Kenya Climate Smart Agriculture Strategy (KCSAS) 2017-2026:

Implementation Assessment Report

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An Assessment Report on the Implementation of the

Kenya Climate Smart Agriculture Strategy (KCSAS) 2017-2026

FOREWORD

Kenya stands at a critical juncture in its journey toward sustainable and climate-resilient development. As a country whose economy and food systems are heavily reliant on agriculture, the impacts of climate change, ranging from erratic rainfall to prolonged droughts and floods, continue to threaten livelihoods, national food security, and the socio-economic wellbeing of millions, particularly in rural and arid regions.

In response to these growing challenges, the Government of Kenya developed the Climate Smart Agriculture Strategy (KCSAS) 2017–2026 to guide the transformation of agricultural systems into more resilient, productive, and low-emission enterprises. This Strategy reflects Kenya's commitment to global, regional, and national goals, including the Paris Agreement, the Sustainable Development Goals (SDGs), Agenda 2063 of the African Union, and Kenya's Vision 2030.

This assessment report was commissioned by Anglican Development Services (ADS) Kenya and the ACT Kenya Forum, in collaboration with the Multi-Stakeholder Platform spearheaded by the State Department of Agriculture, under the auspices of the Africa Climate Adaptation Advocacy Project. It serves as a timely and critical reflection on the progress made, the gaps that persist, and the opportunities that lie ahead in the implementation of the CSA Strategy.

The findings and insights presented herein are grounded in robust data collected from eight counties (Busia, Nyeri, Kajiado, Turkana, Garissa, Kisumu, Kilifi, and Kitui), which represent Kenya's ecological diversity. Through the voices of farmers, extension workers, county officials, civil society actors, and faith leaders, this report offers a nuanced understanding of how climate-smart agriculture is being interpreted, applied, and scaled across different contexts.

As the report shows, Kenya has made important strides in raising awareness and initiating climate-smart practices at both the policy and community levels. Yet, the journey is far from complete. Persistent challenges, including weak coordination mechanisms, limited financing, inadequate

technical capacity, and insufficient integration of CSA into county planning and budgeting, continue to constrain the full realization of the Strategy's vision.

Importantly, the report emphasizes the critical role of faith-based actors and local communities in shaping and sustaining climate adaptation solutions. Faith leaders and institutions are uniquely positioned to drive behavioural change, mobilize grassroots action, and hold duty-bearers accountable. Their deeper engagement in climate-smart agriculture offers a powerful pathway toward achieving inclusive, locally led adaptation.

As we approach the final phase of the KCSAS implementation period, this assessment provides a foundation for strategic reflection, course correction, and renewed momentum. We invite all stakeholders, government agencies, development partners, civil society, private sector, and faith communities to engage with the recommendations outlined in this report and to work collaboratively toward a food-secure and climate-resilient Kenya.

Let this report serve not only as an evaluative document, but also as a call to action one that inspires integrated efforts to secure the future of Kenya's agriculture in the face of a changing climate.

The Most Rev. Dr. Jackson Ole Sapit
Archbishop of the Anglican Church of Kenya

PHOTO: Anglican Development Services Kenya

PREFACE

This report presents the findings of an independent assessment on the implementation of the Kenya Climate Smart Agriculture Strategy (KCSAS) 2017–2026, a policy framework developed by the Government of Kenya to transform the agricultural sector into one that is resilient, productive, and low in greenhouse gas emissions. Agriculture, being the backbone of Kenya's economy and a primary source of livelihood for the majority of rural households, is increasingly threatened by climate change. Recognizing the need for urgent, coordinated, and inclusive climate action, this assessment was commissioned to determine the extent to which the CSA Strategy has been adopted, implemented, and institutionalized at both national and county levels.

The purpose of the report is to provide stakeholders with evidence-based insights on key aspects of the Strategy's implementation, including awareness and adoption of CSA practices, coordination mechanisms, financing, and the monitoring and evaluation framework. Importantly, the report also explores how faith-based actors, long-standing agents of social cohesion and community empowerment in Kenya, contribute meaningfully to climate adaptation efforts through advocacy, awareness, and community mobilization.

This report is intended for a wide audience, including:

- Policy makers and technical staff within the Ministry of Agriculture and related state departments.
- County governments and planning units seeking to integrate CSA into local policies.
- Development partners, donors, and implementing agencies working in agriculture, climate, and resilience.
- Faith-based organizations, interreligious platforms, and civil society actors involved in community development and advocacy.
- Researchers, academics, and students interested in agricultural policy, climate change, and adaptation frameworks.

This assessment was made possible through the collaborative support and technical guidance of several institutions and individuals. We are grateful to ADS Kenya and the ACT Kenya Forum for commissioning and coordinating the assessment under the Africa Climate Adaptation Advocacy Project. We also acknowledge the contribution of the Multi Stakeholder Platform spearheaded by State Department of Agriculture, which offered strategic guidance throughout the process. Special thanks go to Move on Afrika Consulting Limited, the lead research firm, for their expertise and commitment in conducting the study and compiling this report.

We are indebted to the county governments of Busia, Nyeri, Kajiado, Turkana, Garissa, Kisumu, Kilifi, and Kitui, whose support during fieldwork enabled meaningful engagement with communities. We extend heartfelt appreciation to all the farmers, local leaders, extension officers, and faith representatives who provided their perspectives and experiences, your voices are the cornerstone of this report.

It is our hope that this report will contribute to deepening climate action dialogue in Kenya and strengthening the integration of faith-based actors in promoting sustainable, inclusive, and locally owned climate-smart agricultural systems.

The Rt. Rev. Joseph Kibucwa
Chairman, Anglican Development Services Kenya Board

PHOTO: Anglican Development Services Kenya

AKNOWLEDGEMENT

This assessment report was made possible through the collective efforts and dedication of individuals and institutions committed to advancing climate-resilient agriculture in Kenya.

We express our sincere appreciation to the Ministry of Agriculture and Livestock Development, particularly the Climate Change Unit, for their strategic guidance and technical support throughout the assessment process. Their leadership in implementing the Kenya Climate Smart Agriculture Strategy (KCSAS) has been pivotal in shaping national and county-level climate actions in the agricultural sector.

Special gratitude goes to the Anglican Development Services (ADS) Kenya and the ACT Kenya Forum for commissioning and overseeing this assessment under the Africa Climate Adaptation Advocacy Project. Their commitment to strengthening the role of faith actors in climate adaptation and sustainable development was vital to the success of this initiative.

We also acknowledge the valuable contributions of the Multi-Stakeholder Platform, including representatives from government, civil society, academia, the private sector, and faith-based organizations, for their engagement, technical insights, and validation of the findings.

Our appreciation extends to the Move on Afrika Consulting Limited research team—Edwine Ochieng, Alvin Tofler Munyasia, Samuel Odero, Tinaye Agoro, Boaz Odawa, Sharon Kipenzi, and Ronald Muongo—for their professionalism, commitment, and timely delivery.

We thank the county governments of Busia, Nyeri, Kajiado, Turkana, Garissa, Kisumu, Kilifi, and Kitui for their cooperation in facilitating community access and local mobilization, which enriched the assessment with diverse perspectives and agroecological realities.

Finally, we are deeply grateful to the farmers, community members, extension officers, local leaders, and faith actors who shared their experiences and insights during the fieldwork. Your voices form the foundation of this report.

To all who contributed directly or indirectly, we convey our heartfelt appreciation. May this report guide meaningful action toward sustainable agriculture and resilient communities across Kenya.

Mr. Bwibo Adieri
Executive Director, Anglican Development Services Kenya

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Executive Summary

Kenya's agricultural sector remains a cornerstone of the national economy, directly contributing over 30% to the Gross Domestic Product (GDP) and supporting the livelihoods of more than 70% of the rural population. However, the sector is increasingly vulnerable to the impacts of climate change, including erratic rainfall patterns, prolonged droughts, and rising temperatures, which pose significant threats to food security and rural development. In response to these challenges, the Government of Kenya developed the Kenya Climate Smart Agriculture Strategy (KCSAS) 2017–2026 to transform the agriculture sector into one that is more productive, resilient, and low in greenhouse gas emissions.

This report presents the findings of an independent assessment commissioned by Anglican Development Services (ADS) Kenya in collaboration with the ACT Kenya Forum, under the Africa Climate Adaptation Advocacy Project. The assessment evaluates the implementation of the KCSAS at both national and county levels, in advancing climate-smart agriculture (CSA). The study was conducted across eight counties Busia, Nyeri, Kajiado, Turkana, Garissa, Kisumu, Kilifi, and Kitui selected for their agroecological diversity and vulnerability to climate-induced risks. A mixed-methods approach was used, combining household surveys, focus group discussions, key informant interviews, and desk review of policy and program documents.

The assessment revealed that awareness of CSA practices among farming communities is relatively high, with Busia, Nyeri, and Kitui counties demonstrating particularly strong outreach and training efforts. However, the actual adoption of CSA practices varies significantly, influenced by factors such as access to information, availability of resources, and the quality of agricultural extension services. Women comprised over 60% of respondents, reaffirming their central role in agriculture and underscoring the need for gender-responsive CSA interventions that address systemic inequalities in access to inputs, training, and financial services.

While the CSA Strategy is well aligned with national development priorities, global climate commitments, and frameworks such as the Paris Agreement and the Sustainable Development Goals, implementation at the county level remains inconsistent. Few counties have integrated CSA into their County Integrated Development Plans (CIDPs), and coordination between national and county governments, as well as among implementing actors, remains weak. Furthermore, the engagement of faith-based organizations, despite their wide grassroots presence and moral authority, has not been fully harnessed.

The assessment also highlighted that limited and inconsistent financing both at national and county levels continues to hinder CSA implementation. Most counties rely heavily on donor funding and lack structured budget allocations for CSA. In addition, private sector engagement remains minimal, due to weak incentives and limited coordination. The report also identified a lack of a robust monitoring and evaluation framework to track the implementation and effectiveness of CSA interventions. Counties struggle with data collection and reporting, which hinders evidence-based decision-making and accountability.

Despite these challenges, several enabling practices were observed across the counties. These include the use of digital platforms such as WhatsApp and SMS for agro-weather advisories, community-based aquaculture and livestock innovations, and strategic partnerships with NGOs and research institutions. Such practices demonstrate the potential for scalable, low-cost CSA solutions when supported by local leadership and inter-institutional collaboration.

The assessment concludes that while the KCSAS provides a solid policy foundation, its success depends on stronger coordination, adequate financing, and active involvement of non-state actors, especially faith institutions. The report recommends enhancing intergovernmental coordination platforms, increasing investments in extension and CSA financing, strengthening monitoring and data systems, and leveraging the influence of faith-based actors to promote inclusive, sustainable, and community-driven climate action.

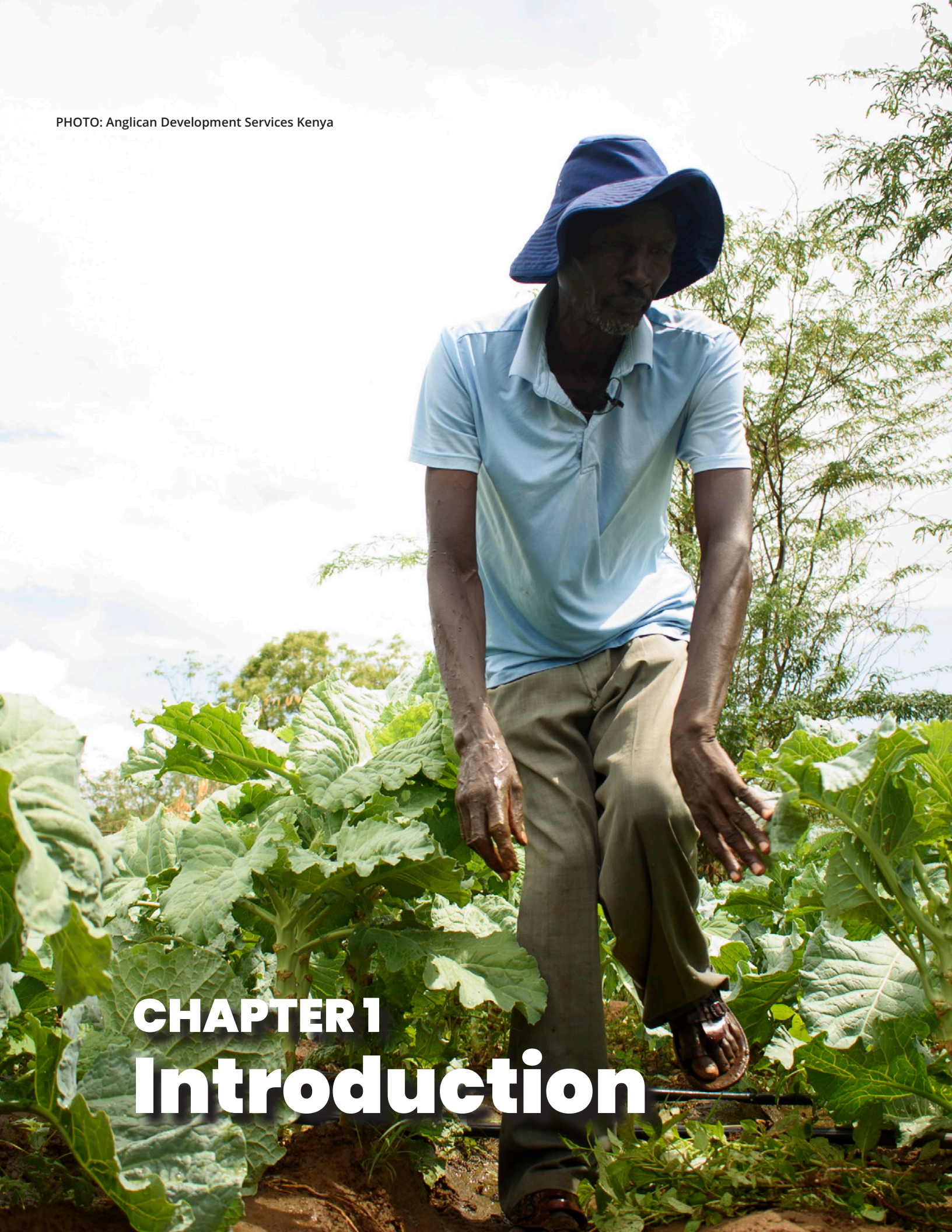
This report not only provides a snapshot of Kenya's progress in implementing the CSA Strategy but also serves as a call to action. By strengthening partnerships across government, civil society, and religious institutions, and by prioritizing the needs and voices of local communities, Kenya can build a more resilient and climate-smart agricultural future.

PHOTO: Anglican Development Services Kenya

LIST OF ACRONYMS

ACC	Africa Conference of Churches
ACMI	African Carbon Markets Initiative
ARUD	Agriculture, Rural, and Urban Development
ASALs	Arid and Semi-Arid Lands
ASDSP	Agricultural Sector Development Support Programme
ASTGS	Agriculture Sector Transformation and Growth Strategy
ATC	Agricultural Training Centre
BCCAP	Busia County Climate Change Action Plan
CAADP	Comprehensive Africa Agriculture Development Programme
CACF	County Agri-Nutrition Coordinating Forum
C-APRs	County Annual Progress Reports
CASSCOM	County Agriculture Sector Steering Committee
CCCAP	County Climate Change Action Plan
CFSPs	County Fiscal Strategy Papers
CGA	Cereal Growers Association
CIDPs	County Integrated Development Plans
CSA	Climate Smart Agriculture Strategy
CWS	Church Worldwide Service
DRIVE	De-risking and Value Chain Enhancement
FGDs	Focus Group Discussions
FIPS	Farm Input Promotions
FLLoCA	Financing Locally Led Climate Action
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoK	Government of Kenya
IFAD	International Fund for Agricultural Development
IGF	Intergovernmental Forum on Agriculture
IGR	Intergovernmental Relations
IGRTC	IGR Technical Committee
JAS	Joint Agriculture Secretariat

JASSCOM	Joint Agricultural Sector Steering Committee
JATESC	Joint Agriculture Technical Steering Committee
KALRO	Kenya Agricultural and Livestock Research Organization
KCASCOM	Kisumu County Agricultural Sector Consultation and Cooperation Mechanism Committee
KCCCF	Kitui County Climate Change Fund
KCCCSC	Kenya County Climate Change Steering Committee
KCICCAP	Kisumu County Integrated Climate Change Action Plan
KCSAIF	Kenya Climate Smart Agriculture Implementation Framework
KCSAP	Kenya Climate Smart Agriculture Project
KEFRI	Kenya Forestry Research Institute
KeLCoP	Kenya Livestock Commercialization programme
KIIs	Key Informant Interviews
M&E	Monitoring and Evaluation
MDAs	Ministries, Departments, and Agencies
MSP	Multi-Stakeholder Platform
MTEF	Medium-Term Expenditure Framework
NAVCDP	National Agricultural Value Chain Development Project
NCCAP	National Climate Change Action Plan
NCCK	National Council of Churches in Kenya
NDCs	Nationally Determined Contributions
NGOs	Non-Governmental Organizations
SftFA	Soil for the Future Africa
SWAGs	Sectoral Working Agriculture Groups
TIMPs	Technologies, Innovations, and Management Practices
TWENDE	Towards Ending Drought Emergencies
UNFCCC	United Nations Framework Convention on Climate Change
VCOs	Value Chain Organizations
WCCPTs	Ward Climate Change Planning Teams



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CHAPTER 1
Introduction

1.1 Agricultural Sector Context and Climate Vulnerabilities in Kenya

Kenya's agricultural sector is a cornerstone of the national economy, contributing approximately 33% of the Gross Domestic Product (GDP) directly and an additional 27% indirectly through linkages with manufacturing, transport, and other service sectors.[1] The sector employs more than 40 per cent of the total population and more than 70 per cent of Kenya's rural people.[2]

The sector comprises a broad range of activities including crop production, livestock rearing, fisheries, and agroforestry. Kenya's agroecological zones range from high-potential highlands to arid and semi-arid lands (ASALs), which make up about 88% of the country's landmass[3] and are home to roughly 36% of the population.[4] Despite its importance, the sector faces deep-rooted challenges including land tenure insecurity, soil degradation, low access to improved inputs and extension services, under investment in irrigation and infrastructure, and gender-based disparities in access to productive resources.[5]

These structural limitations are compounded by the growing threat of climate change. Kenya has witnessed increased variability in rainfall patterns, rising temperatures, and a higher frequency of extreme weather events such as floods and droughts. Recent data shows that between 2020 and 2023, Kenya experienced one of the worst droughts in four decades, with over 4 million people facing acute food insecurity, particularly in the ASAL regions.[6] Such climate-induced shocks are severely disrupting agricultural cycles, reducing yields, depleting water sources, and heightening vulnerabilities among smallholder farmers and pastoralists.

In addition to being highly vulnerable to climate change, agriculture in Kenya is also a major contributor to greenhouse gas emissions. It is estimated that the sector accounts for nearly 41% of total national emissions, primarily from enteric fermentation in livestock, manure management, fertilizer use, and land use changes such as deforestation.[7] This dual role as both a victim and a contributor to climate change calls for an urgent transition to climate-smart agricultural practices that can enhance resilience while promoting environmental sustainability.

In recognition of these challenges and opportunities, the Government of Kenya developed the Climate Smart Agriculture (CSA) Strategy (2017–2026). The CSA Strategy outlines a roadmap to: (i) sustainably increase agricultural productivity and incomes; (ii) enhance adaptive capacity and resilience to climate change; and (iii) reduce or remove greenhouse gas emissions where feasible.[8] The strategy aligns with Kenya's Climate Change Act (2016), the National Climate Change Action Plan (NCCAP 2018–2022), the Kenya Vision 2030 development blueprint, and the country's commitments under the Paris Agreement and its Nationally Determined Contributions (NDCs).

The CSA Strategy also highlights the importance of multi-stakeholder engagement including faith-based actors, civil society organizations, and county governments in implementation, coordination, and knowledge dissemination. However, despite the availability of progressive policy frameworks, implementation at both national and county levels has faced persistent challenges. These include inadequate budgetary allocations for climate-smart initiatives, limited

technical capacity at the local level, inconsistent coordination between national and devolved institutions, and weak integration of CSA indicators within county-level planning and monitoring systems. These challenges continue to hinder the effective uptake of CSA practices, particularly among smallholder farmers in vulnerable regions.[9]

1.2 Purpose and Objective of the Assessment

This assessment seeks to evaluate the implementation progress and effectiveness of Kenya's Climate Smart Agriculture Strategy, which spans the period from 2017 to 2026. Developed by the Government of Kenya in response to the escalating impacts of climate change on the agricultural sector, the CSA Strategy provides a framework for transforming agriculture into a more productive, resilient, and sustainable sector. Given the critical role agriculture plays in Kenya's economy and the livelihoods of rural communities, particularly smallholder farmers, assessing the strategy's effectiveness is both timely and essential.

The assessment aims to generate evidence on the current state of CSA adoption, highlight implementation gaps, and identify opportunities for strengthening climate-resilient agricultural practices. It is envisioned as a tool to inform national and county-level policy decisions and enhance the strategic engagement of stakeholders, including government institutions, civil society organizations, and faith-based actors, in advancing the CSA agenda.

Specifically, the assessment seeks to examine four key areas. First, it aims to establish the extent to which climate smart agricultural practices have been adopted by local communities. This includes an analysis of awareness levels, access to relevant information and resources, actual application of CSA techniques, and the influence of partnerships in promoting their uptake. Second, it looks into the degree of alignment and coordination between national and county governments in implementing the CSA Strategy. This involves assessing the extent to which CSA principles have been integrated into county-level plans and programming, and how effectively the two levels of government collaborate to drive the strategy forward.

Third, the assessment seeks to analyze the funding landscape for CSA initiatives, with a focus on the adequacy of financial allocations, the mechanisms used to mobilize and distribute resources, and the roles played by donors, the private sector, and civil society. Lastly, it evaluates the monitoring and evaluation framework of the CSA Strategy, examining its effectiveness in tracking implementation progress, measuring impact, and providing data-driven insights for adaptive management.

The findings from this assessment will not only contribute to improving the implementation of the CSA Strategy but also provide the foundation for a policy brief aimed at enhancing stakeholder engagement and advocacy. In particular, the results will support efforts by faith actors and other community stakeholders to champion climate adaptation and sustainable agriculture across Kenya's diverse ecological and socio-economic contexts.

1.3 Geographical Coverage of the Assessment

The assessment was conducted in eight intentionally selected counties: Kajiado, Turkana, Nyeri, Garissa, Busia, Kisumu, Kilifi, and Kitui chosen to represent Kenya's diverse agroecological zones. The selection aimed to ensure that the study captured a wide range of farming systems, climate vulnerabilities, and livelihood strategies relevant to different ecological settings.

Within each county, the selection of specific sub-counties and locations was done randomly, guided primarily by the resources, availability of respondents, and the presence of relevant project sites. This approach allowed for practical access while maintaining diversity in community experiences and practices.

In Busia County, respondents were engaged from Bunyala and Butula Sub-Counties, while in Garissa County, participants came from Dadaab and Garissa Sub-Counties. The study in Kajiado County was conducted in Kajiado East Sub-County, while in Kilifi County, it focused on Kilifi North Sub-County. In Kisumu County, the assessment reached respondents in Nyakach and Nyando Sub-Counties. In Kitui County, engagement covered Kitui Central, Kitui South, and Kitui West Sub-Counties. In Nyeri County, participants were drawn from Kyeni East, Kyeni West, and Mukurweini Sub-Counties. In Turkana County, the study targeted Turkana West, Turkana Central, and Kakuma Sub-Counties.

This geographic spread allowed the assessment to capture a broad range of agro-climatic conditions and farming realities, providing a strong foundation for analyzing CSA awareness, adoption patterns, and challenges across different ecological and socio-economic contexts. The targeted counties and sub-counties are illustrated in Figure 1.

Figure 1. CSA Target Locations

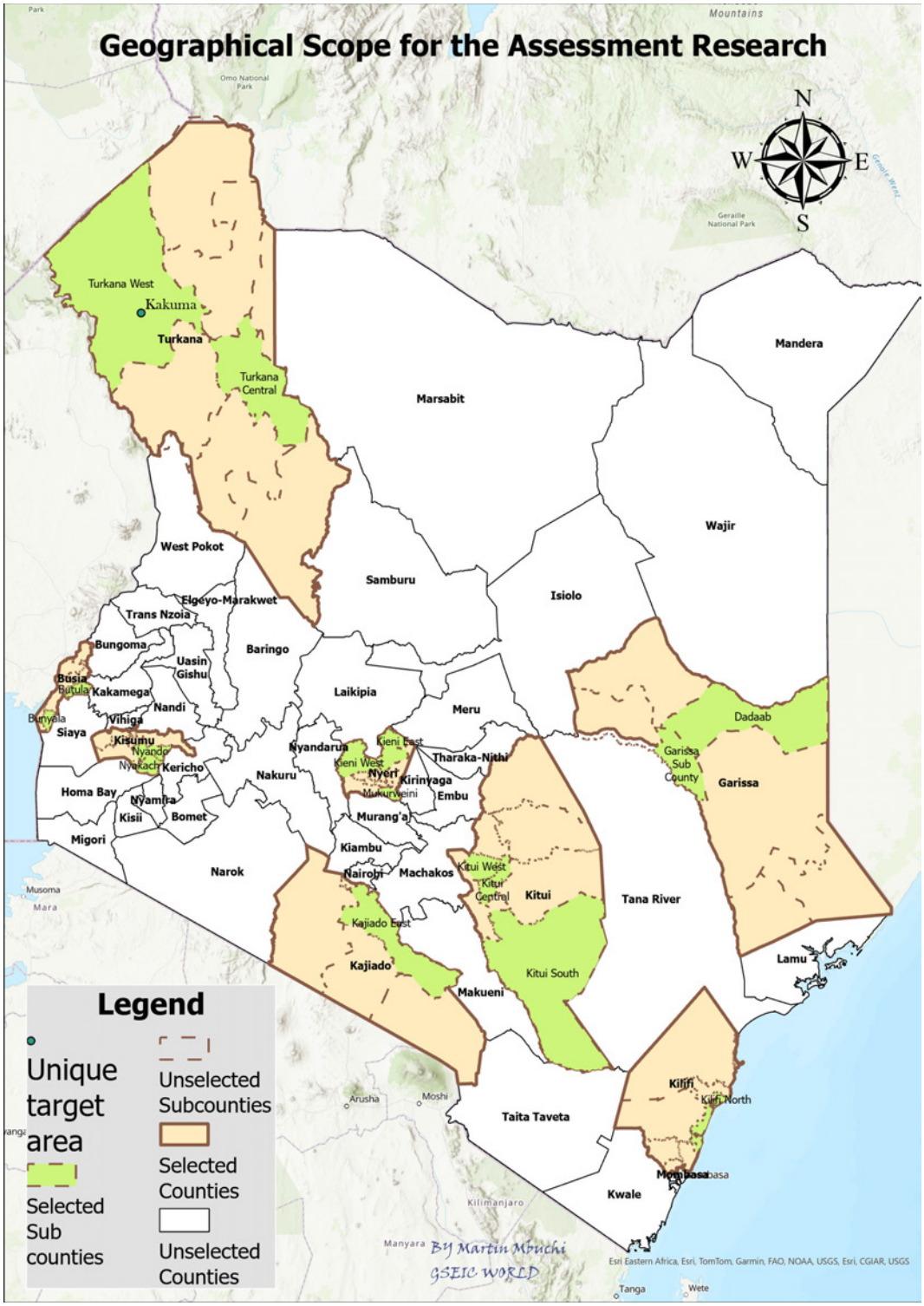


PHOTO: Anglican Development Services Kenya

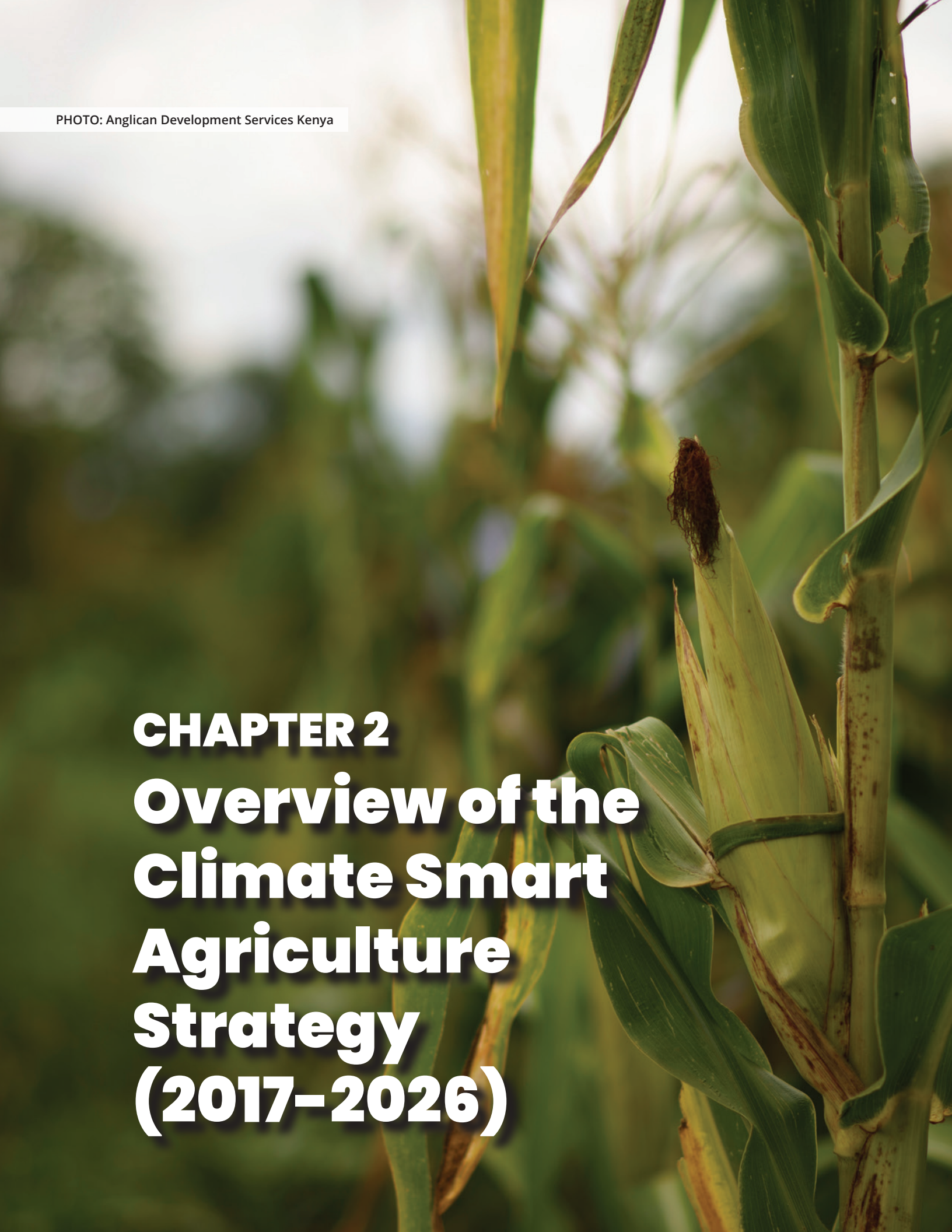


PHOTO: Anglican Development Services Kenya

CHAPTER 2
Overview of the Climate Smart Agriculture Strategy (2017-2026)

2.1 Vision, Goals, and Strategic Objectives

The **vision** of the Kenya Climate Smart Agriculture Strategy (KCSAS) is to establish a climate-resilient and low-carbon growth, sustainable agriculture that ensures food security and contributes to national development goals.

The **mission** is to facilitate agriculture that sustainably increases productivity, enhances resilience, and minimizes greenhouse gas (GHG) emissions.[10]

The **overall goal** of the strategy is to build resilience and minimize emissions from agricultural farming systems for enhanced food and nutritional security and improved livelihoods.[11]

The strategy is anchored on the following specific objectives[12]:

- To enhance the adaptive capacity and resilience of farmers, pastoralists, and fisher-folk to the adverse impacts of climate change.
- To develop mechanisms that minimize GHG emissions from agricultural production systems.
- To improve coordination and collaboration among institutions and stakeholders involved in CSA.
- To address cross-cutting issues that adversely impact or enhance CSA.

2.2 Thematic Focus Areas and Guiding Principles

The KCSAS identifies four strategic thematic areas that guide interventions and investments[13]:

1. **Adaptation and Building Resilience:** Focuses on reducing vulnerability to climatic shocks through improved practices in land and water management, strengthened early warning systems, and diversification of livelihoods.
2. **Mitigation of Greenhouse Gas Emissions:** Targets the reduction of emissions from agriculture by promoting sustainable practices in crop, livestock, fisheries, and forestry sub-sectors.
3. **Enabling Policy, Legal, and Institutional Framework:** Aims to establish clear institutional mandates, strengthen regulatory frameworks, and improve multi-level coordination between national and county governments.
4. **Cross-Cutting Issues:** Addresses foundational constraints such as limited access to climate information, inadequate financing, low technology adoption, gender inequality, and gaps in research and extension services.

The implementation of the Strategy is grounded in the following guiding principles[14]:

1. **Multi-dimensional Planning Across Time Scales:** The Strategy adopts a forward-looking approach that considers short-, medium-, and long-term horizons in its design

and implementation. It recognizes the interconnectedness of global, national, and local processes and seeks to ensure that CSA interventions are responsive to both immediate needs and long-term sustainability goals.

2. **Country- and Context-Specific Design:** Recognizing Kenya's diverse agro-ecological, socio-economic, political, and cultural realities, the Strategy emphasizes the need for localized solutions. It is grounded in the understanding that no universal model can be uniformly applied, and therefore interventions must be informed by local priorities, institutional capacities, political will, technological readiness, and social dynamics.
3. **Intergovernmental and Participatory Approach:** In line with the Constitution of Kenya and the Intergovernmental Relations Act, the Strategy acknowledges the distinct yet interdependent roles of national and county governments. It promotes a participatory, cross-sectoral approach that engages multiple stakeholders; government agencies, civil society, private sector, and communities to enhance coordination and harness synergies across levels and sectors.
4. **Sustainable Agriculture and Ecosystem Stewardship:** The Strategy places sustainability at the heart of agricultural transformation. It promotes healthy ecosystems and advocates for the sustainable management of land, water, and other natural resources while ensuring increased productivity to meet national food security goals. This involves improving resource use efficiency, protecting biodiversity, and enhancing the resilience of communities, ecosystems, and agricultural systems to climate change and market shocks.
5. **Good Governance:** Effective governance is critical to CSA implementation. The Strategy champions good governance practices including:

    - **Accountability** – promoting responsible fiscal decisions that prioritize the agricultural sector.
    - **Transparency** – ensuring open and accessible decision-making, especially in budgeting, regulatory oversight, and procurement.
    - **Rule of Law** – creating a predictable and stable legal environment that protects investments and encourages innovation; and
    - **Participation** – facilitating inclusive dialogue that allows stakeholders at all levels to contribute meaningfully to the design and execution of CSA policies and programs.

6. **Environmental Management:** The Strategy embraces a set of well-established environmental management principles to ensure ecological balance and sustainability. These include:
    - **Polluter Pays Principle** – those who generate environmental harm bear responsibility for its mitigation.
    - **User Pays Principle** – resource users contribute to the cost of maintaining those resources.
    - **Precautionary Principle** – preventive action is taken in the face of uncertainty to avoid harm.

- **Effectiveness and Efficiency** – resources are used in ways that maximize impact while minimizing waste.
- **Responsibility** – all actors share a duty of care toward environmental stewardship.
- **Total Value Principle** – acknowledges both tangible and intangible values of ecosystems.
- **Participation** – reinforces the importance of involving all stakeholders in environmental decision-making; and
- **Proportionality** – calls for a balanced approach to development that weighs economic benefits against environmental costs, ensuring that adverse effects are minimized while societal benefits are maximized.

2.3 Institutional Arrangements and Coordination Mechanisms

The effective implementation of Kenya's Climate Smart Agriculture Strategy (2017–2026) relies on a multi-tiered institutional framework that leverages the roles and responsibilities of both national and county governments, as well as non-state actors. The Strategy recognizes that coordination across various ministries, departments, and agencies (MDAs) is essential to avoid duplication, enhance synergy, and ensure coherence in CSA interventions across sectors and governance levels.[15]

1. **National Government Roles:** The national government, through the Ministry of Agriculture and allied sector MDAs, is tasked with providing overall policy direction, regulatory frameworks, and strategic guidance on CSA. Key responsibilities include policy formulation, setting standards, resource mobilization, capacity development, and providing technical backstopping to counties. Additional line ministries such as those responsible for environment and natural resources, energy, water and irrigation, land, industrialization, infrastructure, and finance are equally critical in mainstreaming CSA in their sectoral mandates.

2. **County Government Roles:** County governments are primarily responsible for the implementation of CSA interventions on the ground, given the devolution of agricultural functions under Kenya's Constitution. Counties are expected to develop and/or integrate CSA strategies within their County Integrated Development Plans (CIDPs) and other relevant planning instruments. They also spearhead resource allocation, service delivery, stakeholder coordination, and community-level mobilization for CSA adoption.

3. **Intergovernmental Coordination Mechanisms:** To promote coherence between national and county-level efforts, the CSA Strategy aligns with Kenya's evolving intergovernmental coordination framework for the agriculture sector. This includes the establishment of structured platforms such as:

    - Intergovernmental Relations (IGR) Summit
    - IGR Technical Committee (IGRTC)
    - Intergovernmental Forum on Agriculture (IGF)

- Joint Agriculture Secretariat (JAS)
- Joint Agriculture Technical Steering Committee (JATESC)
- Sectoral Working Agriculture Groups (SWAGs)

A specific SWAG for CSA is proposed as the key coordination platform between the two levels of government. This group is co-chaired by national and county representatives and supported by technical experts from the JAS. Its responsibilities include facilitating joint planning, capacity building, monitoring and evaluation, compiling intergovernmental CSA reports, and organizing CSA-related consultations and forums.

Each sub-sector (crops, livestock & veterinary services, fisheries & blue economy) is expected to have its own SWAG, allowing for targeted engagement and technical focus. The CSA-specific SWAG will serve as the primary entry point for harmonizing implementation, aligning funding priorities, and sharing lessons across counties and sectors.

4. **Role of Non-State Actors:** The CSA Strategy acknowledges the critical role of non-state actors, including:

    - Faith-based organizations
    - Civil society groups
    - Private sector actors (farmers, processors, marketers)
    - Regulatory and support institutions
    - Research and academic institutions

These actors contribute to innovation, advocacy, service delivery, standard-setting, and compliance enforcement. Their engagement is central to promoting inclusive, evidence-based, and locally tailored CSA solutions.

PHOTO: Anglican Development Services Kenya

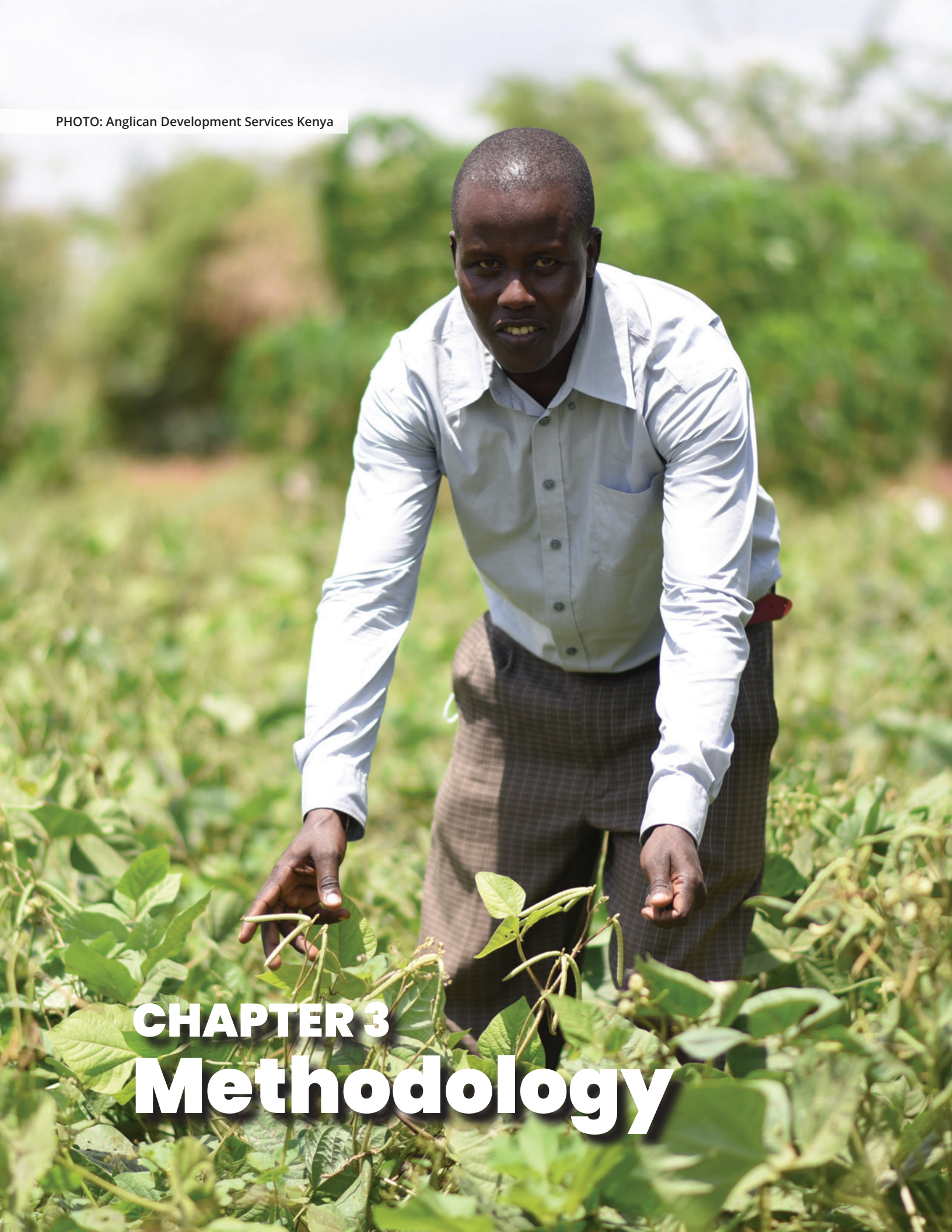


PHOTO: Anglican Development Services Kenya

CHAPTER 3
Methodology

3.1 Assessment Design and Approach

The assessment adopted a mixed-methods approach, combining both qualitative and quantitative data collection and analysis techniques to provide a comprehensive understanding of CSA uptake, policy alignment, funding mechanisms, and monitoring and evaluation (M&E) practices at both national and county levels.

A cross-sectional, multi-phased design was employed, integrating primary and secondary data sources. The assessment was conducted in eight counties: Busia, Nyeri, Kajiado, Turkana, Garissa, Kisumu, Kilifi, and Kitui to reflect diverse agro-ecological zones and socio-economic contexts.

3.2 Sampling Strategy and Target Groups

A probabilistic sampling approach was used to select a representative sample of 240 farming households across eight counties: Busia, Nyeri, Kajiado, Turkana, Garissa, Kisumu, Kilifi, and Kitui. A uniform allocation method was applied, assigning an equal number of 30 households per county. This approach ensured balanced representation across diverse agro-ecological zones.

To complement the household survey, non-probabilistic, purposive sampling was employed to select participants for Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). FGDs targeted different categories of smallholder farmers engaged in a variety of farming systems, including livestock rearing, aquaculture, apiculture, and crop production. This diversity allowed the assessment to capture the unique experiences, challenges, and perspectives associated with different agricultural practices.

Key Informant Interview respondents were selected based on their relevance and roles in the implementation of Climate Smart Agriculture at the national and county levels. The selection ensured representation from a wide range of stakeholders, including:

- Government institutions
- Faith-based organizations
- Development partners and non-governmental organizations (NGOs)
- Research and academic institutions
- Private sector actors

3.3 Data Collection Approaches and Techniques

The assessment employed a combination of primary and secondary data collection methods to generate a comprehensive understanding of the implementation of the Climate Smart Agriculture Strategy in Kenya.

Secondary data was obtained through an extensive desk review of key national and county-level policies, strategic frameworks, reports, and evaluations. This review provided the necessary

context for interpreting the current status of CSA implementation and identifying policy alignment, gaps, and best practices.

Primary data collection involved three main techniques: household surveys, KIIs, and FGDs. The household survey targeted smallholder farmers and was administered to a total of 228 respondents, comprising 88 males and 140 females. Additionally, 23 FGDs were conducted across the eight counties, engaging 211 participants (100 males and 111 females) representing different farming systems and demographic groups. A total of 40 KIIs were carried out with a diverse range of stakeholders from government institutions, faith-based organizations, NGOs, research institutions, and the private sector (see Annex 2 for full details).

To ensure flexibility and inclusivity, the data collection process utilized both in-person and virtual interviews, accommodating respondent availability and addressing logistical challenges such as remote locations or connectivity constraints. This hybrid approach enhanced the reach and depth of the data collected, while ensuring quality, responsiveness, and adherence to ethical research standards.

3.4 Data Analysis Techniques

The data analysis process was designed to align with the mixed-methods approach adopted in the assessment. Quantitative data collected from household surveys was analyzed using the Statistical Package for Social Sciences (SPSS). This facilitated the generation of descriptive statistics, including frequencies, percentages, and cross-tabulations, allowing for the identification of trends, patterns, and relationships relevant to the implementation of Climate Smart Agriculture practices.

Qualitative data, obtained through FGDs and KIIs, was transcribed, coded, and subjected to thematic analysis. This process involved identifying recurring themes, perceptions, and contextual factors that influence CSA adoption, coordination, and monitoring across different stakeholder groups.

To ensure data quality and credibility, rigorous data management protocols were implemented throughout the analysis process. These included real-time data validation during collection, systematic data cleaning, and secure storage of all data sets. Ethical considerations such as confidentiality, informed consent, and data protection were upheld at every stage, reinforcing the reliability and integrity of the assessment findings.

3.5 Research Protocols and Considerations

Ethical integrity and inclusivity were central to the design and implementation of this assessment. All participants were fully informed of the study's objectives, their voluntary participation, and their right to withdraw at any point. Informed consent was obtained prior to engagement in any data collection activity.

Comprehensive safeguarding protocols were put in place to protect the dignity, rights, and well-being of all respondents. Particular attention was given to gender sensitivity, ensuring representation of women and men, and promoting the inclusion of vulnerable and marginalized groups, such as youth, persons with disabilities, and minority communities.

To uphold cultural sensitivity, the assessment team collaborated with local facilitators and community leaders, whose involvement helped tailor engagement approaches to local norms and values. Their insights were instrumental in respondent mobilization and in understanding pre-existing dynamics within the study locations.

To ensure the quality and reliability of data, tools were pre-tested in a non-sampled location, and all enumerators underwent comprehensive training on ethical conduct, tool administration, and digital data collection. The process was further strengthened through real-time data monitoring and validation, which enabled the timely identification and correction of any inconsistencies during fieldwork.

3.6 Limitations of the Assessment and Mitigation Strategies

While the assessment successfully collected valuable insights, several limitations were encountered during the study. These challenges, along with the strategies employed to mitigate them, are outlined below:

1. **Respondent Turnout During Mobilization:** One of the challenges faced during field activities was the low turnout of respondents. Despite initial confirmations, several individuals failed to attend scheduled meetings, leading to lower-than-expected participant numbers and causing delays in data collection. To address this, the assessment team enhanced coordination efforts with local leaders and community mobilizers to strengthen communication and reinforce participant commitment. Flexible scheduling was also adopted to accommodate replacement respondents where feasible, minimizing disruptions to the data collection process.

2. **Availability of Respondents:** The availability of respondents presented another major constraint, as many targeted individuals had very busy schedules. The strict timelines of the assessment further compounded this challenge. To mitigate the issue, the data collection phase was slightly extended, and interviews were scheduled at more convenient times, including late evenings and early mornings, to ensure greater participation without overly burdening respondents.

3. **Research Bias:** Research bias emerged as a challenge, particularly related to respondent mobilization, interpretation of assessment questions, and inconsistencies in the information provided. In some instances, respondents reported not having benefited from interventions despite available evidence to the contrary. To manage this, the team triangulated data from different sources, including KIIs, FGDs, and desk reviews,

ensuring that findings reflected the most accurate and balanced representation of the realities on the ground.

4. **Access to Information:** The study also encountered limitations in accessing up-to-date secondary data, particularly on issues such as funding and recent program outcomes. Not all required documents were readily available on online platforms or through official publications. To address this gap, the assessment engaged relevant stakeholders during the report review phase. This process allowed stakeholders to validate findings and provide additional, updated information where necessary, enriching the comprehensiveness and relevance of the final report.

PHOTO: Anglican Development Services Kenya

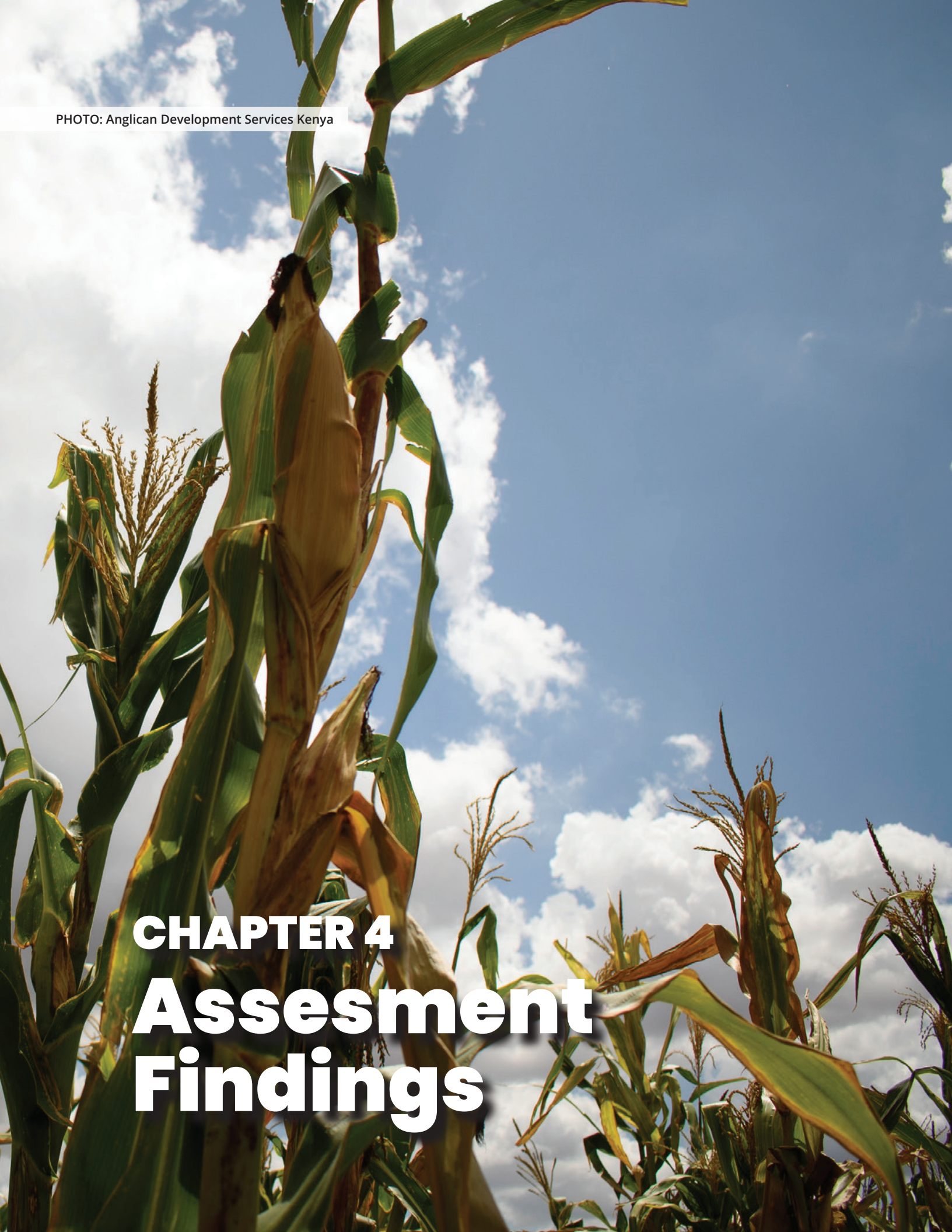


PHOTO: Anglican Development Services Kenya

CHAPTER 4
Assesment Findings

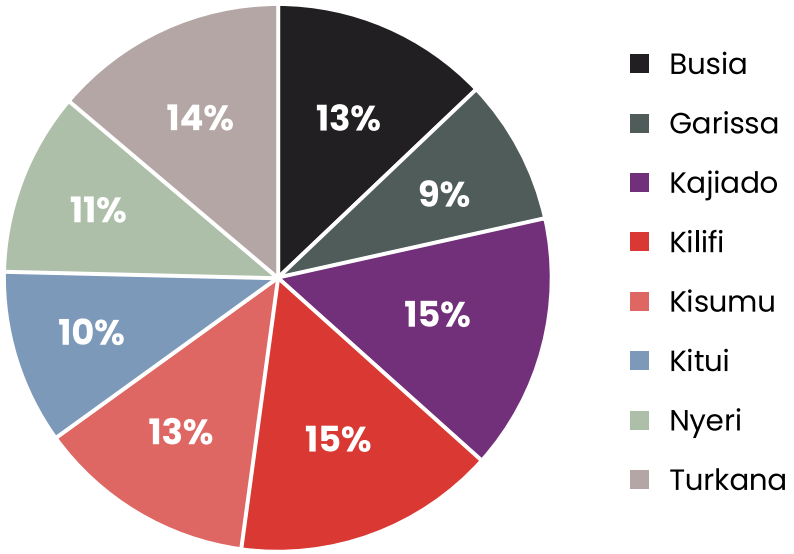
4.1 Demographic Characteristics of Respondents

The assessment collected demographic information from respondents, including their geographical location, gender, age, disability status, education level, and land tenure. These variables provide valuable insights into the composition, characteristics, and socio-economic dynamics of the farming population. Understanding these demographic profiles is essential for analyzing the factors that influence CSA awareness, adoption, and the barriers faced across the eight target counties. The findings presented in this section lay the foundation for interpreting the broader trends observed in CSA practice uptake and inform recommendations for more targeted and inclusive interventions.

4.1.1 Geographical Distribution of Respondents

The assessment engaged a total of 232 respondents across the eight target counties. The distribution of respondents by county was as follows: Kilifi and Kajiado each contributed 15%, Turkana 14%, Busia and Kisumu each 13%, Nyeri 11%, Kitui 10%, and Garissa 9%. This distribution is illustrated in Figure 2.

Figure 2. Proportion of Respondents Reached per County



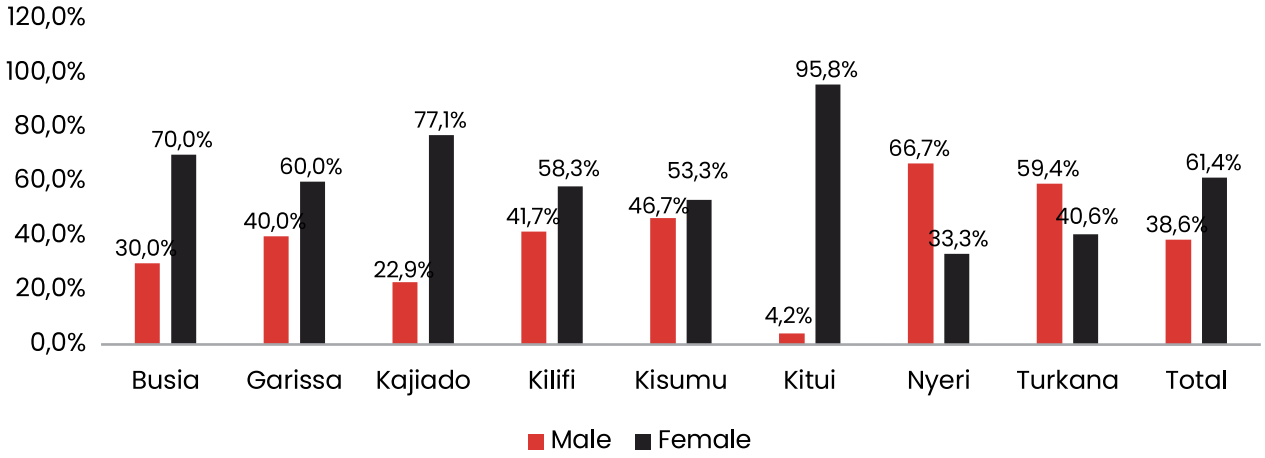
Ensuring broad geographical coverage was crucial for the assessment, as it allowed for the capture of diverse agroecological zones, farming systems, and climate vulnerabilities across Kenya. By engaging farmers from both arid and semi-arid areas as well as more humid and high-potential regions, the study was able to provide a more comprehensive and representative understanding of CSA adoption patterns, challenges, and opportunities across different contexts.

4.1.2 Gender of Respondents

The majority of respondents engaged in the assessment were female, accounting for 61.4% of the total sample. Female representation was highest in Kitui (95.8%), followed by Kajiado (77.1%),

Busia (70.0%), Garissa (60.0%), Kilifi (58.5%), Kisumu (53.3%), Turkana (40.6%), and Nyeri (33.3%). Male respondents comprised 38.6% of the total sample, with the highest proportions recorded in Nyeri (66.7%), Turkana (59.4%), Kisumu (46.7%), Kilifi (41.7%), Garissa (40.1%), Busia (30.0%), Kajiado (22.9%), and Kitui (4.2%). This distribution is further illustrated in Figure 3.

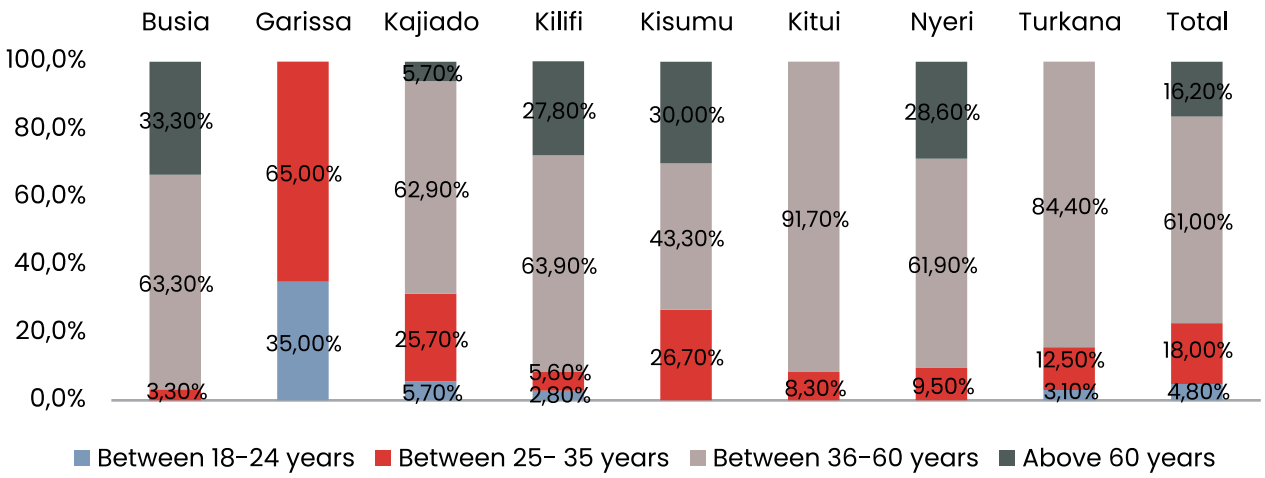
Figure 3. Gender of Respondents Reached



4.1.3 Age of Respondents

The study engaged respondents aged 18 years and above. The majority (61.0%) of respondents were between the ages of 36 and 60 years, with the highest representation recorded in Kitui (91.7%), Turkana (84.4%), Busia (63.3%), Kilifi (63.9%), Kajiado (62.9%), Nyeri (61.9%), and Kisumu (43.3%). Respondents aged 25 to 35 years constituted 18.0% of the sample, with the largest proportions in Garissa (65.0%), followed by Kisumu (26.7%), Kajiado (25.7%), Turkana (12.5%), Nyeri (9.5%), Kitui (8.3%), Kilifi (5.6%), and Busia (3.3%). Those over 60 years made up 16.2% of the respondents, particularly concentrated in Busia (33.3%), Kisumu (30.0%), Nyeri (28.6%), Kilifi (27.8%), and Kajiado (5.7%). A smaller proportion (4.8%) of respondents were between 18 and 24 years, with most coming from Garissa (35.0%), followed by Kajiado (5.7%), Turkana (3.1%), and Kilifi (2.8%). These distributions are illustrated in Figure 4.

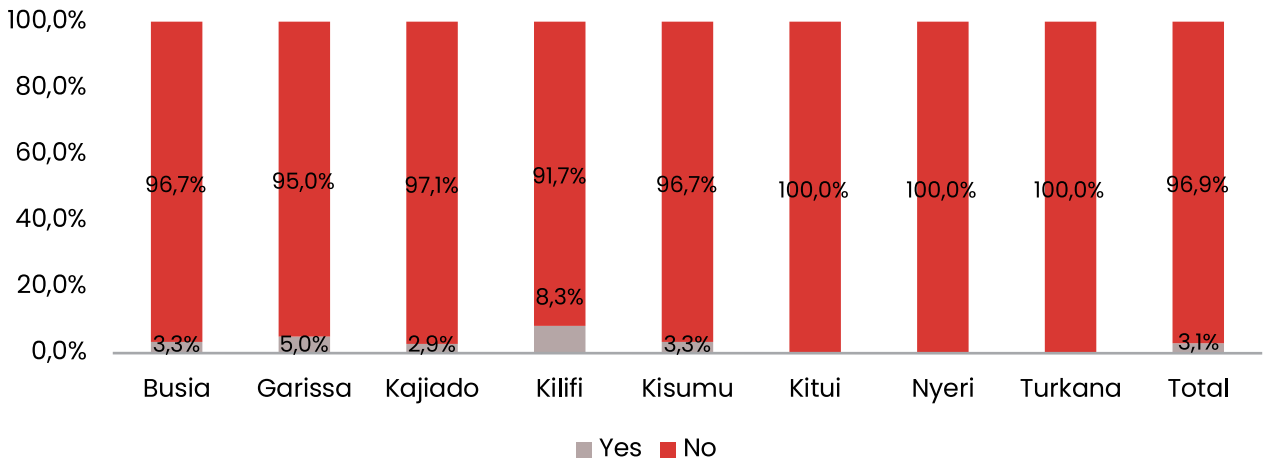
Figure 4. Age Distribution of Respondents per County



4.1.4 Disability Status of Respondents

The assessment captured the disability status of respondents to promote inclusivity and understand potential barriers in CSA adoption. A large majority (96.9%) of respondents reported having no form of disability, with the highest representation in Turkana (100.0%), Nyeri (100.0%), Kitui (100.0%), Kajiado (97.1%), Kisumu (96.7%), Busia (96.7%), Garissa (95.0%), and Kilifi (91.7%). Only 3.1% of respondents indicated that they lived with a form of disability. Among these, Kilifi (8.3%), Garissa (5.0%), Kisumu (3.3%), Busia (3.3%), and Kajiado (2.9%) reported respondents with disabilities, as illustrated in Figure 5.

Figure 5. Disability Status of Respondents



4.1.5 Education Level of Respondents

The assessment captured the education levels of respondents, providing insights into the capacity and potential challenges related to the adoption of CSA practices.

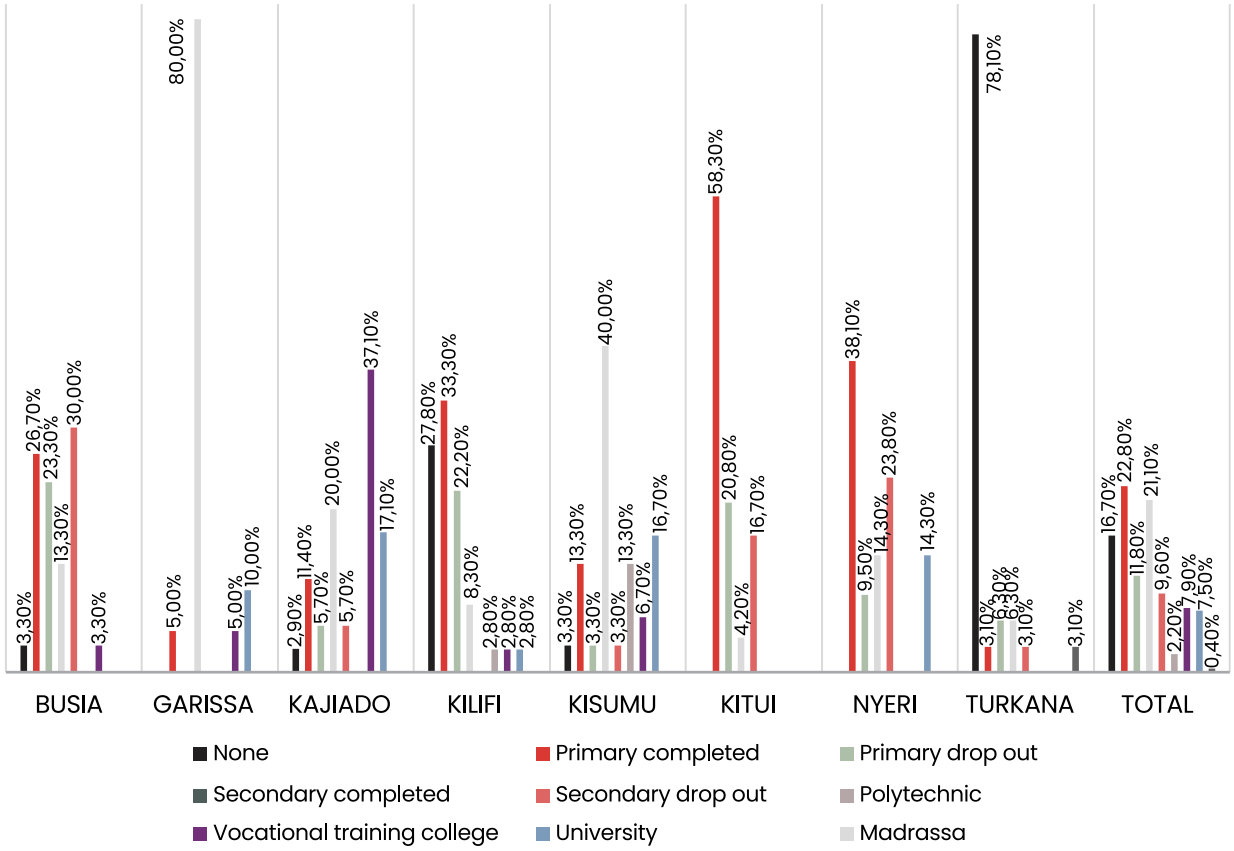
Overall, 22.8% of respondents reported having completed primary school, with the highest representation in Kitui (58.3%), followed by Nyeri (38.1%), Kilifi (33.3%), Busia (26.7%), Kisumu (13.3%), Kajiado (11.4%), Garissa (5.0%), and Turkana (3.1%). Completion of secondary school was reported by 21.1% of respondents, particularly in Garissa (80.0%), Kisumu (40.0%), Kajiado (20.0%), Nyeri (14.3%), Busia (13.3%), Kilifi (8.3%), Turkana (6.3%), and Kitui (4.2%).

Primary school dropouts accounted for 11.8% of respondents, with the highest proportions observed in Busia (23.3%), Kilifi (22.2%), Kitui (20.8%), Nyeri (9.5%), Turkana (6.3%), Kajiado (5.7%), and Kisumu (3.3%). Secondary school dropouts comprised 9.6% of respondents, most notably in Busia (30.0%), Nyeri (23.8%), Kitui (16.7%), Kajiado (5.7%), Kisumu (3.3%), and Turkana (3.1%). Attendance at vocational and higher education institutions was relatively lower. 7.9% of respondents had attended vocational training colleges, with notable representation from Kajiado (37.1%), Kisumu (6.7%), Garissa (5.0%), Busia (3.3%), and Kilifi (2.8%). 7.5% had attended university, particularly in Kajiado (17.1%), Kisumu (16.7%), Nyeri (14.3%), Garissa (10.0%), and Kilifi (2.8%).

A smaller group (2.2%) reported attending a polytechnic, primarily from Kisumu (13.3%) and Kilifi (2.8%). Additionally, 0.4% of respondents indicated that they had attended a madrassa, specifically among respondents from Turkana (3.1%).

Furthermore, 16.7% of respondents reported having no formal education, with the highest proportions recorded in Turkana (78.1%), followed by Kilifi (27.8%), Kisumu (3.3%), and Kajiado (2.9%). These findings are as illustrated by figure 6.

Figure 6. Education Respondents per County



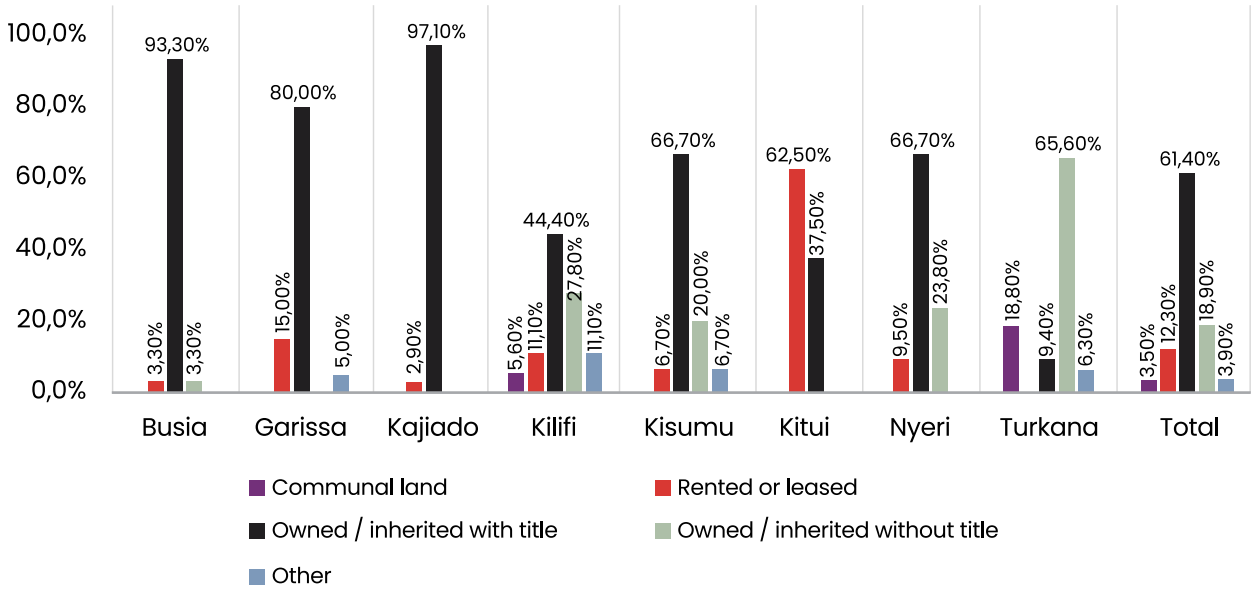
4.1.6 Land Tenure

The assessment also captured information on the type of land ownership among the respondents. A majority (61.4%) reported that they owned inherited land with title deeds. This was most common in Kajiado (97.1%), Busia (93.3%), Garissa (80.0%), Kisumu (66.7%), Nyeri (66.7%), Kilifi (44.4%), Kitui (37.5%), and Turkana (9.4%).

Another 18.9% of respondents indicated that they inherited land without a title deed, particularly in Turkana (65.6%), Kilifi (27.8%), Nyeri (23.8%), Kisumu (20.0%), and Busia (3.3%). A smaller proportion (12.3%) reported that they rented or leased land, with the highest rates in Kitui (62.5%), followed by Garissa (15.0%), Kilifi (11.1%), Nyeri (9.5%), Kisumu (6.7%), Busia (3.3%),

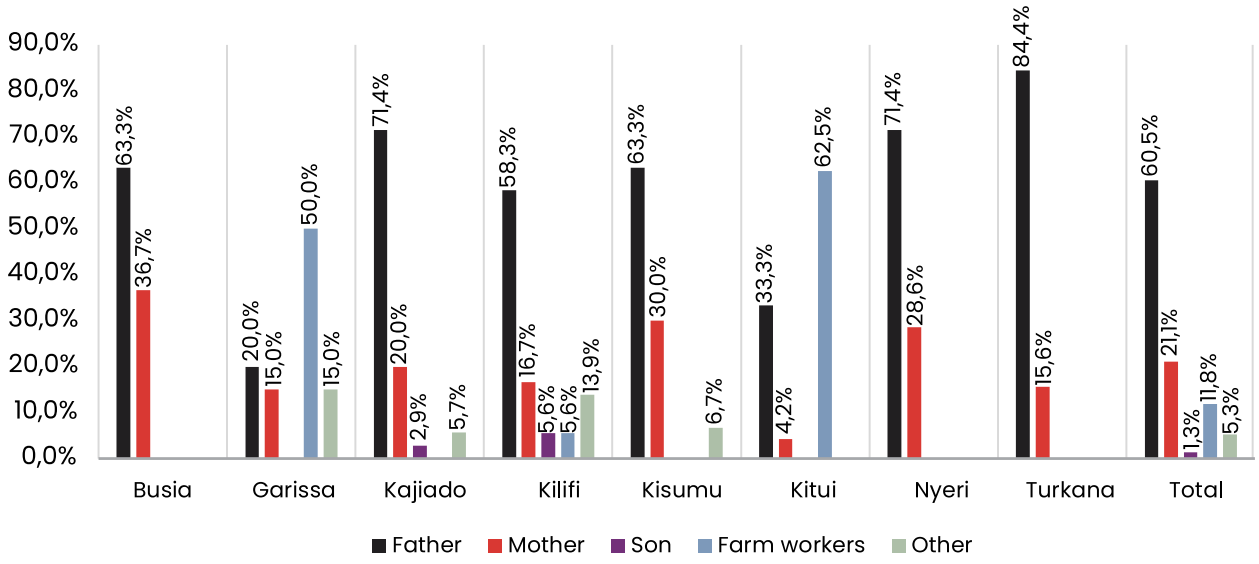
and Kajiado (2.9%). Additionally, 3.5% of respondents indicated that their land was communally owned, particularly in Turkana (18.8%) and Kilifi (5.6%). A further 3.9% of respondents reported other forms of land ownership, as illustrated in Figure 7.

Figure 7. Type of Land Ownership



The study also explored decision-making authority within farming households. The findings revealed that 60.5% of respondents identified the father as the main decision-maker on the farm. 21.1% reported that the mother was the main decision-maker, while 11.8% indicated that decision-making was by farm workers. Additionally, 5.3% of respondents stated that other people were the primary decision-makers, and 1.3% indicated that the son was responsible for making farm-related decisions. These results are further illustrated in Figure 8.

Figure 8. Main Decision Maker in the Farm



4.2 Adoption of CSA Practices

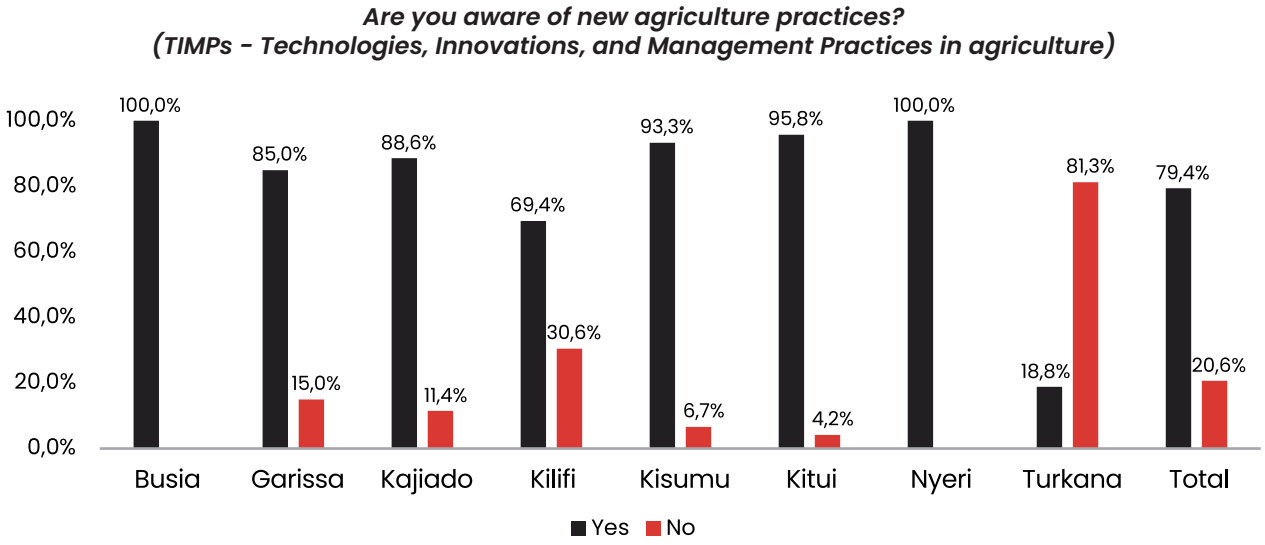
4.2.1 Levels of Awareness and Knowledge Among Farmers and Stakeholders

The assessment revealed high levels of awareness of CSA practices among farmers and stakeholders across the eight focus counties: Busia, Kilifi, Kajiado, Kisumu, Kitui, Turkana, Nyeri, and Garissa. Respondents were able to identify a range of CSA-aligned practices; technologies, innovations, and management practices (TIMPs) reflecting growing exposure to climate adaptation strategies, albeit with regional disparities in depth of knowledge, consistency of information, and service coverage.

a. Awareness of CSA-Related Practices

The assessment revealed that 79.4% of the farmers engaged across different counties were aware of CSA-aligned practices. Awareness levels were highest in Busia and Nyeri, both at 100%, followed closely by Kitui (95.8%), Kisumu (93.3%), Kajiado (88.6%), Garissa (85.0%), and Kilifi (69.4%). Conversely, 20.6% of farmers indicated that they were not familiar with CSA practices. These findings are illustrated in Figure 9.

Figure 9. Farmer's Awareness of CSA-aligned Practices



Focus group discussions provided further insights into the specific CSA practices known and applied by farmers. Participants across counties highlighted several key practices, including:

1. **Water management and irrigation technologies:** including rainwater harvesting, drip irrigation, solar-powered water pumps, and farm ponds.
2. **Soil fertility management:** through composting, mulching, minimal tillage, and soil testing services.
3. **Agroforestry:** particularly planting of fruit trees, intercropping with legumes, and promoting school greening programs.

4. **Drought-resistant crops and livestock:** with specific reference to green grams, cassava, sorghum, fast-maturing certified seeds, and breeds like Sahiwal cattle.
5. **Organic farming and pest control:** use of natural pest deterrents, manure composting, and integrated pest management.
6. **Climate-resilient fish farming techniques:** including aquaponics, raised dikes, and aquapark clustering for efficient input use.
7. **Digital innovations:** such as mobile apps and WhatsApp platforms for market access, weather updates, and extension support.

> *"Our understanding of climate-smart agriculture includes using drought-tolerant seeds, practicing conservation farming methods like mulching and intercropping, harvesting rainwater, and planting trees alongside crops what they call agroforestry."* **– FGD with Crop Farmers in Kajiado County.**
>
> *"We have been trained on how to plant grass and drought-resistant fodder. This has really helped us because once we harvest the grass, we can store it and use it to feed our livestock during the extremely dry seasons. We've also been taught about water harvesting things like sand dams and roof catchment systems that direct water into storage tanks. They've also trained us on disease control, which includes regular vaccination and the use of acaricides for ticks. Another thing they emphasized was improving breeds, like cross-breeding with Galla goats."* **– FGD with Livestock Farmers in Kitui.**

b. Institutional and Programmatic Drivers of CSA Awareness

The advancement of Climate Smart Agriculture awareness in Kenya has been significantly shaped by the active involvement of government institutions, NGOs, research agencies, and development partners. These actors have implemented a range of strategic initiatives to increase farmers' understanding and adoption of CSA practices. Through farmer training, demonstration plots, extension services, participatory approaches, and climate-informed planning, they have contributed to expanding the CSA knowledge base at the grassroots level.

Key institutions such as the Kenya Agricultural and Livestock Research Organization (KALRO), Farm Input Promotions Africa (FIPS-Africa), International Fund for Agricultural Development (IFAD), and the Kenya Forestry Research Institute (KEFRI) have been instrumental in contextualizing CSA innovations to local farming systems. Their efforts are often delivered in partnership with county governments, community-based organizations, and farmer cooperatives.

> *The main partner we've worked with is ADS. We've carried out extensive activities with them, particularly in Marachi Central and Kingandole. These two areas border each other, so whenever we organize training sessions in Marachi Central, farmers from Kingandole often join in as well.*

We also collaborate with the Cereal Growers Association (CGA), especially in Kingandole, and to a lesser extent in Marachi Central. CGA is actively promoting conservation agriculture in the region.

Another key partner is FIPS Africa. Their focus has been on promoting regenerative agriculture and avocado farming particularly the cultivation of Hass avocado, which is steadily gaining traction. Just last week, they distributed 2,500 Hass avocado seedlings during a field day in Kingandole. The seedlings were purchased by the Honourable, who generously provided them to all attendees.

In addition, we're working closely with several seed companies. Seed Co, for instance, has made significant contributions to soybean production, including seed batching initiatives. Bayer supports farmers with agrochemicals, while Real IPM is encouraging the use of organic manure. Other companies like Bazooka are also part of our network of seed suppliers. These are some of the key partners we're currently engaging with." **– KII with Government Representative in Busia**

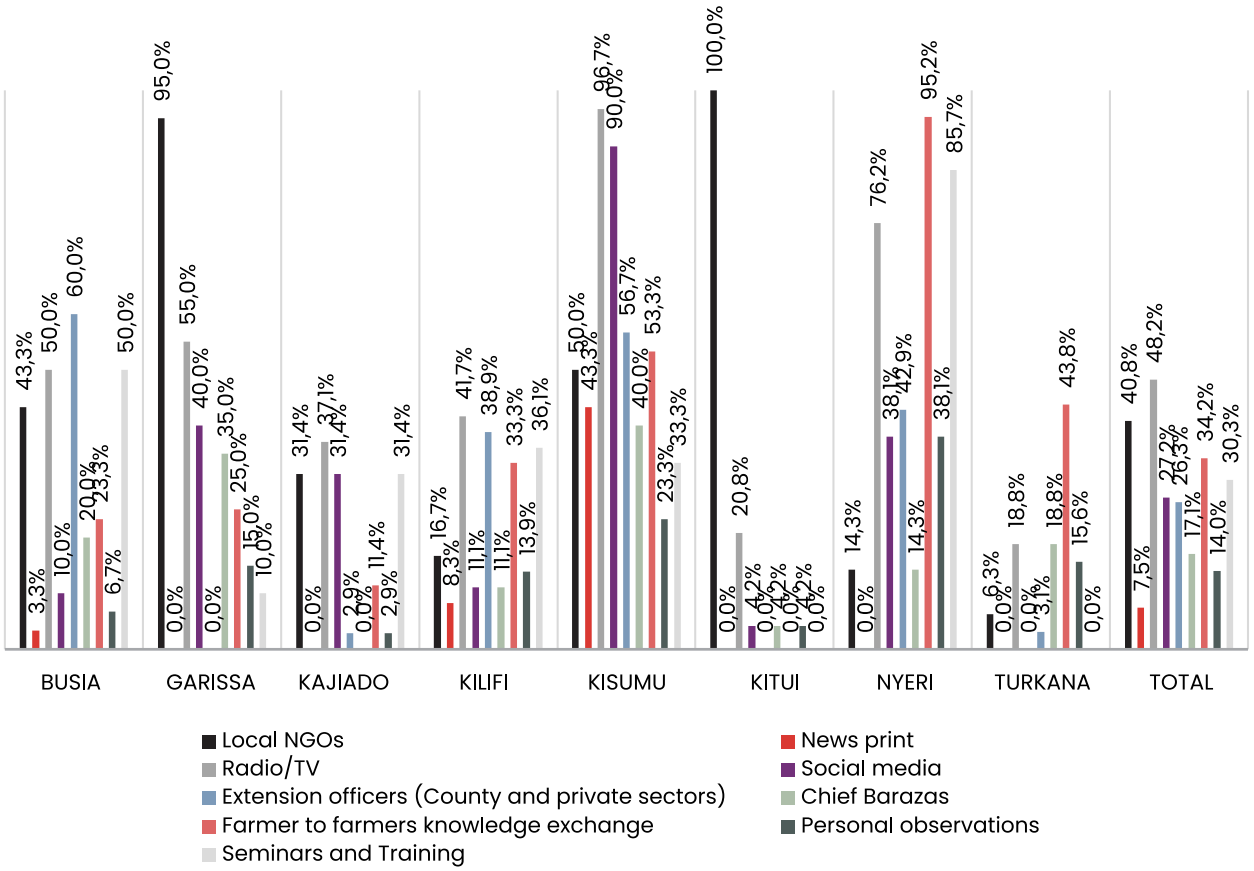
4.2.2 Access to CSA-related Information and Extension Services

a. Information Channels

Access to accurate and timely information is a cornerstone of effective CSA implementation. The assessment identified a wide array of communication channels through which farmers and stakeholders receive CSA-related information. Quantitative survey respondents highlighted some of the platforms ranging from formal government systems to community-based and digital platforms that play a role in providing farmers with information. Radio and television were highly mentioned by 48.2% of the respondents, local NGOs (40.8%), farmer-to-farmer knowledge exchange (34.2%), seminars and training (30.3%), social media and mobile platforms (27.2%), public extension services (26.3%), chief barazas (17.1%), personal observations (14.0%), and news print (7.5%) as illustrated by figure 10.

"Government extension officers regularly visit our communities to raise awareness and educate us on climate change. Non-governmental organizations, including CWS, have also supported our understanding by offering training on how to adapt to the changing climatic conditions. In addition, meteorological departments share climate-related information through multiple platforms such as television, radio, and social media, including WhatsApp." **– FGD with Crop Farmers in Kitui**

Figure 10. Platforms for Access to CSA-related Information

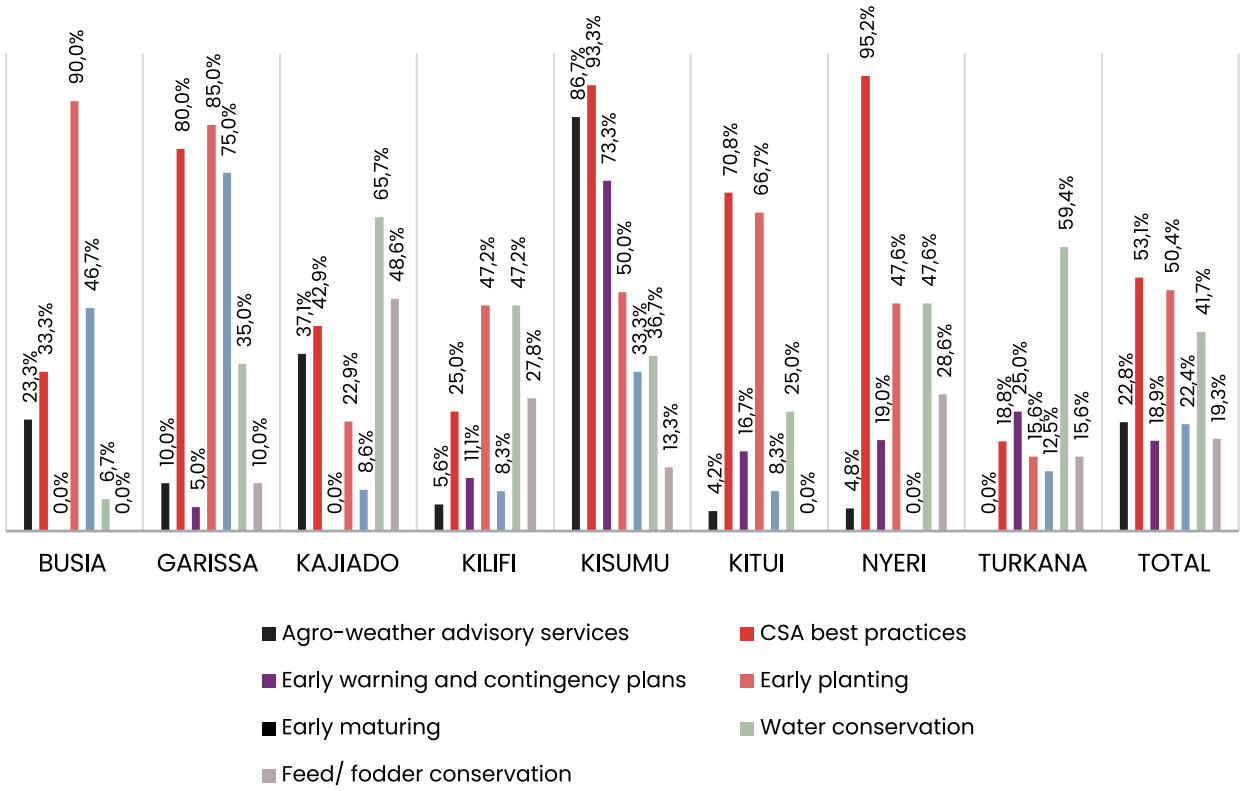


b. Types of Information Accessed

The assessment revealed that farmers across the eight counties accessed a wide range of CSA-related information, which influenced the degree to which they adopted climate-resilient practices. The information shared covered key thematic areas aligned with Kenya's CSA Strategy, and while its availability varied by county, it demonstrated efforts by government, non-governmental actors, and development partners to build climate resilience at the community level.

The findings revealed that one of the most commonly accessed categories of information was on CSA best practices as reported by 53.1% of respondents. Early planting guidance was cited by 50.4% of respondents. Water conservation techniques were another widely disseminated category of information as mentioned by 41.7% of the surveyed farmers. Agro-weather advisories were reported by 22.8% of the surveyed farmers. Another category was information on early maturing crop varieties, reported by 22.4% of respondents. Information on feed and fodder conservation was also reported by 19.3% of respondents. 18.9% of farmers engaged in the survey reported receiving early warning messages and contingency planning information as illustrated by figure 11.

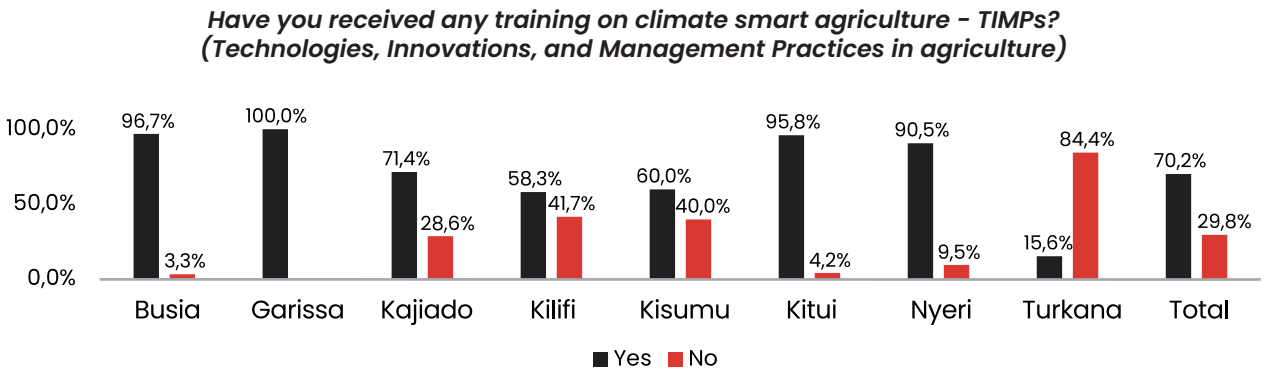
Figure 11. Type of Information Assessed by Farmers



c. Training on Climate Smart Agriculture

The assessment found that the majority of farmers had received training on CSA, reflecting extensive awareness-building initiatives across the target counties. Overall, 70.2% of respondents reported having participated in CSA-related training, while 29.8% indicated they had not. Training coverage, however, varied by location. Garissa recorded full participation (100%), followed closely by Busia (96.7%), Kitui (95.8%), and Nyeri (90.5%). Moderate coverage was recorded in Kajiado (71.4%), Kisumu (60.0%), and Kilifi (58.3%), with Turkana reporting the lowest participation rate at just 15.6%, as illustrated in Figure 12.

Figure 12. Proportion of Farmers Trained on CSA



The surveyed farmers further reported receiving training across a broad range of CSA thematic areas. These included technical skills, sustainable land and water management practices, and the adoption of modern farming innovations. Water conservation and harvesting techniques were frequently cited, encompassing practices such as water-saving irrigation methods, planting in moisture-retentive pssits, and capturing runoff for livestock use.

Early planting and the adoption of early maturing crop varieties emerged as another key area, particularly in regions affected by erratic rainfall patterns. Farmers were trained on selecting appropriate seeds, adjusting planting calendars, and applying principles of conservation agriculture to improve yields and enhance resilience.

Training sessions also covered both practical and theoretical aspects of CSA principles. These included an understanding of climate-smart solutions, adaptation strategies, and even exposure to broader policy-level discussions. Farmers learned about drought-resilient crops and livestock, with guidance provided on cultivating drought-tolerant seed varieties and rearing hardy livestock breeds.

Conservation agriculture was a recurring theme, with techniques such as minimal tillage, mulching, and soil management promoted to boost productivity while safeguarding natural resources. The integration of agroforestry and crop rotation was also emphasized farmers were encouraged to plant trees for shade, fodder, and soil enrichment, and to rotate crops to maintain soil health and fertility.

In some counties, training also extended to modern farming technologies and innovations. This included the use of mobile applications to access markets, obtain weather forecasts, and receive extension services. Additional topics covered included composting and organic farming techniques, such as the preparation and use of organic manure.

Livestock management and health were also addressed, with farmers receiving instruction on feeding practices, disease prevention, and vaccination schedules. Finally, training on soil fertility and testing equipped farmers with the knowledge to assess soil quality, choose suitable crops, and apply nutrients more effectively, ensuring better yields and sustainable land use.

d. Challenges in Accessing CSA-related Information

Farmers participating in the assessment highlighted various challenges that hinder their access to CSA information. These challenges encompass technological, institutional, socio-economic, and geographical factors, collectively shaping the dissemination and utilization of CSA knowledge within communities.

Among the issues raised was the limited availability of communication devices such as smartphones and televisions. These devices are increasingly utilized for delivering agro-weather advisories, CSA training videos, and market-related information. Additionally, connectivity issues,

particularly in remote or underserved areas, were identified. Poor mobile network coverage affects the functionality of mobile-based advisory platforms and digital extension services.

Farmers also noted gaps in extension services availability. They indicated that the number of extension officers is insufficient to effectively reach dispersed farming communities. This limitation results in missed opportunities for timely updates, personalized support, and regular follow-ups. Concerns were expressed regarding the accuracy and timeliness of agro-weather information. Delays in receiving forecasts or inconsistencies in weather predictions were reported to impact decisions related to planting and input use. Language barriers were also identified as problematic; some farmers found CSA messages communicated in English difficult to understand, thus reducing the information's utility.

Another issue highlighted was uncertainty about reliable sources of CSA-related information. Farmers mentioned difficulties in identifying trustworthy sources, which complicates their ability to confidently apply recommended practices. Timing of information delivery was also a concern, with some farmers receiving advisories related to weather or planting guidance after critical decisions had already been made.

The assessment further revealed that training opportunities are not universally accessible. Limited exposure to CSA concepts and a shortage of trained facilitators contribute to gaps in understanding and adoption, even when information is available. Geographical factors, such as long distances to training sites, agro-dealer shops, or government agriculture offices, were also cited as barriers. These physical constraints restrict farmers' participation in CSA-related events and follow-up support.

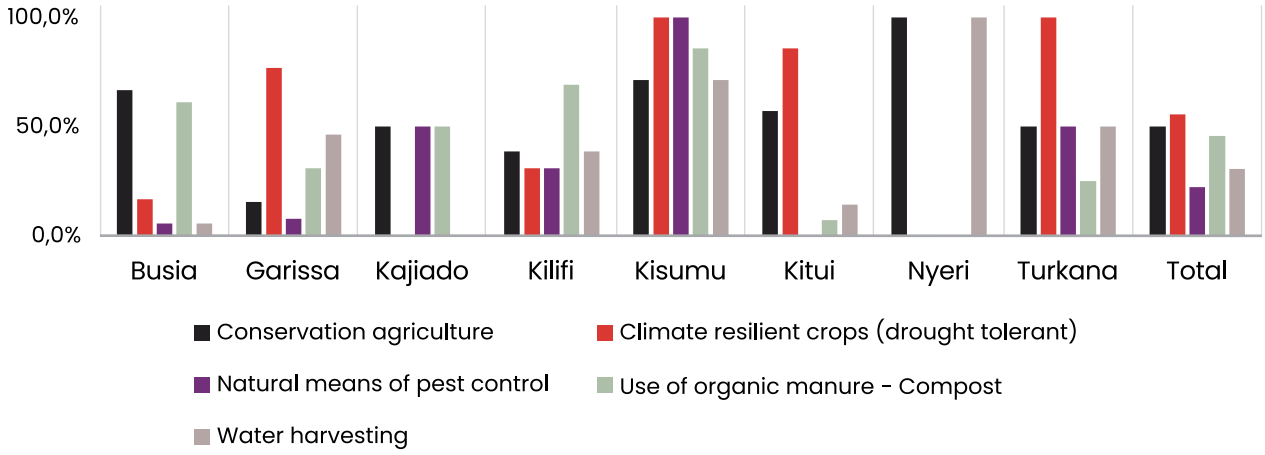
4.2.3 Application of CSA Technologies and Practices

The adoption of CSA technologies, innovations, and management practices has taken root across the eight focus counties, although with varying intensity and coverage. The assessment established that most counties have made progress in promoting and implementing CSA in crop, livestock, and fish farming systems.

a. Application of CSA Practices in Crop Farming

A significant proportion (78.3%) of the crop farmers who participated in the assessment reported adopting various CSA practices. Only 21.7% indicated that they had not integrated CSA into their crop farming. Among those who had adopted CSA, several key practices were mentioned. The use of climate-resilient crops, particularly drought-tolerant varieties, was the most commonly mentioned at 55.5%. Conservation agriculture techniques, such as minimal tillage and mulching, were cited by 50.0% of farmers, while 45.8% reported using organic manure, specifically compost. Water harvesting practices were employed by 30.6% of farmers, and 22.2% indicated the use of natural pest control methods as captured by figure 13.

Figure 13: CSA Practices Adopted by Crop Farmers



During periods of extreme heat, we use shade nets to protect crops from direct sunlight and to reduce pest intrusion. If pests do enter, the enclosed space makes it easier to manage and eliminate them. During the rainy season, we harvest rainwater, which proves to be very beneficial. **– FGD with Refugees in Turkana County**

In our community, people adapt through simple, practical measures. For instance, during droughts, we collect and store water in containers whenever it is available. Additionally, some community members participate in tree-planting campaigns organized by CBOs and NGOs to help reduce heat and enhance the local environment. **– FGD with Refugees in Garissa County**

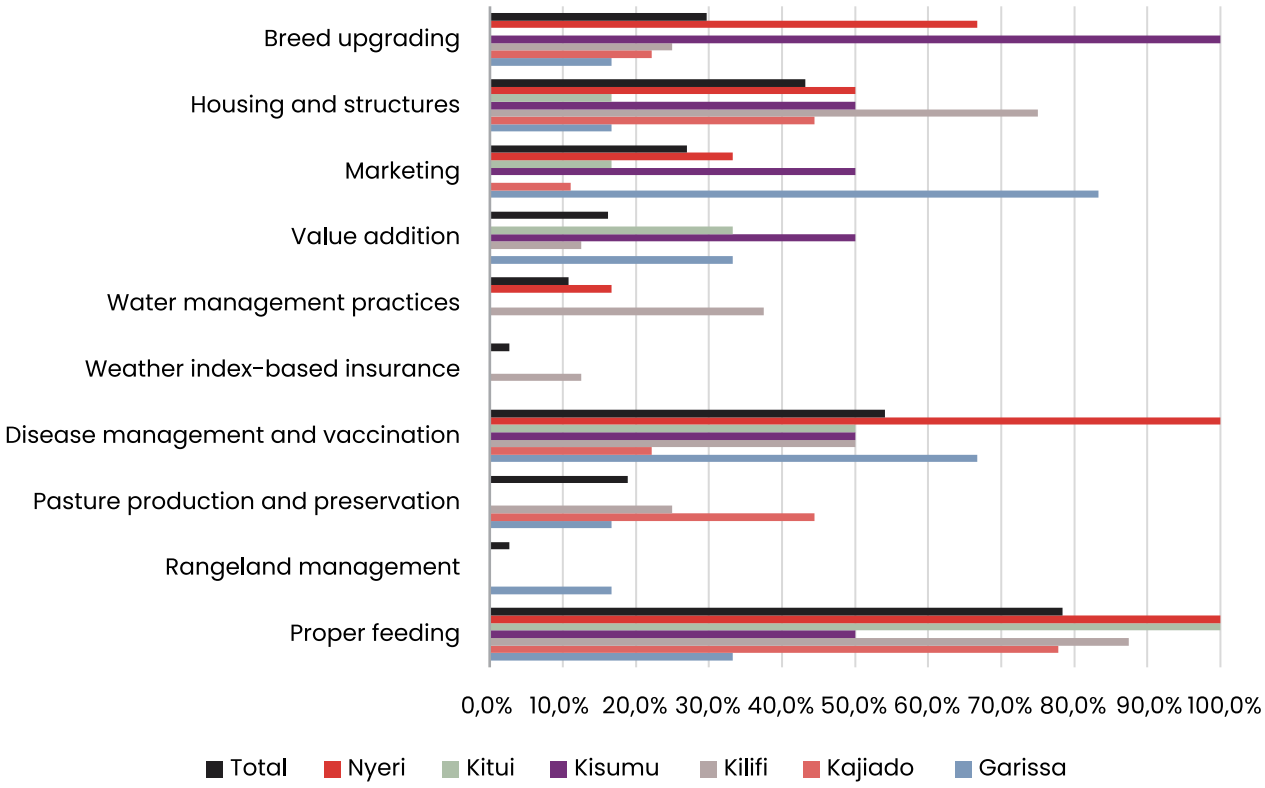
Farmers who had not adopted CSA practices in crop farming pointed to a range of interrelated challenges. Some of the challenges mentioned included water scarcity, which severely limits agricultural activities, particularly when compounded by pest infestations and inadequate access to resilient seed varieties. Some farmers also highlighted the lack of essential resources, including appropriate tools and inputs like drought-tolerant seeds. Limited exposure to training and CSA-related knowledge emerged as another barrier, with some respondents expressing a general lack of awareness about available climate-smart practices and technologies.

Environmental factors such as deforestation, extreme heat, and erratic weather patterns further complicate the adoption of CSA. In addition, some farmers cited insufficient government support, noting the absence of technical assistance or relevant information to guide CSA adoption. Access to advanced agricultural technologies remains a challenge, with many farmers struggling to obtain the tools or knowledge needed to improve their productivity. Recurrent issues such as pests, floods, and droughts combined with broader systemic agricultural hardships highlight the complexity of adapting to an increasingly unpredictable climate.

b. Application of CSA Practices in Livestock Farming

The adoption of CSA practices was also evident in the livestock sector, where farmers reported integrating a variety of interventions aimed at building resilience and improving productivity. Approximately 74.0% of livestock farmers indicated that they had adopted CSA practices, while 26.0% had not. Among the adopters, the most commonly reported practice was proper feeding, mentioned by 78.4% of respondents. Disease management and vaccination were cited by 54.1%, followed by the construction of housing structures for livestock at 43.2%. Other practices included breed improvement (29.7%), market access enhancement (27.0%), pasture production and conservation (18.9%), and value addition activities (16.2%). Water management (10.8%), rangeland management (2.7%), and weather-index based insurance (2.7%) were also mentioned, though to a lesser extent as illustrated by figure 14.

Figure 14. CSA Practices Adopted by Livestock Farmers



Despite the uptake, livestock farmers, especially those involved in beekeeping, reported several constraints hindering broader CSA adoption. One of the issues highlighted was the lack of training and technical guidance on modern beekeeping techniques. The respondents noted they had not received adequate education or support to implement improved practices, limiting their ability to benefit from CSA innovations in this sector.

c. Application of CSA Practices in Fish Farming/ Aquaculture

The assessment revealed that fish farmers across Kisumu, Busia, and other target counties have begun integrating CSA practices into their aquaculture activities as a response to the growing impacts of climate change. Fish farming communities have demonstrated significant resilience and adaptability, despite facing substantial challenges related to erratic weather patterns, water scarcity, and flooding.

1. **Water Management and Conservation Practices:** A central CSA strategy among fish farmers is water management. Farmers reported adoption of rainwater harvesting through construction of water pans, boreholes, wells, and drainage control trenches to secure a reliable water supply during dry seasons. In areas such as Nyakach and Busia, farmers have adopted techniques such as channelling excess water during floods through controlled outlets to maintain pond integrity and prevent fish loss. Some farmers living near rivers have installed inlet and outlet structures to regulate pond water levels during both drought and flooding seasons.

> *During the floods, we built trenches to divert excess water and saved our ponds. Without such measures, all the fish would have been lost. We learned this from previous seasons where floods wiped out everything.* **– FGD with Fish Farmers in Kisumu**

2. **Diversification of Fish Species:** As part of climate-smart strategies, farmers have diversified fish species to improve resilience. In Busia and Kisumu, for instance, farmers reported a shift from Tilapia, which is sensitive to high temperatures and low oxygen levels, to more hardy species like Catfish that can survive in harsher, fluctuating climatic conditions. Farmers recognized Catfish's ability to withstand higher temperatures and lower water quality as critical to sustaining production amidst worsening droughts.

> *We switched to Catfish because they can survive even when the water levels go down. Tilapia would die quickly, but Catfish are stronger. Now, even when the dry season is longer, we still harvest something.* **– FGD with Fish Farmers in Busia**

3. **Water Quality Management:** Fish farmers emphasized the importance of maintaining clean water for pond health. Measures such as ensuring appropriate pond depth, regular draining of dirty water, and the planting of environmentally friendly indigenous trees around water bodies were cited as essential to minimize contamination and ensure fish survival. Environmental practices included establishing gabions to prevent soil erosion into ponds and discouraging the planting of invasive water-draining tree species like eucalyptus near aquaculture sites.

4. **Local Feed Production and Innovation:** Given the high cost and limited availability of commercial fish feed, farmers in Busia and Kisumu have innovatively turned to local feed production. They utilize organic sources such as maggots and azolla (aquatic ferns) to create affordable and nutritious fish feed. This adaptation not only reduces input costs but also strengthens local value chains, contributing to climate-resilient livelihoods.

5. **Community-Based Adaptations and Partnerships:** Focus group discussions also revealed that community-based approaches are a critical strategy for adapting to climate challenges in fish farming. Respondents in Kisumu and Busia emphasized the importance of farmer cooperatives in facilitating knowledge sharing, organizing collective trainings, and mobilizing collective action to strengthen resilience. These cooperatives have also played a key role in advocating for grants, inputs, and technical support from external partners.

Collaborations with stakeholders such as KEYSAB, ADBD, and the County Agricultural Offices have further enhanced farmers' access to capacity-building opportunities, technical expertise, and limited financial resources. Such partnerships have not only improved farmers' technical skills but also strengthened their ability to navigate climate-related shocks through collective problem-solving and resource mobilization.

d. Challenges in the Application of CSA Practices

The implementation of CSA practices across the target counties revealed a complex array of interlinked challenges that span institutional, environmental, socio-economic, and cultural dimensions. These challenges, as voiced by diverse stakeholders engaged in the qualitative assessment influence both the pace and scale of CSA adoption. Challenges highlighted include:

1. **Limited Awareness and Technical Capacity:** The limited understanding of CSA principles among smallholder farmers is one of the challenges highlighted by the assessment respondents. The respondents indicated that communities are still grappling with the concept of CSA, often confusing it with general agricultural development. The absence of user-friendly, context-specific information, coupled with a general lack of technical training, limits the capacity of farmers to adopt and sustain CSA interventions effectively. Compounding this gap is the weak presence of agricultural extension officers, particularly in remote regions. The shortage of skilled personnel to provide continuous support and coaching has meant that even where CSA interventions have been introduced, uptake remains low due to insufficient follow-up and reinforcement.

> *One of the main challenges we face is limited mobility. We are not able to reach as many farmers, or as frequently, as we would like. When we organize field days or set up demonstration plots, not all farmers are able to attend. The extension work we're doing now is quite different from what was done during the days of NALEP-SIDA, for example.* **– KII with the Government Representative in Busia**

We have a low staff-to-farmer ratio the gap is still very wide. That makes it difficult to reach a broad number of farmers. For instance, you may find only one officer in an entire ward. It's not easy, especially now that extension services are demand-driven meaning you only respond when a farmer requests support. So, the high ratio, combined with low facilitation like what we currently experience in county governments affects our ability to carry out extension, training, and related activities effectively. **– KII with the Government Representative in Kisumu**

2. **Gaps in Policy Implementation and Coordination:** While Kenya has made commendable strides in formulating a national CSA strategy, its operationalization at the county level remains weak. Respondents pointed to fragmentation in roles and responsibilities among government departments, with minimal coordination between the Ministry of Agriculture, county governments, and non-state actors. The assessment noted that development partners and NGOs often implement CSA initiatives in silos, leading to duplication of efforts. Moreover, policy coherence across sectors was found lacking, with certain agricultural, environmental, and water policies not fully synchronized with the CSA strategy. This has created implementation bottlenecks and diluted the impact of CSA programming.

3. **Harsh Climatic and Environmental Conditions:** The agro-ecological realities of arid and semi-arid regions present formidable obstacles to CSA application. Erratic rainfall patterns, frequent droughts, and high temperatures reduce the viability of practices such as water harvesting, agroforestry, and improved crop varieties. In areas with already degraded soils or limited water availability, the inputs and effort required to make CSA effective often exceed what households can afford or manage, particularly without ongoing support.

One of the challenges that we are facing is the lack of water sometimes we drill boreholes that are seasonal, so they dry up, and we end up lacking water for irrigation. **– KII with a Government Representative in Kilifi**

4. **Inadequate Financial Resources and Investment:** The respondents also informed the assessment that farmers often lack the capital to invest in critical CSA inputs such as drought-tolerant seeds, drip irrigation kits, soil conditioners, or storage infrastructure. While some donor-funded programs provide initial support, these are frequently short-term and do not foster long-term sustainability. The lack of accessible credit and financing mechanisms further restricts CSA adoption. County governments were also reported to allocate limited budgets for CSA-related activities, constraining broader institutional support.

> *Mostly, it's finances especially when it comes to inputs. You know, inputs are very expensive, especially now if you are to go the smart agriculture way. There's a lot of investment that is needed. So, you find that we have issues with the affordability of the inputs and all that. And even subsidizing some of these things it's still not cheap.* **– KII with NGO Representative in Kajiado**

5. **Socio-Cultural Barriers and Resistance to Change:** Social norms and cultural beliefs were also identified as barriers, particularly traditional farming communities. The introduction of new techniques or crops is at times met with scepticism or resistance, especially where they diverge from long-held practices.

> *We also experience slow adoption or uptake of climate-smart agriculture practices by some farmers, possibly due to their strong attachment to traditional farming methods.* **– KII with a Government Representative**

6. **Weak Data Management and Knowledge Sharing:** Although numerous CSA initiatives are underway, the lack of a centralized data collection and dissemination framework undermines learning and evidence-based planning. Respondents highlighted the absence of clear protocols for reporting, documenting, and sharing CSA results for both successes and failures. This not only affects accountability but also hinders adaptive learning and coordination across implementing agencies. Without robust monitoring systems, it becomes difficult to track progress, identify gaps, or replicate effective models across regions.

4.3 Strategy Alignment and Coordination

4.3.1 Alignment of County-level CSA Plans with the National Strategy

a. Alignment with Paris Agreement

Paris Agreement is a legally binding international treaty on climate change adopted by the United Nations Framework Convention on Climate Change (UNFCCC) adopted in 2015 by 196 parties with a goal to o limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit it to 1.5°C. Countries were requested to develop and update their NDCs to align with the Paris Agreement, to communicate key actions that will be taken to reduce their greenhouse gas emissions in order to reach the goals of the Paris Agreement and key actions that will be taken to build resilience to adapt to the climate change. The NDCs were also required to describe key strategies to promote long-term low greenhouse gas emission development.

Kenya in an effort to align its operations to the Paris Agreement developed and submitted its revised NDC in 2020. Through this document, The Government of Kenya demonstrated key steps that will be taken to achieve low emission of GHG through mechanisms such as mainstreaming

climate change adaptation mechanisms into policies and frameworks.[16] Kenya Climate Smart Agriculture Strategy 2017-2026 is intertwined to Kenya's NDC, as it serves as a tool for implementing Kenya's NDC targets in the agricultural sector. According to the KCSAS goals, the strategy guides on how to enhance the resilience of agricultural systems, minimize greenhouse gas emissions, and improve food security and livelihoods. The strategy also guided the development of KCSAIF 2018-2027 and Kenya Climate Smart Agriculture Monitoring and Implementation Tool to guide documenting and reporting achievements made in the implementation of the NDC targets. This therefore demonstrates the relevance of the KCSAS as it lays out comprehensive mechanisms to achieve the Paris Agreement objectives.

b. Alignment with United Nations 2030 Agenda for Sustainable Development

The UN 2030 Agenda for Sustainable Development was developed to provide a key plan of actions to transform the world. It aims to end hunger and poverty, protect the planet from degradation, and ensure that all human can enjoy lives in a just and inclusive society. Among the key 17 SDGs, SDG 2 and SDG 13 broadly address key issues around agriculture including sustainable production and climate action initiatives. SDG 2 (Zero hunger) focuses on ensuring sustainable food production systems and implementing resilient agricultural practices that adapt to climate change and extreme weather patterns. SDG 13 on the other hand calls for urgent action to combat climate change and its impacts, which directly affect agricultural systems, while SDG 15 focuses on protecting and promoting the sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification, and halting and reversing land degradation, as well as halting biodiversity loss.

Review of literature revealed that Kenya has made significant milestones since the SDGs came into effect in January 2016. With specific focus around SDGs 2, 13and 15, Kenya developed the CSA Strategy 2017-2026, an approach to guide actions to transform agri-food systems towards green and climate resilient practices. It contains comprehensive interventions and specific objectives to ensure all the targets within the SDGs are achieved. The CSA Strategy recognizes the interconnectedness of climate change and agricultural activities and has provided an excellent opportunity for agricultural transformation by uniting agriculture, development and climate change under a common agenda through integrating the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. CSA therefore sustainably increases agricultural production and incomes, builds resilience of agricultural systems to climate change and minimizes GHGs emissions.[17]

c. Alignment with Comprehensive Africa Agriculture Development Programme (CAADP) Framework 2010

The CAADP Framework 2010 was developed to improve and promote agriculture across Africa by raising agricultural productivity in Africa's countries by at least 6% per year. The CAADP, including livestock, Forest and Aquaculture agendas as articulated in the CAADP Companion document provides a common framework for stimulating and guiding national, regional and

continental initiatives on enhanced agriculture productivity. Under CAADP, Africa's governments have further identified four continent wide entry points (Pillars) for investment and action in pursuing increased and sustainable productivity in agriculture, forestry, fisheries and livestock management.

With Agriculture as the backbone of Kenya's economy, the country has integrated the CAADP interventions in its policy and framework structures such as Agriculture Sector Transformation and Growth Strategy (ASTGS) and a number of steps have been taken to implement the CAADP's provisions. Through ASTG, the KCSAS was developed to help transform agriculture sector by ensuring climate resilience in the production, one of the key targets for CAADP.

d. Alignment with Africa Union Agenda 2063 Aspirations

The Africa Union Agenda 2063 directly addresses climate change and resilient Agriculture through its Aspiration 4, "A prosperous Africa based on inclusive growth and sustainable development," that explicitly mentions the need to address climate change issues and other environmental factors that pose a great risk to the agricultural sector. The Agenda 2063 further includes the CAADP, a key initiative that focuses on improving food security and nutrition, increasing incomes, and promoting sustainable agricultural practices, including climate-resilient agriculture.[18]

The Kenya's CSA strategy aligns with the AU's Agenda 2063 as it integrates agriculture, development and climate change under common agenda. The strategy provides a practical path towards achieving the broader goals of Agenda 2063 which include inclusive growth, sustainable development, and a climate-resilient Africa.

e. Alignment with Kenyan Existing Policies, Frameworks and Plans

Review of the Kenya Climate Smart Agriculture Implementation Framework (KCSAIF) 2017-2026 identifies key reforms and milestones achieved by the Government of Kenya (GoK) to promote productivity in the agricultural sector, especially through development of policies and strategies to enhance agricultural growth, natural resource management and climate change interventions. These policy documents have demonstrated their critical role in shaping the designing and implementation of the CSA Strategy 2018-2027. For instance, the Kenyan Constitution 2010 under Article 42 guarantees the right to a clean and healthy environment. This advocates for eco-friendly agricultural practices that leads to harm to the environment. The KCSAS 2018-2027 is aligned with the Kenyan constitution through its commitment to environmental protection, food security and sustainable development. The KCSAS aims to increase agricultural productivity while reducing gas emissions and enhancing the resilience of agricultural systems to climate change, which aligns with the constitution's emphasis on environmental sustainability and the sustainable use of natural resources. More policies that align to the CSA include, inter alia, Agricultural Sector Development Strategy 2010-2020, National Climate Change Response Strategy (2010), Climate Change Act (2016) and National Climate Change Action Plan 2018-2022. These are as analysed in the table below.

Table 1. Policies that guides the implementation of KCSAS 2017-2026

POLICY	PURPOSE	ALIGNMENT WITH CSA
National Climate Change Action Plan 2018 – 2022	NCCAP 2018-2022 aims to further Kenya's development goals by providing mechanisms and measures that achieve low carbon climate resilient development.	Emphasizes sustainable development and prioritizes adaptation, recognizing the importance of increasing the climate resilience of vulnerable groups, including women, youth, persons with disabilities, and marginalized and minority communities.[1]
Agricultural Sector Development Strategy 2010–2020	It seeks to progressively reduce unemployment and poverty, and to spur agriculture back to growth trends.	CSA is implicitly integrated in this vision, which prioritizes investment in both adaptation- and mitigation-related practices and technologies: weather information systems, research on drought-tolerant crop varieties, soil and water conservation, water harvesting, and strengthening integrated pest management systems (adaptation), as well as agricultural waste management, organic farming, mulching, agroforestry, and biotechnology (mitigation).[2]
Agricultural Sector Transformation and Growth Strategy 2019-2029	To transform Kenya's agricultural sector and make it a regional powerhouse, the Government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS).	The strategy is aligned to CSA as it seeks to offer incentives such as tax breaks on climate-smart technologies.[3]
The Arid and Semi-Arid Lands (ASALs) Policy.	This policy aims to revitalize ASALs by harnessing livelihood opportunities in the drylands.	The policy acknowledges pastoralism as a legitimate and productive livelihood and aims to develop the ASALs coherently by providing basic services (health, education, and infrastructure) and decentralizing the planning of livelihood diversification, community participation and early warning systems, which constitute important enablers for CSA adoption in these regions.[4]
Crops Act (2013)	Establishes sustainable and environmentally friendly production	The policy is aligned to CSA as it seeks to improve investment in climate and

	as the standard for all land cultivation, outlining the role of county governments in implementing national policies and laws, including the responsibility for soil and water conservation, as well as the duties of the Agriculture, Fisheries and Food Authority.	efficiency of agribusiness and develop Agricultural crops.[5]
National Livestock Policy	This policy addresses the challenges in the livestock sub-sector in the context of livestock breeding, nutrition and feeding, disease control, value addition and marketing, as well as research and extension.	The policy is aligned to CSA as it creates implicit opportunities for CSA promotion and scale-out through breeding programmes, improvement and conservation of feed and animal genetic resources, among others.[6]

1. https://rise.esmap.org/data/files/library/kenya/Clean%20Cooking/Kenya_NCCAP_2018-2022.pdf
2. https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20KENYA%20NOV%2018%202015.pdf
3. https://kilimo.go.ke/wp-content/uploads/2024/08/ASTGS-Abridged-version.pdf
4. https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20KENYA%20NOV%2018%202015.pdf
5. http://kenyalaw.org:8181/exist/rest/db/kenyalex/Kenya/Legislation/English/Acts%20and%20Regulations/C/Crops%20Act%20-%20No.%2016%20of%202013/docs/CropsAct16of2013.pdf
6. https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20KENYA%20NOV%2018%202015.pdf

4.3.2 Alignment of county-level CSA Plans with the CSA Strategy

The assessment findings established that different county governments have taken key steps in integrating different CSA activities and interventions into their agricultural development plans and their CIDPs, allocating resources for CSA-related activities and implementation of projects targeting community members with CSA-related activities. This has ensured support of the CSA interventions at different levels within the counties, aligning with the CSA strategy which identified county governments as the implementers.

a. Busia County

Busia County developed its action plan, Busia County Climate Change Action Plan (BCCAP) 2023-2027. This plan recommends concerted efforts with key stakeholders and partners to promote adoption of CSA technologies to boost food & nutrition security; and enhance soil fertility as well as increasing on-farm tree cover. Review of the BCCCAP revealed that Busia County promotes climate smart agriculture through strategies such as irrigation, drought tolerant crops and promoting soil and water conservation. In addition, the County has a fish hatchery with a capacity of 100,000 fingerlings per month to promote aquaculture among communities. In water sector, the county is conserving water catchment and promoting use of solar in pumping of water.[19] All these key activities are align with the interventions under KCSAS 2017-2026.

In addition, the county has Busia County Integrated Development Plan 2023-2027, that has identified CSA as a mitigation measure to climate change and mechanism towards sustainable agriculture.[20] Both Busia CIDP and the CCCAP work together to guide CSA implementation

by mainstreaming climate change into sectoral planning and providing tools for effective implementation and monitoring.

b. Nyeri County

In Nyeri County, Nyeri County Climate Change Action Plan 2023 -2027 was developed and the interventions on CSA adopted from the KCSAS 2017-2026. The action plan guides steps towards transformation and reorientation of agricultural systems to effectively support development and ensure food and nutrition security in within the county. The County has demonstrated its key roles in ensuring increased access to water for irrigation and drinking through; investing in water harvesting and storage technologies e.g. Water pans, Dams, roof water harvesting facilities, masonry Tanks, springs protection, water and irrigation projects and solar powered boreholes.[21] Furthermore, through implementation of Kenya Climate Smart Agriculture Project (KCSAP), the county government aims at Up-scaling CSA Practices and supporting smallholder farmers to adopt integrated climate smart TIMPs and also support investments through a community-driven development approach in smallholder agropastoral production systems and in pastoral extensive production systems in the Project area.[22]

Nyeri County Strategic Plan 2021-2025: The Strategic plan contains plans for implementation of CSA interventions as one of the focus areas it seeks to strengthen monitoring and evaluation of climate smart activities at the county level.

Nyeri CIDPs: Nyeri CIDP provides the overall development framework for the funding and execution mechanisms to ensure effective implementation of the KCSAS.

c. Kajiado County

Kajiado County Climate Change Action Plan 2023-2028: Kajiado County through its action plan (Kajiado County Climate Change Action Plan 2023-2028) adopted key CSA actions recommended in the KCSAS in its programs and projects to ensure climate change mitigation and adaptation. Key CSA approaches have been designed to apply integrated approaches to manage landscapes, cropland, livestock, forests and fisheries that addresses the interlinked challenges of food security and accelerating climate change. The action plan also supported implementation of Integrated and climate smart innovations for pastoralists economies and landscapes (ICSIAPL) project, which aims to enhance the livelihoods of agro-pastoralist communities through improved forage production and livestock farming while building on the commercialization of climate-smart innovations and sustainable landscape management.

Kajiado County Rainwater Act 2021: Owing to the Kajiado's semi-arid condition, the action plan highlights key steps to be undertaken by the department of water to encourage communities to harvest rainwater through Kajiado County Rainwater Harvesting Act, 2021 that requires landlords and homeowners to install water harvesting infrastructures. The county government in partnerships with other key stakeholders is helping communities to sink shallow wells, water

dams and boreholes to collect water that would be used in the event of severe drought. The department is also doing solarization of community and institution boreholes and providing technical support to individuals to install solar panels for their boreholes.[23]

Kajiado CIDP 2023-2027: Kajiado County has also displayed significant initiatives to adaptation towards sustainable livestock production in collaboration with the Ministry of Agriculture through KCSAP. The county supported households and women's groups with livestock, such as Sahiwal steers and heifers, dairy and meat goats and indigenous chicken, which has acclimatized with the climatic conditions of Kajiado region. The CIDP also documents crucial provisions on promoting CSA and environmental friendly practices to curb climate change impacts.

d. Turkana County

Turkana County Climate Change Action Plan 2023-2027: Review of the Turkana County Climate Change Action Plan 2023-2027 revealed that Turkana County incorporated diverse range of CSA interventions to ensure achievement of sustainable development benefits. The prioritized interventions reflect the inputs received from National and County Governments; vulnerable groups including women, youth, persons with disabilities, and members of marginalised and minority communities; private sector; civil society; and sector experts. The priority actions include on farm adaptation strategies such as conservation agriculture, rainwater harvesting, fodder conservation, planting early maturing and drought-tolerant crops as well as drought-resistant and high-value livestock breeds. Off-farm adaptation strategies promoted by the county government through its action plan include education and research on climate smart agriculture practices, early warning systems and climate-based advisories, extension services, livestock and crop insurance, afforestation, and reforestation.[24]

Turkana CIDP: It is worth noting that these key actions discussed above are also mainstreamed in the Turkana County Integrated Development Plans and the County Annual Development Plans to ensure that strategic climate change actions are taken up across the county and in all relevant sectors.

Turkana County Climate Change Policy 2021: This policy recognizes that climate change directly affects countries' social, economic, and human development. It was therefore developed to provide a framework for addressing climate change issues in the County.

e. Garissa County

Garissa County Climate Change Action Plan 2023-2028: The County of Garissa through its Climate Change Action Plan 2023-2028 adopted adaptation and resilient strategies to overcome climate risks and shocks in order to enhance livelihoods. These actions include rehabilitation of strategic boreholes, enhancing large scale fodder production and preservation, restoration of degraded rangelands, integrating climate service information/early warning system, promotion of drought-tolerant and flood-tolerant variety of crops and trees, promotion of climate smart

agriculture technologies, innovations and management practices, development of flood control dams/structures along seasonal and permanent rivers and improving vectors and disease surveillance & response. Other actions include improvement of animal health service delivery and increasing the resilience of livestock systems.[25]

Garissa County Environmental Management and Coordination, Act 2018: This Act provides a framework for an integrated approach to planning and sustainable management of the County's environment and natural resources. This policy strengthens the legal and institutional framework for good governance and effective coordination and management of the environment and natural resources and encourages communities within Garissa County to effectively participate in the management of the environment and natural resources.[26]

The Garissa County Climate Change Fund Act section 15:[27] The Act established the climate change steering committee as one of the core coordinating structures that comprise technical directors from line ministries. It also established the Ward Climate Change Planning Committee consisting of local leaders, a Public Benefit Organization, a Faith Based Organization, and eight community representatives to facilitate public participation at the ward level, develop project proposals, and monitor & report the implementation of projects at the ward level.

f. Kisumu County

Kisumu County Integrated Climate Change Action Plan (KCICCAP) 2022-2027: This policy document provides recommendations on promotion and adoption of Climate Smart Agriculture (CSA) to boost food security and enhance soil fertility as well as increase on farm tree cover. Through domestication and implementation of KCSAS, Kisumu County significantly ensures implementation of CSA initiatives within the region to promote agro-ecological farming practices as well as modern and climate smart agricultural and fishery technologies.[28]

Kisumu County Climate Change Policy 2019:[29] The main purpose of the policy is to ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy and to steer Kisumu County towards a climate-resilient blue economy and green development pathway.

Kisumu County Climate Change Act, 2020:[30] The Act provides a regulatory framework for an enhanced response to climate change and provides a legal basis for climate change activities through the County Climate Change Action Plan. The Act guided the establishment of the County's Climate Change Council, Climate Change planning committees, the Climate Change Directorate, and the Climate Change Fund to support and strengthen CSA in the county.

Draft Kisumu County Sustainable Energy Policy: The purpose of this policy is to transform the livelihood of the people of Kisumu County through provision of clean, sustainable, affordable and reliable energy services. It emphasizes and presents the county government's actions aimed at emission reduction and targets emissions from the energy sector. Also the policy has prioritization criteria that is designed to ensure enhanced energy access with equity, sustainable

development, and optimal use of indigenous and renewable resources and ensure that these are integrated into the national energy plan.

g. Kilifi County

Kilifi County Climate Change Action Plan (CCCAP) 2023-2027: Kilifi County developed its CCCAP 2023-2027 in order to cushion key sectors against the impact of climate change. More importantly, the plan has identified detailed CSA interventions to promote sustainable agriculture among the communities as well as measures to promote environmental protections. Among other actions, the proposed adaptation measures include;

- Up scaling production and promotion of drought tolerant, pest resistant as well as early maturing/drought escaping crops varieties; flood based irrigation and promotion of agro-forestry;
- Supporting development of water infrastructure through improved water harvesting techniques and rehabilitation of existing ones; water catchment protection and strengthening community capacity to manage water schemes;
- Improving access to clean water and sanitation facilities to limit outbreaks of water-borne diseases;
- Reducing effects of drought and climate change on vulnerable communities for resilience building through strengthening strategies used by communities to adapt to climate variability for reduction and management of risks;
- Reforestation of degraded forests; restoration of forests and woodlands and promotion of suitable tree species as well as in-situ conservation.
- Promotion of energy efficient cook stoves to reduce household and institutional demand on biomass energy and to reduce greenhouse gas emissions.

h. Kitui County

Kitui County Climate Change Action Plan 2023-2027: Review of the Kitui County Climate Change Action Plan revealed that Kitui County has put effective mechanisms to implement climate smart technologies. Notably, these mechanisms have gotten a node in the CIDP 2023-2027 for Kitui County and have been incorporated in all aspects of planning, and appropriate departments allocated resources to implement these identified CSA adaptive strategy to ensure that development initiatives are resilient to the impacts of a changing climate. Key practices being promoted include;

- Assessment of the status agro-forestry and water harvesting structures and make recommendations for scaling out; and promotion of agro-ecology to increase rainwater infiltration, reduced floods, increase soil fertility and improve soil ecology.
- Promote climate smart pasture development;
- Promote on-farm water harvesting technologies such as farm ponds, retention ditches bunds, stone bunds, grass strips, contour levelling and terracing;

- Promote growing of drought tolerant short cycle food crops such as sorghum, millet and short cycle crops such cow peas and green grams;
- Promote seed bulking and village seed banks for traditional crops;
- Promote construction of mega dams for surface water harvesting and drilling of boreholes.
- Promote supplemental and precision irrigation technologies to conserve water and increase output per unit such as drip irrigation systems and hydroponic systems;
- Promotion of appropriate water harvesting technology for household level crop production; Kitchen gardens, shade nets, sustainable green houses and Zai Pits.[31]

Kitui County Climate Change Fund Regulations, 2018[32]: The purpose of this policy is to outline the regulations that govern the County Climate Change Steering Committee (KCCCSC), County Climate Change Technical Committee (KCCCTC), and Ward Climate Change Planning teams (WCCPTs) in the county wards. This policy operationalized Kitui County Climate Change Fund (KCCCF) and put in place structures for implementing county-specific climate actions.

Kitui County Environment and Climate Change Policy, 2023[33]: The policy was developed to strengthen other existing policies that aim at addressing climate change and resilient agriculture. The policy has formulated structures that have placed Kitui County in a vantage position in mobilizing resources and/or building partnerships for the implementation of adaptation and mitigation programmes and projects to build the resilience of its citizens against the effects of climate change.

Kitui County Charcoal Management Act, 2014[34]: This Act was formulated to regulate and manage the production, use and trade of charcoal in Kitui County. It established the County Charcoal Management Committee to monitor its operation. It enhances the sustainable use, conservation and management of forests and trees; to promote the participation of the communities, private sector and other stakeholders in forest management; conserve water catchment areas; promote dry land forestry and climate change adaptation and mitigation efforts.

4.3.3 Inter-agency and Stakeholder Coordination Mechanisms

For successful implementation of KCSAS 2017-2026, effective platforms and frameworks were established to promote collaboration, knowledge sharing and joint planning among various actors including government agencies, non-governmental organizations, research institutions, private sector actors and farmers at the local levels. The assessment noted that effective coordination ensures that diverse resources and efforts were leveraged as well as facilitating wider adoption of the CSA practices both at the national and local levels. Some of the mechanisms adopted are as discussed below;

The Kenya Climate Smart Agriculture Multi-Stakeholder Platform (CSA MSP): Literature review established that CSA MSP provides a coordination and networking mechanisms for stakeholders within the Agriculture and climate change sector of Kenya to share experiences and identify synergies in their key activities. This platform is chaired by the head of the Climate Change

Unit of the Ministry of Agriculture, Livestock, Fisheries and Co-operatives. CSA MSP convenes stakeholders involved in climate change and agriculture in Kenya on quarterly basis, including government actors, NGOs, research and academia and the private sector. The platform is used to share share knowledge, discuss approaches and coordinate activities around climate smart agriculture and similar interventions. The national level CSA MSP, with the support of platform members established county level MSPs. These county level platforms created a mechanism for coordination on the ground activities and reaching farmers and other food system actors at the locals more directly.[35]

Joint Agricultural Sector Steering Committee (JASSCOM): The study revealed that a two-day consultative meetings were held between the Ministry of Agriculture, Livestock and Fisheries and the COG in August 2024 in Mombasa. The meeting was used to strengthen intergovernmental relations between the national government and the county governments to address key agricultural gaps and challenges alongside the KCSAS parameters. Through the meeting, the Ministry pledged to support livestock programs by facilitating counties to implement initiatives such as feedlots, milk coolers, and enhanced disease control measures to ensure quality milk and meat products. Regular similar follow-up meetings were agreed to be held. In essence, the meeting was a significant step towards ensuring effective coordinated implementation of agricultural policies and programs.[36]

County Agriculture Sector Steering Committee (CASSCOM): This is a body that plays a crucial role in coordinating and managing agricultural activities at the county level. It acts as a platform for collaboration between the county government, key stakeholders, and various agricultural actors, aiming to improve agricultural sector development. The review of the CASSCOM Needs Assessment Report 2021 established that the specific role of CASSCOM in the implementation of KCSAS include improving the strategy's efficiency, effectiveness and accountability in the county service delivery and harmonize CSA reporting in the counties and provide link to National Government. Further findings established that counties have well defined roles of CASSCOM in their different policy implementation structures to guide their operations, as required. This is as discussed below.

Kitui County: Kitui County has a well-established secretariat for County Agri-Nutrition Coordinating Forum (CACF), made of membership from key agricultural sector departments such as Agriculture, Livestock. Fisheries, Water & Irrigation and Environment & Natural Resources among other key departments. The forum is chaired by the director of Agriculture (In case of his/her absence, the forum is chaired by the director of livestock). The already established CASSCOM in Kitui County coordinates with the JASSCOM at national level to communicate CSA implementation progress updates and key learning areas and further for seek for any necessary support especially relating to more resources mobilisation and advocacy from the national government.[37]

Kisumu County: Under the Kenya Gazette Supplement Bills, 2023 Kisumu County incorporated Kisumu County Agricultural Sector Consultation and Cooperation Mechanism Committee

(KCASCOM) in its Kisumu County Agricultural Sector Co-ordination Bill 2023. The committee is mandated to facilitate and enhance collaboration, cooperation, coordination and consultation among different agricultural sector stakeholders in the county.[38] This committee works in liaison with the Kisumu County Agri-nutrition TWG to address matters agriculture and nutrition related plans.[39]

Kajiado County: Kajiado County has a CASSCOM that is responsible for coordinating all players involved, which are the public sector, private sector, NGOs and civil society organizations. The chief officer responsible for livestock shall convene a county steering committee to approve decisions of technical committees for different CSA activities, including animal feeds. In the County, this committee also approves implementation programmes, project proposals and plans prepared by the technical directorates. Also, oversight of animal feed programs, resource mobilization and policy development are the other mandates for the committee in the county[40].

Nyeri County: CASSCOM effectively coordinates different agricultural practices in Nyeri County. The county developed CASSCOM Strategic Plan 2020-2022 to guide operations of the CASSCOM in order to achieve its coordination and oversight roles in County, especially around KCSAS implementation and effective mechanisms to collaborate with the JASSCOM.

4.3.4 Involvement of Non-state Actors Including Religious Institutions

Non-state actors, especially religious institutions play a crucial role in supporting community members. Leveraging on their moral and ethical stance and extensive networks, the community members build their unconditional trust on these institutions, giving them an entry and easy access to communities for different CSA activities with an aim to support the communities and create climate and agricultural resilience. These institutions support the communities at different capacities as discussed below.

Integrating CSA Practices with Religious Stewardship: Religious institutions are highly influential social pillars in Kenyan communities and serve as critical agents in advancing CSA. Their trusted moral authority and wide grassroots reach position them uniquely to shape public attitudes and influence behavioural change. By embedding CSA messages within theological and scriptural teachings, religious leaders frame climate-resilient practices as not just economic or environmental necessities, but as moral responsibilities rooted in faith. For instance, biblical narratives such as the stewardship mandate in Genesis 2:15 ("The Lord God took the man and put him in the Garden of Eden to work it and take care of it") reinforce principles of sustainable land use, while the story of Noah's ark reflects themes of preparation, preservation, and resilience in the face of environmental uncertainty. The account of Joseph advising Pharaoh to store grain in preparation for famine (Genesis 41) aligns with CSA practices such as water harvesting, soil conservation, and food security planning. By linking such teachings to modern agricultural techniques like agroforestry, conservation tillage, and drought-resistant crops religious institutions cultivate a value-based rationale for CSA, encouraging adoption through a sense of spiritual duty.

Technical Assistance and Training for Farmers: The study revealed that different non-state actors such as ADS hire agricultural experts at the local communities to provide training and best practices in sustainable agriculture and climate resilience practices such as conservation tillage, organic farming, crop rotation, agroforestry, and water management to enhance soil health, improve crop yields, and promote the conservation of natural resources.. These are facilitated through workshops, seminars, field days and community gatherings, ensuring that farmers receive practical guidance on sustainable agriculture, tailored to their needs. These community events provide knowledge-sharing platforms where farmers learn from one another, creating a culture of collaboration and continuous learning ensuring that farmers adapt to the changing climatic conditions through resilient agriculture.

> ***We do work with many organizations, some of those are faith-based, while other are not. From the faith side, we work a lot with agencies like Act Alliance, where we work with NCCK and ADS, because they also program a lot around climate and agricultural adaptation. Through their diverse projects, they enegage farmers and support them in training and capacity building around climatic adaptation to resilient agriculture depending on their community needs.*** **– KII with Project staff, ACT Alliance.**

Advocacy on Policies Innovations on CSA: The study revealed that non-state actors conduct campaigns on community awareness on the adaptation in sustainable agriculture, and the need for government to provide funding to support the initiatives and develop significant policies to support sustainable agriculture. Institutions such as ACT Alliance and ADS maintain ties with broader continental bodies such as the All Africa Conference of Churches (ACC), which plays a pivotal role in regional policy advocacy and awareness creation around climate justice. These collaborations expand the influence of CSA implementation beyond national boundaries, allowing for cross-country learning and stronger advocacy platforms.

Financial Support to Resilient Agricultural Practices: The findings established that different religious institutions have established microfinance programs to provide low-interest loans and capital to farmers to start sustainable farming. This ensures that even vulnerable farmers acquire resources such as seeds, farming equipment and irrigation tools and technologies to practice resilient agriculture. For instance, from literature, it was revealed that National Council of Churches in Kenya (NCCK) supports farmers in Turkana[41] and Tharaka Nithi[42] counties with adaptive drought-tolerant seeds and irrigation, Church Worldwide Service (CWS) supports beekeeping, the construction of sand dams and drip irrigation and drought-tolerant crops in different counties in Kenya such as West Pokot County[43]. In addition, ADS has also demonstrated its active community engagement in supporting climate resilient agriculture in different parts of the country through ADS regions. Notably, the strategic plans developed by the ADS regions incorporates different projects to support CSA interventions in their strategic plans to promote resilient agriculture. For instance, ADS Eastern through its Towards Ending Drought Emergencies (TWENDE) Project in Makueni, Kitui, Tana River and Tharaka Nithi Counties reached more than 770,000 community members, aiming at restoring degraded land to mitigate risks associated

with climate change and increasing incomes for beneficiary groups from resource management through grass seed banking and digging of soil bunds to increase water retention capacities.[44]

4.3.5 Gaps in Coordination and Implementation Structures

Lack of Interest on Climate Change Interventions among the Community members: Findings revealed that many community members still avoid participating in climate change related discussions hence hindering effective coordination especially at the county level. A baseline study conducted by Crawn Trust in Nyandarua, Kwale, and West Pokot found that community members do not participate in activities that require public participation in climate issues, hence hindering effective budget making, policy making and county planning especially around the CSA interventions.[45] According to respondents, many fail to take part in the platforms created as they lack a broader understanding of the global context of climate change and its potential impacts to their daily lives despite the existence of indicators of climate change within their environments. This therefore hinders effective implementation and coordination of CSA approaches as the community members are the targeted grassroots level stakeholders. There is therefore a need for more mechanisms to create awareness on the indicators of climate change within the communities and what that means to the community members.

Inadequate Infrastructure on Engagement of Faith (Religious) Institutions: The study revealed that despite the strengthened efforts to improve research on CSA interventions and the active engagement of faith organizations, there is still limited studies in existence in Kenya that document how religious institutions influence the adoption of CSAPs. This leaves out the critical achievements and national impactful interventions achieved by these institutions considering their deep-rooted presence in the communities. The assessment noted the key role played by the faith organizations in enhancing agricultural resilience and ensuring food security in the face of climate change in various ways, including direct financial support for agricultural adaptation, education and training to farmers as well as facilitation of sustainable agricultural projects within the communities. Furthermore, the CSAIF does not clearly define the coordination roles of these institutions within the coordination mechanisms. This limits the availability of data from the grassroots agricultural practitioners to inform the research outputs on CSA.

Limited Agricultural Adaptation Finances: The study revealed that many counties have incorporated CSA adoption strategies in their action plans and CIDP, which has also received funding allocation in the fiscal budgets. However, large section of the funds are majorly directed towards capacity building and equipment purchase for the county civil servants in agricultural and climate change units, leaving very little or no funds towards supporting farmers to and the communities towards adoption of CSA practices. This leaves heavy reliance on non-state actors and religious institutions for funding of the adaptation practices.

Lack of Centralized Online M&E framework: The assessment notes the comprehensive M&E framework and tool developed to help in monitoring the progress of the implementation of the KCSAS 2017-2026. However, the tool has not been made available online for counties to guide their reporting on the CSA achievements. This has led to development of different

county and local reports with diverse indicators and different formats from those targeted at the national level. This has made it difficult to effectively ensure consistency and comparability of achievements made in the implementation of the CSA strategy. The national government should speed up the finalization of the online tool to ensure consistent data collection and learning across all levels of the implementing institutions as it will provide standardized approach to track progress, measure impact and inform decision-making regarding CSA.

Late Disbursement of Funds to the Counties: The assessment established that despite the well laid frameworks and plans to implement CSA plans, delay in the disbursement of County funds by the national government negatively affects operations of the Counties leading to postponement of initiatives or allocating less funds on these plans considering that County Governments heavily rely on these funds to provide essential services and drive development projects within their jurisdictions, among them including implementation of KCSAS. According to the Council of Governors Statutory Report 2022-2023, the late disbursements arise as a result of different factors including delayed approval of the legal framework for disbursement by the Senate and National Assembly as was witnessed on the FY 2022/2023, and slow finance and procurement processes in some Counties.[46]

Overreliance on Donor Funds: The study revealed that most counties majorly rely on donor funds and projects to support agricultural and climate related initiatives. Considering the long term needs of the agricultural interventions and climate resilience practice, some donor-funded projects, due to their fixed duration lifespan fail to meet the sustainability aspect as communities are left vulnerable when the funding dries up. Other factors that exacerbate the negative impact is the corruption and mismanagement of the funds as well as ineffective mechanisms that do not effectively engage the community members.[47]

4.4 Funding and Resource Allocation

Sustainable implementation of CSA interventions in Kenya hinges on the availability, accessibility, and effective utilization of financial resources. The Kenya CSA Strategy (2017–2026) recognizes that mobilizing adequate funding from both public and private sources is critical to scaling climate-resilient practices, strengthening institutional frameworks, and enhancing farmer-level adaptation.

4.4.1 Budgetary Allocations at National and County Levels

Public financing plays a critical role in enabling the implementation of CSA in Kenya. However, budgetary allocations at both national and county levels remain inconsistent, fragmented, and often insufficient to meet the growing demands for climate-resilient food systems.

4.4.1.1 National-Level Budgetary Trends

Despite agriculture's critical role in Kenya's economy and its potential to drive climate adaptation, national budget allocations to the sector continue to fall short of the 10% target committed

under the Maputo and Malabo Declarations[48]. Over the last three financial years, the national government has demonstrated incremental yet inconsistent investment trends across agriculture and climate-relevant sub-sectors.

- In FY 2022/2023, the government allocated Ksh 66.8 billion to Agriculture and Food Security. In the same year, Ksh 2.8 billion was committed to the Kenya Marine Fisheries and Socio-Economic Development Project, while Forest and Water Tower Conservation received Ksh 10.15 billion, and the Kenya Livestock Commercialization Programme (KeLCoP) received Ksh 1.65 billion.
- In FY 2023/2024, the allocation to Agriculture and Food Security rose to Ksh 87.9 billion. An additional Ksh 2 billion was earmarked for aquaculture development, targeting over 18,000 smallholder farmers to build climate resilience. Funding for Forests and Water Towers Conservation increased to Ksh 14.3 billion, and the livestock sub-sector received Ksh 7.5 billion to improve production systems.
- In FY 2024/2025, the allocation slightly decreased to Ksh 84.9 billion for Agriculture and Food Security. The fisheries sub-sector was allocated Ksh 2.07 billion to support infrastructure development and improve fish post-harvest management. Forest-related interventions received Ksh 10.7 billion for Conservation and Management and Ksh 1.7 billion for Research and Development. The Livestock Resources Management and Development budget rose to Ksh 12.3 billion.

While these investments reflect growing awareness of climate resilience needs within the agricultural sector, they remain insufficient to comprehensively tackle climate-related risks. Moreover, CSA-specific expenditures remain embedded within broader sectoral programs and are not consistently disaggregated in budget documents, hindering precise tracking of CSA investments. Although the Medium-Term Expenditure Framework (MTEF) process under the Agriculture, Rural, and Urban Development (ARUD) sector outlines priorities consistent with CSA such as improved seed distribution, livestock vaccines, aquaculture inputs, and irrigation infrastructure—there is an urgent need to strengthen CSA-specific budget tagging, performance indicators, and outcome tracking mechanisms to ensure effective alignment with national strategies like the ASTGS and the NCCAP.

Table 2: National Budget CSA Related Budget Allocations

Financial Year	Agriculture	Fisheries	Forestry	Livestock
FY 2022/2023	For the FY 2022-2023, the Kenyan government allocated Ksh 66.8 bn for Agriculture and Food Security.[1]	Ksh 2.8 billion was allocated to Kenya Marine Fisheries and Socio-Economic Development Project in FY 2022/2023.	Kenya allocated Ksh 10.15 billion for Forest and Water Tower Conservation during the FY 2022-2023.[2]	Kenya allocated Ksh 1.65 billion to Kenya Livestock Commercialization programme (KeLCoP) for the financial year 2022-2023.[3]
FY 2023/2024	For the FY 2023/2024, Kenya allocated KShs 87.9 bn to Agriculture and Food Security.[4]	Ksh 2 billion was allocated to boost aquaculture and build climate resilience to over 18,000 smallholder farmers.	Kenya allocated Ksh 14.3 billion for Forests and Water Towers Conservation.[5]	Kenya allocated Ksh 7.5 billion to Improve Livestock Production.[6]
FY 2024/2025	Kenya allocated to Agriculture and Food Security Ksh 84.9 bn.[7]	Ksh 2.07 billion to support the development of fisheries related infrastructure and improve fish post-harvest management	Kenya allocated Ksh 10.7 billion Forests Resources Conservation and Management and Ksh 1.7 billion Forests Research and Development.[8]	Kenya allocated Ksh 12.3 billion for Livestock Resources Management and Development.[9]

1. https://www.treasury.go.ke/wp-content/uploads/2022/04/Mwananchi-Guide-for-FY-2022-23-pdf.pdf
2. https://www.treasury.go.ke/wp-content/uploads/2022/04/Mwananchi-Guide-for-FY-2022-23-pdf.pdf
3. https://www.treasury.go.ke/wp-content/uploads/2022/04/Mwananchi-Guide-for-FY-2022-23-pdf.pdf
4. https://www.treasury.go.ke/wp-content/uploads/2023/06/Budget-Highlights-The-Mwananchi-Guide-for-the-FY-2023-24-Budget.pdf
5. https://www.treasury.go.ke/wp-content/uploads/2023/06/Budget-Highlights-The-Mwananchi-Guide-for-the-FY-2023-24-Budget.pdf
6. https://www.treasury.go.ke/wp-content/uploads/2023/06/Budget-Highlights-The-Mwananchi-Guide-for-the-FY-2023-24-Budget.pdf
7. https://www.treasury.go.ke/wp-content/uploads/2024/06/Budget-Highlights-The-Mwananchi-Guide-for-the-FY-2024-25-Budget.pdf
8. https://www.treasury.go.ke/wp-content/uploads/2024/06/Budget-Highlights-The-Mwananchi-Guide-for-the-FY-2024-25-Budget.pdf
9. https://www.treasury.go.ke/wp-content/uploads/2024/06/Budget-Highlights-The-Mwananchi-Guide-for-the-FY-2024-25-Budget.pdf

4.4.1.2 County-Level Budgetary Allocations in Assessed Counties

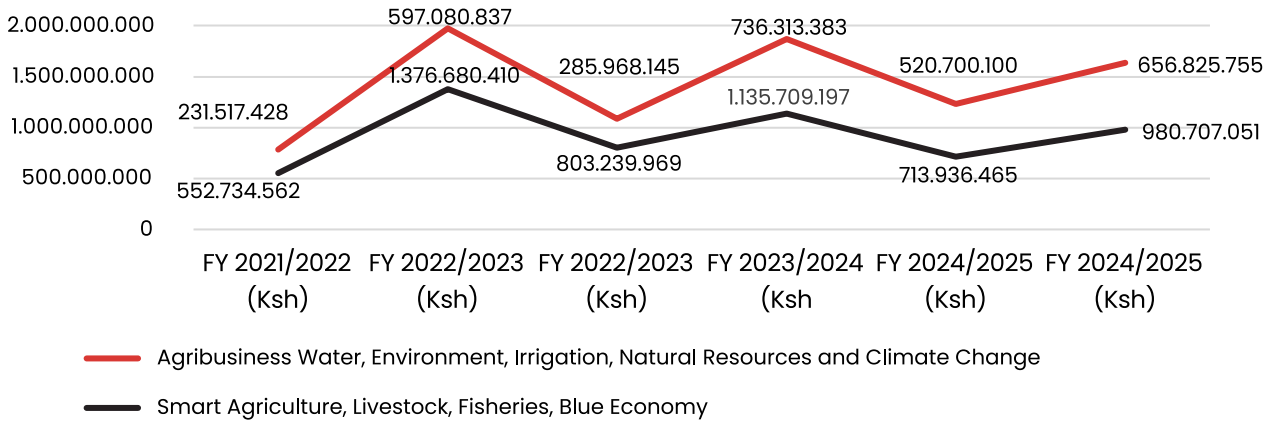
Across the eight counties assessed; Garissa, Busia, Kisumu, Kilifi, Kitui, Turkana, Nyeri, and Kajiado, efforts to prioritize CSA vary significantly. Some counties have integrated CSA into development frameworks like CIDPs and County Fiscal Strategy Papers (CFSPs), while others face challenges in allocating and executing dedicated CSA budgets.

a. Busia County

Busia County has shown a consistent increase in allocations to sectors relevant to Climate Smart Agriculture (CSA) over recent financial years. In FY 2024/2025, the county allocated Ksh 980.7 million to the Department of Smart Agriculture, Livestock, Fisheries, Blue Economy, and Agribusiness, with Ksh 713.9 million (72.8%) dedicated to development expenditure. This reflects a strong commitment to enhancing agricultural productivity and resilience, particularly through modernization and climate-relevant programs.[49]

In addition, the Department of Water, Environment, Irrigation, Natural Resources, and Climate Change received Ksh 656.8 million for the same period, of which Ksh 520.7 million (79.3%) was directed toward development projects. These include irrigation infrastructure, water harvesting, environmental conservation, and potentially CSA-aligned activities. The upward trend in allocations from Ksh 552.7 million in FY 2021/2022 to nearly Ksh 1.38 billion in the revised FY 2022/2023 budget for agriculture-related sectors demonstrates a scaling up of investments in key CSA-enabling areas.[50]

Figure 15. Busia Budget Allocation from 2021-2025



However, despite these substantial investments, a key gap remains in the lack of disaggregated CSA-specific budget lines. CSA activities are currently embedded within broader sectoral allocations, making it difficult to track actual spending on climate-resilient interventions. Furthermore, while the development budget share is significant, it is not always clear how much of this directly supports CSA technologies such as drought-tolerant seeds, climate advisory services, agroforestry, or conservation agriculture.[51]

b. Nyeri County

Nyeri County has consistently allocated resources to sectors critical for CSA, although allocations have fluctuated across financial years. In FY 2022/2023, the county allocated Ksh 670.8 million to the Department of Agriculture, Livestock, and Fisheries, and Ksh 352.3 million to Water, Irrigation Services, Environment, and Climate Change.[52] This reflected a relatively strong commitment to supporting agricultural productivity and environmental resilience.

In FY 2023/2024, agricultural allocations increased to Ksh 712.8 million[53], reflecting a scaling up of investment in food systems, aquaculture, and livestock development. However, this was followed by a sharp decline in FY 2024/2025, with the sector receiving Ksh 508.3 million[54], representing a 28.7% reduction from the previous year. Similarly, allocations to the Water, Environment, and Climate Change sector dropped from Ksh 352.3 million in FY 2022/2023[55] to Ksh 327.6 million in FY 2023/2024[56], before rebounding slightly to Ksh 341.1 million in FY 2024/2025[57].

While Nyeri County has made visible efforts to invest in agriculture and environmental management, including components relevant to CSA, the absence of clearly defined CSA budget lines remains a key limitation. Climate-related activities are largely mainstreamed within broader departmental functions, making it difficult to isolate and assess CSA-specific expenditures. Furthermore, although the county has allocated funds for environmental sustainability and agricultural development, there is no clear indication of what proportion directly supports climate-resilient technologies, sustainable land management, or early warning systems.

c. Kajiado County

Kajiado County demonstrated a strong financial commitment to CSA and resilience-building initiatives during FY 2023/2024, with a total allocation of Ksh 522.79 million specifically targeting agriculture and livestock-related programs with clear CSA relevance. These investments were made within a broader county resource envelope of Ksh 11.56 billion, comprised of the National Government equitable share (Ksh 8.33 billion), Own Source Revenue (OSR) (Ksh 1.5 billion), and conditional grants totaling Ksh 1.71 billion. The county allocated Ksh 4.25 billion (37%) to development spending, including Ksh 3.34 billion for sectoral and flagship projects, within which CSA programs were prioritized.[58]

The agriculture sector received targeted support through various donor and national government-financed initiatives, such as[59]:

- Ksh 90 million under the Kenya Climate Smart Agriculture Programme (KCSAP),
- Ksh 250 million for the National Agricultural Value Chain Development Project (NAVCDP),
- Ksh 96.69 million through the De-risking and Value Chain Enhancement (DRIVE) initiative,
- Ksh 28.65 million for the Livestock Value Chain Support Project,
- Ksh 10.5 million for the Aquaculture Business Development Project,
- Ksh 41.36 million for the Fertilizer Subsidy Grant, and

- Ksh 5.59 million under the Agricultural Sector Development Support Programme (ASDSP).

These allocations reflect a deliberate approach to enhancing climate-resilient food systems, strengthening key value chains, and improving input access for smallholder farmers and agro-pastoralists. Additionally, the county's participation in national and multilateral CSA platforms enabled it to leverage co-financing mechanisms for greater impact.

However, while Kajiado's aggregated CSA budget is among the most substantial of the counties assessed, several areas still require attention. Firstly, much of the CSA funding is project-based and externally financed, raising concerns about long-term sustainability if external grants decline. Secondly, there is limited CSA-specific performance tracking at the county level, making it difficult to evaluate the outcomes and impact of the funded interventions.

d. Garissa County

Garissa County has expressed policy-level commitment to CSA by integrating climate resilience and sustainable agriculture into key county planning documents such as the CIDPs and CFSPs. These documents reflect the county's recognition of climate change as a major threat to pastoral and agricultural livelihoods and outline broad objectives for enhancing food and water security through CSA-aligned programs.[60]

In FY 2023/2024, Garissa County received external financial support totalling Ksh 104 million, comprising[61]:

- Ksh 90 million under the KCSAP, and
- Ksh 11 million through the Financing Locally Led Climate Action (FLLoCA) program (County Climate Institutional Support Grant – Level 1, funded by the World Bank),
- In addition, Ksh 3.04 million was allocated through the Sweden-funded ASDSP II.

However, despite these allocations, the county's actual absorption and utilization of funds for CSA remains critically low. According to budget execution data, the Department of Agriculture, Livestock and Pastoralism had a total budget allocation of Ksh 695.22 million in FY 2023/2024. Of this, Ksh 572.82 million was earmarked for development spending. Yet, none of this development allocation was utilized, with zero disbursement recorded, highlighting serious bottlenecks in fund access and project execution.[62]

The recurrent budget (Ksh 122.4 million) had an expenditure of only Ksh 40 million, reflecting an absorption rate of 32.7%, while the overall departmental absorption rate stood at only 5.8%. This suggests deep structural and operational challenges, including delays in exchequer releases, limited technical capacity for program implementation, and potentially weak procurement planning and coordination.[63]

While the county is positioned in one of the most climate-vulnerable regions of Kenya and receives considerable donor attention, the mismatch between planning and execution severely undermines the impact of CSA financing.

The current state of under-utilization of available resources threatens to widen the climate vulnerability gap among farming and pastoralist communities.

e. Turkana County

Turkana County has made considerable efforts to address the impacts of climate change through targeted investments in agriculture, pastoral livelihoods, and climate resilience. In FY 2023/2024, the Department of Agriculture, Pastoral Economy and Fisheries was allocated a budget ceiling of Ksh 466.75 million, with Ksh 85.92 million earmarked for recurrent expenditure and Ksh 380.82 million for development spending. These allocations reflect a strong emphasis on boosting climate resilience and supporting vulnerable agro-pastoralist communities across the county.[64]

The county has also demonstrated commitment to community-led adaptation, with an approved allocation of Ksh 382 million in 2024 for community-driven climate resilience projects, including natural resource management, water infrastructure, and drought mitigation activities. These initiatives were complemented by technical support from partners such as World Vision, with whom the county co-developed a CSA training manual to support capacity-building for extension officers and farmers.[65]

However, despite these promising budgetary commitments, budget execution remains a major challenge. Of the Ksh 1.49 billion annual budget allocated to the agriculture and pastoral economy sector in the recent fiscal year, only Ksh 620.81 million was spent as of the reporting period, translating to an absorption rate of just 42%. Development expenditure, in particular, was underutilized, pointing to operational, administrative, and logistical bottlenecks that hinder full implementation of planned interventions.[66]

f. Kisumu County

Kisumu County has made notable investments in agricultural transformation and climate-related initiatives, although CSA-specific tracking remains a challenge due to limited disaggregation of climate-smart components within sector budgets. A key highlight includes the allocation of KES 191 million to support 243 farmer groups engaged in poultry, cassava, and sorghum value chains across Kisumu East, Nyando, and Nyakach sub-counties.[67] This reflects a deliberate push to enhance local agri-value chains and farmer resilience through enterprise development.

Further analysis of budgetary data from FY 2021/2022 to FY 2025/2026 reveals a gradual scaling up of resources for climate-related and agricultural productivity programs. For instance[68]:

- The budget for Climate Change programs increased from KES 650,000 in FY 2021/2022 to a projected KES 7.36 million in FY 2025/2026, signalling a growing recognition of the need for climate-responsive programming.
- The Agricultural Productivity and Output Improvement program maintained substantial allocations, starting at KES 82.8 million (approved) in FY 2021/2022, with a projected increase to KES 52.1 million by FY 2025/2026, despite a temporary dip in FY 2022/2023.
- Other supportive programs include Agricultural Credit and Input Access, Market Access and Product Development, and Sustainable Land Use, all of which have budget allocations that steadily rise over the medium term.

Despite these promising trends, challenges persist. Most CSA-aligned activities are embedded within broader agriculture, environment, and water sectors, making it difficult to isolate budget lines or track the performance of CSA-specific investments. Additionally, the modest allocations to programs directly labelled as "Climate Change" suggest that while climate resilience is being mainstreamed, it may not yet be fully institutionalized or prioritized at scale.

Kisumu County's budget execution also raises considerations. In FY 2021/2022, out of KES 102.84 million approved, only KES 83.42 million[69] was actually spent, indicating an absorption rate of approximately 81%, which is relatively strong but still points to possible capacity or disbursement bottlenecks.

g. Kilifi County

Kilifi County has consistently allocated significant portions of its development budget to sectors relevant to CSA, particularly agriculture and natural resource management. According to the CIDP 2023–2027, the county plans to invest a total of Ksh 24 billion in the Water, Environment and Natural Resources and Agriculture, Livestock Development, and Fisheries sectors over the five-year period.[70]

Specifically, the Water, Environment and Natural Resources sector is allocated[71]:

- Ksh 2.67 billion in FY 2023/2024
- Gradually declining to Ksh 1.43 billion in FY 2027/2028

Meanwhile, the Agriculture, Livestock Development and Fisheries sector sees a notable increase in funding[72]:

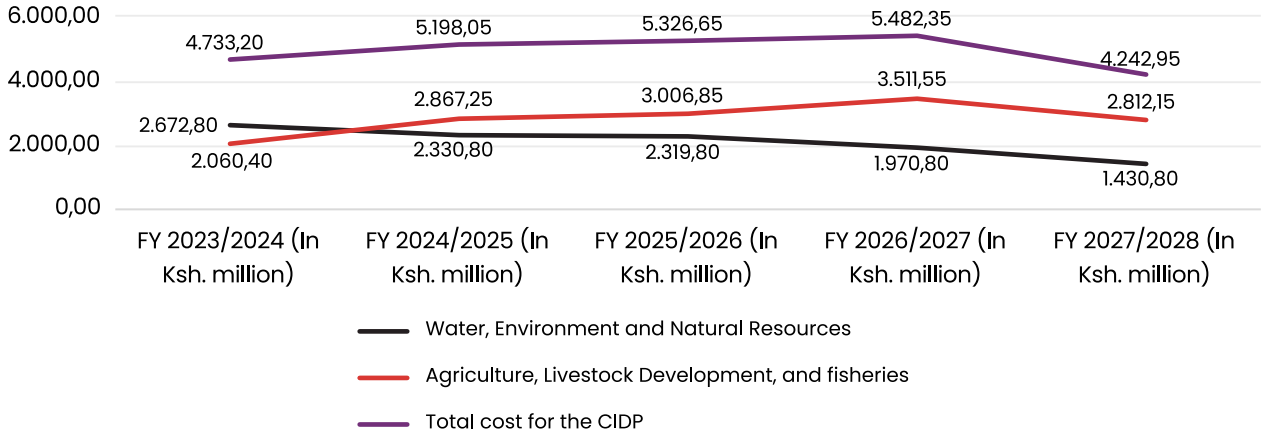
- From Ksh 2.06 billion in FY 2023/2024
- Peaking at Ksh 3.51 billion in FY 2026/2027
- Before slightly reducing to Ksh 2.81 billion in FY 2027/2028

This upward trajectory in agricultural sector investment reflects the county's growing emphasis on enhancing food security, improving livelihoods, and supporting rural development. Combined,

these two sectors represent between 85% and 100% of the county's total annual development spending over the five-year period.

However, despite this substantial financial commitment, Kilifi County still lacks a dedicated CSA budget line or financial tracking mechanism, which severely constrains transparency, accountability, and strategic targeting of climate-resilient agricultural interventions. CSA activities such as soil conservation, agroforestry, irrigation development, or climate information dissemination are often embedded within broader sector programs without specific indicators, deliverables, or reporting mechanisms.

Figure 16. Kilifi CIDP 2023/2027



h. Kitui County

Kitui County has emerged as a proactive leader in integrating climate change considerations into its planning and financing frameworks. The county has institutionalized the allocation of at least 1.5% of its annual development budget to climate change interventions through the Kitui County Climate Change Fund (KCCCF). This pioneering financing mechanism is designed to channel resources toward locally prioritized climate adaptation and mitigation projects, with a strong emphasis on community participation and inclusion of vulnerable groups.[73]

The KCCCF has supported various resilience-building investments, including the construction of sand dams, rock catchments, and water piping systems, all of which aim to enhance water access and buffer communities against the impacts of prolonged droughts and erratic rainfall. The fund has also promoted sustainable livelihoods through initiatives in apiculture, reforestation, and climate-smart agriculture.[74]

Budget allocations across key CSA-relevant sectors in Kitui County show a steady increase over the past three years, reflecting growing institutional commitment[75]:

Table 3. Budget Allocation for the Climate Change Related Sectors in Kitui

SECTOR	2022/23 ACTUALS (KSH)	2023/24 ESTIMATES (KSH)	2024/25 PROJECTIONS (KSH)	2025/26 PROJECTIONS (KSH)
Agriculture, Water & Irrigation	532,378,959	621,489,356	671,208,505	724,905,185
Livestock, Apiculture & Fisheries	686,210,163	1,007,055,408	1,087,619,840	1,174,629,428
Environment, Tourism & Natural Resources	198,761,357	240,929,125	260,203,455	281,019,731
Total	**1.42 billion**	**1.87 billion**	**2.02 billion**	**2.18 billion**

These upward trends highlight Kitui's strategic focus on investing in water security, climate-resilient agriculture, sustainable land use, and ecosystem restoration. In FY 2024/2025, Kitui is projected to invest over Ksh 2 billion[76] in agriculture and environmental sectors combined a significant commitment considering the county's semi-arid context and vulnerability to climate shocks.

Despite these gains, the county faces challenges in disaggregating CSA-specific expenditures, as many climate-smart interventions are embedded in broader sectoral budgets. There is also room to enhance transparency and outcome tracking, particularly in linking budget allocations to measurable impacts on resilience, productivity, and emissions reduction.

4.4.2 Donor and Private Sector Contributions

Donor agencies and private sector actors have played a critical role in financing and supporting the implementation of CSA in Kenya. Their contributions have complemented government efforts, enhanced technical capacity, facilitated knowledge transfer, and enabled the scaling of innovative solutions across various counties, especially those vulnerable to climate risks.

4.4.2.1 Donor Contributions to CSA

Development partners have played an indispensable role in the promotion and implementation of CSA in Kenya. Through a variety of bilateral, multilateral, and philanthropic funding mechanisms, donors have supported national and county governments in scaling CSA innovations, strengthening institutional frameworks, and building community resilience to climate shocks.

One of the most prominent programs is the KCSAP, funded by the World Bank and implemented in partnership with the Ministry of Agriculture and participating counties[77]. KCSAP is operational in several counties including Garissa, Kajiado, Kisumu, and Turkana, and focuses on improving agricultural productivity and resilience through sustainable land and water management, climate-smart inputs, and enhanced extension services[78].

Additionally, the World Bank has supported the FLLoCA Program, which aims to institutionalize climate finance governance at the sub-national level.[79] In Garissa County, for instance, Ksh 11 million was disbursed through FLLoCA's County Climate Institutional Support (CCIS) Grant to strengthen the county's climate change planning and coordination mechanisms[80].

The Swedish International Development Cooperation Agency (Sida), through the ASDSP II, has also provided substantial technical and financial assistance of approximately Ksh. 3.6 Billion[81]. In a county like Garissa ASDSP II has facilitated the identification and strengthening of climate-resilient agricultural value chains while enhancing stakeholder collaboration, market access, and knowledge-sharing platforms[82].

In collaboration with the Ministry of Agriculture and Livestock Development (MoALD), the Food and Agriculture Organization (FAO), with support from the Embassy of Sweden, is implementing the project "Institutionalizing and Scale-Up of the Kenya Integrated Agriculture Management Information System (KIAMIS)". A key objective of KIAMIS is to integrate Environmental Sustainability (ES) and CSA into agricultural planning and service delivery to address climate adaptation needs in the sector. KIAMIS functions as a digital platform supporting farmer registration and e-voucher redemption, directly contributing to the implementation of the Agricultural Sector Transformation and Growth Strategy (ASTGS). To date, over 6.5 million farmers have been registered on the platform, making it the first comprehensive, digitized farmer registry in Kenya.

Other donors such as IFAD, USAID, and GIZ have made targeted investments in nutrition-sensitive agriculture, climate-smart irrigation technologies, rangeland management, seed system resilience, and disaster risk reduction. These investments have been particularly impactful in arid and semi-arid counties (ASALs) where climate shocks disproportionately affect livelihoods.

In Kitui County, donor support has also contributed to the operationalization of the KCCCF a pioneering, county-led mechanism that channels at least 1.5% of the annual development budget into locally identified climate adaptation and mitigation projects.[83] With development partner backing, the KCCCF has financed sand dams, rock catchments, water piping systems, and other water resource projects that directly address the impacts of recurring droughts and erratic rainfall[84].

Despite these substantial investments, there are emerging concerns over sustainability and coordination. Most CSA financing at the county level remains heavily reliant on donor-funded programs, which are often time-bound and fragmented. This dependency presents risks to continuity once donor funding cycles end. Moreover, the absence of harmonized reporting frameworks and integrated monitoring systems has made it difficult to track the cumulative impact of donor support across counties or align it with national priorities such as the National Climate Change Action Plan (NCCAP) or the ASTGS.

4.4.2.2 Private Sector Contributions to CSA

The private sector has increasingly emerged as a key player in the CSA ecosystem, offering innovations in agri-inputs, digital services, renewable energy, and market systems. While its role is growing, full-scale participation is yet to be achieved due to structural and policy-related barriers.

a. Input Provision and Technology Development

Private companies such as Seed Co, Kenya Seed Company, and Syngenta have developed and commercialized drought-tolerant and disease-resistant seed varieties suitable for ASAL regions. These efforts help farmers mitigate yield losses from climate shocks and pests.

b. Digital and Mobile-Based Services

Agri-tech platforms like DigiFarm (Safaricom), iShamba, and Agri-Wallet provide smallholder farmers with climate advisories, weather forecasts, soil diagnostics, and market price information, enhancing their capacity to make informed decisions. These platforms also offer access to credit and inputs through digital wallets, creating a closed-loop system for CSA service delivery[85].

c. Financial Services and Insurance

Financial service providers including Equity Bank, M-Pesa, and various SACCOs have enabled access to digital loans and savings products. Meanwhile, companies like Pula[86] and APA Insurance[87] have piloted index-based crop and livestock insurance, compensating farmers for climate-induced losses such as droughts and pasture failures. Despite these innovations, uptake remains limited due to affordability, awareness gaps, and complex claims processes.

d. Value Chain Development and Market Integration

Private agribusinesses, especially in Kisumu, Kilifi, and Nyeri, are involved in contract farming, processing, and aggregation of CSA-relevant value chains including poultry, cassava, sorghum, aquaculture, and beekeeping. These partnerships offer farmers secure markets, training, and access to improved inputs, contributing to income stability and resilience.

e. Renewable Energy Solutions

Renewable energy companies are enabling CSA by deploying solar-powered irrigation, cold storage facilities, and clean cooking solutions, especially in off-grid rural areas. These technologies reduce post-harvest losses and reliance on climate-sensitive fuels like charcoal and diesel.

4.4.3 Challenges in Mobilizing and Accessing Funding

Despite the growing recognition of CSA as a strategic response to climate change and food insecurity in Kenya, mobilizing and accessing adequate, predictable, and sustainable financing

remains a persistent challenge. Both national and county governments, as well as development partners and private sector actors, have acknowledged a range of structural, institutional, technical, and operational barriers that constrain effective CSA financing.

a. Inadequate Public Financing for CSA

At both national and county levels, CSA-specific funding remains limited, fragmented, and often embedded within broader agricultural or environmental budgets without clear disaggregation. Kenya has not met the 10% agriculture financing target outlined in the Maputo and Malabo Declarations. While there have been increases in agricultural budget allocations in counties such as Kitui, Nyeri, and Busia, these allocations often lack clear linkages to CSA outcomes, making it difficult to track spending or measure impact.

Counties also face challenges in aligning annual budgets with long-term climate objectives due to:

- The short-term planning horizons of CIDPs;
- Limited fiscal space and competing development priorities;
- Reliance on national equitable share with limited local revenue generation;
- Infrequent or delayed disbursement of development funds from the exchequer.

b. Overdependence on Donor Support and Project-Based Funding

Many CSA initiatives across counties such as KCSAP, ASDSP II, and FLLoCA are heavily donor-funded, creating dependency on external financing. While such funding has been instrumental in building foundational CSA infrastructure and capacity, it is often time-bound and project-specific, with limited integration into core public finance systems. This undermines sustainability and ownership once donor programs close or transition.

Furthermore, overlapping mandates, fragmented project implementation, and lack of harmonized reporting frameworks have resulted in duplication of efforts and inefficiencies in resource utilization at both national and sub-national levels.

c. Limited Engagement and De-risking for Private Sector Investment

Although the private sector has begun to invest in CSA through seed systems, agri-tech platforms, and insurance products, its engagement remains constrained by:

- High perceived risks in agriculture, particularly in ASAL counties;
- Lack of risk-sharing mechanisms, such as guarantees or blended finance facilities;
- Unclear regulatory and policy frameworks for green investment;
- Low levels of public-private coordination and absence of structured platforms to co-invest or share data

This has led to concentration of investment in peri-urban or high-potential areas, leaving vulnerable regions with minimal CSA-related private capital flows.

d. Low Community-Level Access to Finance

At the grassroots level, smallholder farmers and pastoralists who are the main implementers of CSA practices face significant barriers to finance, including:

- Lack of collateral and formal credit history;
- Low financial literacy;
- Inadequate access to financial institutions in remote areas;
- Limited awareness of existing credit, subsidy, or insurance schemes.

While digital finance platforms like M-Pesa and DigiFarm have made strides in improving inclusion, CSA-specific financial products remain inaccessible to vulnerable populations, particularly women, youth, and persons with disabilities.

4.5 Monitoring, Evaluation, and Learning

4.5.1 Availability and use of data to track implementation progress

Findings revealed that despite the availability of CSA's Strategy M&E framework, there is still slow utilization of the framework as counties have not adopted it due to delayed development and dissemination of the virtual M&E tool. This has negatively impacted on the consistent reporting by the counties and key stakeholders for comparable findings. Despite this gap, there are significant sources of data to inform and track CSA implementation progress. These are as discussed below:

a. Maarifa Centre Platform

This refers to e-platform created by the Council of Governors to facilitate inter-county learning and knowledge sharing. In the implementation of KCSAS, it focusses on promoting exchange of ideas, best practices, and innovations among Kenyan counties to improve service delivery. The platform with its rich resources from counties, it aims to provide resources for learning for the policy makers, researchers, non-state actors and the community members. There are key achievements available in these e-platform to inform implementation of CSA strategy.

Natural Resource Conservation in Mutito and Muumoni Hill forests in Kitui County: The study revealed that lack of conservation of Mutito and Muumoni Hills in Kitui County led to degradation of ecosystem, including reduction in water supply downstream. Through different conservation mechanisms, the Kitui County Government restricted illegal harvesting timber and charcoal production. This led to restoration of biodiversity in the forests. As a result, the forests now have 367 bird species and 9 species of reptiles and amphibians. Furthermore, the county has initiated nature-based enterprises like honey production, a strategy that has catalyzed revenue generation for other key development projects.[88]

Sustainable Rangeland Restoration in Kajiado: The platform reveals the significant initiative taken by Kajiado County to prioritize programs and projects aiming at shaping pastoralism practices to ensure the pastoralists adopt and economic and cultural sustainable livestock production system in the context of climate change. Through partnerships with Soil for the Future Africa (SftFA), the County promotes rangeland carbon projects and sustainable financing mechanism to support decades of rangeland restoration efforts. This has provided resources to created alternative sources of water and fodder therefore preventing loss of livestock during drought periods.

Development of Water-Asset Management Dashboard in Kajiado County: Kajiado County, despite being predominantly semi-arid, it largely relies on cattle rearing and crop production. This shows that frequent droughts plagues the Counties activities. The availability of unimproved water sources such as dams, rivers, springs and water pans further compound the impact of the lack of availability of water for irrigation and livestock watering. Since the County lacked tangible evidence on the functionality of different water sources and the level of needs among the communities, it hindered the County's mechanisms to support water accessibility. Through collaboration efforts with WHH (Welthungerheilfe), the county developed its mWATER Asset Management Dashboard (location registry for water sources) and the mWATER & mDashboard (water equipment registry) to support in continuous data collection on water sources, leading to improved water services within the county.[89]

Voices for Just Climate Action initiative in Kilifi County: The county government of Kilifi efforts to conserve the environment by encouraging residents to reduce charcoal use and turn to briquettes as a clean source of energy. The project also supports other climate resilient practices such as tree planting to curb deforestation at the local levels. The Kilifi County Government donated briquette-making machines to different youth polytechnics from all sub-counties, and has further linked the initiative different microfinance institutions that offer loans to more youth towards buying more machines and raw materials for briquette making.[90]

b. County Annual Progress Reports (C-APRs)

The study revealed that County Annual Progress Reports (C-APRs) in Kenya serve as a crucial tool for monitoring and evaluating the implementation of CIDPs. They provide an annual overview of the progress made on implementation of policies, projects and programs. The C-APRs are therefore reliable documents to track the implementation progress of KCSAS. For instance, a review of Nyeri County Annual Progress report FY 2023-2024 revealed that the County procured 52,293 indigenous one-month chicks and 379 dairy goats and distributed them to farmers. Furthermore, the County completed Thika Micro irrigation Scheme and Low Kakuret Irrigation Project in Rugi and Thegu River Ward. In Kisumu County, Achievements made were recorded including rehabilitation of Maseno Agricultural Training Centre (ATC) (including installation of a drip irrigation system and expansion of water supply) and distributed day old chicks, fish cages and dry season feeding materials for the farmers. Garissa County's annual progress report indicated achievements made from the implementation of the KCSAP including support to 202 Value Chain Organizations (VCOs) with TIMPs.

c. County Websites

The findings established that the county websites also serve as crucial digital hubs for communication, transparency and tracking of service delivery efforts executed as well as policy and project implementation. With the county documents uploaded, different information can be tracked and utilized. Although not all counties share crucial documents to trace the implementation of the KCSAS, case studies of counties embracing this platform to avail information. For instance, Busia County has demonstrated a clear budget implementation on different CSA interventions including trainings provided to County staff and farmer groups.

4.5.2 Results achieved and their attribution to CSA interventions

Discussions with relevant County Government representatives provided key insights on the impact of KCSAS implementation within the counties.

Expansion of Aquaculture and Local Hatchery System: Discussions with a respondent from Busia indicated that one of the most tangible achievements in the implementation of the CSA strategy in Busia County was the large-scale expansion of aquaculture infrastructure. Through concerted efforts by the Department of Agriculture under the Directorate of Fisheries, the county witnessed the construction of over 200 fish ponds in key areas such as Samia and Butula. This shift from relying solely on lake fishing to adopting aquaculture systems represented a major milestone in enhancing fish production and sustainability.

> *"An additional achievement is we were able to increase the number of ponds that were available. We have brought the aquaculture part of it. So we were able to increase the number. For example, in one park in Samia area, we constructed 100 ponds. Then we have another 100 that were constructed in Siunga in Butula. So you can see that there are 200 fish ponds that we've added to the production system. This has promoted production and supply of fish in Busia. KII with Staff"* **- Department of Agriculture under the Directorate of Fisheries.**

Furthermore, there were developed local hatchery systems in Busia. These hatcheries serve as input sources for the aquaculture parks, helping to reduce dependence on external suppliers and lower the cost of production. The creation of these hatcheries also extended to poultry production, thereby strengthening local food systems and boosting agricultural resilience.

Ecosystem Restoration and Climate Resilience: Interviews with respondents established that counties have experienced key achievements due to the increased uptake of climate-smart agriculture (CSA) practices. Significantly, Turkana County has strengthened its adaptive capacity to climate change through vulnerability assessments and the rehabilitation of key water sources. Programs such as rehabilitating boreholes and establishing community water points have improved water access, particularly in rural and arid zones, thereby supporting both livelihoods and human health.

4.5.3 Challenges in Monitoring, Evaluation, and Learning

Despite notable progress in data generation and learning platforms such as Maarifa Centre, County Annual Progress Reports, and county government websites, several challenges continue to hinder effective MEL of KCSAS implementation at both national and county levels. These challenges impact data consistency, reporting accuracy, learning uptake, and overall evidence-based decision-making. Some of the challenges include:

1. **Delayed Adoption of the CSA M&E Framework and Digital Tools:** One of the pressing issues is the low adoption of the national CSA Monitoring and Evaluation framework. Despite the existence of a standardized results framework under the KCSAS, most counties have not fully operationalized it. This gap has been attributed to delays in the rollout of the virtual M&E tool, which was expected to support consistent reporting and data visualization. In the absence of this tool, counties continue to use manual, fragmented, or donor-specific reporting formats, which hampers the comparability of data across regions and disconnects county-level reporting from national systems. Consequently, efforts to monitor and evaluate CSA interventions remain disjointed and inconsistent.

2. **Weak Institutional and Technical Capacity for MEL Functions:** Another significant challenge is the limited capacity within county departments to carry out MEL functions effectively. Many counties lack dedicated M&E officers or have staff who are not adequately trained in climate-smart agriculture or digital data management systems. Logistical constraints such as lack of transport, digital tools, and internet access further impede the collection and analysis of CSA-related data. As a result, reporting tends to be infrequent and of variable quality, limiting its utility for decision-making. Without adequate staffing and facilitation, the MEL function cannot keep pace with the expanding scope and complexity of CSA programming.

3. **Fragmented Data Systems and Lack of Coordination:** Data relevant to CSA implementation is generated by a wide range of actors, including national ministries, county governments, NGOs, and development partners. However, these data systems remain siloed and lack interoperability. There is little coordination among the various platforms such as mWater dashboards, county MIS portals, and project-based reporting tools which results in duplication of effort, inconsistent reporting, and limited synthesis of learning. The absence of a centralized, harmonized system undermines national oversight and makes it difficult to evaluate aggregate progress on CSA targets.

4. **Limited Disaggregation and Inadequate Focus on Inclusion:** A cross-cutting weakness in the current MEL landscape is the inadequate disaggregation of data. Most counties do not systematically collect or report data disaggregated by gender, age, disability status, or livelihood group. This limits the ability to assess how inclusive CSA programs are or to identify which groups are being underserved. As a result,

interventions may inadvertently exclude women, youth, or persons with disabilities, and decision-makers may lack the evidence needed to design targeted, equitable responses. The absence of inclusion-sensitive data weakens accountability and undermines Kenya's broader commitments to gender equality and social inclusion in climate action.

4.6 Lessons Learnt

The implementation of the Kenya Climate Smart Agriculture Strategy (KCSAS) across various counties has provided valuable insights into what drives or hinders effective adoption of CSA practices. These lessons offer important direction for policy refinement, program design, and institutional coordination as CSA efforts scale up across the country.

1. **Integration of CSA Interventions into County Annual Plans:** The study noted that integrating CSA interventions into county annual plans has created clear pathways for implementation, resource allocation, and monitoring. This approach has also encouraged interdepartmental collaboration, with departments such as Health, Agriculture, Environment, and Climate Change working jointly to support CSA initiatives.

2. **Provision of Start-up Kits and Capital to Communities:** Providing start-up kits and capital especially to poor and vulnerable groups emerged as a vital strategy for promoting CSA practices. Interviews with government representatives highlighted that support extended to selected community members in counties such as Nyeri, Kisumu, Busia, and Kajiado enabled the effective implementation of the KCSAP and NAP. This targeted support helped to mitigate poverty-related barriers to the adoption of CSA practices.

3. **Delayed Disbursement of Funds:** The assessment noted that late disbursement of funds from the national government to counties, resulted in implementation delays for the KCSAS. These delays also weakened intergovernmental collaboration. For example, the postponement of funds for July–September 2024 left many county programs in limbo, including delayed salary payments. To address this, the National Treasury should ensure timely fund disbursements to support uninterrupted service delivery and CSA implementation at the county level.

4. **Undefined Roles for Private Sector and Non-State Actors:** The study observed that private sector players and non-state actors, including faith-based organizations, play a critical role in grassroots CSA implementation. However, the absence of clearly defined roles and coordination mechanisms limits the effective engagement and recognition of their contributions. Establishing structured frameworks for their involvement would enhance collaboration and impact.

5. **Capacity Strengthening on CSA Practices:** Training county staff especially at the sub-county and ward levels proved essential in equipping officials with the knowledge, skills,

and confidence needed to support CSA initiatives. Additionally, community-level training, particularly for farmers, helped to demystify the link between agriculture and climate change. Given the complex and sometimes abstract nature of climate change, many community members had difficulty understanding how agricultural practices contribute to it. The training sessions played a crucial role in bridging this knowledge gap, laying a foundation for more informed and effective CSA adoption.

6. **Multi-Stakeholder Engagement in CSA Programs:** Involvement of a diverse consortium of stakeholders in planning, implementation, management, and coordination is crucial in promoting ownership and sustainability of the implemented CSA related projects. The National government forged partnerships and strengthened collaborations with county governments, research institutions and other non-state actors such as religious institutions, CSOs and farmer cooperatives to ensure all aspects of the KCSAPs are implemented.

4.7 Emerging Issues

The implementation of CSA continues to evolve in response to new opportunities, emerging challenges, and lessons from the field. This section outlines three key emerging issues that hold significant implications for the future scaling, equity, and sustainability of CSA in Kenya. They include:

Carbon Markets: The potential for carbon markets to support the widespread adoption of CSA practices is gaining traction both globally and nationally. During the launch of the African Carbon Markets Initiative (ACMI) at COP27 in November 2022, Kenya's President Dr. William Samoei Ruto underscored the role of carbon credits as a transformative tool for financing climate action.[91] Carbon credits offer financial incentives for farmers and landowners who adopt land-use practices that sequester carbon, reduce emissions, and enhance ecosystem services such as agroforestry, reduced tillage, improved manure management, and cover cropping. Despite this opportunity, the integration of smallholder farmers into voluntary carbon markets remains limited due to knowledge gaps, regulatory uncertainty, and high transaction costs.

Gender: While climate change affects all members of a community, its impacts are shaped by intersecting factors such as gender, age, and social status, often placing women at a greater disadvantage. Although women are heavily involved in on-farm activities such as planting, weeding, and harvesting, their influence over key agricultural decisions remains limited. This imbalance significantly affects the adoption and uptake of CSA practices.

Findings from the assessment indicate that 60.5% of farming decisions are made by fathers, while only 21.1% are made by mothers, despite women contributing substantially to agricultural labor. This gendered power dynamic means that women, who are central to daily farming operations, often lack the authority to determine whether CSA techniques such as improved seed use, agroforestry, or soil conservation are implemented.

Unprecedented Challenges and Gaps in CSA: For CSA to be implemented effectively, its three interconnected pillars, increased productivity, enhanced adaptation, and reduced greenhouse gas emissions (mitigation) must be achieved in a balanced and context-specific manner. However, evolving realities on the ground continue to expose significant implementation gaps that threaten the integrity and sustainability of CSA interventions.

One notable challenge is the reliability of renewable energy technologies promoted under CSA frameworks. For example, while the installation of solar-powered irrigation systems supports the shift to clean energy, farmers often revert to fossil fuel-powered generators during cloudy or rainy seasons due to solar inefficiency. This fallback not only undermines mitigation efforts but also reflects a broader gap in energy infrastructure and backup planning, which is essential for continuity in climate-smart production.

Another example is the promotion of minimum or zero tillage practices, which are central to CSA's goals of soil conservation and emission reduction. While agronomically sound, these practices often require years to demonstrate visible benefits, such as improved soil structure and moisture retention. In the short term, they may expose farmers to increased risks of pest infestation, crop diseases, and waterlogging, particularly in areas with poor drainage or erratic rainfall patterns. These trade-offs, unless clearly communicated and supported through tailored risk mitigation strategies, can erode farmer confidence and lead to abandonment of CSA practices.

Furthermore, the dynamic and unpredictable nature of climate change is outpacing the effectiveness of some CSA interventions. For instance, changes in rainfall patterns or the emergence of new pests can render previously suitable CSA technologies less effective or even obsolete, highlighting the need for continuous innovation, localized adaptation, and robust research-to-practice linkages.

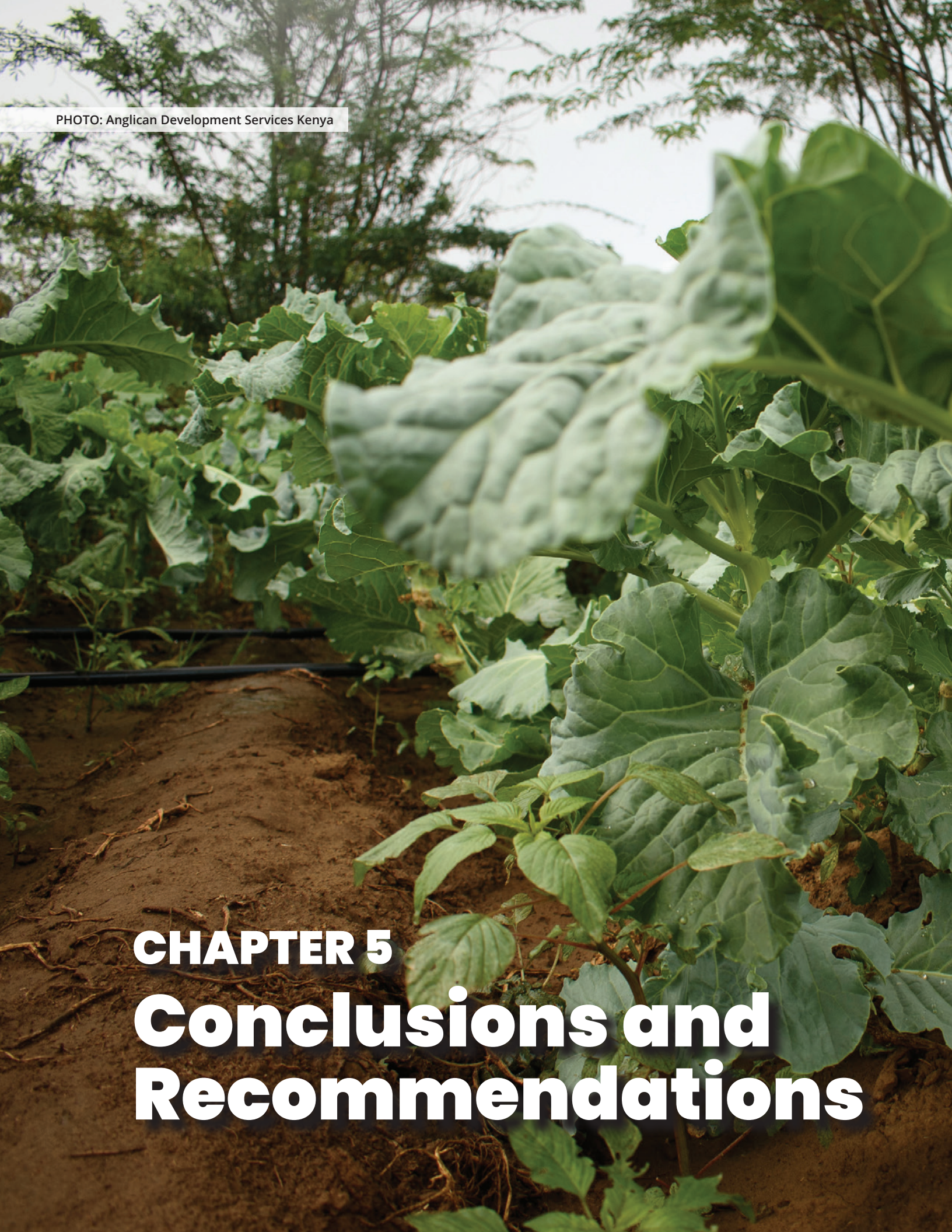


PHOTO: Anglican Development Services Kenya

CHAPTER 5
Conclusions and Recommendations

5.1 Conclusions

The Kenya Climate Smart Agriculture Strategy (KCSAS) 2017–2026 was developed to address the urgent need to transform the country's agricultural systems in response to climate variability and change. This assessment, conducted across eight counties representing diverse agro-ecological zones (Kajiado, Turkana, Nyeri, Garissa, Busia, Kisumu, Kilifi, and Kitui) highlights both the gains made and the persistent challenges in implementing climate-smart agriculture interventions at scale.

The findings confirm that CSA has gained recognition as a viable pathway for building agricultural resilience, improving productivity, and reducing emissions. Various stakeholders, including national and county governments, NGOs, research institutions, and development partners, have contributed to increased awareness and partial uptake of CSA practices. Farmers across counties reported applying a mix of traditional knowledge and improved techniques such as agroforestry, rainwater harvesting, use of improved crop varieties, sustainable livestock management, and aquaculture. There is also increasing experimentation with innovations like kitchen gardens, zai pits, solar-powered irrigation systems, and soil fertility management.

Despite this progress, implementation of the CSA strategy remains inconsistent and fragmented. County governments have taken steps to mainstream CSA into policy and practice, but the level of integration varies significantly. In many cases, CSA efforts are donor-driven and short-term, raising concerns about sustainability. The absence of harmonized coordination mechanisms has resulted in a siloed approach among actors and reduced the overall effectiveness of interventions. A major limitation is the slow adoption of the CSA M&E framework. While several counties have valuable MEL data and platforms (e.g., Maarifa Centre, county dashboards), these are not uniformly utilized or linked to national systems. As a result, progress tracking, learning, and adaptive management are compromised. Moreover, institutional capacity remains weak. Counties are often under-resourced and understaffed, with limited technical expertise to design, implement, and evaluate CSA projects effectively.

Inclusion remains a critical cross-cutting issue. Women, youth, and persons with disabilities who are negatively affected by climate shocks continue to face barriers in accessing information, resources, decision-making spaces, and productive assets. The assessment also reveals that while traditional knowledge systems continue to play an important role in adaptation, they are often under-recognized in formal CSA planning and knowledge exchange platforms.

In terms of financing, although national and county governments have made notable efforts, resource allocations to CSA-specific initiatives remain below the levels needed to achieve the strategy's objectives. National allocations to the agriculture sector continue to fall short of the 10% Maputo and Malabo Declarations' targets, and county-level budgets are often constrained or diverted due to competing priorities. Donor support has been instrumental, but reliance on external funding raises questions about long-term sustainability and ownership.

Climate-smart agriculture in Kenya is at a critical juncture. The enabling policy environment exists, and there is demonstrated community-level willingness to adapt. However, unlocking the full potential of CSA requires a coordinated, inclusive, and well-resourced approach that moves beyond project-based implementation to system-level transformation. Strengthening governance, improving financing frameworks, institutionalizing MEL systems, and investing in farmer-driven innovation and peer learning are essential for building long-term resilience.

5.2 Recommendations

To enhance the effectiveness, scalability, and sustainability of CSA in Kenya, the assessment proposes a set of integrated recommendations that address institutional, financial, social, and technical dimensions. These recommendations are designed to support the full realization of the KCSAS and ensure its alignment with national development goals, climate resilience targets, and inclusive growth. The recommendations include:

1. ***Strengthening Institutional Coordination and Policy Integration:*** To ensure coherence in CSA implementation, it is imperative that counties establish and strengthen formal CSA coordination units or technical working groups. These should bring together departments of agriculture, environment, water, and finance, alongside non-state actors including NGOs, research institutions, and farmer organizations. Functional coordination mechanisms will promote integrated planning and reduce duplication of efforts. Furthermore, CSA principles must be mainstreamed into key planning instruments such as CIDPs, County Climate Change Action Plans, and ADPs, aligning them with national strategies like the ASTGS and NCCAP. Institutionalizing CSA into planning and budgeting processes will facilitate more consistent, targeted, and accountable implementation across counties.

2. ***Enhancing CSA Financing and Resource Mobilization:*** A significant constraint in CSA implementation is the inadequate and inconsistent funding. Counties should prioritize the establishment of CSA-specific budget lines and ring-fence climate finance to protect against competing development priorities. Operationalizing County Climate Change Funds and facilitating access by local communities will promote community-led adaptation solutions. At the national level, blended financing mechanisms that combine public funding, donor contributions, and private sector investment should be developed to support large-scale CSA technologies and infrastructure. Additionally, encouraging financial institutions to design affordable credit products for climate-resilient agriculture and offering incentives for green agribusinesses can also boost private sector participation. Reliable, long-term financing is essential for the scalability and sustainability of CSA programs.

3. ***Expanding Farmer Training, Knowledge Sharing, and Extension Services:*** Building the technical capacity of farmers is central to CSA adoption. County governments should increase investment in agricultural extension systems by recruiting more staff, enhancing

their facilitation, and integrating CSA into routine extension activities. Innovative learning platforms such as Farmer Field Schools, model farms, and demonstration sites should be expanded and tailored to specific agroecological contexts. Collaboration with faith-based organizations, youth groups, and community-based organizations can also enhance outreach and credibility. Moreover, efforts should be made to blend indigenous knowledge with modern CSA practices, allowing for contextualized learning and greater community acceptance. Strengthening knowledge delivery systems will improve farmer decision-making and climate risk management.

4. ***Fostering Social Inclusion and Equity in CSA Programs:*** CSA initiatives should be intentionally designed to benefit all segments of the population, particularly women, youth, PWDs, and other marginalized groups. Counties should also conduct regular gender and social inclusion assessments to understand access to land, credit, training, and information among different groups. Based on this, targeted interventions such as women-led agribusiness cooperatives, youth innovation grants, and disability-friendly CSA models should be developed. In counties hosting refugee populations, CSA interventions should promote integration and shared access to services. Equitable access to CSA resources and opportunities will not only enhance livelihoods but also promote social cohesion and resilience.

5. ***Improving MEL Systems:*** Effective MEL is critical to tracking progress, ensuring accountability, and informing continuous improvement in CSA interventions. The national CSA Monitoring and Evaluation Framework and accompanying digital tools should be rolled out to all counties with adequate training and technical support. The respective counties should invest in M&E personnel and digital infrastructure to enable real-time data collection, analysis, and reporting. It is also important to ensure that CSA data is disaggregated by gender, age, disability, and livelihood type to support inclusive programming. Strong MEL systems will facilitate evidence-based planning, foster adaptive learning, and enhance transparency in the use of resources.

6. ***Leveraging ICT, Climate Information Services, and Innovation:*** Access to timely, localized climate information can significantly enhance CSA planning and adoption. Counties should invest in digital platforms such as mobile SMS alerts, e-extension services, and climate-smart farming apps that provide real-time weather forecasts, advisory services, and market information. These services should be tailored to reach farmers in remote areas and be delivered in local languages. Additionally, partnerships with innovation hubs and agri-tech startups should be supported to co-develop digital CSA solutions, especially those led by youth. Combining ICT with local knowledge systems can enhance preparedness, improve yields, and reduce losses from climate-related shocks.

7. ***Promoting Research, Documentation, and Knowledge Exchange:*** Research institutions, universities, and NGOs should be supported to co-generate knowledge on CSA innovations, including indigenous and locally adapted practices. These findings

should be systematically documented and disseminated through platforms such as the Maarifa Centre and County digital dashboards. Encouraging counties to document their CSA case studies, tools, and lessons learned will strengthen peer learning and cross-county replication of effective practices. Moreover, the national government and donors should support participatory action research and feedback loops that ensure continuous learning and relevance of CSA interventions.

ENDNOTES

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Act Alliance
15 Route de Ferney 150
1218 Le Grand-Saconnex,
Switzerland

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www.actalliance.org

Anglican Development Services–Kenya
Bishops Road, Opposite NSSF Building
ACK Language School Building, 2nd Floor
P.O. Box 40502–00100, Nairobi

Tel: +254 (0) 111 038 600
Email: admin@adskenya.org

www.adskenya.org

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