

**REPUBLIC OF KENYA**



***KENYA CLIMATE SMART AGRICULTURE  
FRAMEWORK PROGRAMME***

***JOINTLY COORDINATED BY***

***MINISTRY OF AGRICULTURE, LIVESTOCK AND  
FISHERIES***

***AND***

***MINISTRY OF ENVIRONMENT AND NATURAL  
RESOURCES***

***AND***

***IMPLEMENTED BY NATIONAL & COUNTY  
GOVERNMENTS***

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***2015 - 2030***

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## ABBREVIATIONS AND ACRONYMS

ACCI	Adaptation to Climate Change and Insurance
AEZ	Agro Ecological Zone
AgGDP	Agriculture Gross Domestic Product
AR5	Fifth Assessment Report (of the IPCC)
ASALs	Arid and Semi-Arid Lands
ASDS	Agricultural Sector Development Strategy
AU	African Union
CA	Conservation Agriculture
CAADP	Comprehensive African Agriculture Development Programme
CBOs	Community Based Organizations
CCAFS	Climate Change, Agriculture and Food Security
CGIAR	Consultative Group of International Agricultural Research
CIAT	International Center for Tropical Agriculture
COMESA	Common Market for Eastern and Southern Africa
CSA	Climate Smart Agriculture
CSOs	Civil Society Organization
DANIDA	Danish International Development Agency
DFID	Department for International Development
DWFN	Distant Water Fishing Nations
EAC	East African Community
EACCCP	East African Community Climate Change Policy
EEZ	Exclusive Economic Zone
ESP	Economic Stimulus Package
FAO	Food and Agriculture Organization of the United Nations
FFEPP	Fish Farming Enterprise and Productivity Programme
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
INDC	Intended Nationally Determined Contribution
INGOs	International Non-Governmental Organizations
IPCC	Intergovernmental Panel on Climate Change
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KALRO	Kenya Agricultural and Livestock Research Institute Organization
KAM	Kenya Association of Manufactures
KDHS	Kenya Demographic and Health Survey
KEFRI	Kenya Forest Research Institute
KEMFRI	Kenya Marine and Fisheries Research Institute
KENAFF	Kenya National Farmers Federation
KEPSA	Kenya Private Sector Alliance
KFS	Kenya Forest Service
KMS	Kenya Meteorological Service
MALF	Ministry of Agriculture, Livestock and Fisheries (of Kenya)
MDG	Millennium Development Goals
ME&NR	Ministry of Environment and Natural Resources (of Kenya)
MioKshs	Million Kenya Shillings
MRV	Monitoring/Measurement/Monitoring, Reporting and Verification

MT	Metric Tons
MTIP	Medium Term Investment Plan
MTP	Medium Term Plan
MTP2	Medium Term Plan II
MWI	Ministry of Water and Irrigation (of Kenya)
NAEP	National Agricultural Extension Policy
NALEP	National Agricultural and Livestock Extension Program
NAMA	Nationally Appropriate Mitigation Actions
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan 2013 – 2017
NCCRS	National Climate Change Response Strategy
NDA	National Designated Authority
NEMA	National Environment Management Authority
NEPAD	New Partnership for African Development
NGOs	Non-Governmental Organizations
NRM	Natural Resource Management
PPP	Public Private Partnership
R&D	Research and Development
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus
SAPs	Structural Adjustment Programs
SLM	Sustainable Land Management
USAID	United States Agency for International Development
WB	World Bank
WHFSP	Water Harvesting for Food Security Project

## **FOREWORD**

Kenya envisions being a middle- income country with citizens enjoying high quality of life and a sustained annual economic growth rate of at least 10% by the year 2030 according to the National Development Blue Print “The Kenya Vision 2030”. The agriculture sector has been identified as one of the key sectors to contribute to the projected annual national economic growth.

About 98% of Kenya’s agricultural systems are rain-fed and susceptible to climate change and variability which would jeopardize attainment of the projected sector contribution to the national economic growth. There is evidence from historical records that Kenya’s has experienced increased temperature over the last 50 years and the frequency coupled with intense extreme climate and weather events like droughts and floods. Future climatic predictions for Kenya indicate possible temperature increase of 1°C by 2020 and 2.3°C by 2050. The changes in climate and weather patterns will expose the rain-fed farming systems, especially the arid and semi-arid lands, to more climate related vulnerabilities thereby predisposing farming communities to food insecurity and poverty through erosion of the productive assets and the weakening of coping strategies and resilience.

Innovative and transformative measures are therefore urgently required to assist stakeholders in the sector across the agricultural value chain to cope with effects of current and projected change in climate patterns. Climate Smart Agriculture (CSA) has been identified as a viable alternative to provide solutions towards increased agriculture sector productivity while addressing effects of changing climate and weather patterns. Consequently, the Ministries of Agriculture, Livestock and Fisheries and Environment and Natural Resources with support from COMESA, CCAFS and DFID are leading efforts towards development of a National “Country CSA Program for 2015-2030.” The Vision for the CSA Program is a “Climate resilient and low carbon growth sustainable agriculture that ensures food security and contributes to national development goals in line with Kenya Vision 2030.” In order to carry out a successfully implement the CSA country program, various stakeholders need to come on board to support this venture. We therefore, urge all the relevant stakeholders to play their respective roles in ensuring that the country CSA program is successfully implemented to ensure that the sector attains its vision of ensuring food security and employment creation for the all citizens.

Principal Secretary  
**State Department of Fisheries**  
**Ministry of Agriculture, Livestock**  
**Fisheries**

Principal Secretary  
**State Department of Environment**  
**Ministry of Environment**  
**and Natural Resources**

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The preparation of the Country CSA program has greatly benefited from insightful contributions from a multi-disciplinary team of experts drawn from the Ministries of Agriculture, Livestock and Fisheries and Environment, Water and Natural Resources, civil society organization (CSOs), private sectors, researchers, and academia and development partners.

We also acknowledge Technical and financial support during the development of this program by NEPAD Climate Change Fund, Common Market for Eastern and Southern Africa (COMESA), and East African Community (EAC) and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

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## EXECUTIVE SUMMARY

The Kenya Climate Smart Agriculture Framework Programme has been developed to set guidelines for implementing Climate Smart Agriculture approaches, practices and technologies in the Kenyan context. Agricultural growth and development is important for stimulation of economic growth and development in Kenya. A near total dependence on rain-fed agriculture, coupled with increased land degradation, inadequate access land and to support services, credit and markets, absence of appropriate incentives for investment in agriculture, weak producer associations and institutional arrangements, has increased the vulnerability of farming systems and predisposes rural households to food insecurity and poverty thus eroding their productive assets and weakening their coping strategies and resilience. Variability of seasonal rains has increased considerably from year to year, while the frequency and intensity of the extreme weather and climate events such as drought and floods are also on the increase, with devastating impacts on the national economy and the livelihoods of the people. Drastic and innovative measures are therefore needed to help farmers and consumers cope with the changes in emerging and projected climate patterns.

Climate Smart Agriculture is an approach that will simultaneously enhance gains in agricultural productivity, build resilience to climatic and weather shocks as well as reduce emissions intensity from agriculture and food systems where possible. This would require collaborative actions amongst the various actors in the value chain, including: farmers, the private sector, the Government, Non-Governmental Organizations, Civil Society Organizations and other value chain actors. The Programme document is organized into nine (9) sections as follows:

1. Introduction
2. Situation analysis
3. Vision and objectives
4. Programmatic/strategic result areas
5. Coordination framework
6. Monitoring and Evaluation
7. Resource mobilization
8. Work plan and budget
9. Roles and responsibilities

The objectives of the Programme will be realized through five (5) Result Areas as follows:

1. Agricultural productivity
2. Building resilience and associated mitigation co-benefits through CSA
3. Value chain integration
4. Improving and sustaining agricultural and agro weather advisory services
5. Improved institutional coordination

Two layers of interventions are anticipated in the CSA Framework Programme. The first layer is expected to address climate smart issues in ongoing programmes/actions (in sector ministries/ county governments/ private sector, etc.) that need climate smarting/ monitoring/ tracking/ learning because already planned and funded in other places (e.g., irrigation investment plan of Ministry of

Water; early warning system of National Drought Management Authority (NDMA) and FEWS NET; conservation and biodiversity actions of ME&NR, MW&I). This will require engaging relevant specialists to compare existing plans and programmes with proposed CSA framework. The second layer will involve new/additional actions in the CSA Framework which address gaps and guides investors/ development partners, and may require fund raising.

The Programme will be coordinated by the Ministry of Agriculture, Livestock and Fisheries in conjunction with the Ministry of Environment and Natural Resources. It will be implemented by the national and county governments.

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## 1.0 INTRODUCTION

### 1.1 Background

Agriculture plays a major role in Kenya's economy. Defined in AFFA Act 2013 as comprising crops, livestock, fisheries, agro forestry and associated services, it is the largest contributor to Kenya's Gross Domestic Product (GDP) directly contributing about 25.4% of and another 27% indirectly via linkages to agro-based industries and the service sector, giving an overall 52% contribution. The agricultural sector is mainly dominated by smallholder farmers and contributes a significant impact on Kenya's food security, income generation, employment creation and poverty reduction efforts. The sector accounts for over 65% of Kenya's total exports, and provides 18% of formal and 60% of total employment respectively, contributes 60% of Kenya's income and supports >80% of the rural population. About 33% of manufacturing sector output is based on agricultural products. The crops, livestock and fisheries subsectors contribute 77.6%, 19.6% and 2.0% of the Agricultural GDP respectively, with forestry taking about 0.8%. Production is carried out on farms averaging 0.2–3 ha, mostly on a commercial basis. This small-scale production accounts for over 75% of the total agricultural output and over 70% of marketed agricultural produce. Horticulture and industrial crops account for 90% of the exports. This, in turn, has significant implications on income generation, food security and poverty reduction efforts in the country.

Agriculture sector is a priority in Vision 2030, which aims to achieve an innovative, commercially oriented, modern agricultural sector through institutional reforms, increased productivity, land use transformation, increased access to markets and development of arid and semi-arid lands (ASALs). The Agricultural Sector Development Strategy 2010-2020 sets out a detailed plan to “position the agricultural sector as a key driver for delivering the 10 per cent annual economic growth rate envisaged under the economic pillar of Vision 2030.” The vision of the document is “a food-secure and prosperous nation” and the strategy aims to increase productivity, commercialization and competitiveness of agricultural commodities and enterprises; and develop and manage key factors of production.

#### 1.1.1 Alignment with regional and national policies

This Climate Smart Agriculture (CSA) Program is aligned to the national economic blue print – Kenya Vision 2030, and the National Development Plan. The Programme is also in line with the broad national objectives of the agricultural sector of contributing towards attainment and maintenance of domestic supply of main food items, production of raw materials for industries and creation of gainful employment. At the regional level, the CSA Program enhances the implementation of the Comprehensive African Agriculture Development Programme (CAADP)

and responds to the 23<sup>rd</sup> Ordinary African Union Assembly – Decisions and Declaration (Malabo Declaration), in particular: Assembly/AU/Dec. 538 (XXIII) on Climate Change and Agriculture; Assembly/AU/Decl.1 (XXIII) on Accelerated Agricultural Growth and Transformation; and Assembly/AU/Decl.4 (XXIII) on Nutrition Security for Inclusive Economic Growth and Sustainable Development. At the international level, the CSA Programme will contribute to Kenya's efforts to adapt and build resilience in the agriculture under the National Adaptation Plan (NAP), Nationally Appropriate Mitigation Actions (NAMAs) and Intended Nationally Determined Contribution (INDC).

## ***1.2 The Process of Preparing the Programme***

The preparation of the Kenya CSA program stems from the concerted efforts being made by the Government of Kenya to mainstream climate change considerations into the national development planning and budgeting and sectoral policies, strategies, programmes and plans. In preparing this CSA Program, joint Ministries of Agriculture, Livestock and Fisheries and Environment and Natural Resources pursued a consultative approach under the guidance of a multi-stakeholder/multi-disciplinary Expert Team. The Expert Team draws representation from relevant Ministries and Departments, Parastatals, Civil Society Organization (CSOs), Non-Governmental Organizations (NGOs), Community-Based Organizations (CBOs), Private Sector, researchers, academia and individuals.

The activities that informed the Program include: technical working sessions that carried out a stocktaking of the sector's programmes, strategies and performance from a historical perspective, as well as an analysis of options for agricultural sector growth in a changing climate. Consultative sessions were held with special interest groups, in particular The National Treasury [Designated National Agency (DNA) for the Green Climate Fund (GCF)], Global Environment Facility (GEF) focal point, Ministry of Planning (integration into development planning and budget), civil society organizations, umbrella private sector organizations, devolved government, national stakeholder workshops.

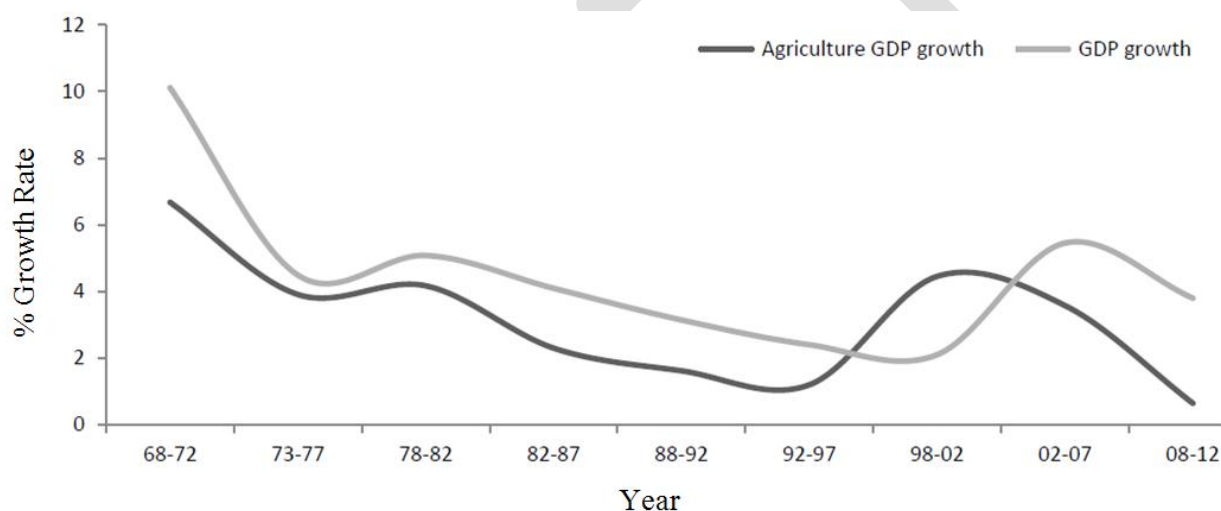
The preparation of the Country CSA Program was facilitated by the Expert Team with technical and financial support from the New Partnership for African Development (NEPAD) Climate Change Fund, the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC) and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

## 2.0 SITUATION ANALYSIS

### 2.1 General trends

Agriculture<sup>1</sup> is the largest contributor to Kenya's GDP, directly contributing about 25.4% of the country's Gross Domestic Product<sup>2</sup> and another 27% indirectly via linkages to agro-based industries and the service sector, giving an overall 52% contribution to Kenya's GDP. The crops (horticulture, food crops and industrial/ cash crops), livestock (beef, dairy, etc.) and fisheries subsectors are the main components of the agricultural sector, contributing about 78%, 20% and 2% of the Agricultural GDP respectively.

Growth of the national economy is highly correlated to growth and development in agriculture, indicating the sector's importance for the stimulation of overall economic growth (Figure 2).



**Figure 1:** Agricultural GDP Growth Rate vs. National GDP Growth Rate (% change), 1968-2012

Source: World Bank –ASRA Phase I Draft Report June 2014, unpublished (with MoALF data)

However, Kenya's agriculture is 98% rain-fed<sup>3</sup> and predominantly small-scale, especially in the medium to high-potential areas, covering less than 15% of the country. Therefore productivity in the sector is directly influenced by climatic conditions. A large proportion of the country, accounting for about 83-89%, is arid and semi-arid with an annual average rainfall of 400mm. These facts about Kenyan agriculture sector pose a number of challenges to the sector.

The production characteristics of the Kenyan agricultural sector are small-scale (average farm is 0.2 to 3 ha), medium scale (3 to 49 ha) and large scale (> 50 ha), with small-scale farm holdings accounting for 75-80% of total production.

<sup>1</sup> comprising crops, livestock, fisheries, agro forestry and associated services

<sup>2</sup> This is the contribution computed after the rebasing of Kenya's GDP in September 2014

<sup>3</sup> Kenya: Atlas of Our Changing Environment (UNEP, 2009); Kenya State of the Environment and Outlook (NEMA Kenya, 2010)

According to a study conducted by the Adaptation to Climate Change and Insurance (ACCI) project<sup>4</sup>, between 1970 and 2013 a total of 41 flood events have been reported against a total of 12 drought events (Figure 3). Flooding tends to be more frequent but more localised, while drought is less frequent but more systemic. The cycle of drought is becoming shorter, more frequent and more intense. Historically, negative growth indices have been associated with extreme weather events. According to the Stockholm Environment Institute<sup>5</sup>, if climate change in Kenya is not addressed effectively, economic costs of its impacts are estimated to be 3% of GDP per year by 2030 and possibly 5% by 2050. Agriculture is one of the main economic sectors that will be affected negatively by climate change. With increasing frequency and magnitude of these extreme weather events, annual growth rate in agricultural “value added” has been on the decline (Government of Kenya, 2014)<sup>6</sup>.

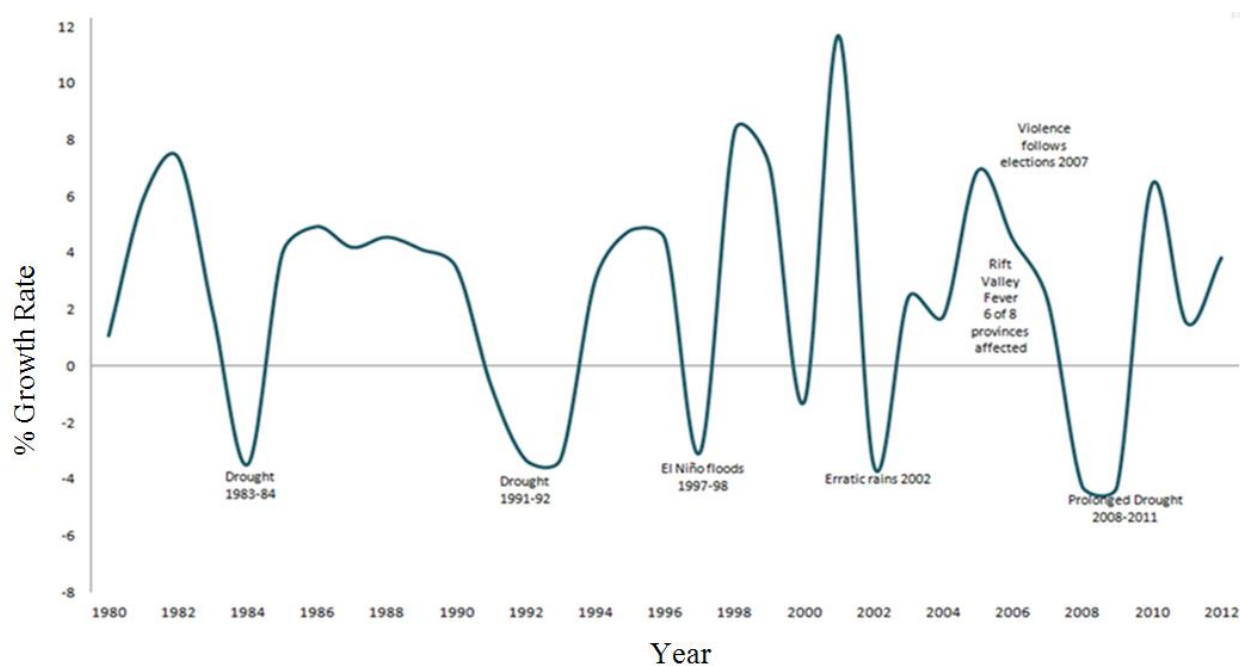


Figure 2: Agricultural growth index and major extreme events in Kenya 1980 – 2012

Source: World Bank –ASRA Phase I Draft Report June 2014, unpublished (with MoALD data)

### 2.1.1 National Trends

The national trends indicate an increase in temperature and highly variable rainfall, with first season rains becoming lower in amounts and more variable, while second season rains becoming

<sup>4</sup>Situational Analysis Report for the development of National Agricultural Insurance Policy, February 2014, conducted by ASCU and funded by GIZ/ACCI

<sup>5</sup> SEI, 2009

<sup>6</sup>Situation Analysis Report for a National Agricultural Insurance Policy, produced by ASCU and ACCI/GIZ.

more in amounts than the first. The Programme also recognizes the various agro-ecological zones and sets the tone for action in each context.

### ***2.1.2 Trends in Arid and Semi Arid Land Areas***

Trends in Arid and Semi Arid Land Areas indicate that this area is expanding as temperatures increase

### ***2.1.3 Trends in Humid and Sub-Humid Land Areas***

Trends in Humid and Sub-Humid Land Areas indicate that this area is shrinking as ASAL areas expand

## ***2.2 Agricultural production trends***

### ***2.2.1 Crops production***

Rain-fed farming is the predominant production agricultural production system in the country, accounting for over 98% of the total land under agriculture, especially in the medium to high-potential areas, covering about 11-20% of the country. The main food crops grown in Kenya include maize ( $\approx 38\%$  of total agricultural production), beans ( $\approx 19\%$  of total agricultural production)<sup>7</sup>, rice, millet and sorghum. Major industrial crops (or cash crops) are tea, coffee, pyrethrum, cotton and sugarcane among others. The relative importance of these different agricultural commodities varies and their spatial and temporal distribution is varied as well. Historical data from 1963 to 2012 shows that average maize and beans acreage has been increasing but yields have stabilized around 1.5 – 2 tons/ha since 1980's.

Although very sensitive to climate change, maize is the main staple food crop for a majority of Kenyans, produced by majority of rural households in different parts of the country. Since independence, the government has concentrated on policies aimed at enhancing maize production to boost the country's food security. Maize is also important in Kenya's crop production patterns, accounting for roughly 28 – 38% of gross farm output from the small-scale farming sector. For many years food security was equated to self-sufficiency in maize production. It has always been taken to be synonymous with household and national food security, and is therefore used as a proxy indicator of food security. Maize is also top of the list of staple food imports, since the national demand has been on the increase, outstripping supply (Figure 4). However, there has been a fluctuating trend in maize production over the years, which threatens household food security and income sources.

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<sup>7</sup> Maize and beans also cover well over half of total cropped area (FAOSTAT 2015)



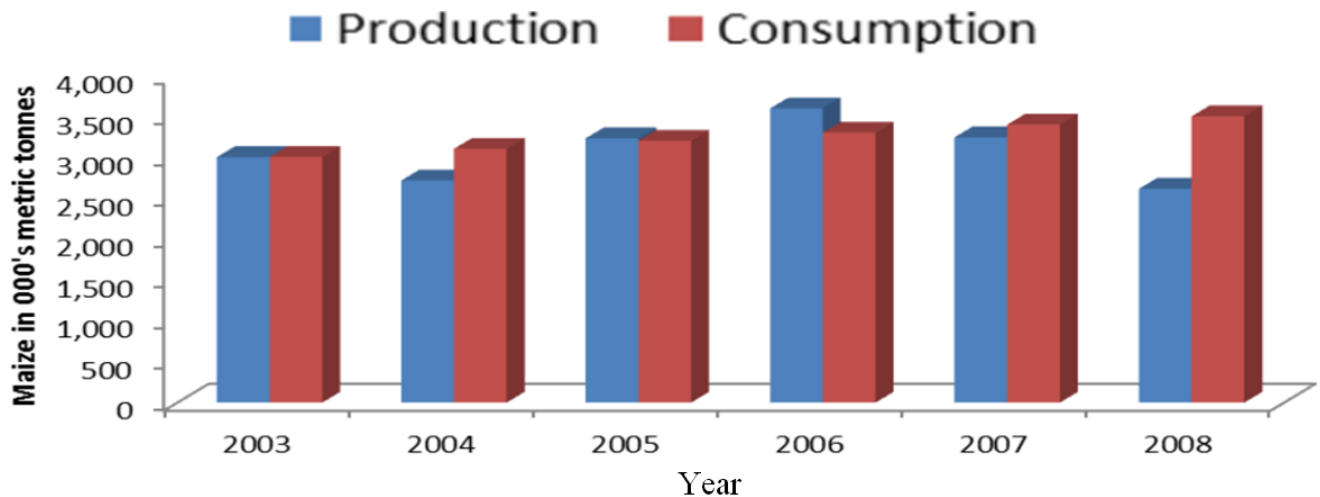


Figure 3 Maize production and demand trends in Kenya

Source: Gichuhi and Odwe (undated)

Production level of the major industrial crops (tea, coffee, sugar) has been fairly stable under increased areas of production. However, the yields (kg/ha) have been on the decline, majorly attributed to changes in climate.

The sugar sub-sector holds a key position in Kenya's agricultural sector, directly employing about 40,000 workers. It also acts as an input supplier for other companies and as a marketing and distribution agent for sugar and sugar by-products. It is also a major food item in the household budget of the average Kenyan with refined sugar being an essential raw material in food processing, confectioneries, beverage manufacture, soft drinks and pharmaceutical industries among others. Sugarcane growing is a major source of income to over 150,000 smallholders. However, in the past few years, sugarcane yields have been declining – decreases have been mostly associated with water shortage for irrigation (See Annex 3 for an illustration of estimated yield impact of climate trends for sugarcane). While local demand for sugar supply outstripped local supply in recent times, amounts being imported have been increasing.

Coffee, on the other hand, is one of the major key players in the agricultural sector in Kenya, employing many people and contributing to export revenues. The crop was the first major export in Kenya and has remained an important part of the Kenyan economy throughout its history. Its farming is mainly done by small-scale farmers organized into co-operative societies who account for 60% while 40% is done by large scale farmers at plantation or estates level.

The yield of most vegetables has been stagnant, except indigenous vegetables. Only 10% of Kenya's fresh agricultural produce find its way into regional and other global markets with most of it consumed locally. However due to the perishable nature of these products, producers and marketers incur post-harvest losses ranging between 30 – 75%. This is basically due to poor transport networks, low value addition and lack of storage and preservation facilities among other factors.

## 2.2.2 Livestock production

The livestock sub-sector employs 50% of the agricultural labor force and is the mainstay for over 10 million Kenyans living in the Arid and Semi-Arid Lands (ASALs). It contributes about 5% of agriculture's GDP. According to the 2009 census, the country's livestock population was 17.5 million cattle, 27.7 million goats, 17 million sheep, 3 million camels, 31.8 million domestic birds, and 1.8 million donkeys.

Livestock population growth in the country is driven by the rapidly increasing demand for livestock products due to increased population growth, urbanization and increasing incomes. The overall livestock population trends (largely based on estimates) across all species has been on the increase (Figure 5). Figure 8 further indicates fluctuations in livestock population that is closely related to severe drought events indicating that the performance of livestock subsector is highly sensitive to rainfall.

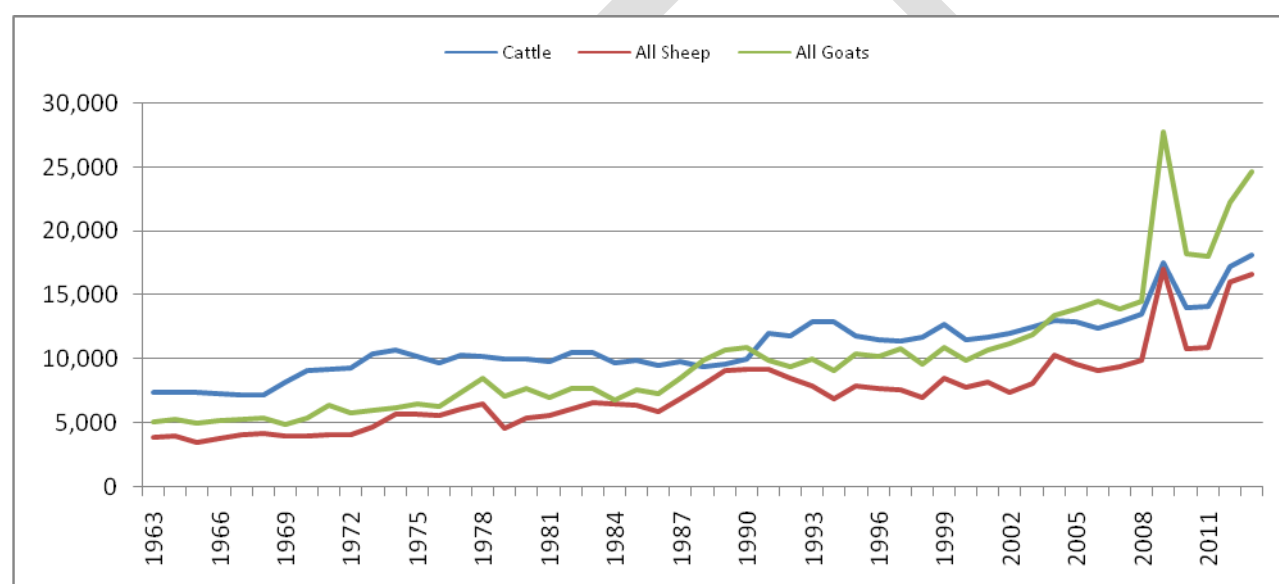


Figure 4: Cattle, sheep and Goats population trend from 1963 to 2013

Source: State Department of Livestock, Government of Kenya, 2013

A sharp increase in the trend in 2009 for all species was not due to production but adjustment of livestock figures as a result of human census exercise where livestock data was part of the information captured.

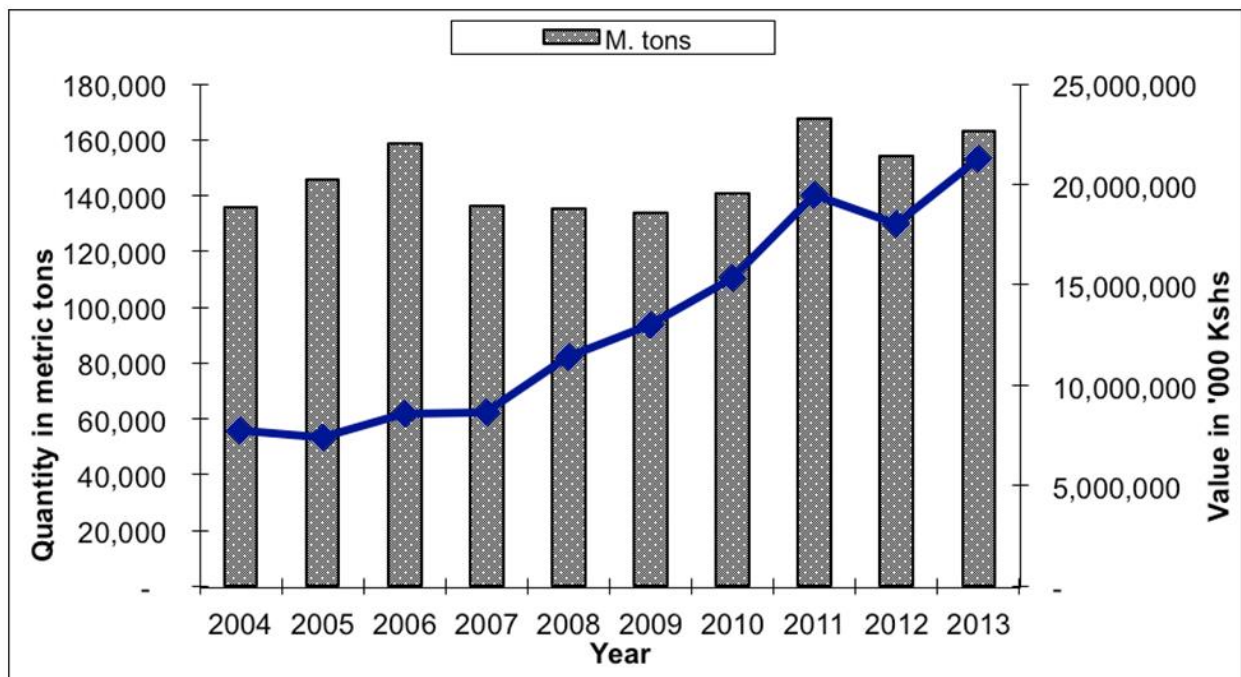
Depending on biophysical suitability of the area and socioeconomic considerations of the people, there are several different livestock production systems common across Kenya, ranging from extensive (nomadic) pastoralism, sedentary (agro) pastoralism, mixed crop/livestock farming systems (often accompanied by small-medium-scale free range or backyard poultry production), to intensive dairy, poultry and pig production.

From the colonial period, Kenya's dairy industry has consistently been ranked among the largest in sub-Saharan Africa. Over 1 million households produce milk with 80 percent produced by small-scale farmers, producing on average XX litres/cow. Milk consumption in Kenya is one of the highest in the world for developing countries (100kg/capita/year) and is still growing (Ref?). Beef production is second in value and is one of the fastest rising sub-sectors in the economy as domestic beef consumption has more than doubled over the past two decades. Beef is predominantly raised under extensive system based in the ASALs but with a significant contribution from the dairy sector. Small ruminants and camels are raised under similar system as beef, while backyard system is the most prevalent poultry production system for indigenous birds while exotic birds are kept under intensive systems.

It is projected that production of livestock and livestock products is bound to increase with increasing human population, urbanization and incomes. Growing local and export market demand is likely to be a key driver for increasing intensification of production.

### 2.2.3 Fisheries production and aquaculture

The fisheries sub-sector plays an important role in the national economy especially in contributing to food security, poverty reduction and employment creation. It is mainly composed of freshwater (lakes, rivers and dams) and marine (Indian Ocean) with the rest coming from aquaculture. The sub-sector contributes about 0.5 % of the country's National GDP, and fisheries production continues to grow. However, the growth is more from aquaculture and not from convectional rivers and lakes, where fish catches are declining. Figure 6 shows the quantities and monetary values of fish produced in Kenya between 2004 and 2013.



*Figure 5: Fish national Production for the years 2004-2013*  
Source: State Department of Fisheries, Government of Kenya

#### **2.2.4 Forestry, Farm Forestry and Agro Forestry**

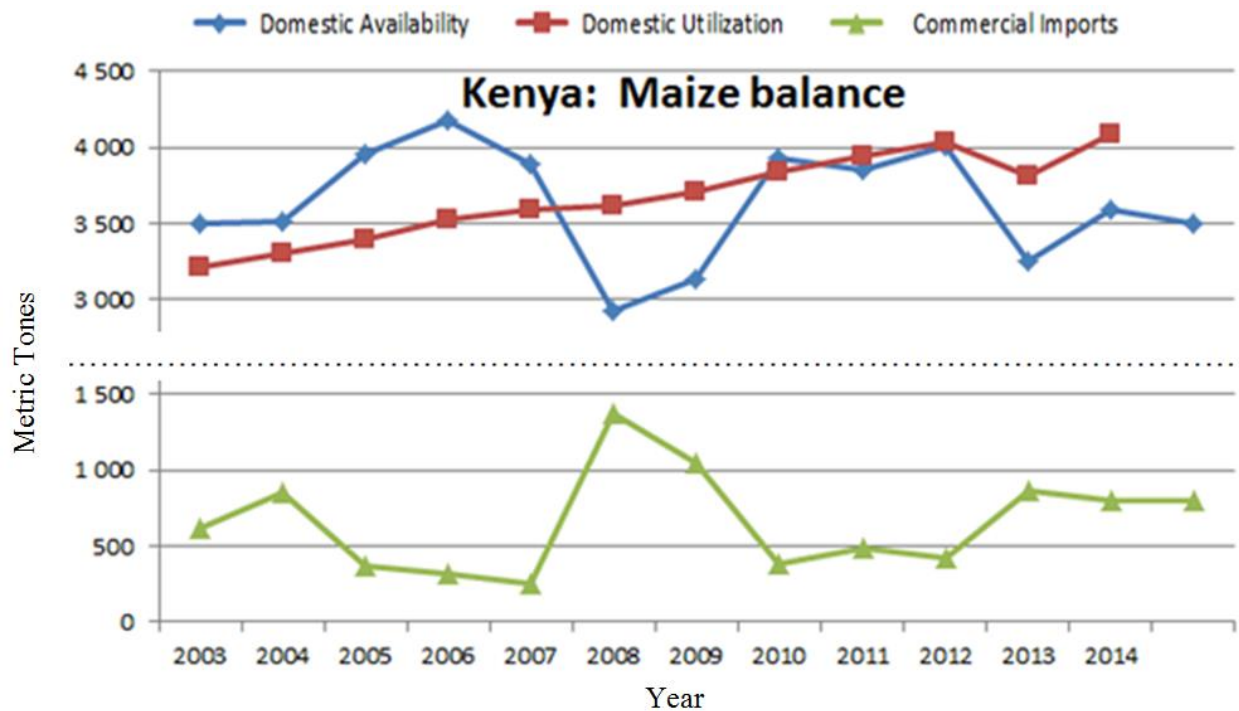
Agriculture and forestry are closely linked, since agriculture is the most dominant deforestation driver leading to forest loss. Forest resources provide important ecosystem services that include food and water; regulating floods, drought and land degradation; supporting soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other nonmaterial benefits). Kenya's national forest cover is about 6.9 % (Ref) compared with the internationally accepted level of 10%. One of the objectives of the current forestry policy is to expand agro forestry tree cover on-farm to achieve the desired 10% forest cover and implement REDD+ as a climate change mitigation initiative.

In this framework forestry, farm forestry and agro forestry will be developed further an embedded in several result areas. However, the current extent of tree cover on agricultural land is not known, and a baseline will need to be established.

### **2.3 Food Consumption and Nutrition Trends**

#### **2.3.1 Levels of food consumption**

Kenya is a food deficit country and a net importer of foodstuffs, importing up to 20% of its annual cereal requirements even in a bumper harvest year. Countrywide, an estimated 47% of the rural population has insufficient food to meet their minimum daily energy requirements. Although crops, livestock and fisheries constitute Kenya's basket of food security assets, currently maize is the main staple food crop for majority of Kenyans. The average annual production of maize is estimated at 2,700,000 tons, while average annual consumption needs reach 3,400,000 tons. However, there has been a fluctuating trend in maize production over the years, which threatens household food security and income sources. Thus, maize demand in the country has been on the increase outstripping supply. The shortfall in domestic production/availability is met by imports, mainly from neighboring Uganda and Tanzania (Figure 7)



**Figure 6: Kenya Maize Balance**

Source: MALF data 2003 – 2014

Economic Review of Agriculture reports from 2001 to 2013 indicate that Kenya exports and imports maize and a few other agricultural commodities. However, the reports have several gaps in crops and in years. Wheat and rice are only imported, not exported. There are no records showing either exports or imports of other staples. Beans, millet, cowpeas, green grams, pigeon peas, sweet potatoes, cassava, cocoyam, yams, etc are neither imported nor exported. Analysis and projections show that climate change would likely lead to increased food imports by Kenya. At the same time, expected higher food prices will likely dampen demand for food, as affordability of nearly all agricultural commodities, including basic staples and livestock products, declines. These effects will worsen in areas of high vulnerability, namely arid and semi-arid lands. Figure 8 have been presented to summarize our projection for maize crop production and consumption in Kenya.

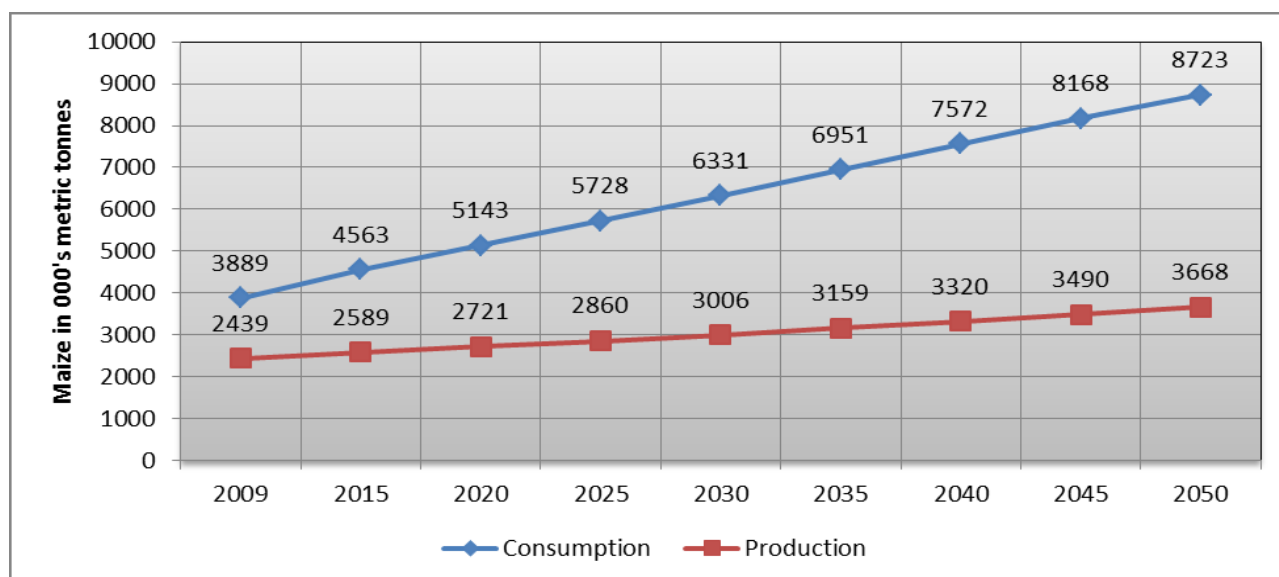


Figure 7: Projected Maize Production and Consumption Kenya

Source: Gichuhi and Odwe (undated)

This can be compared with climate and production suitability projections in section 2.5.2 to appreciate the wider impact.

However, quantifying actual losses is difficult because, with the exception of maize (Figure 12), wheat and rice, specific commodity production data and information is very scanty at all levels of the respective value chains.

## 2.4 Enabling Policy Environment

Policy reforms are cited as one of the drivers of productivity gains experienced in the agriculture sector. The Government of Kenya has over the years developed policies and strategies to enhance agricultural growth, natural resource management and climate change interventions. These policy reforms substantially improve the economic environment for agriculture through improvements in pricing policies, trade, exchange rates, institutions and markets. The Table below summarizes the key policies and strategies the GoK ratified and implemented in the country, and which, through their objectives and action plans, have an impact on CSA implementation.

Table 1 Main policies with impact on CSA in Kenya

Level and Name of Policy Instrument	Key policy thematic areas relevant for CSA implementation
Continental/Regional	
Comprehensive African Agriculture	Main pillars included: land water management, capacity building, food security and research and technology dissemination/ adoption,

Level and Name of Policy Instrument	Key policy thematic areas relevant for CSA implementation
Development Programme (CAADP) Framework, 2010	livestock, forestry and fisheries. CAADP now also incorporates CSA, which includes sustainable intensification and resiliency of production systems and the reduction of greenhouse gas emissions caused by agriculture. Kenya's CAADP Compact (formed of government representatives, development partners, private sector, NGOs, CBOs, research institutes, producers, etc.) commits the government to implementing the common vision of the sector, as described in the Agricultural Sector Development Strategy (ASDS), to address the agricultural development agenda in the country.
East African Community Climate Change Policy (EACCCP)	Focused on improving the adaptive capacity and resilience of the East African Region to the negative impacts of climate change. Under the agriculture and food thematic areas, the objective is to improve sustainable land use systems that enhance agricultural production and ensure food security under the changing climate.
<b>Macroeconomic</b>	
Constitution of Kenya 2010	In line with CSA principles, the Constitution promotes sustainable approaches to natural resource management, establishes the right to food security and to live in a clean and healthy environment, while emphasizing sustainable and productive management of land resources (e.g. maintenance of 10% of tree cover of the country's land cover). Introduces two levels of government with specific functions for each level, thus providing guidance on climate change response and CSA implementation
Kenya's Economic Blueprint - Vision 2030	Represents the country's development blueprint for 2008-2030, identifying agriculture as a key sector to boost economic growth rates. It aims to transform smallholder agriculture from low-productivity subsistence activities, to an innovative, competitive agricultural sector. Operationalized in a series of five year Medium Term Plans (MTPs), the current one MTP (2013 to 2017) being the second one and putting emphasis on devolution, socio economic development, equity and national unity.
<b>Agriculture, Livestock and Fisheries</b>	
Agricultural Sector Development Strategy (ASDS 2010 – 2020)	Provides a framework for transforming agriculture into a modern and commercially viable sector. The current medium term plan lays emphasis in addressing challenges of food and nutrition security, over-dependence on rain fed agriculture, youth unemployment, poverty reduction and high cost of inputs.
National Food and Nutrition Security Policy	Recognizes climate change as an emerging issue for food and nutrition security, and advocates for adaptation interventions that enhance farming communities' resilience to climate change induced effects. It also recognizes the role of mitigation in addressing climate

Level and Name of Policy Instrument	Key policy thematic areas relevant for CSA implementation
	change
<b>Environment and Climate Change</b>	
National Climate Change Response Strategy (NCCRS), 2010	Adaptation measures suggested for agriculture in NCCRS include: changes in land use or activities, changes of location, restoration of degraded ecosystems, provision of downscaled weather information and farm inputs, water harvesting for irrigation, protection of natural resource base (soil and water conservation techniques), research and dissemination of superior (drought tolerant, salt-tolerant, pest and disease resistant) crops.
National Climate Change Action Plan (2013-2017)	The NCCAP sets out a low-carbon climate resilient pathway for the economy and identifies priority actions in the planning sectors, including agriculture. The plan notes that Kenya will not adopt measures to reduce greenhouse gas emissions if they threaten the country's ability to feed its population or reduce export earnings. The NCCAP identifies agro forestry and conservation tillage and management of agricultural wastes as priority climate smart practices that reduce climate vulnerability while reducing emissions and improving agricultural production potential. In regard to livestock, the NCCAP recommends improved management of grazing systems, biogas, livestock diversification, and improved breeding of animals. Adaptation actions include drought tolerant crops, water harvesting, integrated soil fertility management, insurance schemes, price stabilization schemes for livestock, strategic food reserves, and mainstreaming climate change into agricultural extension services.
Draft National Climate Change Framework Policy. 2014	Includes policy statements to enhance climate resilience and adaptive capacity, to promote low carbon growth, and to mainstream climate change into planning processes. The policy notes that the agricultural sector has the potential to reduce GHG emissions through sequestration of carbon in trees and soils through agro forestry, improved pasture and range land management, conservation agriculture, efficient dairy production systems, and improved manure management. The policy notes that an enabling policy environment for investment in the agriculture sector can promote the creation of green jobs.
Draft Climate Change Bill, 2014	Includes policy statements to enhance climate resilience and adaptive capacity, to promote low carbon growth, and to mainstream climate change into planning processes, while developing incentives to promote climate resilient actions through appropriate policy reforms.
<b>Land use and Forestry</b>	
Sessional Paper №3 of 2009 on National Land	Encourages sustainable intensification of land use in high-potential, densely populated areas, through the application of efficient



Level and Name of Policy Instrument	Key policy thematic areas relevant for CSA implementation
Policy, 2009	methods, improvement of the condition and productivity of degraded lands, and through application of cost-effective irrigation methods
Farm Forestry Rules, 2009	Require farmers to establish and maintain farm forestry (e.g. woodlots or trees on farms) on at least 10% of every agricultural land holding. Likewise, species of trees or varieties planted must not have adverse effects on water sources, crops, livestock, soil fertility and the neighborhood and must not be of invasive nature. Moreover, agriculture authorities at the district (now county) level are required to identify land at risk of degradation and establish measures necessary for ensuring its conservation including planting of trees.
Draft National Irrigation Policy, 2014	The objectives of the draft policy are to expand land under irrigation; increase agricultural water harvesting and storage capacities; promote water harvesting, use of waste water, and exploitation of groundwater for irrigation; build capacity for generation and utilization of irrigation research, innovation and technology; and promote and adopt an integrated approach to sustainable commercial irrigation farming.
National Agricultural Research System Policy, 2012	The Policy aims to establish an integrated national agricultural research system that guides and supports the development of an innovative, commercially oriented, and modern agricultural sector; design a novel funding mechanism for agricultural research that ensures adequacy, predictability and sustainability of research; and formulate a comprehensive framework for partnership building and consultation, and collaboration with stakeholders.
Livestock policy/strategy	The National Livestock Policy 2008 seeks to create a favorable environment for private sector to thrive by creating a mechanism for capacity building and supervision, regulation and improved access to market information

## 2.5 Constraints to Agricultural Growth and Development

### 2.5.1 Land Degradation and Declining Soil Health

Demands on the land for economic development and pressures from a growing population are leading to unprecedented land use change. In turn, unsustainable land use is driving land degradation. The result is a loss of land productivity with impacts on livelihoods and the economy. The impacts of land degradation and desertification include a reduction in crop and pasture productivity, fuel-wood and non-timber forest products, which are closely linked to poverty and food insecurity. The damage to soil, loss of habitat, water shortages, and siltation

reduce biodiversity and ecosystem services and has economic consequences. Land degradation manifests itself in many forms; among them are soil erosion, increased sediment loading of water bodies, loss of soil fertility, salinity, reduced ground cover, and the reduced carrying capacity of pastures.

### 2.5.2 Climate Change

Kenya’s agricultural sector is highly vulnerable to extreme weather events, climatic shocks and more general climatic changes and variability. Climate change is creating further stresses on food and water supply while further degrading the environment. For example, recurring droughts have caused heavy losses to livestock, forcing an estimated 30% of livestock owners out of pastoralism over the last 20 years. Extended periods of drought erode livelihood opportunities and community resilience in these areas; leading to undesirable coping strategies that damage the environment and impair household nutritional status, further undermining long-term food security. It is estimated that, between 2008 and 2011, drought, a major climatic hazard in Kenya that is becoming more and more frequent (Figure 14), has caused losses in livestock and agriculture that amounted to KShs 699.3 billion (72.2% of total losses) and KShs 121.1 billion (12.5% of total), respectively. With the deteriorating climatic conditions, and primarily due to climate change, the annual growth rate in agricultural “value added” has been on the decline (Government of Kenya, 2014)<sup>8</sup>. Historically, negative growth indices have been associated with extreme weather events (cross ref Figure 9, and section 2.1).

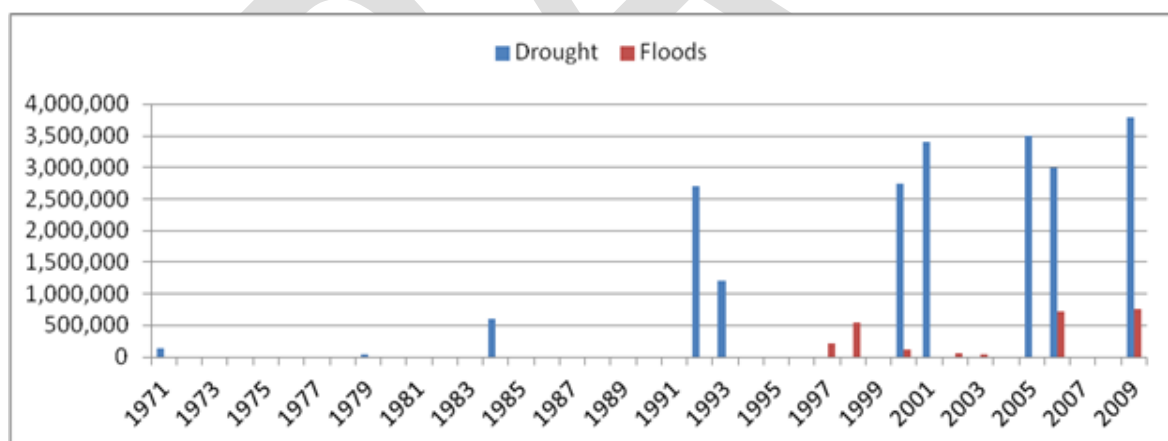


Figure 8: Number of people in Kenya affected by droughts and flood disasters 1971 – 2009

Source: Draft National Policy for Disaster Management, in Kenya, 2009

According to the Fifth Intergovernmental Panel on Climate Change (IPCC) Assessment Report of September 2013, the Earth’s temperature has increased by about 0.89°C in the period 1901 – 2012. Observations made in the Farm Management Handbook of Kenya (2009), and the Atlas of Kenya’s Changing Environment (2009) show that Kenya’s average annual temperatures increased by 1°C between 1960 and 2003 while temperatures in western Kenya rose by 0.5°C between 1981 and 2004. In the drier parts of Kenya it went up by 1.5°C over the same period.

<sup>8</sup>Situation Analysis Report for a National Agricultural Insurance Policy, produced by ASCU and ACCI/GIZ.

These changes have led to a shift (altitudinal increase) of the upper altitudinal limits of Agro Ecological Zone (AEZ) boundaries by about 90m asl.

Climate predictions for Kenya (Figure 10, Figure 11) highlight a number of vulnerabilities, risks and impacts for the agriculture sector, including higher temperatures (projections from baseline year 2011 show temperature increases by 1°C by 2020 and 2.3°C by 2050 in specific regions (CIAT, 2011), changes in rainfall distribution, and more frequent extreme events such as prolonged drought and flooding, contributing to more frequent water shortages<sup>9</sup> (Luedeling, 2011). The warming trend has also been leading to increased spatial-temporal variability in precipitation and evapo-transpiration patterns.

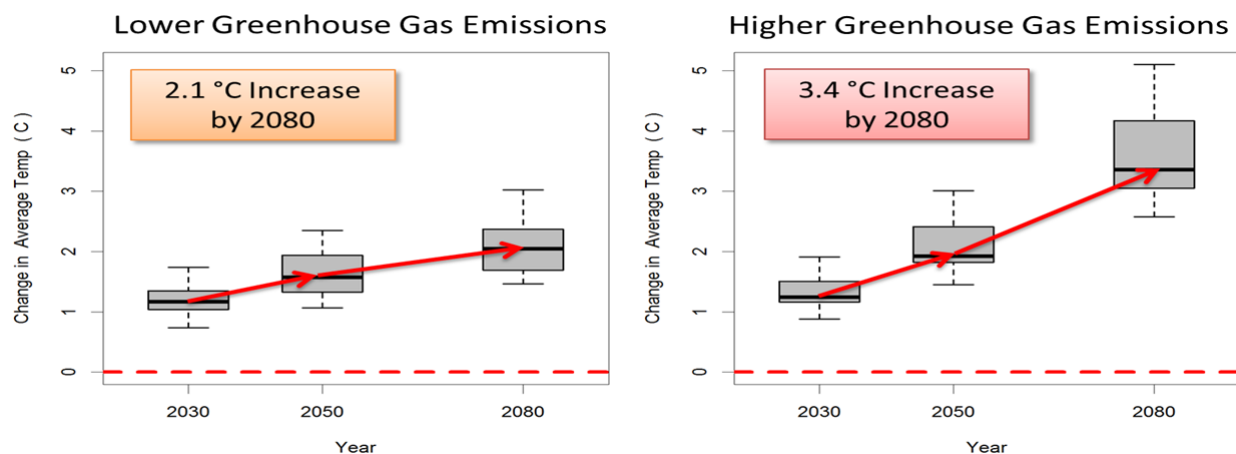


Figure 9: Climate change impacts in Kenya to temperature in Kenya

Under lower (RCP 4.5) and higher (RCP 8.5) greenhouse gas emissions scenarios

Source: IPCC AR5

Note: The thick black lines represent the average of 29 different climate models, whereas the grey box and dashed lines represent the range of climate models. Although precipitation is projected to increase by most climate models, the timing of precipitation is also changing with some months projected to decrease

<sup>9</sup>However, the variability is not a new phenomenon, and the long term pattern or trend is still not yet certain (Luedeling 2011)

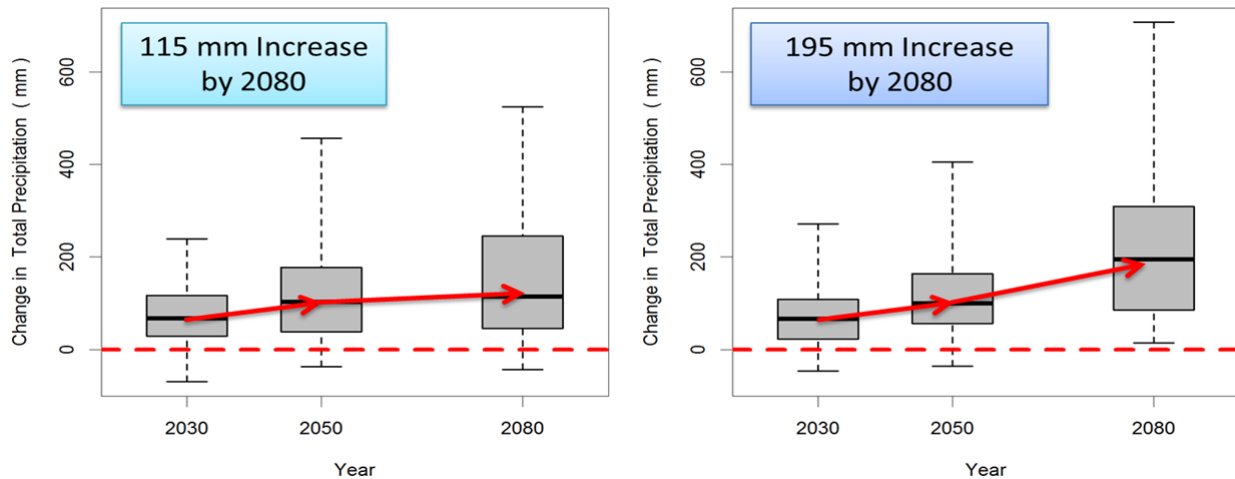


Figure 10: Climate change impacts in Kenya on precipitation in Kenya

Under lower (RCP 4.5) and higher (RCP 8.5) greenhouse gas emissions scenarios

Source: IPCC AR5

Seasonal rainfall trends have been found to give mixed results, with some locations indicating increasing trends while others show no significant changes. The annual rainfall totals show either neutral or slightly decreasing trends due to a general decline in the main long rains (March-May) season. There is a general decline of rainfall toward the end of the Long Rains, leading to more frequent and prolonged drought in the Long Rains. On the other hand, there is a general positive trend (more rains) during Short Rainy season of September-October-December, where the short rainy season is extending into what is normally a hot and dry period of January and February.

The second season rains are even becoming more frequent and more intense than before, leading to frequent occurrence of severe floods. Despite the slight increase in total annual rainfall, the frequency and severity of droughts and floods have continued to increase, because evaporation rates and rainfall intensity have also increased. Given that over 80% of the country is arid or ASAL areas (Annex 3 shows that the ASAL environment is expanding), and that around 98% of the country's agricultural systems are rain-fed, rainfall variability has serious implications on agricultural yields, according to the Atlas of Our Changing Environment" (2009) and "Kenya: State of the Environment and Outlook" (2010). Frequent water shortages lead to a decrease in reliable cropping days, higher incidence of crop failure and livestock deaths. In addition, changes in the timing of long and short rains will make it increasingly difficult to plan sowing and harvest times, causing lower crop yields in major production zones, and greater food insecurity. Also, incremental changes in temperature and rainfall patterns are expected to contribute to biodiversity loss and emergence of new pests and diseases.

Crop simulation results showed that, in general, temperature rise caused by climate change is the main driver of crop yield decreases (Ref). All simulated crops respond negatively to higher temperatures. Among crops that will find future climatic conditions intolerable are soy bean (with very low yield potential and very high yield reduction under raising temperatures), cotton

(its production risk stemmed from its transitional place between two seasons), and to lesser extents maize and dry beans (Figure 12). However, some crops are expected to experience more favorable growing conditions as a result of climate change, such as banana, cassava, sorghum, sweet potato, pearl millet, groundnut, and finger millet (Figure 13). There is also evidence that mango, banana, sugarcane and pineapple show increasing suitability for all future climate scenarios (Luedeling 2011). However, many suitability scenarios enhanced by higher temperatures also seem constrained by water shortage. Similarly livestock forage is projected to decrease across most of Kenya (Figure 18).

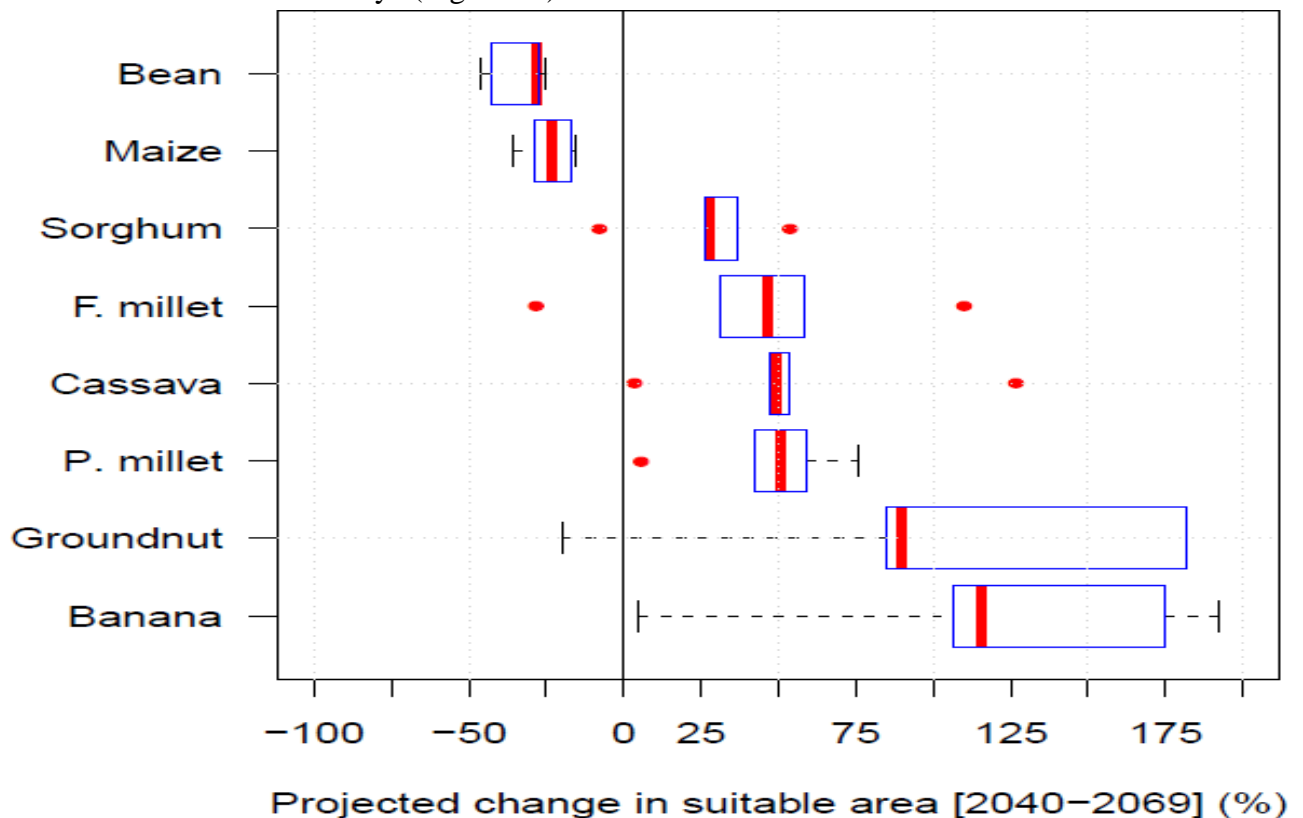
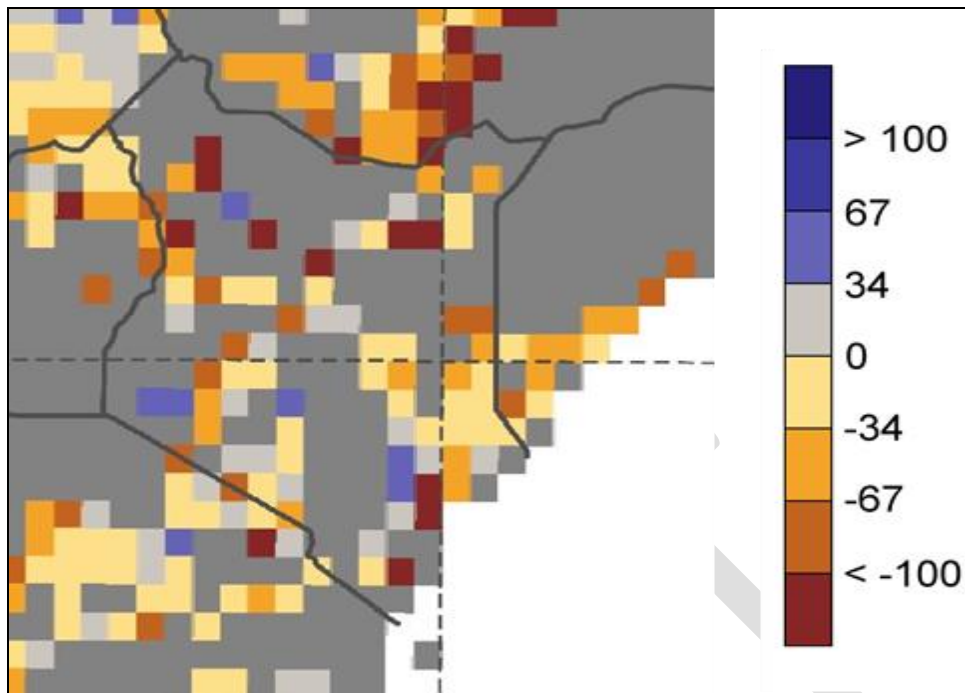


Figure 11: Percent change in suitable area for major crops in Kenya due to climate change. Source: Analysis provided by J. Vargas, CIAT

Note: The red line represents the average projected change and the blue box and dashed lines represent uncertainty associated with the crop modelling.



*Figure 12: Projected changes Aboveground Net Primary Productivity (ANPP) in Kenya's rangelands ANPP by 2050s and RCP8.5 (high-end emissions) in relation to the mean value of 1971-1980.*

Source: Analysis provide by J. Vargas, CIAT

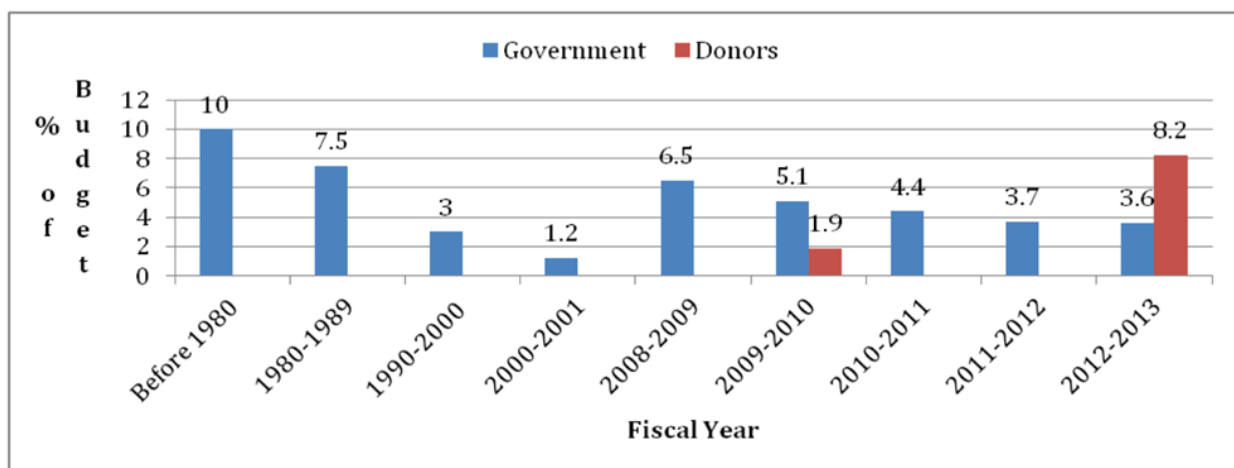
This provides a good proxy for climate change impacts to livestock productivity.

Equally, regions such as the mixed rain-fed temperate and tropical highlands are projected to experience an increase in crop yield, whereas the ASALs are projected to witness a significant decline in crop yields and livestock numbers, as water resources become increasingly scarce (Luedeling, 2011).

Similarly, according to the Second National Communications (in preparation), the agriculture sector is the largest contributor of greenhouse gas (GHG) emissions. The largest shares of emissions originate from agricultural soils ( $N_2O$ ), enteric fermentation associated with ruminant livestock ( $CH_4$ ), and manure management (biogas). Emissions from agriculture are expected to rise because of increased food demand for growing and more urbanizing populations able to afford more varied diets with higher shares of meat and dairy products. This shift will also lead to increased pressure on forests from agricultural expansion. Both emissions from fertilizers and livestock are expected to continue to increase as Kenya's agriculture grows and develops. However, policy direction indicates that the focus of emissions management will not be on absolute emissions but on production efficiency, leading to increased output per unit of emission. This can make the agriculture sector be part of the solution to emission reduction if appropriate measures are taken.

### 2.5.3 Agricultural Finance and Investments

Agriculture offers the best prospect for economic growth and development in Kenya given its contribution to GDP and government revenue. Growth in agriculture is found to benefit both urban and rural households. However, available statistics show that attention to the agricultural sector is inadequate in terms of both government budgetary allocation and resource utilization. On average, Kenya used to spend over 10% of its total government budget on agriculture in the first decade after independence (Figure 14). This declined to an average of 7.5% in the period between 1980 and 1989 and dropped to 3% in the 1990 to 2000 period, and to 1.2% in 2000/1 then increased to 6.5% in 2008/9. For some time it has averaged 4%. Budget allocation to the Agriculture and Rural Development sector rose by 56.6%, from Ksh 32.2 billion in 2009/10 to Ksh 50.4 billion in 2012/13 but declined considerably in terms of ratio of the national budget from 5.1% in 2009/10 to 3.6% in 2012/13 (Institute of Economic Affairs, 2014). As a result, the Government of Kenya falls short of meeting the Maputo Declaration of allocating 10% of its budget to the agricultural sector. Donor participation increased from 1.9% in 2009/10 to 8.2% in 2012/13 to fill the gap in domestic expenditure. It would be useful to see how this budget to agriculture has been apportioned to the various sub-sectors in agriculture as this will better define the points for interventions.



**Figure 13: Proportion of agriculture and rural development/national budget**

Source: Institute of Economic Affairs, 2014: PFA Report - Public Spending in Agriculture in Kenya

However, the current Medium Term Investment Plan (MTIP) outlines the government's investment strategy for improving the situation through Agricultural Sector Development Strategy (ASDS), which is aligned to CAADP. In implementing the MTIP, the government seeks to prioritize investments across the country's major agro-climatic, agro-ecological and AEZ. Some financial institutions also provide credit for agricultural development, and this has helped many farmers boost production and use better methods.

Specific agricultural investments have higher returns in different parts of the country, however. Irrigation favors the lowlands and the poorest segment of the population, while research and

extension (R&E) favors the midlands and highlands. Investment in R&E is also found to have the highest returns in both growth and poverty reduction. However, increasing agricultural spending to 10 percent of total spending is insufficient. Achieving targets will require non-agricultural investments, such as in infrastructure, market development and efficient transaction costs.

## **2.5.4 Extension and Agro-Weather Advisory Services**

### **2.5.4.1 Extension**

The extension service is one of the critical change agents required in transforming subsistence farming to a modern and commercial agriculture to promote household food security, improve income and reduce poverty. Agricultural extension in Kenya dates back to the early 1900s. The Kenya government through its Ministry of Agriculture provided the bulk of extension services to both small-scale farmers and commercial producers. Its most notable success at that time was in the dissemination of hybrid maize technology in the late 1960s and early 1970s. However, after the implementation of structural adjustment programs (SAPs) in the 1980s, the government scaled down its dominant role in extension service, both in terms of agricultural extension budget together with extension staff numbers. To respond to these challenges, the government formulated the National Agricultural Extension Policy (NAEP) in 2001, and subsequently National Agricultural Extension Policy (NASEP) in 2012, to guide improvements in delivery of extension services, implemented through National Agricultural and Livestock Extension Program (NALEP), and subsequently Agricultural Sector Development Support Programme (ASDSP) in 2012. The NAEP recognized the need to diversify, decentralize and strengthen the provision of extension services to increase their sustainability and relevance to farmers. However, it failed to specify how the private sector would be encouraged to play a stronger role in extension and the use of agro-weather information.

As climate changes so does the role of agricultural extension services. Demand for climate information and agro weather advisory services is increasing. Farmers need wide-ranging advice on how to adapt their farming practices and entire livelihoods to take advantage of viable, profitable options with manageable levels of risk. Extension services require improvement through bringing in more players especially private service partnerships for the Climate Smart Agriculture practices and technologies to be shared to wide range of farmers.

### **2.5.4.2 Agro-Weather Advisory Services**

Provision of downscaled weather forecasts and agro weather advisory services have been developed and piloted in different parts of Kenya, under Kenya Meteorological Service (KMS, formerly KMD) and supported by the IGAD Climate Prediction and Application Centre (ICPAC), the Institute of Climate Change and Adaptation (ICCA) and Meteorology Department of the University of Nairobi (UoN), Kenya National Academy of Sciences (KNAS), the Centre for Science and Technology Innovation (CSTI), Agricultural Sector Development Support



Programme (ASDSP) and CARE International using the National Farmers Information System (NAFIS), and the World Bank and the Meteorology Department of UoN, Agro-Input Dealers/Seed Companies. The main objective of these pilots have been to increase the adaptive capacity of farming communities by improving access to information on weather and climate patterns. Some of the tools used are Short Messaging Service (SMS); Interactive Voice Response (IVR); Seasonal print bulletins and Radio programmes. Expected outcomes include improved farm management capabilities under conditions of climate risk; farmers will plan and manage weather risks; maximize productivity; and minimize the environmental impacts of farming practices. Coverage (content) includes seasonal forecast brief; agronomic practices; postharvest practices; pest and disease control; nutrition; agribusiness; value chain approach; and crop/livestock insurances

## ***2.6 Potential and Sources of Agricultural Growth***

Addressing the challenge requires knowledge of what drives agricultural growth and productivity. A study by KIPPRA (Odhiambo et al., 2004)<sup>10</sup> establishes that most of the agricultural growth in Kenya is attributable to factor inputs – labor, land and capital. Growth in output not attributed to factor inputs or total factor productivity has in the entire period accounted for only 10 per cent of growth. Labor has been the most important source of growth and accounted for about 48 per cent of the total growth. Land is also a very important determinant of agricultural growth and productivity. The study also established that Kenya’s trade policy, climate, and government expenditure on agriculture are important determinants of agricultural total factor productivity growth.

Agricultural growth is important for stimulation of economic growth in Kenya. According to “Kenya: Atlas of Our Changing Environment” (2009) and “Kenya: State of the Environment and Outlook” (2010), about 98% of Kenya’s agricultural systems are rain-fed producing consistently low yields. Total dependence on rain-fed agriculture and poor soil health increases vulnerability of farming systems and predisposes rural households to food insecurity and poverty thus eroding their productive assets and weakening their coping strategies and resilience. Increasingly, the onset, duration and intensity of these rains vary considerably from year to year, while the frequency and intensity of the extreme weather events such as drought and floods are on the increase with devastating impacts on the national economy and the livelihoods of the people.

Climate smart agriculture offers an excellent opportunity for agricultural growth. Among the aspects crucial for achievement of Climate Smart Agriculture objectives are: management of climate risks in agricultural systems; agro ecosystem approaches, landscape approaches and community-based approaches to resilience building; scaling up/out proven technologies and

<sup>10</sup> Odhiambo, Walter; Nyangito HNJO: Sources and Determinants of Agricultural Growth and Productivity in Kenya, 2004.

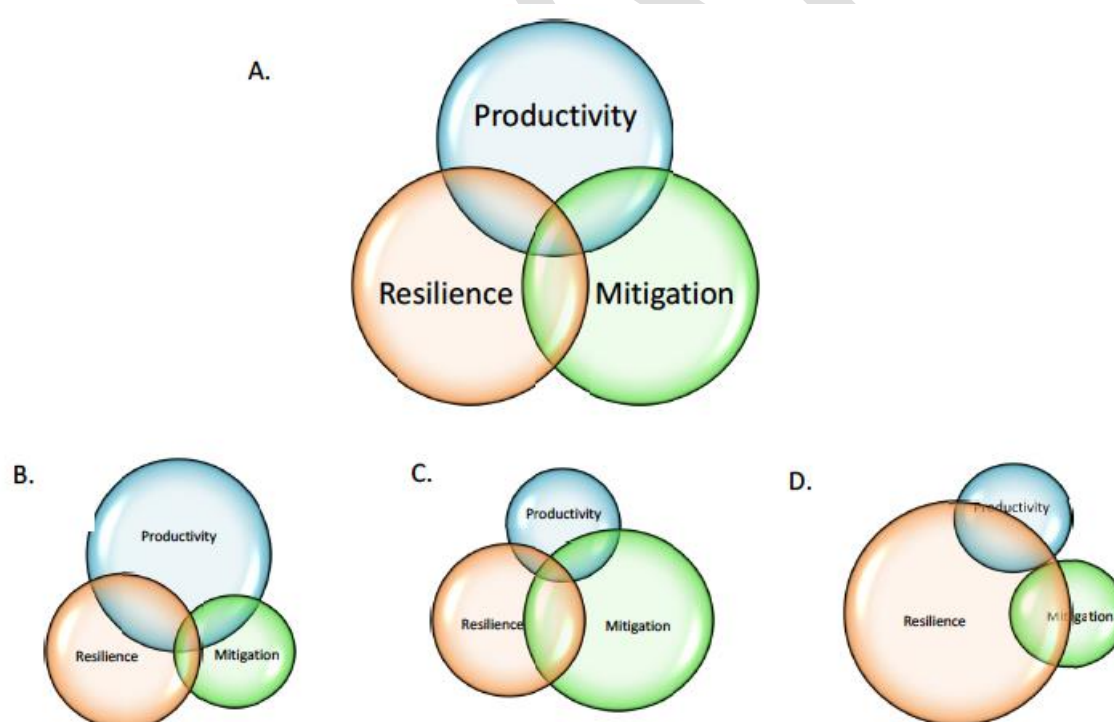
practices for resilient livelihoods; efficient management of soil, nutrients, water and on-farm energy resources; conservation and sustainable use of agro-genetic resources; sustainable intensification of crop, forage, agro forestry, livestock and fisheries production; adaptation and mitigation practices in livestock production systems; efficient management of agricultural commodity value chains; identifying opportunities to leverage climate finance for CSA, including social protection and safety nets where economic models are not viable; knowledge sharing and effective learning; strengthening key institutions and systems for CSA initiatives; and mainstreaming CSA elements into national policies.

### 2.6.1 Context of Climate Smart Agriculture

The context in which climate smart agriculture (CSA) is to be applied in Kenya is as an integrated approach that aims to transform and to re-orientate agricultural systems to –

- (a) increase food and nutrition security by sustainably and reliably increasing food production and the ability of smallholder farmers to earn a living,
- (b) adapt and build resilience to the likely effects of climate change,
- (c) reducing and/or removing GHG emissions, where possible.

while contributing to the achievement of sustainable development and poverty eradication goals as well as ensuring food security. For purposes of Kenya, the most appropriate diagrammatic representation of the approach is as illustrated in B below (Figure 15).



**Figure 14: Relative importance of CSA Components.**

*Source. Garritty et al, 2014 unpublished*

Thus, CSA offers an excellent opportunity for agricultural growth potential and sources of growth. Among the aspects crucial for achievement of CSA objectives include management of climate risks in agricultural systems; agro-ecosystem approaches, landscape approaches and community-based approaches to resilience building; scaling up/out proven technologies and practices for resilient livelihoods; efficient management soil, nutrients, water and on-farm energy resources; conservation and sustainable use of agro-genetic resources; sustainable intensification of crop, forage, agro forestry, livestock and fisheries production; adaptation and mitigation practices in livestock production systems; efficient management of agricultural commodity value chains; identifying opportunities to leverage climate finance for CSA, including social protection and safety nets where economic models are not viable; knowledge sharing and effective learning, strengthening key institutions and systems for CSA initiatives; and mainstreaming CSA elements into national policies and development planning process.

## 3.0 VISION AND OBJECTIVES

### 3.1 VISION

The Vision for the CSA Program is a *“Climate resilient and low carbon growth sustainable agriculture that ensures food security and contributes to national development goals in line with Kenya Vision 2030.”*

### 3.2 OBJECTIVES

The four core objectives of the Kenya CSA Program are:

1. To guide actions for sector ministries, county governments, investors and development partners on mainstreaming CSA into agricultural plans, programmes and projects.
2. Contribute to increasing productivity and commercialization of agricultural related value chains with nutrition and gender considerations.
3. Enhance resilience to climatic and weather shocks on the social, environmental, and economic aspects of agriculture and food systems.
4. Contribute to low carbon development through efficient use of agricultural and agribusiness resources to reduce national emission intensity in agriculture and food systems.
5. Strengthen governance and institutional coordination for effective implementation of the Climate Smart Agriculture Framework Programme at the national and county levels.

Thus, the Programme aims to build resilience of agricultural farming systems for enhanced food and nutrition security through six Result Areas, namely:

**Result Area 1: Agricultural productivity** – a pro-growth, pro-poor development agenda that supports agricultural sustainability and includes better targeting to climate change impacts will improve resilience and climate change adaptation. Because climate change has a negative impact on agricultural production, achieving any given food and nutrition security target will require greater investments in agricultural productivity, crop diversification and utilization at the household level. However, this must not be done in a way that kills the traditional systems that sustain production. Public and private sectors as well as public-private partnerships will play a critical role.

**Result Area 2: Building resilience and associated mitigation co-benefits through CSA** - CSA will help reduce vulnerability of Kenya’s agriculture sector by increasing productivity, diversification and enhancing adaptation and resilience of the farming systems and reducing emissions intensity in the context of achieving sustainable development and poverty reduction. This will focus on improving agricultural data and information management.

**Result Area 3: Value chain integration** - This approach is holistic in that it considers input supply, production, agricultural services, marketing and business support services as necessary building blocks. The Programme will adopt an approach that entails participatory understanding of markets and markets demands, and on building special relation with the markets. It may involve exploration of existing markets, but also the creation of new initiatives (including institutional markets). Under the approach, both public and private sectors are seen as critical actors. Knowledge and capacity building are critical strategic priorities to leverage innovations and increase efficiencies to reduce the greenhouse gas emissions intensity from agriculture and food systems. The approach also provides enabling framework for integrating gender, nutrition (mostly through education and awareness creation) and the needs of the youth in value chain businesses.

**Result Area 4: Research for development through science, technology and innovations** - The role of research will be reoriented to support innovations that facilitate the transition to climate-smart agriculture by smallholder farmers. Agricultural research partnerships will identify technological advances that respond to the impacts of climate change and climate variability. A major thrust will be use of climate-smart agricultural practices, promoting improved land management and sustainable crop-livestock and fisheries intensification, in order to bolster farmers' adaptive capacity and support the national vision of achieving food security for all people. Research will be tailored to a landscape approach that builds on the principles of natural resource management systems that recognize the value of ecosystem services to multiple stakeholders.

**Result Areas 5: Improving and sustaining agricultural advisory services** - Agro-advisory services that include climate applications for agriculture will help farmers to make informed decisions in the face of risks and uncertainties, in addition to the integrated management of present and emerging pests and disease challenges. Climate applications include seasonal weather forecasts, monitoring and early warning products for drought, floods and pests and disease surveillance. These products and services will increase the preparedness of the farmers, well in advance, to cope with risks and uncertainties. In this regard, dissemination of agro-weather advisories and other climate-smart agricultural practices will be enhanced through Public Private Partnerships among other models. Furthermore, robust agro-advisory services will catalyze private sector investment in priority areas such as weather-based index insurance and associated infrastructure. With these services, farmers will also benefit from information on acceptable feeding practices that will in turn influence crops (specifically of high nutrient value), which are grown as well as dietary choices, thus improving the food and nutrition security of communities. The issue of energy use efficiency in agricultural value chains will also be addressed in CSA interventions

**Result Area 6: Improved institutional coordination** - Improved institutional coordination is crucial for achievement of horizontal and vertical integration required for effective discharge of the CSA Programme. The achievement of horizontal integration requires a framework that

provides high-level guidance while vertical integration is instrumental in determining the roles of various sector institutions and devolved governments in performing CSA mandates. The proposed coordination framework will improve Inter-Ministerial and County Government coordination; enhance partnerships with private sector and civil society organizations; and strengthen coordination with development partners.

DRAFT

## 4.0 PROGRAMMATIC RESULT AREAS

### 4.1 Result Area 1: Agricultural Productivity

#### 4.1.1 Component 1: Adaptive technologies

Development issues:

- Low use of improved technologies and practices in crops, livestock and fisheries by producers.
- Low use of agricultural inputs by smallholder producers.
- High poverty levels.
- Low use of IWRM principles and best land management practices for sustainable production
- Emergence new crop and livestock diseases and pests on staple food like **MNLD** on maize.
- Low levels of income from agricultural production by smallholder producers
- Low productivity and production of improved breeds and cultivars to meet market demand
- High levels of animal diseases and inadequate feed and water for animals
- Limited market linkages agricultural products
- Limited adoption of integrated farming production systems with potential high incomes
- Many scattered small producers with fragmented outputs
- Limited access to input and output markets
- Potential for urban and peri-urban agriculture as a source of food and income is under exploited
- Limited income/livelihood diversification and enterprise development for value addition

*Output 1: Increased production and productivity of food and cash crops through adoption of improved adaptive technologies by 25% by 2030*

#### **Actions:**

1. Identify and update existing climate smart technological packages
2. Introduce diversified and improved crop varieties (high yielding, short duration, disease and pest resistant and nutrient fortified)
3. Increase use of integrated soil fertility management practices
4. Strengthen surveillance of agricultural input trade
5. Improved agricultural mechanisation by adopting appropriate machinery and equipment

*Output 2: Increased production and productivity of livestock enterprises by 25% through adoption of improved adaptive technologies by 2030*

**Actions:**

1. Introduce improved livestock breeds and improve local adaptive breeds.
2. Promote adoption of low emission technologies from livestock by-products
3. Improved nutrition through supplementation, forage and fodder conservation and irrigated pastures and fodder.
4. Adequate disease surveillance and disease control and regular vaccination campaigns
5. Provision of livestock drugs within reach of pastoralist –increase community managed drugs stores

*Output 3: Increased production and productivity of cultured fish through improved adaptive technologies by 50% by 2030*

**Actions:**

1. Apply existing fish culture technological packages throughout the country
2. Use of appropriate fish culture technologies
3. Strengthen fish health inspectorate

**4.1.2 Component 2: Area under Irrigation**

Development issues:

- Overdependence of agriculture on poor and erratic rainfall (rain-fed agriculture).
- Inadequate infrastructure development for irrigation, drainage and water storage
- Inefficient use of existing irrigation systems.
- Low productivity on existing irrigation systems.
- High water wastage and poor water management.
- Inadequate and un-coordinated information in irrigation research, science and technology.

*Output 1: Area under efficient renewable energy powered irrigation systems increased by 50% by 2030*

**Actions:**

1. Increase use of renewable energy in irrigation systems
2. Building technical capacity to establish and maintain renewable energy innovations
3. Increase area of micro irrigation schemes

*Output 2: Improved water resource use efficiency of existing irrigation systems through use of adaptive technologies by 50% by 2030*

**Actions:**

1. Promote development and diffusion of appropriate efficient small-scale irrigation technological packages.



2. Build capacity of extension workers on irrigation and water management technologies and skills to enable them undertake irrigation extension, participatory methods of dealing with farmers as well as market extension.
3. Build the capacity of water users association in agricultural water management and their obligations as major beneficiaries.
4. Undertake comprehensive management needs assessment of existing large scale irrigation schemes.
5. Conduct studies on the irrigation potential and identify sites in various river floodplains and underground water sources for micro-irrigation systems.
6. Build capacity of farmers in the installation, operation and maintenance of recommended irrigation technologies.
7. Facilitate procurement and delivery of irrigation equipment through suppliers who can provide technical backstopping and training of local artisans.
8. Integration of livestock water needs in all new irrigation designs

## **4.2 Result Area 2: Building resilience and associated mitigation co-benefits**

### **4.2.1 Component 1: Improve soil health and rehabilitate degraded lands**

Development issues:

- Nutrient depletion and loss of biodiversity
- Land degradation and soil erosion
- Low capacity at all levels for implementation CSA practices
- Low adoption of CSA technologies and practices at community level
- Most CSA activities are of pilot in nature
- Weak collaboration of relevant ministries and agencies to ensure CSA up scaling
- Unsustainable land use

*Output 1: Adoption of climate smart soil management technologies and practices by 600,000 households by 2030*

#### **Actions**

1. Improve the management of agricultural soil/nutrients/water
2. Establish CSA knowledge hubs across the country to support adoption of CSA technologies and practices by farmers that improve soil health and rehabilitate degraded lands
3. Enhance the capacities of private sector service providers and farmer-based organizations to support farmers' adoption of existing/new/improved CSA technologies and practices
4. Develop and integrate CSA principles into farmer-field schools, primary, secondary and tertiary curriculum
5. Establish mechanisms for joint planning and implementation of CSA at the county level

6. Establish land carrying capacity and stocking density and promote grazing management practices

*Output 2: At least 20% of degraded land rehabilitated by 2030*

**Actions:**

1. Develop and implement sustained awareness creation program on CSA in addressing soil health and land degradation challenges
2. Facilitate the development and implementation of at least 5 County CSA Programs annually to rehabilitate degraded lands
3. Facilitate the dissemination and adoption of CSA technologies and practices at the farm level across the country through County CSA Programs

#### **4.2.2 Component 2: Conservation of Water and Natural Resources**

Development issues:

- Deforestation
- Low tree cover in agricultural areas
- Forest degradation, soil erosion and siltation
- Loss of biodiversity
- Decreased forest cover
- Land use change
- Eutrophication
- Resource use conflict and encroachment

*Output 1: Enhance Integration of CSA practices in conservation and rehabilitation of water catchment areas and contribute towards increasing tree cover to a minimum of 10% by 2030*

**Actions**

1. Protect and restore water catchment areas through integrated watershed management
2. Promote best management practices for natural resources management to improve and maximize net benefits for the farmers
3. Promote upstream water catchments conservation to reduce sediment yields into the river systems in order to reduce sediment loads to the banks
4. Promote and support soil and water conservation
5. Monitor trends in land use management
6. Promote bee keeping and other non-wood forestry products as a forest conservation measure
7. Promote integrated rangeland management
8. Develop a business model for ecosystem management in order to facilitate payment for ecosystem services
9. Develop and implement management plans for ecosystems in order to encourage sustainable use
10. Develop eco-tourism opportunities in catchment areas
11. Undertake natural resources accounting for ecosystem
12. Identify agro forestry species for different agro-ecological zones and support farmers to increase tree cover on their land by at least 10%

13. Encourage Public-Private Partnerships in conservation of water and natural resources.

*Output 2: Production of freshwater aquaculture and marine fishes increased by 25% by 2030*

**Actions:**

1. Build capacity fisherfolks on stock management and good fishing practices.
2. Strengthen fish health inspectorate
3. Build capacity fisheries institutions on the management of capture fisheries resources

### **4.2.3 Component 3: Insurance and Other Safety Nets**

Development issues:

- Vulnerability and increasing risks to climate change
- Shifting spatial distribution of events
- High incidence of poverty making it difficult for small scale farmers to bounce back after experiencing extreme weather events and climate variability
- Inadequacy of traditional approaches to risk transfer and risk management
- Inadequate knowledge dissemination on importance of agricultural insurance in changing climatic conditions
- Inadequate/limited insurance products especially for small-scale producers

*Output 1: Crop and livestock weather-indexed insurance increased by 30% by 2030*

**Actions**

1. Develop and implement varied innovative index-based agricultural insurance packages for crop, livestock and fisheries value chains
2. Invest in the agro-meteorological infrastructure to support index-based agricultural insurance
3. Enhance the capacity of micro-finance institutions to act as agents to deliver innovative crop and livestock index-based insurance packages
4. Raise awareness within the insurance industry of extreme weather and climate risks and communicate actions and opportunities
5. Undertake farmer education to address their concerns regarding insurance products with a view to gain their trust
6. Explore government re-insurance to support insurance of high risk smallholder farmers

*Output 2: Insurance for consequential loss for actors who depend on farmers' production initiated and grown to 10% by 2030*

**Actions**

1. Develop and pilot index-based consequential loss products for agribusiness traders who aggregate farm produce for contracted farmers

*Output 3: A safety net fund for residual loss and damage established and maintained by 2020*

#### **Actions**

1. develop mechanisms for sustaining existing safety nets

#### **4.2.4 Component 4: Synergies in adaptation and mitigation enhanced**

Development issues:

- Agriculture sector is a source of GHG emissions
- Some adaptation actions have mitigation as co-benefits
- Increased soil carbon has beneficial effects on soil fertility
- Poor soil carbon and manure management by producers
- Inadequate understanding of adaptation benefits of some mitigation actions

*Output 1: Reduction of GHG emissions intensity from the agriculture sector without compromising productivity*

#### **Actions**

1. Promote adoption of low cost climate smart technologies that minimize emission of carbon dioxide and enhance soil carbon sequestration
2. Develop a national carbon accounting and measurement, reporting and verification system
3. Promotion of efficiency in dairy and livestock manure management for reduction of GHG due to enteric fermentation
4. Promotion of efficiency in paddy rice management for reduction of GHG

*Output 2: Synthesise the evidence relating to the co-benefits between adaptation and mitigation in CSA*

#### **Actions**

- Track and measure mitigation co-benefits of adaptation actions

### **4.3 Result Area 3: Value Chain Integration**

#### **4.3.1 Component 1: Development and introduction of new products**

Development issues:

- Most agricultural commodities are sold in their raw form and are thus bulky, lower value, with short shelf lives and inconvenient to use
- Limited value chains development
- Disjointed value chains with regards to most agricultural commodities
- Limited shelf life of some value added products plus poor distribution and marketing

*Output 1: At least 20 Counties supported to develop new commercially viable products (crops, horticultural crops, livestock and fisheries) by 2030*

**Actions**

1. Identify existing value addition technologies and incentivize the private sector to promote them and innovate
2. Promote value addition on various readily available products the counties
3. Establish links to input and output markets and service providers (strengthen value chain) while ensuring that it benefits households in terms of food utilization.

*Output 2: Efficient pilot value chains developed for selected commodities in each agro-ecological zone*

**Actions**

1. Establish regional hubs (a cluster of Counties in the same AEZ) for value chain development and backstopping
2. Identify and build capacity of actors in value chain processes
3. Undertake advanced market feasibility studies to promote demand for the selected commodities
4. Facilitate linkages to markets for the selected commodities

**4.3.2 Component 2: Increased competitiveness and enhanced integration into markets**

Development issues

- Low levels of local market penetration by smallholder producers.
- Low capitalization of bulk traders
- Poor grading and standardization system
- High consumer preference of imported commodities that have local substitutes
- Inadequate volumes with the required specifications and quality to supply the international market
- Limited capacity to fully comply with international sanitary and phytosanitary standards (SPS)
- Prohibitive regulatory and marketing barriers to regional trade
- External niche markets of various products not fully exploited
- Inadequate value addition of agricultural produce
- Inadequate markets and marketing infrastructure

*Output 1: Marketed agricultural output by smallholder producers increased by 50% by 2030*

**Actions:**

1. Create agricultural, livestock and fish commodity hubs through participation of private sector
2. Facilitate capacity building of farmers on demand- and market-driven production
3. Design and launch a market promotion program for import substitution commodities

4. Work with supermarkets, hotels and restaurants to participate in selected commodity value chains with a smallholder production base to reduce the tiers
5. Review regional and international trade regulations and protocols to promote trade
6. Link producer to external niche markets
7. Facilitate building capacity of producers on SPS and international trade
8. Develop branding of Kenya produce for regional and international markets

*Output 2: Export of non-traditional agricultural commodities by smallholder producers increased by 50% by 2030*

**Actions:**

1. Identify successful lead private sector firms with access to assured markets and apply viable models of linkage with smallholders
2. Design sustainable Programmes to support the certification of smallholders/producers for export markets
3. Facilitate capacity building of farmers on selected non traditional agricultural commodities

*Output 3: Grading and standardization systems of agricultural commodities developed and improved by 2020*

**Actions:**

1. Develop and implement grading and standardization systems for agricultural commodities that do not have grades and standards
2. Promote the adoption of grading and standardization systems for all agricultural commodities for both domestic and export markets.

### **4.3.3 Component 3: Improved food storage and distribution**

Development issues:

- High post-harvest losses along the value chain.
- Inadequate food preparation, preservation and storage to ensure safe food availability throughout the year.
- Low integration of commodity markets
- Declining food safety (increased food poisoning) as a result of poor post-harvest handling and storage technologies
- Safety of food being consumed at the household level as a result of poor storage
- Low storage capacity
- Low storage skills for livestock products
- Inadequate marketing and storage infrastructure

*Output 1: Post harvest losses along agricultural value chains reduced by 30% by 2030*

**Actions:**

1. Invest in improved appropriate storage facilities and technologies along the value chain.
2. Train producers, processors and marketers in post harvest management as well as food safety
3. Provide regular market information (deficit/surplus areas) to improve distribution of agricultural commodities/food stuffs
4. Facilitate establishment of marketing centers in rural areas with the appropriate infrastructure to enhance transportation of agricultural produce
5. Link at least 70% of communities in each County by feeder roads to various marketing centers and highways
6. Facilitate through favourable policies the capacity of food processing units to produce quality products in larger quantities.

*Output 2: Private sector annual storage capacity for agricultural products enhanced by at least 50% by 2030*

**Actions:**

1. Strengthen the warehousing receipt system and link producers to warehousing receipt system in the commodity supply chain
2. Rehabilitate existing warehouses, cold storage facilities and silos and establish public-private-partnerships management
3. Support private sector to invest in food processing (including abattoirs) as well as value addition, including packaging, and branding
4. Facilitate linkages with relevant service providers and markets (inputs and outputs)

*Output 3: Communities and household capacity to store agricultural produce enhanced by at least 25% by 2030*

**Actions:**

1. Enhance farmers capacity to deal with postharvest pests
2. Support communities and households to store surplus produce

*Output 4: Expand the strategic food reserve to include all appropriate agricultural products and establish strategic feed/grazing reserves by 2020*

**Actions:**

1. Expand the strategic food reserve to include all appropriate agricultural foodstuffs
2. Establish strategic feed/grazing reserves

#### **4.4 Result Area 4: CSA Knowledge, Extension and Agro-weather Services**

##### **4.4.1 Component 1: CSA knowledge generation and dissemination**

###### **Development issue**

- Fragmented CSA knowledge and poor understanding of CSA
- Inadequate CSA research innovations
- Lack of CSA knowledge Management System across the country
- Poor management and sharing of agricultural research information
- Poor packaging of research information for the benefit of farmers
- Lack of appropriate platforms for researchers and farmers to interact and share knowledge and experiences
- Poor coordination and multiplication of research efforts

###### *Output 1: Enhanced Agricultural research innovations along the value chain by 2020*

###### **Actions:**

1. Undertake genetic characterization and improvement of local livestock breeds, crops and fisheries
2. Genetic improvement of key agricultural produce to enhance adaptability
3. Characterise and profile biodiversity in the ecosystems including below ground biodiversity for ecosystem management
4. Support development of climate smart innovative agricultural products
5. Institute competitive grant scheme for research into new products

###### *Output 2: Establish and maintain a national CSA Knowledge and Information Management System (platform) by 2017*

###### **Actions**

1. Undertake a CSA knowledge mapping, audit and analysis
2. Build a CSA knowledge Warehouse
3. Develop and maintain a robust and functional CSA knowledge management system
4. Capacity building of different stakeholders in the agricultural value chain at the national, county and local levels
5. Establish a robust CSA Knowledge Platform with disaggregated data on men, women and youth

###### *Output 3: Best CSA practices and approaches documented, packaged and disseminated annually from 2017*

###### **Actions:**

1. Undertake analyses and provide tools to support CSA decision-making.
2. Bundle and provide synthesized information on case studies and best CSA approaches
3. Develop and test CSA guidelines and decision-making support tools.
4. Identify, update and disseminate improved CSA technological packages.



5. Build capacity farmers on CSA technological packages

*Output 4: Multimedia CSA knowledge products, training and communications packages produced and updated annually from 2017*

**Actions:**

1. Produce regular CSA information and communication materials to support and inform policies, planning and agricultural advisory services
2. Produce CSA information and communication materials to strengthen capacity of researchers, private sector, CSOs and farmer organizations to influence policy
3. Develop practical and applied training materials and packages for training on CSA

*Output 5: CSA knowledge networks and partnerships strengthened and maintained by 2017*

**Actions:**

1. Strengthen CSA knowledge and information sharing networks/forums
2. Develop a portfolio of information sharing technology tools to support sharing of CSA information and learning resources
3. Establish CSA knowledge partnerships on knowledge generation, sharing and mobilization with governments, international organizations, research institutions, farmer organizations, private sector and civil society organizations
4. Promote public-private-partnerships for CSA knowledge management

*Output 6: Disaster and climate preparedness, and risk mitigation practices for the most vulnerable livelihood groupings identified, pilot tested and disseminated by 2020*

**Actions:**

1. Construct vulnerability maps to support targeting of food security and emergency preparedness interventions
2. Develop tools to support vulnerable households and communities to establish household community systems that can respond to emergencies (with regards to food insecurity).
3. Monitor crops, livestock and fish pests and diseases
4. Use weather forecasting to inform farmer decisions through strengthening and integration of scientific and indigenous knowledge
5. Establish a National Seed Emergency stock

**4.4.2 Component 2: Enhance extension, climate info services and agro-weather advisories**

Development issues

- Low use of climate information services and agro-weather advisories in agricultural planning and farm management decision making (Highly inadequate agro-climate information services and inappropriate agro-weather products)
- Role of climate change and weather variability in the increased post harvest losses, and increased energy use, along value chains

- Low integration of climate research with agricultural research
- High levels of wasting, stunting and high mineral deficiency levels among vulnerable groups, young children and women of reproductive age group.

*Output 1: Agro-climate information services and timely-use of agro-weather products increased by 80% by 2030*

**Actions:**

1. Identify appropriate climate/weather services and products for small scale farmers
2. Downscaling forecasted weather to various localities to promote the appropriate climate/weather services and products for small scale farmers, and pre-season dissemination of agro weather advisories
3. In-season community agro-weather monitoring and post-season agro-weather review
4. Strengthen integration of climate research with agricultural research

*Output 2: Establish/enhance comprehensive early warning system and contingency plans for climate change adaptation, livelihoods protection for each agro-ecological zone by 2017*

**Actions:**

1. Review, integrate and maintain existing early warning systems
2. Establish and maintain new early warning systems
3. Support counties and communities to develop contingency plans
4. Producing downscaled efficient Early Warning System messages

*Output 3: Promote implementation of resilience building adaptation actions that have mitigation as co-benefits*

**Actions**

1. Promotion of beekeeping
2. Biltong production –drying using sunlight
3. Agroforestry promotion
4. Manure management
5. Promotion of energy saving technologies

*Output 4: Adoption of improved CSA technologies and practices by farmers along the value chain increased by 30% by 2030*

**Actions**

1. Conduct participatory research work on improved technologies and practices that is informed by needs of users and agro-ecological zones along the value chain
2. Conduct on-farm research into low-cost appropriate technologies and practices and deliver them as packages
3. Build the capacity of extension, producers and other stakeholders in the use of existing/new/improved CSA technologies and practices
4. Support development of private sector input and appropriate CSA technologies outreach and distribution networks

5. Intensify field demonstration/field days/study tours to enhance adoption of existing/new/improved CSA technologies and practices

*Output 5: Stunting and underweight in children as well as mineral deficiencies in children and women of reproductive age reduced by 50% by 2030*

**Actions:**

1. Promote production and consumption of high quality and diversified balanced meals – comprised of animal and plant source proteins
2. Promote other high quality staples – cassava, rice, potatoes, farming sorghum, green grams, and millet among others.
3. Promote production of cheap animal protein such as rabbits and other emerging livestock
4. Promote fortification of staples during processing
5. Create awareness through nutrition education to enable communities and households make informed dietary decisions
6. Involve all stakeholders in address the issues of malnutrition
7. Build and strengthen the capacity and skills of extension services on health and nutrition
8. Promote incorporation of nutrition education throughout the support services.

**4.5 Result Area 5: Improved Institutional Coordination**

**4.5.1 Component 1: Improve Inter-Ministerial and County Government Coordination**

Development issue:

- Weak inter-ministerial coordination on agricultural (hence CSA) issues
- Weak coordination between national and county governments on agriculture related issues
- Low capacity for cross-sectoral planning
- Ineffective communication within and between ministries
- Overlapping mandates of different government institutions

*Output 1: A joint platform for collaboration between ministries responsible agriculture, livestock, fisheries, environment, forestry, water, planning and devolution and finance established and strengthened by end of 2015*

**Actions:**

1. Develop and implement an inter-ministerial communications strategy with respect to inter-ministerial coordination on matters relating to climate smart agriculture
2. Introduce a biannual joint planning and review session between inter-ministerial team and the country government executive and chief officers responsible for agriculture
3. Build capacity of national and county government staff in cross-sectoral planning and implementation
4. Build policy review and analytical capacity at the national and county levels

5. Strengthen the planning, implementation, monitoring and evaluation at the national and county levels
6. Establish a framework for disseminating CSA programmatic planning and implementation as well as annual reports and studies and receiving feedback at national and county levels

#### **4.5.2 Component 2: Partnerships with private sector and civil society organizations**

Development issue:

- Lack of structured framework for private sector and CSOs to engage national and county governments on CSA issues
- Inadequate incentives for private sector to invest in CSA

*Output 1: A platform for private sector and CSOs engagement with national and county governments established and strengthened by end of 2015*

**Actions:**

1. Engage private sector to identify opportunities for increased investments in CSA
2. Organize regular consultative meetings with private sector and CSOs on the planning and implementation of the CSA Program
3. Identify appropriate incentives to catalyze private sector and CSO investments in CSA activities
4. Publicize the Country CSA Program to private sector and CSOs with a view to identifying areas for their participation
5. Establish communication channels for consultations between private sector and CSOs in the programmatic planning and implementation of CSA activities at the national and county levels

#### **4.5.3 Component 3: Programmatic Coordination with Development Partners strengthened**

Development issue:

- Fragmented projects/programmes on CSA or CSA-related initiatives
- Varied financial management, procurement, monitoring and evaluation systems.
- Weak ownership of intervention at the national and county levels

*Output 1: GoK – Development Partner Coordination and Collaboration strengthened and Development Partners fund a common Country CSA Program by end of 2015*

**Actions:**

1. Harmonize GoK and development partners' investments in climate smart agriculture through a common Country (National) CSA Program
2. Strengthen collaboration between GoK and the development partners' Agriculture Coordination Group (with a standing agenda item programmatic planning and implementation of CSA Program)

#### **4.5.4 Component 4: Research-Extension Liaison framework strengthened**

Development issue:

- Restructuring of government research and extension systems
- Fragmented research and extension projects/programmes on CSA
- Research agenda is set by development partners and not responsive to farmer challenges/needs
- Weak ownership developed interventions by farmers

*Output 1: Research Extension Linkage and made functional by 2016*

##### **Actions:**

1. Develop an institutional framework for farmer-research-extension and public private partnership engagement to set the research agenda from the grassroots to the national level
2. Establish a platform through which researchers will have regular contacts with stakeholders and other users at the national, county and farm levels
3. Prepare CSA information packages and disseminate them to interested stakeholders using ICT

*Output 2: Market-led and group-based adaptive research and participatory extension programmes enhanced by 30% by 2020*

##### **Actions**

1. Conduct participatory research work on improved technologies and practices that is informed by needs of users and agro-ecological zones along the value chain
2. Conduct on-farm research into low-cost appropriate technologies and practices and deliver them as packages
3. Build the capacity of extension, producers and other stakeholders in the use of existing/new/improved CSA technologies and practices
4. Support development of private sector input and appropriate CSA technologies outreach and distribution networks
5. Intensify field demonstration/field days/study tours to enhance adoption of existing/new/improved CSA technologies and practices

#### **4.5.5 Component 5: Agricultural research funding**

Development issues:

- Low public expenditure funding into agricultural research
- Limited participation of private sector in funding agricultural research and innovations
- Poor management of agricultural research information
- Poor coordination and collaboration among the institutions involved in research

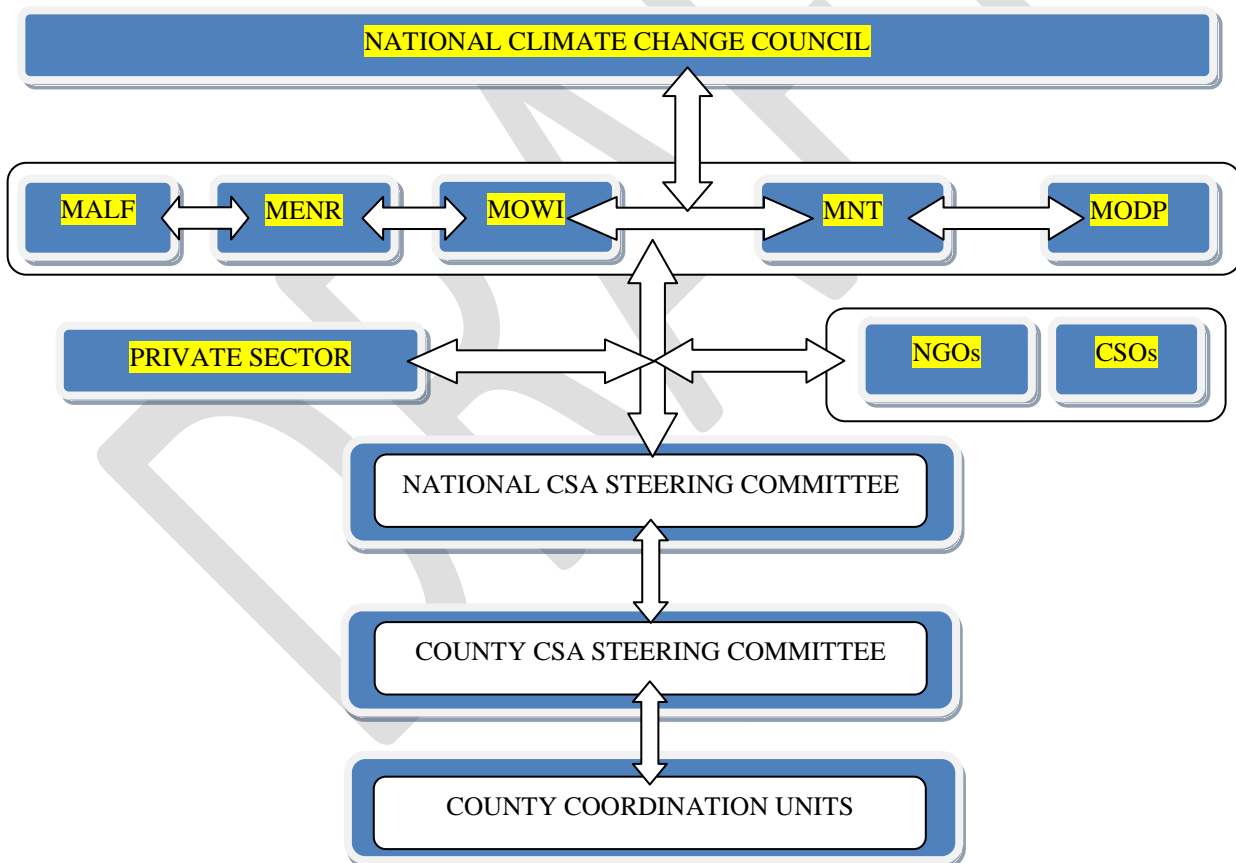
*Output 1: Increased funding in research for development of innovations by 50% by 2030*

##### **Actions:**

1. Increase public expenditure into research and development and innovations through national budget
2. Incentivize private sector investments in research and development and innovations
3. Re-formation of a coordination unit (similar to defunct ASCU) to steer agriculture oriented research efforts/activities. The unit should take into account the new administrative units/system

## 5.0 COORDINATION FRAMEWORK

This Programme proposes a National CSA Steering Committee that will be responsible for policy guidance and inter/intra-sectoral coordination (Figure 22). This coordination role is a facilitative framework for supporting and rolling actions that enhance resilience of farmers that the counties are working with. A CSA Technical Working Group will be established to advise the National Steering Committee and to implement the Programme. County CSA Steering Committees and County Coordination Units will be established to coordinate and implement the Programme at County level.



**Figure 15:** Coordination Framework for CSA Program in Kenya

*NB: MALF – Ministry of Agriculture, Livestock and Fisheries; MENR – Ministry of Environment and Natural Resources; MTN – Ministry of the National Treasury; MOWI – Ministry of Water and Irrigation; MODP – Ministry of Devolution and Planning*

## 5.1 At National Level:

**5.1.1 National Climate Change Council:** This will be adopted as provided for in the Draft Climate Change Bill 2014, when finally enacted. Rules and Regulations will be formulated to specify the nature of relationships between the Climate Change Council and the National CSA Steering Committee. Rules and Regulations will be formulated to specify the nature of relationships between the Climate Change Council and the National CSA Steering Committee, and to specify reporting guidelines and procedures at all levels, and for what purposes.

**5.1.2 The National CSA Steering Committee:** The CSA Steering Committee will be chaired by the Principal Secretary, in charge of Climate Change at the MALF. The CSA steering committee membership is composed of Principal Secretaries from the Ministries of Environment and Natural Resources, Water and Irrigation, Energy, Devolution and Planning, The National Treasury, the Directors of KFS, KMS, KALRO and NEMA, CCAFs, relevant NGOs, relevant CSOs, relevant Private Sector Actors and the Donor Coordination Group. The steering committee will be responsible for policy guidance, inter/intra-sectoral coordination, resource mobilization, quality control and mechanism for International collaboration on CSA. Rules and Regulations will be formulated to specify the number from each of these institutions.

**5.1.3 CSA Technical Working Group (TWG):** The National CSA Steering Committee will appoint, from amongst its members, a CSA Technical Working Group with expertise in general Agriculture, Crops, Livestock, Fisheries, Forestry, and Meteorology. The TWG will play a key advisory role for the National CSA Steering Committee and will be responsible for oversight and implementation of the CSA Programme.

## 5.2 At the County Level:

### 5.2.1 County CSA Steering Committee

The steering committee will be responsible for policy guidance, inter/intra-sectoral coordination, quality control and mechanism for International collaboration on CSA at the County level.

**5.2.2 CSA County Coordination Unit:** The unit will be charged with the implementing CSA activities at the county level including, communication of the CSA program and stakeholder's consultation process, conflict resolution and grievance management, finance management and any other duty relevant to CSA implementation process at the county level.

## **6.0 MONITORING AND EVALUATION**

The project will be implemented and coordinated by the Climate Change Unit in the Ministry of Agriculture, Livestock and Fisheries of the Government of Kenya, in collaboration with the Ministries of Environment and Natural Resources and a multi-sectoral team comprising of representatives from the National and County Governments, academia and CSA practitioners (CSOs and private sector). An M&E Plan will be agreed upon by the different stakeholders to ensure delivery and ownership.

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## **7.0 IMPLEMENTATION PLAN WITH BUDGET**

Indicative budget for investment proposals

## 8.0 RESOURCE MOBILISATION

- Adaptation Fund
- Green Climate Fund
- Bilateral Development Partners climate finance
- National funding sources
- Private sector leveraging

## 9.0 ROLES AND RESPONSIBILITIES

Level of Government	Organization/ Stakeholder	Roles/ Responsibility
1 National Government	Government ministries (MALF, MENR, MWI, Devolution & Planning, The National Treasury) Some Ministries captured under 5.1.1 are missing here	Leadership and policy guidance, planning and implementation inter/intra-sectoral coordination and integration of CSA activities, resource mobilization, quality control and mechanism for International collaboration on CSA
	Research institution and Academia	Technology development, validation and evaluation; capacity building and Strategic input support
	Climate Change Unit	MALF Focal Point
	Climate Change Secretariat	MENR Focal Point
	KMS	Climate information services
	KFS	NRM, especially agroforestry and mitigation
	NEMA	Environmental Regulations
2 County Government	47 County Governments	Domestication and Implementation of the CSA Programme
3 Private Sector	(KEPSA, KAM, financial institutions, insurance companies)	Entrepreneurship investment facility, input supply, provision of credit, guarantees to farmers and private sector. Value chain development and provision of business and services. Provision of Crop, fisheries and livestock insurance services

Level of Government	of	Organization/ Stakeholder	Roles/ Responsibility
3	Farmer Organizations, Cooperatives and Farmer Groups	e.g. KENAFF, etc	Awareness, mobilisation and coordination of partnerships for CSA and investment in CSA
	INGOs/NGOs	e.g. AGRA, etc	Capacity building and support implementation of CSA interventions
4	CSOs	e.g. KCCWG, CARE, etc	Advocacy
5	Development partners	WB, DFID, USAID, GIZ, DANIDA, FAO,	Financing and resource mobilization, technical expertise and capacity building,

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**ANNEXES*****Annex 1: Kenya CSA Program Result-Based Logframe***

This will be devolved to the different counties for them to develop

HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	TARGET AREA/ GROUP	PERFORMANCE INDICATORS	INDICATIVE TARGET AND TIMEFRAME	RISKS AND ATTENUATION MEASURES
I: VISION/GOAL	LONG TERM				
II: PROGRAMME AREAS	RESULT AREAS				