65 085 720	11 940 135	100 328 005
	% Mobile Cellular telephone subscribers	123,22%	122,78%	60,03%	168,93%
	Landline phone subscriptions	307 668	66 646	12 465	2.10 million
Energy	Electricity Access (2021)	85,87%	71,44%	14,87%	84,39%
Climate change	Key Climate Risks	Heat waves, droughts, floods sea level rise	Droughts, floods, heat waves,	Droughts, tropical storms, floods	Droughts, Floods, Heat waves, fires, Storms
	Annual deaths from disasters (decadal average)	6	80	207	169

Agriculture	Share of land area used to arable agriculture (2020)	11,05%	10,19%	38,18%	9,89%
	Share of labor force in agriculture (%)	29,75	54,34	76,36	5,28
	Avg. income of small-scale food producers, 2021	1627,36		427,19	557,58
	Macro economic indicators (Capital Stock in USD)	1346	1359	166	1713
	Crop Yields (Maize) tonnes/ hectare, 2021	2.69 t	1.52 t	2.62 t	5.41 t
Public Expenditure on Agriculture	As % of total spending	1.03 (2011)	3.44 (2017)	0.04 (2017)	1.08 (2013)
	As % of GDP	0.26 (2011)	0.71 (2017)	0.04 (2017)	0.79 (2013)
	Public expenditure on Ag R&D, 2015 prices (million US\$)	1,04	44,63		119,03
Extension agents/ farmer		1 for every 1500	1 for every 1800	1 for every 2232	1 for every 250
Land Use and Ag. Labour - 2019 (% change since 1961)	Agricultural labor	(+) 151.96	(+) 677.86	(+) 316.04	(+) 5.55
	Agricultural land	(+) 142.63	(+) 155.62	(+) 221.40	(-) 48.22
Agricultural Inputs	Fertilizer use/ hectare of cropland (2020)	51.72 kg/ha	59.71 kg/ha	30.87 kg/ha	61.37 kg/ha
	Farm machinery (per unit of ag land 2019)(unit: horsepower/ 1000 hectare)	<0.01	0,13	0,02	0,28
Agricultural Exports (2021)***	US \$Thousand	1 501 262,69	781 961,37	144 821,17	4 016 362,07

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ANNEX G: ACAMI DATABASE CODEBOOK (DATABASE IS IN MS ACCESS)

ACAMI BROAD CATEGORIES	TYPE OR SUB-CATEGORY	DESCRIPTION
Climate Information Services		This addresses whether the project addresses CIS in its description or objectives
Gender		Specifies whether the project addresses the issue of gender in its description or objectives
Project Funder	Multilateral Institutions	Specifies funding provided by multilateral institutions such as the UN, World Bank, African Development Bank
	Bilateral (Country to Country)	Funding coming from country to country arrangements (including agencies which represent countries e.g. USAID, GIZ, BMZ, SIDA etc.)
	International NPO	NPO/NGO which operates across various countries. This also includes philanthropy and/or foundations
	Specific Government Sources	Funding provided through government, across all levels; e.g local, provincial, national
	Private Sector	For profit company/business.
	Other Sources	Source does not fall into other categories
	Unknown sources	Source of funding unknown
Partner Organizations	International Multilateral Institution	Institution formed by three or more parties for the purposes of common interest (e.g UN, World, AFDB)
	International NPO	NPO/NGO which operates across various countries. This also includes philanthropy and/or foundations
	Private Sector	This is generally an entity which seeks to generate profit
	Local NPO/CBO	Specifies a local entity established for non-profit purposes
	University/Research Institution	Specifies university or research institution
	Parastatal/SOE	Specifies an entity or organization which is owned by a country's government and often has some political power. In South Africa, these are commonly known as state-owned enterprises (SOE).
	Government (Other)	Specifies an organization established by the state for specific mandates
	Social Enterprise	Business that generates revenues by positively impacting communities and the environment
	Government National	Specifies government departments, including line ministries, regional and national governments
	Government Local	Specifies government departments on the local governance level, including municipalities

MLO Type	International Multilateral Institution	Institution formed by three or more parties for the purposes of common interest (e.g UN, World, AFDB)
	International NPO	NPO/NGO which operates across various countries. This also includes philanthropy and/or foundations
	Private Sector	This is generally an entity which seeks to generate profit
	Local NPO/CBO	Specifies a local entity established for non-profit purposes
	University/Research Institution	Specifies university or research institution
	Parastatal/SOE	Specifies an entity or organization which is owned by a country's government and often has some political power. In South Africa, these are commonly known as state-owned enterprises (SOE).
	Government (Other)	Specifies an organization established by the state for specific mandates
	Social Enterprise	Business that generates revenues by positively impacting communities and the environment
	Government National	Specifies government departments, including line ministries, regional and national governments
	Government Local	Specifies government departments on the local governance level, including municipalities
MLO Function & Roles	Harvest Broker	Specifies an organization that helps SSPs to process and access market products (forward linkages) as well as supplying credit, inputs and other services (backward linkages).
	Knowledge Producer	Produces knowledge and innovation for use by actors, including SSPs, MLOs, etc.
	Knowledge Supplier	Supplies knowledge products/serves as knowledge intermediary between producers and users of knowledge and adaptation interventions.
	Community Organizer	Mobilizes communities towards a common goal or to carry out a joint activity
	Resource Distributor	Distributes resources for use by actors (including SSPs, MLOs, etc.), such as seeds and equipment
	Trainer/Educator	Provides training and capacity building on new or innovative methods such as training on farm management, livelihood diversification, marketing training and investment in infrastructure.
	Finance Supplier	Provides finance for adaptation activities (Capital)
	Advocacy	Publicly advocates for a particular cause, interest or approach
Project Location Type	Rural	Geographical area characterized by less population density and other economic activities such as farming
	Urban	Geographical area characterized by high population density, highly developed infrastructure among others

	Peri-urban	Geographical areas classified as neither rural or urban
	Other	Unspecified
MLO location Type	Rural	Geographical area characterized by less population density and other economic activities such as farming
	Urban	Geographical area characterized by high population density, highly developed infrastructure among others
	Peri-urban	Geographical areas classified as neither rural or urban
	Other	Unspecified