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MINISTRY OF AGRICULTURE, LIVESTOCK, FISHERIES AND COOPERATIVES

KENYA CLIMATE-SMART AGRICULTURE MONITORING AND EVALUATION FRAMEWORK

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FOREWORD

Kenya's agricultural sector has committed to contribute to the implementation of nationally determined contributions (NDCs) through the climate-smart agriculture (CSA) approach. To guide the implementation and adoption of CSA, the sector developed the Kenya Climate Smart Agriculture Strategy 2017-2026 (KCSAS) and the Kenya Climate Smart Agriculture Implementation Framework 2018-2017 (KCSAIF). These policy documents are aligned with the Climate Change Act 2016, the overarching legal framework for monitoring, reporting, and verifying climate actions in Kenya, which obligates state departments and public, national, government entities to do the following, inter alia: report on sectoral greenhouse gas (GHG) emissions and the performance and implementation of climate change duties and functions, regularly monitor and review the performance of the integrated climate change functions through sectoral mandates, and undertake investigations and report any unsatisfactory performance by statutory bodies. This mandate requires a robust and comprehensive monitoring and evaluation (M&E) system that would facilitate tracking climate action goals and objectives. This monitoring and evaluation framework (M&EF) for CSA has been developed to foster the effective transformation of the agricultural sector toward resilient, low-carbon development, and to check whether the implementation of the KCSAIF objectives, outcomes, and outputs are proceeding as planned, in order to support optimal planning and efficiency in the utilization of resources.

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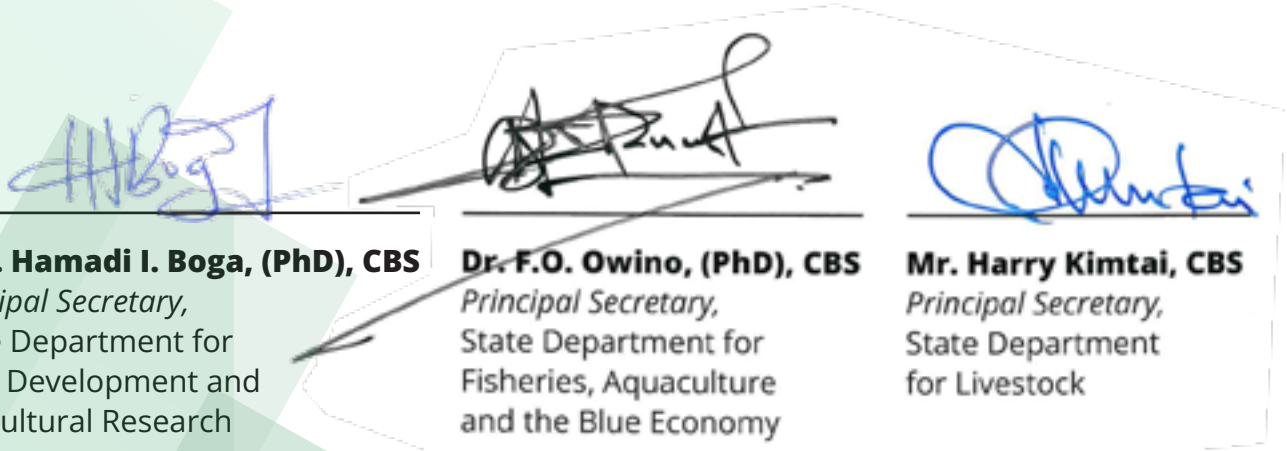
Finally, we thank the CSA Multi-Stakeholder Platform team drawn from state and non-state organizations that provided expertise towards the completion of this CSA M&EF for a job well done.



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EXECUTIVE SUMMARY

The preparation of this M&EF is guided by Kenya Vision 2030, the Constitution, the Third Medium Term Plan 2018-2022, the Big Four Agenda on food and nutrition security, the KCSAS, the KCSAIF, and relevant government blueprints towards economic growth and development. The agricultural sector developed the KCSAS and the KCSAIF in response to climate change impacts. These policy documents are meant to guide the adoption and implementation of CSA in the country. Successful implementation of the CSA strategy and implementation framework will depend on a robust and comprehensive M&EF—hence the development of this Kenya Climate-Smart Agriculture Monitoring and Evaluation Framework.

Chapter 1 gives relevant background information about the goals, objectives, and components of the KCSAIF, and about the objectives, purpose, and scope of this CSA M&EF. Chapter 2 outlines institutional arrangements, capacity building, and resource mobilization for the implementation of this framework. These arrangements typically provide the context in which the institutions in charge of coordinating climate action in agriculture carry out M&E roles, including the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALF&C) and county government departments. This chapter therefore describes the roles of the state departments of the MoALF&C; National Climate Change Council; the Climate Change Directorate; the Climate Change Unit (CCU); the national Multi Stakeholder Platform for Climate Smart Agriculture (CSA-MSP); the County Climate Change Units (CCCUs); the County Agriculture Sector Climate Focal Point (CASCFP); and the county CSA multi-stakeholder platforms (MSPs). It also summarizes the capacity building activities and resource mobilization actions undertaken by the MoALF&C and by stakeholders implementing the M&EF to collect data on CSA activities, and examines the infrastructural capacities to implement this framework, observing that implementing partners will develop the necessary infrastructure based on a capacity needs assessment. Within this coordination framework, the sectoral Climate Change Unit will develop a CSA management information system (MIS) and standard monitoring tools for data collection and analysis. The implementation of this CSA M&EF will involve several stakeholders and will require an estimated budget of K Sh 25 billion in the next 10 years.

The elaborate M&E matrix that has been developed in Chapter 3 establishes the requisite foundation for stakeholders to efficiently track the progress of climate actions. To ensure harmony and provide coherence in reporting, the repository of indicators in this framework will facilitate efficient tracking of the outputs of the four outcomes outlined in the KCSAIF. This process will be actualized by stakeholders capturing data and information on outputs, and through evaluation of results and outcomes. To support reporting on all climate actions, the framework is flexible enough to enable each stakeholder to identify their entry point and area of specialization and report appropriately on the relevant indicators. The inclusion of metadata to outline the data collection process further enhances the accuracy of the output that this framework will generate.

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ABBREVIATIONS AND ACRONYMS

CIAT	International Center for Tropical Agriculture
CASCFP	County Agriculture Sector Climate Focal Point
CCCU	County Climate Change Units
CCD	Climate Change Directorate
CCU	Climate Change Unit
CO_2e	Carbon dioxide equivalent
CSA	Climate-Smart Agriculture
CSA-MSP	Multi Stakeholder Platform for Climate Smart Agriculture
CSO	Civil Society Organization
FAO	Food and Agriculture Organization of the United Nations
GHG	Greenhouse gases
GoK	Government of Kenya
KCSAIF	Kenya Climate Smart Agriculture Implementation Framework
KCSAS	Kenya Climate Smart Agriculture Strategy
M&E	Monitoring and Evaluation
M&EF	Monitoring and Evaluation Framework
MDAs	Ministries, Departments and Agencies
MIS	Management Information System
MSP	Multi-Stakeholder Platform
MoALF&C	Ministry of Agriculture, Livestock, Fisheries, and Cooperatives
MRV+	Measurement, Reporting and Verification
Mt	Metric tons
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organization
SME	Small and Medium-sized Enterprise
SMS	Short Message Service
TIMPs	Technologies, Innovations, and Management Practices
UNDP	United Nations Development Programme

DEFINITION OF TERMS

Term	Definition as used in this framework
Baseline study or survey	An analysis describing the situation in a project area – including data about individual primary stakeholders – prior to a development intervention. Progress, including results and accomplishments, can be assessed and comparisons made against the baseline study. It also serves as an important reference for the completion evaluation.
Climate-smart agriculture (CSA)	An approach to developing the technical, policy, and investment conditions to achieve sustainable agricultural development for food security under climate change. CSA integrates the economic, social, and environmental dimensions of sustainable development by jointly addressing food security and climate challenges. It entails three main pillars: sustainably increasing agricultural productivity and incomes, adapting and building resilience to climate change, and reducing and/or removing GHG emissions, where possible.
Efficiency	A measure of how economic inputs such as funds, expertise, and time are converted into outputs.
Evaluation	A systematic and objective examination of a planned, ongoing, or completed project. It aims at answering specific management questions and judging the overall value of a development intervention. Evaluations offer information about lessons learned to improve future decision making and commonly seek to determine the efficiency, effectiveness, impact, sustainability, and relevance of the project's or organization's objectives.
Goal	The higher-order program or sector objective to which a program or project is intended to contribute.
Indicator	A quantitative or qualitative factor or variable that provides a simple and reliable basis for assessing achievement, change, or performance. It is a unit of information measured over time that can help show changes in a specific condition. A given goal or development objective can have multiple indicators.
Inputs	The financial, human, and material resources necessary to produce the intended outputs of a project.
Intervention	A combination of program or project elements or strategies designed to produce behavioral changes or improve the status of value chain actors to achieve intended project objectives.

Term	Definition as used in this framework
Innovation	A modification of an existing technology for a different use than the original intended purpose, or the application of new or existing knowledge or technology in a fresh way or context, to do something better or differently.
Knowledge management	The systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical and strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.
Management information system (MIS)	A system of inputting, collating, and organizing data to provide management with selective information and reports in order to assist in monitoring and controlling a project's organization, resources, activities, and results.
Monitoring and evaluation framework (M&EF)	It is a log design that provides means for determining the progress of a programme or a project or set of activities in regard to achievement of the program/project aims/objectives. It is a table that describes verifiable indicators used to effectively measure a program or project progress.
Monitoring and evaluation (M&E) matrix	A table presenting the following information: performance questions; information gathering requirements, including indicators; reflection and review events with stakeholders; and resources and activities required to implement a functional M&E system. This matrix lists how data will be collected, when, by whom, and where.
Metadata	Metadata means "data about data". Metadata is defined as data that furnishes information about one or more aspects of other data; it is used to summarize basic information about data which can make tracking and working with that data easier.
Monitoring	The regular collection and analysis of information to support timely decision making, ensure accountability, and provide a basis for evaluation and learning.
Objective	A specific statement detailing the desired accomplishments or outcomes of a project at different levels in the short or long term. A good objective meets the criteria of being impact-oriented, measurable, time-limited, specific, and practical.

Term	Definition as used in this framework
Outcome	The results achieved at the level of "purpose" in the objective hierarchy. It is part of impact, a result at purpose and goal level.
Output indicators	Indicators at the output level of the objective hierarchy, usually describing the quantity of outputs and the timing of their delivery.
Outputs	The immediate, intended, and tangible—that is, easily measurable and practical—results to be produced through sound management of agreed-upon inputs. Outputs may also include changes resulting from interventions that are necessary to achieve outcomes at the purpose level.
Qualitative	Something that is not conveyed in numerical form, such as minutes from community meetings and general notes about observations. Qualitative data often describe people's knowledge, attitudes, and behaviors.
Quantitative	Something measured by, measurable by, or concerned with quantity and expressed in numbers or quantities.
Resilience	The capacity of a system or people to recover quickly from a difficult situation such as a prolonged drought.
Result	The measurable output, outcome, or impact—intended or unintended, positive or negative—of a development intervention.
Safety nets	Safeguards against possible hardships or difficult circumstances arising from foreseeable or unforeseeable events.
Stakeholder	An agency, organization, group, or individual that has a direct or indirect interest in a project or program, or who affects or is affected positively or negatively by its implementation and outcome.
Stakeholder participation	Active involvement by stakeholders in the design, management, and monitoring of a project. Full participation means all representatives of key stakeholder groups at the project site become involved in mutually agreed-upon, appropriate ways.
Sustainability	The likelihood that the positive effects of a project, such as assets, skills, facilities, or improved services, will persist for an extended period after the external assistance ends.
Target	A specified objective that indicates the number, timing, and location of that which is to be realized.

Term	Definition as used in this framework
Technology	An output of a research process which is beneficial to the target clientele—mainly farmers in this case. Technology can be commercialized and can be patented under intellectual property rights arrangements. Examples include research outputs such as crop varieties, livestock breeds, livestock vaccines, new equipment, and models.
Validation	The process of cross-checking to ensure that the data obtained from one monitoring method are confirmed by the data obtained from a different method.
Value chain	The full range of value-adding activities required to bring a product or service through the different phases of production, including procurement of raw materials and other inputs.

CHAPTER 1:

INTRODUCTION

1.1 Introduction

The agricultural sector is a high-priority economic pillar in Kenya Vision 2030 which aims to achieve an innovative, commercially oriented, modern agricultural sector through institutional reforms, increased productivity, land use transformation, greater access to markets, and the development of arid and semi-arid lands. The sector is predominantly rain-fed and therefore vulnerable to climate change. It is not only impacted by climate change but also contributes to the problem.

The agricultural sector is the largest source of GHG emissions and was responsible for one third of Kenya's total emissions in 2010. Agricultural emissions are likely to jump from 20 metric tons of carbon dioxide equivalent (Mt CO_2e) in 2010 to 27 Mt CO_2e by 2030, largely driven by livestock methane emissions and land use change, which account for 90% of agricultural emissions and 30% of overall national emissions.

Kenya submitted its NDCs to the United Nations Framework Convention on Climate Change, which sets out mitigation contributions intended to abate GHG emissions by 32% by 2030 under the Paris Agreement. Kenya's Climate Change Act 2016 obligates governments at all levels to integrate and mainstream climate change actions and interventions in all sectors.

CSA offers an excellent opportunity for agricultural growth. It requires collaborative actions among various actors including national and county governments, farmers, the private sector, civil society organizations (CSOs), and other value chain actors.

To respond to the impacts of climate change in agriculture, the sector developed the KCSAS. This strategy offers a detailed plan to "adapt to climate change, build resilience of agricultural systems while minimizing emissions for enhanced food and nutritional security and improved livelihoods". To implement the strategy, the KCSAIF was created to address the impacts of climate change challenges on agricultural growth and development. This framework outlines envisaged actions towards the implementation of KCSAS 2017-2026 and is aligned with the government's commitments and obligations to guide the country's transition towards a low-carbon, climate-resilient development pathway. The framework seeks to support the implementation of the KCSAS, whose objectives are as follows: (i) to enhance the adaptive capacity and resilience of farmers, pastoralists, and fisher-folk to the adverse impacts of climate change; (ii) to develop mechanisms

that minimize GHG emissions from agricultural production systems; (iii) to create an enabling regulatory and institutional framework; and (iv) to address crosscutting issues that adversely impact CSA.

1.2 Kenya Climate Smart Agriculture Implementation Framework 2018-2027

1.2.1 Goal and Objectives of the Kenya Climate Smart Agriculture Implementation Framework

GOAL

The overall goal of the KCSAIF is to achieve a national, long-term, low-carbon, climate-resilient development pathway whilst realizing the development goals of Kenya Vision 2030.

OBJECTIVES

The KCSAIF has four objectives:

1. To develop a sustainable system for achieving coordinated, coherent, and cooperative governance of climate resilience and low-carbon growth in the agricultural sector.
2. To mainstream CSA to support the transformation of Kenya's agricultural sector into an innovative, commercially oriented, competitive, and modern industry that contributes to poverty reduction and improved food security in Kenya.
3. To reduce the vulnerability of agricultural systems by cushioning them against the impacts of climate change and to reduce GHG emissions where possible.
4. To strengthen communication systems pertaining to CSA extension and agro-weather issues.

1.3 Kenya Climate Smart Agriculture Implementation Framework Components

The objectives of the KCSAIF will be realized by implementing actions designed around the following four components.

1.3.1 Institutional coordination

This component supports the establishment of an inclusive institutional framework for improved agricultural-sector CSA coordination and harmonization,

and an enabling policy and institutional environment for the realization of the CSA objectives in general. It involves strengthening the coordination on CSA-related issues of inter-ministerial, national, and county governments, the private sector, CSOs, development partners, and other non-state actors. Institutional coordination will enhance the capacity for cross-sectoral planning and communication within and between ministries and government institutions with different mandates regarding CSA. Further, this component will enable sectoral institutions to contribute to and take responsibility for sector-wide coordination and implementation for more effective delivery of their CSA-related mandates.

1.3.2 Agricultural productivity and the integration of the value chain approach

Aimed at building resilience along different agricultural value chains through adaptive technologies and enhanced market linkages, this component can play a major role in ensuring improved agricultural productivity. It will also promote commercialization, food safety, and quality control standards along the value chains.

1.3.3 Building resilience and appropriate mitigation actions

This component aims at building resilience through adaptation and appropriate mitigation measures through improved management of the natural resource base and through the development of safety nets along value chains. It will also support the identification and deployment of appropriate measures that minimize GHG emissions in agricultural production systems.

1.3.4 Communication systems for climate-smart agriculture extension and agro-weather issues

This component aims to strengthen and mainstream communication systems pertaining to CSA, extension, and agro-weather issues among agricultural-sector stakeholders. In addition, it will promote generation of, access to, and enhanced application of CSA knowledge among value chain actors. Further, this component will help strengthen systems for timely provision of climate forecasts to different value chain stakeholders.

CHAPTER 2:

INSTITUTIONAL ARRANGEMENTS, CAPACITY BUILDING AND RESOURCE MOBILIZATION

2.1 Climate-smart agriculture monitoring and evaluation institutions and their roles

Institutional arrangements for M&E relate to the roles and responsibilities of stakeholders and partners and how they work together. These arrangements typically provide the context in which the institutions in charge of coordinating climate action in agriculture carry out their M&E roles—in this case, the MoALF&C and county government departments. An effective M&E institutional arrangement fosters the implementation of a robust M&E system, such that each institution undertakes its functions efficiently and in a timely manner to ensure seamless working between relevant institutions.

The following institutions will play a pivotal role in the M&E of CSA.

a) The National Climate Change Council

The National Climate Change Council has a broad-based membership among both state and non-state actors and is chaired by the president; it provides an overarching national climate change coordination mechanism. As the principal decision-making organ on climate change issues in Kenya, the council is a key consumer of M&E reports to track the progress of resilience building in the country. The council does the following:

- Ensures the mainstreaming of the climate change functions by the national and county governments.
- Sets targets for the regulation of GHG emissions and resilience building.
- Approves and oversees implementation of the National Climate Change Action Plan.
- Provides ultimate oversight on the implementation of climate change actions.

b) The Climate Change Directorate

The Climate Change Directorate is domiciled in the Ministry of Environment and Forestry and is the leading government agency on national climate change plans and actions that provides operational coordination with respect to climate change in the country. As regards Measurement, Reporting, and Verification (MRV+), its functions are the following, among others:

- To develop the national MRV+ systems and requisite regulations;
- To compile and submit national climate change reports to meet both national and international obligations;
- To provide guidance and capacity building on MRV+;
- To provide technical support on climate change reporting;
- To establish and manage a national registry for appropriate adaptation and mitigation actions by public and private entities; and
- In collaboration with other agencies at the national and county government levels, to identify low-carbon, climate-resilient strategies and coordinate related MRV+.

At the intergovernmental level, the current Joint Agriculture Sector Consultation and Cooperation Mechanism will be the avenue through which CSA M&E implementation will be guided by each organ's mandate and responsibility.

c) State departments of the Ministry of Agriculture, Livestock, Fisheries and Cooperatives

The state departments of the MoALF&C shall:

- Set department-specific targets for climate change;
- Develop strategies to achieve these targets;
- Coordinate CSA M&E at the departmental level;
- Develop departmental indicators and baselines; and
- Compile and submit CSA M&E reports to the MoALF&C CCU for analysis and forwarding to the Climate Change Directorate.

d) The Climate Change Unit

The MoALF&C CCU shall:

- Provide technical support and policy advisory to stakeholders regarding the implementation of CSA M&E and reporting;
- Coordinate the review of the CSA M&EF;
- Carry out quality control and quality assurance for CSA data;
- Develop a knowledge management hub to provide a repository for all CSA knowledge, technologies, data, and best practices in the country;
- Coordinate CSA sensitization, awareness, and capacity building; and
- Play a secretariat role in CSA-MSP forum meetings.

e) Multi Stakeholder Platform for Climate Smart Agriculture

The national CSA-MSP is a consortium of actors and partners on CSA and includes public entities, non-governmental organizations (NGOs), donors, academia, researchers, private-sector actors, and others. The platform is composed of nationally based institutions. Its secretariat is located at the ministry headquarters with the CCU.

The National CSA-MSP plays the following roles:

- Provides high-level consultations between the national and county governments and other key sectoral stakeholders on matters related to CSA;
- Makes recommendations on CSA policy matters in the agricultural sector;
- Agrees on mechanisms to coordinate CSA forums;
- Makes recommendations about CSA programs, strategies, plans, and performance-monitoring instruments brought to their attention;
- Ensures that CSA decisions and resolutions are circulated and implemented by relevant entities within the platform;
- Deliberates on CSA issues within the areas of responsibility of platform stakeholders in reports and resolutions;
- Facilitates national and county M&E systems to implement CSA initiatives;
- Coordinates events and functions to follow up about CSA with the national and county governments; and
- Uses its forums for joint planning of CSA programs.

f) County Climate Change Unit

The CCCU is the coordinating body of the climate agenda for all the sectors within a county. Each CCCU is domiciled at the county department of the environment. As a reflection of the county climate change agenda, each sector is expected to provide plans, interventions, and policies to be carried out in the departments responsible for climate action.

g) County Agriculture Sector Climate Focal Point

The CASCFP fulfills the following expectations:

- Coordinates implementation of CSA activities at the county level;
- Communicates the decisions of the national CSA-MSP to the county's implementing entities;
- Develops departmental indicators and baselines;
- Sets county-specific CSA targets and develops strategies to achieve them;
- Mainstreams CSA strategy in the County Integrated Development Plans and the corresponding M&EF and links it to County Integrated Monitoring and Evaluation Systems and the National Integrated Monitoring and Evaluation System;

- Prepares annual reports on the progress of CSA implementation through the established mechanism;
- Creates and manages a registry of climate change actions for all stakeholders at the county level and links the county registry to the national registry; and
- Plays a secretariat role in county CSA-MSP forum meetings.

h) County Climate-Smart Agriculture Multi-Stakeholder Platforms

The county CSA-MSPs are a consortium of actors and partners on CSA that includes public entities, NGOs, donors, academia, researchers, the private sector, and others. The platforms are composed of institutions that are based in or operate on the county level. The secretariat is based at the CASCFP headquarters.

The county CSA-MSPs do the following:

- Provide high-level consultations between county governments and other key sectoral stakeholders on CSA matters;
- Make recommendations about CSA policy in the agricultural sector;
- Agree on mechanisms for coordination of the county CSA forums;
- Make recommendations about CSA programs, strategies, plans, and performance-monitoring instruments brought to their attention;
- Ensure that CSA decisions and resolutions are circulated and implemented by relevant entities within the platforms;
- Deliberate on CSA issues in the areas of responsibility of each stakeholder in reports and resolutions;
- Facilitate county-level M&E of the implementation of CSA initiatives;
- Coordinate preparation, follow-up events and functions between the national and county governments on CSA related issues
- Furnish a forum for joint planning on CSA programs; and
- Provide and submit reports to the national CSA-MSP for the preparation of national reports on CSA initiatives.

2.2 Capacity building and resource mobilization

Implementation of this M&EF will require sufficient financial, human, and infrastructural capacity to empower relevant institutions, organizations, managers, and staff to effectively carry out the M&E tasks.

2.2.1 Human capacity

A capacity needs assessment will be conducted to identify the required skills and enable the development of a capacity building program to ensure the availability of adequate human resources for M&E. Sufficient capacity building will be conducted

among all implementing institutions and partners for effective implementation of this M&EF. Implementing organizations and partners shall retain a critical mass of experts to support the M&E system, who will include M&E specialists, MIS experts, and statisticians, among others. Qualified trainers will roll out the capacity building plan, which will cover the following factors, among others:

- CSA indicators
- Results-based management
- A geographic information system and mapping for M&E
- A CSA MIS
- Data collection methodologies and statistical analysis
- Participatory M&E and advocacy
- CSA data collection tools
- M&E reporting tools
- Resilience characterization and indicators
- Survey and case studies methodologies

2.2.2 Infrastructural capacity

Implementation of M&E activities requires sufficient infrastructure, including buildings, office equipment, furniture, vehicles, power connections, computers, printers, communication devices, and an internet connection. Other requirements are Global Positioning System equipment, weighing scales, and survey equipment. Implementing partners will develop the necessary infrastructure based on the capacity needs assessment. The CCU will develop a CSA MIS and standard monitoring tools for data collection and analysis.

2.3 Resource mobilization

The implementation of this CSA M&EF will involve several stakeholders and will therefore require adequate resources. Based on the budget estimates of the KCSAS strategy at K Sh 500 billion, this M&EF will require a total of K Sh 25 billion in a period of ten (10) years, equivalent to 5% of the KCSAS budget. Resources will be mobilized from a wide range of partners that shall include the national government through exchequer allocations, the county governments through prioritization of CSA M&E in their County Integrated Development Plans and other development plans, development partners, and the private sector. The CCU, counties, and other partners will develop proposals to fund different aspects of implementing this framework and seek support from the respective governments and other funding agencies like Green Climate Fund, Global Environment Facility, and additional development partners. The allocation of government resources for this framework is critically important as climate change is a key consideration in transforming the agricultural sector. This self-reliance is anticipated in the African Union Agenda 2063, of which Kenya is a signatory.

CHAPTER 3:

MONITORING AND EVALUATION MATRIX

3.1 The Kenya Climate-Smart Agriculture Monitoring and Evaluation Framework

Efficient tracking of the climate actions being undertaken in the agricultural sector is a prerequisite to demonstrate progress towards enhanced productivity, increased resilience, and the mitigation of GHG emissions outlined in the KCSAS. Consequently, this M&EF has been developed as an integral component to ensure that strategic objectives are achieved in a cost-effective, coordinated, and harmonized approach at both the national and county levels.

This M&EF aims to guide coordinated and efficient data collection, analysis, and use, and the provision of information that includes indications of impact, outcomes, and outputs. Monitoring will entail gauging the progress of sectoral climate actions at the activity and output levels, while evaluation will involve measuring achievements at the levels of outcomes and impact. This M&EF is expected to foster effective planning to attain optimal utilization of resources, achieve set goals, and transform the agricultural sector towards resilient, low-carbon agriculture.

3.1.1 Objectives of this monitoring and evaluation framework

The objectives of this M&EF are as follows:

i. To guide M&E of progress toward KCSAIF goals, outcomes, and indicators, in order to ensure efficiency, effectiveness, and accountability during implementation; and

ii. To enforce a culture of results-based M&E and provide a foundation for an evidence-based decision-making process.

3.1.2 Purpose and scope of this monitoring and evaluation framework

Under the United Nations Framework Convention on Climate Change, the Paris Agreement sets out an enhanced transparency framework for climate change action and support. Kenya is expected to provide information on mitigation, adaptation, and the support received.

Kenya's transparency framework is based on the MRV+ system defined in the National Climate Change Action Plan 2013-2017 as "an integrated framework for measuring, monitoring, evaluating, verifying, and reporting results of mitigation actions, adaptation actions and the synergies between them." The MRV+ system generates information for national and international reporting requirements.

The purpose of this M&EF is to track whether the scheduled KCSAIF goals, objectives, outcomes, outputs, and other factors are proceeding as planned. An effective M&EF will help guide the implementation of the KCSAIF and by extension the KCSAS. The purpose of this M&EF, therefore, is to ensure that the implementation of the KCSAIF is efficient and stakeholders can measure the progress of initiatives arising from the KCSAS and the KCSAIF.

This M&EF is a useful learning tool and will inform potential investment actors for onward planning. Corrective actions will be instituted on an ongoing basis using the annexed monthly, quarterly, and annual reporting formats. Reports will be compiled, analyzed, and shared during the implementation period which will be used at a mid-term review before the second M&E framework is developed. During the M&E process, implementers will identify data gaps and institute mechanisms to rectify any anomalies.

The scope of this M&EF is broad enough to accommodate all stakeholders implementing CSA interventions including farmers, public- and private-sector actors, academia, researchers, and CSOs. Elaborate metadata is part of this framework to enhance understanding of the indicators monitored, how they will be measured, and reporting formats.

The stakeholders implementing CSA at all levels of government are expected to use this M&EF to report to their sectoral CCU through the communication flow about all CSA interventions as outlined in the M&E tool which shall be online. Subsequently, the CCU will collate the sectoral data on CSA interventions and submit the same to the Climate Change Directorate in the Ministry of Environment and Forestry.

3.2 Monitoring and evaluation matrix

A set of appropriate indicators in the form of M&E matrix can effectively track the progress of climate actions in the agricultural sector (Table 1). To ensure coherence, this matrix transforms information from the KCSAIF logical framework into smart, monitorable indicators for proper progress tracking. It provides all stakeholders undertaking agricultural-sector climate actions with the requisite indicators to measure advancements towards the goal, impact, outcomes, and outputs outlined in the KCSAIF, thus enables effective M&E reporting. The M&E matrix is a comprehensive repository of indicators structured to capture both qualitative and quantitative data and information on CSA and is further supported by the metadata (Table.2).

Table 1: Monitoring and evaluation matrix

Result hierarchy (log frame element)	Indicators	Unit of measure
GOAL: A national, long-term, low-carbon, climate-resilient development pathway, alongside realization of the development goals of Kenya Vision 2030	Climate change adaptation investments in the agricultural sector	K Sh
	GHG emissions per unit of agricultural produce or per commodity	Kg CO2eq/unit
	Renewable energy investments in the agricultural sector	K Sh
	The proportion of climate-resilient households	%
	Total agricultural-sector GHG emissions	Metric Tons CO_2eq
IMPACT: Improvement of agricultural livelihoods and food, nutritional, and income security through CSA extension	Prevalence of severe food insecurity in target areas	%
	National average intake of calories per capita	Kcal per capita
	Prevalence of stunted children under five years old	%
	Household dietary diversity score, which is an index of household food availability, access, utilization, and stability of supply	Index
The aim of Outcome 1 is to demonstrate existence of a sustainable system for achieving coordinated, coherent, and cooperative governance of climate-resilient, low-carbon growth in the agricultural sector through improved inter-ministerial and county government coordination; through deepening partnerships between state and non-state actors; and through improved linkages between actors in the agricultural research system, advisory services, and producers.		
OUTCOME 1. **Institutional coordination of CSA policy and implementation strengthened**	INDICATOR 1.1. Total amount of finances invested in CSA	K Sh
	INDICATOR 1.2. Existence of functional CSA coordination mechanism at the national and county levels	Descriptive
	INDICATOR 1.3. Presence of up-to-date CSA policies and strategies in place at both national and county levels of governance	Descriptive
	INDICATOR 1.4. Existence of functional research-extension-farmer linkages mechanisms	Descriptive
OUTPUT 1.1. Strengthened coordination and partnership between state and non-state actors	INDICATOR 1.1.1. Change in frequency of joint CSA coordination and partnership forums	Descriptive
	INDICATOR 1.1.2. Number of harmonized CSA policies	N
	INDICATOR 1.1.3. Number of counties that have mainstreamed national CSA related policies	N
	INDICATOR 1.1.4. Number of collaboration agreements/commitments related to CSA between the institutions	N
	INDICATOR 1.1.5. Existence of approved joint agricultural-sector CSA programming and financing mechanism	Descriptive
	INDICATOR 1.1.6. Number of jointly developed CSA related policy briefs	N
	INDICATOR 1.1.7. Number of joint CSA programmes implemented by national and county governments	N
	INDICATOR 1.1.8. Amount of funding allocated to joint CSA programs by state and non-state actors	Ksh
OUTPUT 1.2. Strengthened farmer-research-extension linkages	INDICATOR 1.2.1. Change in number of farmer-research-extension forums held	N
	INDICATOR 1.2.2. Composition of stakeholders involved in farmer-research-extension linkage	Descriptive
	INDICATOR 1.2.3. Number of user-driven CSA research technologies developed	N
OUTPUT 1.3. Enhanced enabling environment for CSA	INDICATOR 1.3.1. Existence of up to date CSA policies, strategies, guidelines, and regulations	Descriptive

Result hierarchy (log frame element)	Indicators	Unit of measure
OUTPUT 1.4. Enhanced organizational capacities to address CSA issues	INDICATOR 1.4.1. Change in expenditure in Climate Smart Agriculture (CSA)	K Sh
	INDICATOR 1.4.2. Change in the number of Climate Smart Agriculture (CSA) Specialists	N
The aim of Outcome 2 is to mainstream CSA to support the transformation of Kenya's agricultural sector into an innovative, commercially oriented, competitive, and modern industry that contributes to poverty reduction and improved food security in Kenya.		
OUTCOME 2. **Agricultural productivity and integration of the value chain approach promoted**	INDICATOR 2.1. Changes in productivity of various value chains	Descriptive
	INDICATOR 2.2. Changes in the quantity of marketed produce or products derived from value-added commodities	Tonnes
	INDICATOR 2.3. Change in number of value chain actors in the agricultural sector adhering to market standards	N
	INDICATOR 2.4. Volumes of strategic reserves of foods or feeds stored	Tonnes
	INDICATOR 2.5. Percentage change in area of land under efficient irrigation systems	%
	INDICATOR 2.6. Proportion of small and medium-sized enterprises (SMEs) using green technologies for value addition	%
	INDICATOR 2.7. Number of green jobs created	N
	INDICATOR 2.8. Change in percentage of post-harvest losses by value chain	%
OUTPUT 2.1. Improved access to and use of CSA technologies and innovations	INDICATOR 2.1.1. Number of value chain actors adopting the promoted CSA technologies and innovations.	N
	INDICATOR 2.1.2. Types of certification for climate smart produced commodities	Descriptive
	INDICATOR 2.1.3. Number of CSA Technologies and innovations for post-harvest loss reduction in use	N
OUTPUT 2.2. Efficient irrigation enhanced	INDICATOR 2.2.1. Area under efficient irrigation systems	Ha
	INDICATOR 2.2.2. Number of producers using efficient irrigation systems	N
	INDICATOR 2.2.3. Area under both efficient water use and renewable energy-powered irrigation systems	Ha
	INDICATOR 2.2.4. Number of efficient irrigation technological packages developed	N
OUTPUT 2.3. Enhanced green technology value addition to commodities	INDICATOR 2.3.1. Types of value addition green technologies in use across value chains	Descriptive
	INDICATOR 2.3.2. Number of actors using green technologies for value addition	N
OUTPUT 2.4. Enhanced market access for climate-smart products (labelled & certified)	INDICATOR 2.4.1. Change in volumes of marketed climate-smart commodities	Tonnes
	INDICATOR 2.4.2. Change in number of market outlets trading climate-smart products	N
	INDICATOR 2.4.3. Number of actors trading in climate-smart commodities	N
	INDICATOR 2.4.4. Number of actors adopting standardization systems	N

Result hierarchy (log frame element)	Indicators	Unit of measure
OUTPUT 2.5. Improved food and feed storage and distribution	INDICATOR 2.5.1. Change in the number of climate-smart food and feed processing, storage and distribution technologies in use	N
	INDICATOR 2.5.2. Change in the number and capacity of climate-smart food and feed storage and distribution facilities	N
	INDICATOR 2.5.3. Quantity of strategic food reserves, by commodity	Tonnes
	INDICATOR 2.5.4. Change in the quantities of strategic livestock and fish feed reserves	Tonnes
The aim of Outcome 3 is to reduce the vulnerability of agricultural systems by cushioning them against the impacts of climate change and to reduce GHG emissions where possible.		
OUTCOME 3. **Increased resilience with mitigation benefits**	INDICATOR 3.1. Percentage change in GHG emission intensity	%
	INDICATOR 3.2. Total land under integrated soil fertility and water management practices	Ha
	INDICATOR 3.3. Total area under Ecosystem management and degraded land rehabilitation	Ha
	INDICATOR 3.4. Volume of water harvested and stored for agricultural use	M3
	INDICATOR 3.5. Existence of Monitoring Reporting and Verification (MRV+) systems	Descriptive
OUTPUT 3.1. Improved soil health and rehabilitation of degraded lands	INDICATOR 3.1.1. Number of farmers adopting integrated soil fertility management practices	N
	INDICATOR 3.1.2. Land area under integrated soil fertility management practices	Ha
	INDICATOR 3.1.3. Number of farmers adopting soil and water management technologies and innovations	N
	INDICATOR 3.1.4. Number of actors providing soil and water management services	N
	INDICATOR 3.1.5. Area of land under soil and water management technologies and innovations	Ha
	INDICATOR 3.1.6. Area of degraded land rehabilitated	Ha
OUTPUT 3.2. Enhanced conservation of water and other natural resources	INDICATOR 3.2.1. Change in area of land under conservation/restoration	Ha
	INDICATOR 3.2.2. Change in number of value chain actors adopting climate-smart ecosystem conservation measures	N
	INDICATOR 3.2.3. Number of water harvesting and storage structures for agricultural use	N
	INDICATOR 3.2.4. Change in number of non-conventional livelihood opportunities linked to integrated watershed management	N
OUTPUT 3.3. Enhanced access to climate risk-related agricultural insurance and other safety nets	INDICATOR 3.3.1. Change in access to agricultural safety nets services	N
	INDICATOR 3.3.2. Change in access to index –based insurance products	N
OUTPUT 3.4. Enhanced adoption of synergistic adaptation and mitigation initiatives	INDICATOR 3.4.1. Change in adoption of synergistic adaptation and mitigation initiatives	N
	INDICATOR 3.4.2. GHG accounting system for adaptation interventions with high potential for mitigation	Descriptive

Result hierarchy (log frame element)	Indicators	Unit of measure
OUTPUT 3.5. Enhanced capacity for GHG accounting	INDICATOR 3.5.1. Number of institutions with facilities to support GHG accounting	N
	INDICATOR 3.5.2. Number of experts trained in GHG emissions accounting	N
	INDICATOR 3.5.3. Change in GHG emission	Metric Tons CO2eq
The aim of Outcome 4 is to strengthen communication systems related to CSA extension and agro-weather issues by generating, communicating, and disseminating CSA knowledge; by enhancing access to climate information and agro-weather advisory services and early warning systems; and by developing capacity in climate risk contingency planning.		
OUTCOME 4. **Communication systems related to CSA extension and agro-weather issues strengthened**	INDICATOR 4.1. Change in total number of actors with access to CSA information	N
	INDICATOR 4.2. Existence of functional CSA information management systems	Descriptive
	INDICATOR 4.3. Existence of functional contingency plans for climate risks response	Descriptive
	INDICATOR 4.4. Presence of functional CSA communication strategies.	Descriptive
OUTPUT 4.1. Enhanced CSA knowledge generation	INDICATOR 4.1.1. Number of CSA knowledge products developed	N
	INDICATOR 4.1.2. Number CSA best practices documented	N
OUTPUT 4.2. Enhanced CSA knowledge communication and dissemination	INDICATOR 4.2.1. Change in access to CSA advisory services	N
OUTPUT 4.3. Enhanced access to climate information and agro-weather advisory services	INDICATOR 4.3.1. Change in number of agro-weather advisories integrating scientific and indigenous knowledge	N
	INDICATOR 4.3.2. Change in number of service providers trained in climate information and agro-weather advisory service delivery	N
	INDICATOR 4.3.3. Change in access to downscaled climate agro-weather information to communities and localities in place	N
OUTPUT 4.4. Early warning systems and contingency plans for climate change responses strengthened	INDICATOR 4.4.1. Change in the number of climate risk contingency plans developed	N
	INDICATOR 4.4.2. Change in the number of stakeholders implementing the contingency plans	N
	INDICATOR 4.4.3. Change in the number of climate risk mitigation and disaster preparedness measures	N
	INDICATOR 4.4.4. Types of functional early warning systems for climate change responses	Descriptive

Table 2. Metadata

OUTCOME 1. **Institutional coordination of Climate Smart Agriculture (CSA) policy and implementation strengthened.** The aim of Outcome 1 is to demonstrate the existence of a sustainable system for achieving coordinated, coherent, and cooperative governance of climate-resilient, low-carbon growth in the agricultural sector through improved inter-ministerial and county government coordination; through deepening partnerships between state and non-state actors; and through improved linkages between actors in the agricultural research system, advisory services, and producers.	
INDICATOR 1.1. **Total amount of finances invested in CSA**	**Definition:** These are funds in Kenya Shillings invested by the state and non-state stakeholders (government, CSOs, development partners, private sector, researchers, academia, and others) in CSA activities annually. These are the funds invested by the implementing organizations. **Rationale:** This will allow progressive increase in climate smart agriculture investments. **Disaggregated by:** Source (government, CSOs, development partners, the private sector, researchers, academia, and others) and category (loans and grants). **Data source:** Funding/implementing organizations.
INDICATOR 1.2. **Existence of functional CSA coordination mechanisms at the national and county levels**	**Definition:** Presence of CSA coordination mechanisms that are discharging their mandates of coordinating, planning, implementation and reporting. There will be need for coordination between the two levels of government. **Rationale:** This will solve the problem of duplication and build synergy. **Disaggregated by:** Governance level (National and county). **Data sources:** Departmental climate change focal points.
INDICATOR 1.3. **Presence of up-to-date CSA policies and strategies in place at both the national and county levels of governance**	**Definition:** These are the national guidelines aimed at increasing productivity and resilience of farming systems through low carbon pathways. These guidelines are expected to be domesticated at the county level. **Rationale:** This will create coherence in climate smart agriculture interventions. **Disaggregated by:** Governance level (National and county). **Data sources:** County websites, Ministry of Agriculture websites, CSA-MSP websites.
INDICATOR 1.4. **Existence of functional research-extension-farmer linkage mechanisms**	**Definition:** These platforms bring together the three actors in the technology generation, dissemination and adoption. The platform will set the agenda for research, dissemination methods and factors to facilitate adoption. **Rationale:** This will create demand-driven research and efficient extension for technology adoption. **Disaggregated by:** Value chains. **Data sources:** Reports, journals, brochures, county websites, Ministry of Agriculture websites, CSA-MSP websites etc.

OUTPUT 1.1. Strengthened coordination and partnership between state and non-state actors	
INDICATOR 1.1.1. **Change in frequency of CSA coordination and partnership forums**	**Definition:** These are meetings, conferences, seminars, workshops held between state and non-state actors on matters of CSA. **Rationale:** This will address the issue of in-effective coordination because of infrequent joint coordination forums. **Disaggregated by:** National and county. **Data sources:** County websites, Ministry of Agriculture websites, CSA-MSP websites, meeting minutes and reports.
INDICATOR 1.1.2. **Number of harmonized CSA policies**	**Definition:** These are CSA related policies have been reviewed and harmonized. **Rationale:** To avoid contradiction among CSA related policies. **Disaggregated by:** None. **Data sources:** Ministry departments and meeting reports.
INDICATOR 1.1.3. **Number of counties that have mainstreamed national CSA related policies**	**Definition:** These are the counties, which have domesticated national CSA policies and are implementing. **Rationale:** This will provide for harmonized implementation for CSA policies. **Disaggregated by:** Counties. **Data source:** County website.
INDICATOR 1.1.4. **Number of collaboration agreements/ commitments related to CSA between the institutions**	**Definition:** These are the arrangements by CSA actors for joint planning, funding and implementation of CSA activities. This indicator will show the number of partnership agreements for CSA activities. **Rationale:** This will enable pooling of resources for upscaling CSA activities. **Disaggregated by:** State and non-state institutions. **Data sources:** County website, Ministry of Agriculture website, CSA-MSP website.
INDICATOR 1.1.5. **Existence of approved joint agricultural-sector CSA programming and financing mechanism**	**Definition:** These are official multi-agencies, multi-year CSA plans developed jointly, which specify priorities and objectives and addresses the role of various contributors. **Rationale:** This will provide financial commitments by agencies and reference document on CSA interventions. **Disaggregated by:** National and county levels. **Data sources:** County websites, Ministry of Agriculture websites, CSA-MSP websites.

INDICATOR 1.1.6. **Number of jointly developed CSA related policy briefs**	**Definition:** These are communication tools developed through synthesis of research, studies to inform policy makers for decision-making. **Rationale:** This will accelerate implementation of the recommended CSA policy actions by informed decisions. **Disaggregated by:** Governance level (National and county). **Data sources:** County websites, Ministry of Agriculture website, CSA-MSP websites.
INDICATOR 1.1.7. **Number of joint CSA programmes implemented by national and county governments**	**Definition:** This is the number of programmes that will be undertaken at national and county levels, bringing together CSA stakeholders to disseminate and share CSA knowledge and technologies. Stakeholders refer to individuals, groups, organizations and agencies that have an interest in CSA. These programmes will enable stakeholders to interact with experts who will share latest CSA knowledge and technologies. **Rationale:** These programmes will provide an avenue to capacity build stakeholders on CSA knowledge and technologies and centralized reporting. **Disaggregated by:** Governance level (National and county). **Data source:** Programme reports.
INDICATOR 1.1.8. **Amount of funding allocated to joint CSA programs by state and non-state actors**	**Definition:** These are budgeted funds allocated for joint CSA activities by state and non-state actors. **Rationale:**This indicator will track financial support on CSA programs. **Disaggregated by:** State and non-state. **Data sources:** Organization budgets, reports.
OUTPUT 1.2. Strengthened farmer-research-extension linkages	
INDICATOR 1.2.1. **Change in number of farmer-research-extension forums held**	**Definition:** This indicator tracks the change in the number of forums in a year where CSA findings, knowledge and skills are shared amongst researchers, extension staff and farmers. Forums include CSA conferences, meetings, symposiums, farmer field schools, benchmarking, trial/demonstration plots farmer-farmer exchange programs, exhibitions and open days. In these forums, researchers, extensions and farmers exchange and share information, knowledge and skills. **Rationale:** Strong farmer-research-extension linkages will facilitate effective and efficient CSA knowledge development, dissemination and sharing and the linkages among different knowledge types. **Disaggregated by:** Value chain, farmers, gender. **Data sources:** National Agricultural Research System (NARS), Centre Research Advisory Committee (CRAC).

INDICATOR 1.2.2. **Composition of stakeholders involved in farmer-research-extension linkage**	**Definition:** This indicates the category of membership in farmer-research-extension linkages during the reporting period. This indicator will show the extent of representation of farmers, researchers, and extensionists in the linkage. **Rationale:** Diverse membership of stakeholders in the linkage will help increase knowledge exchange on CSA. A strong linkage should have representation from farmers, researchers and extension personnel. **Disaggregated by:** Membership category. **Data sources:** National Agricultural Research System (NARS), Centre Research Advisory Committee (CRAC).
INDICATOR 1.2.3. **Number of user-driven CSA research technologies developed**	**Definition:** These are the number of research products (technologies, innovations and management practices) that are developed during the reporting period. These products are based on user needs and target specific agro-ecological/ production systems such as pastoral systems, or targeting specific value chains such as pulses, or specific objectives such as provision of feed and fodder through research in multi-purpose crops. **Rationale:** This will help in mapping the state of research on CSA and progressively increase research for context-specific CSA needs. **Disaggregated by:** Value chains. **Data sources:** Reports, research papers, patent certificates.
INDICATOR 1.2.4. **Amount of funding utilized for user-driven CSA research**	**Definition:** These are financial resources in Kenyan Shillings that are used in developing new knowledge and technologies specific to CSA annually. They include financial resources directly from government (public funding) and from other partner organizations. **Rationale:** This will facilitate the mapping of available funding for CSA research and inform progressive increase in investments towards climate risk research and development of new knowledge and technologies for CSA. **Disaggregated by:** Source (government, CSOs, development partners, private sector, researchers, academia, and others) and category (loans and grants). **Data sources:** Financial reports, voted estimates, funding agreements.
OUTPUT 1.3. Enhanced enabling environment for Climate Smart Agriculture (CSA)	
INDICATOR 1.3.1. **Existence of up-to-date CSA policies, strategies, guidelines, and regulations**	**Definition:** These are the CSA legal and institutional frameworks that have been developed/reviewed during the reporting period to facilitate an enabling environment for CSA planning and implementation at the national and county levels. **Rationale:** Sound policies, strategies, guidelines and regulations are critical in outlining the vision, planned actions and mandates in the implementation of CSA. They will create a conducive environment for CSA implementation at all levels of government. **Disaggregated by:** Types (policies, strategies, guidelines, or regulations); level of government (national, county). **Data sources:** Kenya Gazette, Kenya Law Reporting, Kenya Law Reforms Commission, sector departments.

OUTPUT 1.4. Enhanced organizational capacities to address Climate Smart Agriculture (CSA) issues

INDICATOR 1.4.1.

Change in expenditure in Climate Smart Agriculture (CSA)

Definition: This refers to the change in amount of financial resources in Kenyan Shillings used for CSA implementation within the reporting period. Implementation includes various activities such as promoting CSA technologies, innovation & management practices, CSA awareness creation or promoting collaborations with other actors.

Rationale: Increased financial capacity is key in supporting CSA implementation. This will facilitate the mapping of available funding for CSA and inform progressive increase in investments towards CSA implementation at various scales.

Disaggregated by: None.

Data sources: Organizations, CCU, The National Treasury.

INDICATOR 1.4.2.

Change in the number of Climate Smart Agriculture Specialists

Definition: This indicator shows the trend in the number of people within state and non-state organizations with knowledge and skills to support the implementation of CSA during the reporting period. This indicator will show the adequacy of specialists with knowledge and skills on CSA.

Rationale: Adequacy of human resource is critical in supporting CSA implementation and will inform continued capacity building efforts.

Disaggregated by: Value chain.

Data sources: Organizational profiles, CSA-MSP database.

OUTCOME 2. **Agricultural productivity and integration of the value chain approach promoted**

The aim of Outcome 2 is to mainstream CSA to support the transformation of Kenya's agricultural sector into an innovative, commercially oriented, competitive, and modern industry that contributes to poverty reduction and improved food security in Kenya.

INDICATOR 2.1.

Changes in productivity of various value chains

Definition: These are the changes in yield per unit of various value chains (Crop yield per area, aquaculture yield per pond, milk yield per cow, carcass weight etc.).

Rationale: To track progress in increasing productivity of various agricultural commodities (Crops, Fisheries and Livestock).

Disaggregated by: Agricultural commodity (sub sector, value chain).

Data sources: Ministry of Agriculture, County websites and CSA MSP websites etc.

INDICATOR 2.2.

Changes in the quantity of marketed produce or products derived from value-added commodities

Definition: These are the trends in the volumes (Metric tons) of agricultural products marketed coming from processing of agricultural commodities both food and non-food.

Rationale: This is aimed at increasing the volume of final agricultural products market rather than raw agricultural commodities.

Disaggregated by: Value chains.

Data sources: KNBS, Kenya Association of Manufacturers (KAM).

INDICATOR 2.3. **Change in number of value chain actors in the agricultural sector adhering to market standards**	**Definition:** This is the trend in number of value chain actors conforming to certain market standards (e.g. GLOBAL G.A.P , GAM, GAP). **Rationale:** Value chain actors need to conform to established standards (like GLOBAL G.A.P, GAM, and G.A.P) to avoid interceptions and rejection of commodities. **Disaggregated by:** Value Chains, market standards. **Data sources:** MOALFC, AFFA.
INDICATOR 2.4. **Volumes of strategic reserves of foods or feeds stored**	**Definition:** Stocks of human food and livestock feed items set aside for use in times of scarcity. **Rationale:** To maintain food and feed supplies at six months national requirements and six months cash requirements. **Disaggregated by:** Food and feeds. **Data sources:** Food Security Balance sheet.
INDICATOR 2.5. **Percentage change in area of land under efficient irrigation systems**	**Definition:** This will give an indication of the proportion of irrigated land using renewable energy powered irrigation systems and efficient water use technologies/practices in relation to the total irrigated land. **Rationale:** This is intended to reduce the cost and increase productivity of irrigation water. **Disaggregated by:** Energy sources and water use technologies. **Data sources:** Sector reports.
INDICATOR 2.6. **Proportion of small and medium-sized enterprises (SMEs) using green technologies for value addition**	**Definition:** This is the number of SMEs using green energy for value addition relative to a total number of SMEs using energy. **Rationale:** To reduce pollution and GHG emissions during processing/ value addition of agricultural value chains. **Disaggregated by:** Value chains, green technologies. **Data sources:** MOALFC, Ministry of Energy.
INDICATOR 2.7. **Number of green jobs created in the agriculture sector**	**Definition:** These are jobs that preserve or restore the environment through renewable energy in the agriculture sector. **Rationale:** This contributes to transitioning agriculture sector into low-carbon development pathway. **Disaggregated by:** Green technology. **Data sources:** MOALFC, Ministry of Energy.

INDICATOR 2.8. **Change in percentage of post-harvest losses by value chain**	**Definition:** This is the trend of % of losses occurring at post-harvest level for specific value chains. **Rationale:** To track the postharvest losses reductions resulting from CSA interventions. **Disaggregated by:** Value chains. **Data sources:** National and county level agriculture sector departments reports.
OUTPUT 2.1. Improved access to and use of CSA technologies and innovations	
INDICATOR 2.1.1. **Number of value chain actors adopting the promoted CSA technologies and innovations.**	**Definition:** These are technologies and innovations in crops, livestock and fisheries that are promoted to increase agricultural productivity, build resilience and adaptation to climate change. **Rationale:** The aim is to increase accessibility to CSA innovations and technologies for increased productivity and resilience to climate change. **Disaggregated by:** Value chain, subsectors, type of technology. **Data sources:** MSP members and other extension service providers.
INDICATOR 2.1.2. **Types of certification for climate smart produced commodities**	**Definition:** These are the types of certifications used for climate smart produced commodities. **Rationale:** Availability of standards will allow actors to access premium prices for their produce and enhance environmental conservation and reduced greenhouse gas emissions. **Disaggregated by:** Type of certificate, value chains. **Data sources:** KEBS, MOALFC.
INDICATOR 2.1.3. **Number of CSA Technologies and innovations for post-harvest loss reduction in use**	**Definition:** These are CSA technologies and innovations to reduce produce and product losses after harvest; including at storage, processing, transportation and marketing stages. **Rationale:** Track technologies and innovations for upscaling. **Disaggregated by:** Value chain. **Data sources:** MSP members and other service providers.
OUTPUT 2.2. Efficient irrigation enhanced	
INDICATOR 2.2.1. **Area under efficient irrigation systems**	**Definition:** The indicator refers to the total of all land, in hectares under efficient irrigation systems. Efficient irrigation in this context is in relation to water use efficiency of an irrigation system. (Drip, sprinklers, the water is conveyed to the farm by lined or closed canal or pipe (closed system). **Rationale:** Enhanced water usage for agricultural production. When used efficiently more actors will have access to it, meaning we can put more land under irrigation using the same quantity of water. **Disaggregated by:** Value chain, type of irrigation systems, efficient water use, renewable energy. **Data sources:** County websites, Ministry of Agriculture websites, CSA-MSP websites.

INDICATOR 2.2.2. **Number of producers using efficient irrigation systems**	**Definition:** These are farmers using efficient irrigation systems. Efficient irrigation in this context is in relation to water use efficiency (e.g., drip, sprinklers, or if by furrow or basin, the water is conveyed to the farm by closed canal or pipe) and use of renewable energy solar, wind, geothermal, gravity, biomass (bagasse, biogas etc.) or small hydro sources in an irrigation system. **Rationale:** This indicator aims at tracking access of the efficient irrigation technologies to small scale farmers. **Disaggregated by:** Water use system, renewable energy, gender. **Data sources:** County websites, Ministry of Agriculture website, CSA-MSP website, irrigation service providers.
INDICATOR 2.2.3. **Area under both efficient water use and renewable energy-powered irrigation systems**	**Definition:** Renewable energy in the context of this indicator is energy obtained from solar, wind, geothermal, gravity, biomass (bagasse, biogas etc.) or small hydro sources. The indicator measures area in hectares under irrigated crops and/or pasture where renewable energy is being used as the main source of energy supply to drive the irrigation system. **Rationale:** Use of renewable energy emits less of CO_2 therefore contributing to reduction of effects of climate change from agricultural systems. **Disaggregated by:** Power sources (solar, wind, geothermal, gravity, biomass, small hydro sources) and water use systems/methods (e.g drip, sprinkler). **Data sources:** County websites, Ministry of Agriculture website, CSA-MSP website, irrigation service providers.
INDICATOR 2.2.4. **Number of efficient irrigation technological packages developed**	**Definition:** This refers to the number of irrigation technologies developed that achieve maximum productivity with minimum water losses in relation to water conveyance, application and use. **Rationale:** This will track progressive availability of efficient technologies for use by farmers. **Disaggregated by:** eTechnology types. **Data sources:** MoALFC website, MSP website (MSP members) and other service providers.
OUTPUT 2.3. Enhanced green technology value addition to commodities	
INDICATOR 2.3.1. **Types of value addition green technologies in use across value chains**	**Definition:** This refers to the green technologies that are used for value addition across the value chains. **Rationale:** This is to track transitioning from fossil fuel use into green energy like wind, solar, biogas, bagasse. **Disaggregated by:** Value chain, type of value addition (drying, storage, transportation, processing). **Data sources:** MoALFC website, MSP website and other service providers.

INDICATOR 2.3.2. **Number of actors using green technologies for value addition**	**Definition:** These are entrepreneurs using technologies that use green energy like wind, solar, biogas, bagasse to change primary agricultural commodities to higher value products and longer shelf life. **Rationale:**This is to track transitioning from fossil fuels to use of green energy. Use of green technologies will reduce emissions hence mitigating climate change. **Disaggregated by:** Value chain, green technology. **Data sources:** MoALFC website, MSP website and other service providers.
OUTPUT 2.4. Enhanced market access for climate-smart products (labelled & certified)	
INDICATOR 2.4.1. **Change in volumes of marketed climate-smart commodities**	**Definition:** This is the change in the annual volumes of commodities in tonnes produced through climate practices that increase productivity without polluting the environment causing more GHG emissions that are sold both locally (in the county/country) and exported outside the country during the reporting period. **Rationale:** This will provide information climate cautiousness of the consumers and their demand for climate-smart products. **Disaggregated by:** Type of market (local and export); value chain. **Data sources:** Agriculture marketing reports, marketing organizations, certification bodies, KEPHIS, DVS.
INDICATOR 2.4.2. **Change in number of market outlets trading climate-smart products**	**Definition:** This is the number of market outlets, which trade in climate smart products over a given a period. **Rationale:** This will progressively track the diversity of markets outlets trading in Climate smart products for **Disaggregated by:** Value chains; types of markets (wholesale, retail, local or export). **Data sources:** Sub-sector reports, market surveys.
INDICATOR 2.4.3. **Number of actors trading in climate-smart commodities**	**Definition:** This indicator looks at the number of actors (producers, traders, aggregators and processors) who are trading in climate smart commodities during the reporting period. **Rationale:** This allows for increased trade of the climate smart commodities and value share to the different value chain actors. **Disaggregated by:** Value chain actors; value chain produce. **Data sources:** Sub sector reports; marketing reports.
INDICATOR 2.4.4. **Number of actors adopting standardization systems**	**Definition:** This indicator is meant to track the number of agricultural value chain actors adopting approved grading and standardization systems for climate smart products within the reporting period. **Rationale:** The purpose is to increase competitiveness and market access of climate-smart products. **Disaggregated by:** Value chains. **Data sources:** Sub sector reports, standardization data base, KeBS.

OUTPUT 2.5. Improved food and feed storage and distribution	
INDICATOR 2.5.1. **Change in the number of climate-smart food and feed processing, storage and distribution technologies in use**	**Definition:** This indicator intends to measure the trend in the number of climate smart food and feed storage technologies in use within the reporting period. The technologies are value chain specific and use technologies that ensure food and feed preservation using renewable energy, for instance crops (silos, hematic bags, zero energy cooling chambers etc.), fisheries (solar drying oven and racks, icing, cooler boxes, etc) and livestock (pasteurization, chillers, etc.). **Rationale:** Use of climate smart food and feed storage will contribute to adaptation to climate change with mitigation co-benefits. **Disaggregated by:** Actor types (producers, processors); Value chain (crops, livestock, fisheries). **Data sources:** Sub-sector reports.
INDICATOR 2.5.2. **Change in the number and capacity of climate-smart food and feed storage and distribution facilities**	**Definition:** This indicator measures the trend in the number and capacity of food and feed distribution technologies that have been used during the reporting period. **Rationale:** Use of climate smart food and feed distribution facilities and equipment will contribute to preserving the quality of agricultural produce and can indicate the capacity of producers to take perishable produce to the market. Distribution facilities and equipment are also key in ensuring that the feeds can reach the farmers in a timely and cost-effective manner. **Disaggregated by:** Actor types; type (public, private); storage capacity (small, medium, large); value chain (crops, livestock, fisheries). **Data sources:** Sub sector reports.
INDICATOR 2.5.3. **Quantity of strategic food reserves, by commodity**	**Definition:** This is the change in volume of food reserved according to value chain. e.g. Kilograms of rice, maize, beans, milk. **Rationale:** This is important in capturing the ability to retain food reserves. **Disaggregated by:** Type of value chain, household, county. **Data sources:** NCPB, county government and national government.
INDICATOR 2.5.4. **Change in the quantities of strategic livestock and fish feed reserves**	**Definition:** This is the change in volume of livestock and fish feeds strategically put aside for use during period of scarcity during the reporting period. **Rationale:** This is to increase the availability of livestock and fish feed during hardship periods. **Disaggregated by:** Feed types (roughages, proteins, energy, minerals and additives). **Data sources:** NCPB, county government and national government.

OUTCOME 3. **Increased resilience with mitigation benefits**

The aim of Outcome 3 is to reduce the vulnerability of agricultural systems by cushioning them against the impacts of climate change and to reduce GHG emissions where possible.

INDICATOR 3.1. **Percentage change of GHG emission intensity**	**Definition:** This is the change in measure of GHG emissions per unit of production. GHGs are gaseous compounds such as CO_2, CH_4, and NO_2 cause global warming through absorption of infrared radiation. Agriculture is one of the major sources of these GHG emissions. **Rationale:** To monitor the sequestration and abatement of GHG emissions from the resilience building initiatives. **Disaggregated by:** Value chains and practices. **Data sources:** Agriculture departments at national and county levels.
INDICATOR 3.2. **Total land under integrated soil fertility and water management practices**	**Definition:** This is land area in hectares that has been put under integrated soil fertility and water management practices through various initiatives. **Rationale:** To attribute the initiatives to the GHG emission abatement and sequestration. **Disaggregated by:** Initiatives/practices. **Data sources:** Organizations.
INDICATOR 3.3. **Total area under ecosystem management and degraded land rehabilitation**	**Definition:** This is the aggregation of land area that has been put under ecosystem management and land rehabilitation (agroforestry, watershed management, habitats, and biodiversity conservation, rangeland management, wasteland rehabilitation, liming). **Rationale:** To improve productivity, restoration of ecosystems and habitats and GHG emissions reduction. **Disaggregated by:** Practice. **Data source:** Reports.
INDICATOR 3.4. **Volume of water harvested and stored for agricultural use**	**Definition:** This is the amount of rain water collected and stored for use in agricultural activities. **Rationale:** To conserve water for increased productivity. **Disaggregated by:** Harvesting type/method. **Data source:** Reports.
INDICATOR 3.5. **Existence of Monitoring Reporting and Verification (MRV+) systems**	**Definition:** MRV refers to a set of measures for collecting data on emissions, mitigation actions to support direct measurement or estimated calculations of emission and emission reductions following the IPCC Guidelines. MRV+ is aimed at delivering both MRV of greenhouse gas (GHG) emissions and mitigation activities and Monitoring and Evaluation (M&E) of the adaptation activities. **Rationale:** To provide guidance on the implementation of both adaptation and mitigation actions in the form of policies, projects, programmes or business ventures and country help to fulfil international reporting obligations. **Disaggregated by:** National and county. **Data source:** Sub-sector CCUs.

OUTPUT 3.1. Improved soil health and rehabilitation of degraded lands	
INDICATOR 3.1.1. **Number of farmers adopting integrated soil fertility management practices**	**Definition:** This indicator measures the number of farmers adopting/ using (over a period of time) a set of soil fertility management practices that combine fertilizer use, organic inputs, improved germplasm, soil testing, etc. for maximizing efficient use of applied nutrients. **Rationale:** To increase productivity while reducing emissions resulting from unsustainable soil fertility management practices. **Disaggregated by:** Practices, gender. **Data source:** Reports.
INDICATOR 3.1.2. **Land area under integrated soil fertility management practices**	**Definition:** This refers to the area of land with integrated soil fertility management practices. **Rationale:** To increase productivity while reducing emissions resulting from unsustainable soil fertility management. **Disaggregated by:** Practices **Data source:** Reports.
INDICATOR 3.1.3. **Number of farmers adopting soil and water management technologies and innovations**	**Definition:** This indicator refers to the number of farmers adopting/ using soil and water management technologies and innovations. Soil and water management technologies and innovations refer to techniques that build soil health and better manage water resources. Adopting refers to extent to which farmers have accepted and incorporated various climate-smart integrated soil and water management in their agricultural practices. **Rationale:** To enhance soil health and productivity. **Disaggregated by:** Gender, technologies and innovations. **Data sources:** Reports, field surveys.
INDICATOR 3.1.4. **Number of actors providing soil and water management services**	**Definition:** This is the number of actors providing soil and water management services e.g., soil testing. **Rationale:** To enhance access of the soil and water management services which is important for adoption. **Disaggregated by:** Actor, soil and water management service. **Data source:** Reports.
INDICATOR 3.1.5. **Area of land under soil and water management technologies and innovations**	**Definition:** This is the area of land under soil and water management technologies and innovations which refer to techniques that build soil health and better manage water resources. **Rationale:** To reduce land degradation and increase productivity. **Disaggregated by:** Technologies and innovations. **Data sources:** Reports and survey maps.

INDICATOR 3.1.6. **Area of degraded land rehabilitated**	**Definition:** This is restoration of land that has lost its natural productivity through degradation. Degraded land is land whose productivity has been lost because of loss of natural resources (soil, water, vegetation, rocks, air, climate, relief) because of human caused processes that include overgrazing, overuse, deforestation. **Rationale:** To improve land productivity, carbon sequestration, increased biodiversity, and ecosystem services. **Disaggregated by:** Type of degradation, rehabilitation method. **Data source:** Reports, survey maps.
OUTPUT 3.2. Enhanced conservation of water and other natural resources	
INDICATOR 3.2.1. **Change in area of land under conservation/ restoration**	**Definition:** This indicator measures the trend in total land (in hectares) under conservation for agricultural use within the reporting period. This includes: swamps, riverbanks, critical fish habitats, agroforests, rangelands. **Rationale:** Increasing land under conservation enhances adaptation and mitigation co-benefits (ecosystem goods and services). **Disaggregated by:** Land use, conservation measures. **Data source:** MoALFC, County, MoEF.
INDICATOR 3.2.2. **Change in number of value chain actors adopting climate-smart ecosystem conservation measures**	**Definition:** This indicator will track the trend in adoption of climate smart ecosystem conservation measures. E.g. minimum tillage, zero tillage, range rehabilitation, restocking, agroforestry. **Rationale:** Progressive increase in adoption of climate smart ecosystem conservation measures results in increased land under conservation that enhances adaptation and mitigation. **Disaggregated by:** Conservation measures, actors. **Data source:** CCU.
INDICATOR 3.2.3. **Number of water harvesting and storage structures for agricultural use**	**Definition:** Number of water harvesting and storage structures including, small dams, water pans, farm ponds, water tanks, rock catchments that are privately or communally owned. This excludes mega structures like the electricity generating dams. **Rationale:** These structures store rainwater that could have caused run off and soil erosion. The water harvesting and storage structures enhance water availability for agricultural use. **Disaggregated by:** Type of structures (small dams, water pans, farm ponds, water tanks, and rock catchments), actors (HH, communal, public etc.). **Data source:** County CCUs, WRUAs, WRA.

INDICATOR 3.2.4. **Change in number of non-conventional livelihood opportunities linked to integrated watershed management**	**Definition:** This indicator seeks to track the number of non-conventional livelihoods that are considered in the integrated watershed management. These are considered as an addition to conventional livelihoods leading to socio-cultural and economic diversification. These include use of gums and raisins, herb and medic. **Rationale:** Progressive diversification of livelihoods opportunities in water sheds motivates natural resource conservation. **Disaggregated by:** Watersheds. **Data sources:** WRA, County Water Departments.
OUTPUT 3.3. Enhanced access to climate risk-related agricultural insurance and other safety nets	
INDICATOR 3.3.1. **Change in access to agricultural safety nets services**	**Definition:** This indicator tracks accessibility of agricultural safety nets services that support farmers, livestock producers and fisher folks to rebound after hardship of adversity such as weather, endemic disease, pest infestation etc. This includes subsides, cash transfers, etc. **Rationale:** The intervention is geared towards supporting farmers, livestock producers and fisher folks from falling into destitution as result of climate disasters. **Disaggregated by:** Value chains, service providers, actors. **Data sources:** Reports, MoALFC, NDMA, TNT, MOINC, National Safety Net Programme.
INDICATOR 3.3.2. **Change in access to index–based insurance products**	**Definition:** Index-based insurance refer to schemes where payouts are triggered by disasters covering a large area. The trigger is based on a scale of severity of the disaster depending on the deviation from the normal conditions. **Rationale:** The insurance scheme is geared at cushioning the insured against possible climate risks of livelihood and build their resilience. **Disaggregated by:** Value Chain, service providers, actors. **Data sources:** Survey, synthesis report.
OUTPUT 3.4. Enhanced adoption of synergistic adaptation and mitigation initiatives	
INDICATOR 3.4.1. **Change in adoption of synergistic adaptation and mitigation initiatives**	**Definition:** This indicator will track the trend of CSA initiatives that have high potential for synergy between adaptation and mitigation. These will include initiatives that have both adaptation and mitigation benefits. **Rationale:**Progressive increase in initiatives that have both adaptation and mitigation benefits will ensure faster transition of the agricultural sector towards low carbon development pathway. **Disaggregated by:** Value chains. **Data sources:** CCU, CCD, sub-sector reports.

INDICATOR 3.4.2. **GHG accounting system for adaptation interventions with high potential for mitigation**	**Definition:** A system to measure and track emissions arising from agricultural activities. **Rationale:** It is aimed at monitoring and reporting progress GHG emissions arising from climate interventions. **Disaggregated by:** Sub-sector, value chain, interventions. **Data sources:** MoALFC, County Agriculture departments.
OUTPUT 3.5. Enhanced capacity for GHG accounting	
INDICATOR 3.5.1. **Number of institutions with facilities to support GHG accounting**	**Definition:** These are the number of institutions with infrastructure to conduct assessments, collect data, calculate emissions, assure data quality and reporting. **Rationale:** To provide a platform for national GHG initiatives and programmes. **Disaggregated by:** Institution and facility. **Data sources:** Institutions.
INDICATOR 3.5.2. **Number of experts trained in GHG emissions accounting**	**Definition:** These are trained personnel with capacity to use the GHG accounting tools, facilities, conduct assessments, analyze GHG data and generate accurate reports. **Rationale:**To ensure that credible GHG reports are generated. **Disaggregated by:** Sub-sector, gender. **Data sources:** Sub-sector reports
INDICATOR 3.5.3. **Change in GHG emissions**	**Definition:** This refers to the amount of GHG emissions abated or sequestered because of interventions out in agricultural subsectors expressed in tons of CO_2 equivalent. **Rationale:**To track GHG emission abated or sequestered by implementing resilience building interventions. **Disaggregated by:** Sub-sector, value chains and interventions. **Data sources:** Sub-sector reports
OUTCOME 4. **Communication of CSA information strengthened** The aim of Outcome 4 is to strengthen communication systems related to CSA extension and agro-weather issues by generating, communicating, and disseminating CSA knowledge; by enhancing access to climate information and agro-weather advisory services and early warning systems; and by developing capacity in climate risk contingency planning.	
INDICATOR 4.1. **Change in total number of actors with access to CSA information**	**Definition:** This is the change in number of actors with access to CSA information. This refers to information on climate, agro-weather, CSA technologies and innovations and GHG emissions. **Rationale:** To increase availability of CSA information. **Disaggregated by:** Actors, type of information. **Data sources:** Organizations.

INDICATOR 4.2. **Existence of functional CSA information management systems**	**Definition:** This is an operational database where different actors share and store information. **Rationale:** To build synergies, trigger necessary action and improve information access. **Disaggregated by:** Information system. **Data sources:** Organizations, CSA MSPs websites.
INDICATOR 4.3. **Existence of functional contingency plans for climate risks response**	**Definition:** These are plans developed for climate risk management by different actors at both county and national levels in the event of a catastrophic climate change disaster (e.g. flood and drought). **Rationale:** To ensure swift and efficient response in the event of a disaster and minimize disruption of agricultural livelihoods. **Disaggregated by:** Type of risk (droughts, floods, mudslides). **Data sources:** National and County governments.
INDICATOR 4.4. **Presence of functional CSA communication strategies**	**Definition:** This indicator tracks the implementation of a communication strategy specifying products, media for different audience. **Rationale:** The communication strategy provides for targeted communication of information and knowledge sharing for effective decision-making. **Disaggregated by:** Governance level (National and County), National CSA MSP, non-state actors, value chains. **Data sources:** Counties, CCU, MSP website.
OUTPUT 4.1. Enhanced CSA knowledge generation	
INDICATOR 4.1.1. **Number of CSA knowledge products developed**	**Definition:** This is a summary of best CSA practices or recommendations that provide enough contextual background information and the description of the practice. Knowledge products refer to brochures, pamphlets, journals, reports, webinars, images, mobile and web based platforms etc. **Rationale:**To ensure the information is in the right form and content for effective action by the intended users. **Disaggregated by:** Knowledge product type, actor. **Data sources:** Organizations.
INDICATOR 4.1.2. **Number CSA best practices documented**	**Definition:** CSA best practices include approaches and methodologies that through experience and adoption have proven to reliably lead to desired results. These practices are generally accepted as superior to the dominant alternatives when they are documented as more productive, resilient and efficient in addressing climatic issues. **Rationale:** Proven success practices are important for up-scaling CSA, hence the need for documentation and dissemination. **Disaggregated by:** Value chains, type. **Data sources:** Organizations, institutions.

OUTPUT 4.2. Enhanced CSA knowledge communication and dissemination	
INDICATOR 4.2.1. **Change in access to CSA advisory services**	**Definition:** This indicator tracks the number of value chain actors accessing CSA advisory services. **Rationale:** Increase the proportion of value chain actors e.g. farmers, suppliers, livestock producer, fisher folks accessing CSA advisory services. **Disaggregated by:** Value chain actors, type of service. **Data sources:** Counties, CCU, CSA-MSP.
OUTPUT 4.3. Enhanced access to climate information and agro-weather advisory services	
INDICATOR 4.3.1. **Change in number of agro-weather advisories integrating scientific and indigenous knowledge**	**Definition:** This indicator seeks to track the integration of scientific and indigenous knowledge in agro-weather advisories. Scientific knowledge includes advisory generated from climatic models whereas indigenous knowledge entails predictions that are based on the observation of the biophysical environment, often by local communities. **Rationale:** Integration of scientific and indigenous knowledge will enhance the downscaling and accuracy of agro-weather advisories and promote the use of the advisories in decision making for agricultural activities. **Disaggregated by:** Type of advisory; County. **Data sources:** KMD.
INDICATOR 4.3.2. **Change in number of service providers trained in climate information and agro-weather advisory service delivery**	**Definition:** This indicator tracks the number of public and private extension personnel upskilled (capacity built) on agro-weather and climate information. **Rationale:** Increase the proportion of farmers, livestock producers and fisher folks accessing climate information agro-weather services. **Disaggregated by:** Type of service provider (public, private), county, gender. **Data sources:** KMD, counties, national government, CSA MSP.
INDICATOR 4.3.3. **Change in access to downscaled climate agro-weather information to communities and localities in place**	**Definition:** This indicator shows the trend in the channels of passing synthesized and packaged agro-weather information suitable to communities and localities within a given period. **Rationale:**There is value in packaging agro-weather information in a simplified format that local communities will understand and therefore take action. **Disaggregated by:** County. **Data sources:** County, Kenya Met, CCU.

OUTPUT 4.4. Early warning systems and contingency plans for climate change responses strengthened	
INDICATOR 4.4.1. **Change in the number of climate risk contingency plans developed**	**Definition:** This indicator tracks evidence of agriculture sector contingency plans that support prompt and appropriate responses in the event of climate related risks and hazards. They are designed to reduce the negative impacts and support recovery. **Rationale:** Functional contingency plans ensure adverse negative effects to human and environment are minimized and there is fast bounce back to normal situations. Hence, there is need for these plans to be in place to mitigate against negative effect of climate change. **Disaggregated by:** County. **Data sources:** Counties, organizations.
INDICATOR 4.4.2. **Change in the number of stakeholders implementing the contingency plans**	**Definition:** These are stakeholders implementing contingency plans made for current and future climate risks and hazards. **Rationale:** Contingency planning enables efficient and rapid response to climate change risk and hazards and this indicator tracks the number of stakeholders actually implementing the contingency plans in place. **Disaggregated by:** County, type of stakeholder (state or non-state). **Data sources:** Organizations, counties.
INDICATOR 4.4.3. **Number of climate risk mitigation and disaster preparedness measures**	**Definition:** These are activities planned ahead of time to ensure effective response to climate related disasters. **Rationale:** Climate risk mitigation and disaster preparedness measures contributes to overall resilience therefore, this indicator assesses our preparedness for dealing with climate disasters. **Disaggregated by:** Type. **Data sources:** Organizations, counties.
INDICATOR 4.4.4. **Types of functional early warning systems for climate change responses**	**Definition:** An early warning system is a climate change adaptation strategy that uses integrated communication systems to assist individuals, communities, governments or businesses in take timely action to reduce climate related disaster risks. **Rationale:**Functional early warning systems will help planners protect land, infrastructure economies and save lives, jobs etc. therefore this indicator assesses sector preparedness for dealing with hazardous climate related events. **Disaggregated by:** Types. **Data sources:** Organizations.

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ANNEXES

ANNEX I:

Team of experts who developed this Climate-Smart Agriculture Monitoring and Evaluation Framework

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