FANRPAN
Food, Agriculture & Natural Resources Policy Analysis Network

POLICY BRIEF 08/2017

CLIMATE-SMART AGRICULTURE IN KENYA

Introduction

The effects of climate change on agriculture are severe, and one of the most significant emerging challenges to household livelihoods in Africa. As such, it is imperative that efforts to address agriculture in the context of food security and rural development need to take climate change into consideration. Climate-smart Agriculture (CSA) is defined as agricultural practices that sustainably increase productivity and system resilience, while reducing greenhouse gas emissions. It is not a single specific agricultural technology or practice that can be universally applied; it is a combination of policy, technology, and finance options that involves the direct incorporation of climate change adaptation and mitigation into agricultural development planning and implementation (FAO, 2010). Kenya holds great potential for CSA, but this needs to be further explored. Although the country has traditional agricultural practices as well as research-based programs and techniques that have CSA qualities, CSA promotion requires concerted action from multiple actors to allow for context-specific approaches to be designed, implemented.

KEY RECOMMENDATIONS

ONE: The diversity of Kenya's agro-ecological zones lends itself to decentralized approaches to CSA. County-level approaches should be employed to maximize success in implementing CSA in Kenya.

TWO: Farmers need to be engaged in designing and implementing CSA practices, and should receive immediate and long-term benefits from implementing these approaches.

THREE: CSA practices are knowledge-intensive, and promoting their adoption requires well-designed, inclusive, and innovative knowledge-management systems. Efforts must be made to fully engage Kenya's robust research and extension stakeholders in promoting the uptake of CSA.

FOUR: Scaling-up promising CSA requires institutional coordination between private and public agriculture and climate-related institutions at national, regional, and international levels. Efforts must be made to ensure that the implementation of the National CSA strategy complements the implementation of other national climate change initiatives.

POPULATION Total population of 48.46 million (World Bank, 2016) of which 74% live in rural areas (UN, 2017).

ECONOMY Real GDP growth increased to an estimated 6% in 2016, from 5.6% in 2015, with slight increases projected for 2017 and 2018. A stable macroeconomic environment with single-digit inflation (averaging 6.3% in 2016) (African Economic Outlook, 2017).

POVERTY Approximately 50% of population below the international poverty line (World Bank, 2017a).

AGRICULTURE IN ECONOMY Agriculture contributes 24% to GDP (UNICEF, 2010). Almost 90% of the total rural labor force is directly or indirectly involved in agriculture (Statistics Kenya, 2014).

FOOD SECURITY INDEX High ratings on relative to African countries; within top 50% of countries globally (Food Security Index, 2015).

CLIMATE CHANGE Kenya's greenhouse gas emissions contribute 0.13% of global emissions (USAID, 2015). Agriculture contributes 24% of the nation's greenhouse emissions (World Bank, 2017c).

Context Overview

AGRICULTURE IN KENYA

Productive agricultural land occupies less than 20 percent of the country's land area and carries approximately 90 percent of the country's population (UNFPA, 2013). Kenya's agriculture sector consists of crops and livestock production, with smallholder farmers accounting for most of the agricultural productivity.

Tea is Kenya's leading export crop, and other exports include coffee and fresh produce. Cattle is the primary livestock in Kenya.

Agriculture, which employs most of the national workforce, suffers from low productivity. Yields are low, sometimes as much as 70 percent below global best practice (World Bank, 2009). Many farmers lack access to improved varieties of seeds and fertilizers, as well as to crop, soil, water, and animal management practices that have proved their worth in many African trials.

VULNERABILITIES

The Fifth Assessment of the Intergovernmental Panel on Climate Change (IPCC) has shown that global climate change is already damaging crops and undermining food production capacity, particularly in poorer countries (IPCC, 2014).

The vulnerability of African countries, including Kenya, to climate change is compounded by strong dependence on rain-fed agriculture and natural resources; high levels of poverty; low levels of human capital; low levels of preparedness for climate events; and poor infrastructure in rural areas.

Temperatures in Sub-Saharan Africa are already close to or beyond thresholds at which further warming reduces (already low) yields (Cline, 2008), and Kenya's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) projects that mean annual temperature may increase by between 0.8 and 1.5°C by the 2030s, and 1.6°C to 2.7°C by the 2060s. In the absence of intervention, agricultural yields in will continue to decline.

Kenya's climate varies considerably across the country. It is hot and humid at the coast, temperate inland, and very dry (of arid nature) in the north and northeast parts. The western, central, and coastal regions are primarily rain-fed. (UNFPA, 2013).

Kenya is prone to cyclical, prolonged droughts and serious floods, with climate change increasing the intensity and frequency of these events. As a water-scarce country, Kenya is critically exposed to the adverse effects of climate change. Being a developing country with a majority of the population dependent on climate-sensitive sectors, Kenya has low adaptive capacity to withstand the adverse impacts of climate change.

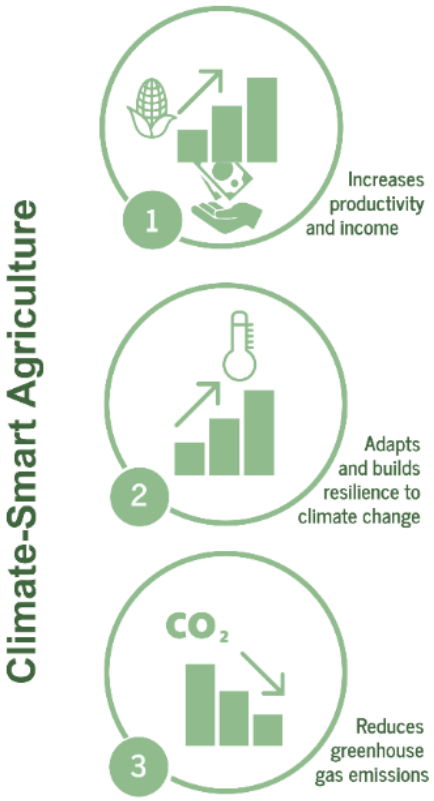
Countries in Southern Africa are also affected by El Niño (warm) and La Niña (cool) events in the tropical Pacific. The most recent El Niño (2014-2016) and La Niña (2016-2017) have impacted on agriculture in East Africa, including Kenya (Hirons and Klinagman, 2016). Although the El Niño has receded, the impact of the higher- than-average temperatures and the lower-than-average rainfall continue to be felt.

A comparative assessment of fifteen African countries reveals that the onset impacts of climate change are already being perceived both by formal experts and by rural populations across Eastern and Southern Africa, including Kenya (FANRPAN, 2017).

AGRICULTURE & DEVELOPMENT

Agriculture remains one of the most effective pathways out of poverty. Gross domestic product (GDP) growth that originates in agriculture is approximately four times more effective in reducing poverty than GDP growth that originates in other sectors (World Bank, 2008). The risk which climate change poses to the sector thus has significant implications for poverty-reducing capacity.

In this context, CSA is critical for food security and development. It is an approach that can help reduce the negative impacts of climate change and can increase the adaptive capacity of farming communities to long-term climatic trends (FAO, 2010).



Climate-Related Policy Environment

Eastern and Southern African countries generally have policies on agriculture and climate change, and do recognize the impacts of the latter on the former. Some countries have developed National Climate Change Policies, while others have National Adaptation Programmes of Action (NAPA).

However, policies often lack adequate instruments to achieve the goals they set. Furthermore, they are not yet sufficiently connected across sectors.

INTERNATIONAL AND REGIONAL ENVIRONMENT

As a non-Annex I party to the UNFCCC Paris Agreement, Kenya has an obligation under the to report on the anthropogenic sources and sinks of greenhouse gases, and identify measures to minimize the impacts of global warming and climate change. Kenya submitted and ratified its Nationally Determined Contribution (NDC) to the convention in late 2016. The NDC states Kenya's target to reduce its GHG emissions by 30% by 2030 relative to the business as usual scenario.

Regionally, Kenya is implementing the Comprehensive Africa Agriculture Development Programme (CAADP) Framework (2010). Kenya signed its CAADP compact in 2010 and has a medium-term investment plan for the agricultural sector aligned to its compact.

NATIONAL POLICY ENVIRONMENT

The Ministry of Environment, Natural Resources, and Regional Development Authorities (MENRRDA) is the national climate change focal point in Kenya with responsibility to ensure the full implementation of the strategies and measures for curbing the adverse impacts of climate change and variability on all the sectors of the economy.

Kenya developed its first national level policy document related to climate change in 2010, namely the National Climate Change Response Strategy (NCCRS). Since then, Kenya developed a National Climate Change Action Plan, 2013-2017 (NCCAP) and a draft National Adaptation Plan (NAP).

The NCCAP identifies priority mitigation and adaptation measures and provides information on how to integrate these options in national development plans; it is the primary mechanism through which the NCCRS is operationalized.

Specifically, the Plan recognizes the critical importance of CSA practices such as agroforestry, conservation tillage, the limited use of fire in agricultural areas, cultivation of drought-tolerant crops, water harvesting, and integrated soil fertility management, among others.

The draft NAP identifies CSA as a priority area, and recommends the development of an adaptation Monitoring and Evaluation (M&E) system. This system will help to ensure that the benefits of interventions aimed at building adaptive capacities and enhancing resilience are being realized.

However, until very recently, national strategies and interventions such as the National Climate Change Action Plan (2013-2017) and the Agriculture Sector Development Strategy (2010-2020) did not adequately mainstream adaptation, building resilience, and mitigation of GHGs into the agricultural sector. In 2012 the Kenyan Climate Change Authority Bill was gazette and is in the process of being enacted to mainstream climate change within national policy.

The Bill proposes formation of the Climate Change Authority to coordinate activities across government sectors and non-state actors and guide the implementation of the NCCRS, including a M&E function and ensuring Kenya's compliance with national conventions.

Selection of national policies, plans and strategies in Kenya related to CSA

National Climate Change Response Strategy (NCCRS) (2010)	This was the first national policy document to fully acknowledge the reality of climate change in Kenya. It provides the evidence of climate change impacts on different economic sectors and proposes adaptation and mitigation strategies. The strategy outlines the budgets and plans for government line ministries.
National Climate Change Action Plan, 2013-2017 (NCCAP)	The NCCAP identifies priority mitigation and adaptation measures and provides information on how to integrate these options in national development plans; it is the primary mechanism through which the NCCRS is operationalized.
Kenyan Climate Change Authority Bill (2012)	Goal to mainstream climate change within national policy. The Bill proposes formation of the Climate Change Authority to coordinate activities across government sectors and non-state actors and guide the implementation of the NCCRS,
Kenya Climate-Smart Agriculture Strategy (KCSAS) (2017)	The Kenya Climate-Smart Agriculture Strategy (KCSAS) was launched in 2017 and has been developed to guide investments and implementation of CSA activities guaranteeing productivity and food security, while addressing climate change adaptation and mitigation

CSA POLICIES AND STRATEGY

The Agriculture Sector Development Strategy (ASDS 2010- 2020) is the overall and current national policy document for the agricultural sector, and identifies climate adaptation as a priority.

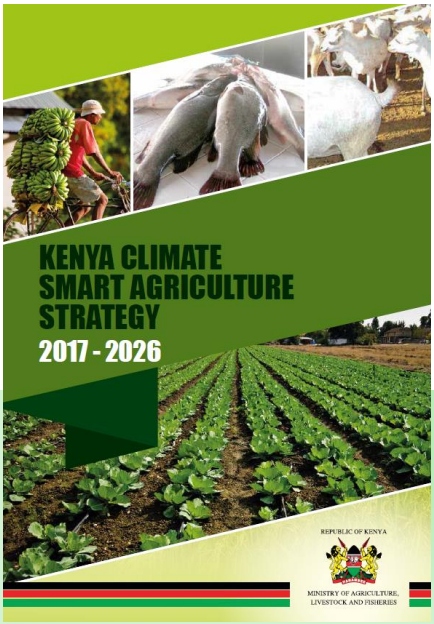
The Kenya Climate-Smart Agriculture Strategy (KCSAS) was launched in 2017 and has been developed to guide investments and implementation of CSA activities guaranteeing productivity and food security, while addressing climate change adaptation and mitigation.

The strategy was jointly developed by the Ministry of Agriculture, Livestock, and Fisheries (MoALF), the Ministry of Environment and Natural Resources (MENR), and other government entities, with support from the World Bank, the Food and Agriculture Organization (FAO), and the United Nations Development Programme (UNDP).

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

The coordination framework and implementation mechanism for the strategy will be harmonized within an inter-governmental coordination structure which is under development and will be mainly implemented by the county governments.

The KCSAS is a tool to implement Kenya's NDC contribution for the agriculture sector to the UNFCCC.



CSA Projects and Practices

Kenya has examples of both traditional and research-based agricultural practices that can be deemed climate-smart, but they are not mainstreamed and still receive limited support – particularly among smallholder farmers. The Kenya Climate-Smart Agriculture Strategy launched in 2017 offers great potential to overcome these hurdles. There is significant scope to increase collaboration between government, farmers, and private-sector stakeholders to promote CSA in Kenya.

Although CSA practices are used in many of Kenya's agro-ecological zones, few have high adoption rates. Low and medium adoption rates for practices scoring high on climate-smartness, are linked with infrastructural, institutional, and financial challenges for both farmers and other stakeholders in the agriculture value chain.

There are several research and development projects in the country that are implemented by different stakeholders, both governmental and nongovernmental; however, there is very little coordination between them. In this sense, the operational KCSAS provides a good opportunity for coordinating interventions in the country.

Examples of projects and practices in Kenya are provided below.

Mitigation of Climate Change in Agriculture (MICCA)

The Food and Agriculture Organization (FAO), with financial support from the Government of Finland, designed the Mitigation of Climate Change in Agriculture (MICCA) Programme to expand the climate change evidence base and build CSA readiness.

The MICCA CSA pilot projects (2011–2014), implemented jointly with partners in Kenya, promoted integrated and diversified farming systems and agro-ecological principles. The pilot projects linked research activities, practical work in farmers' fields, and policy making at different levels to enhance the effectiveness of planning and programming for CSA on farms. The project pilot evaluations illustrated that CSA can be an effective approach for improving food security, alleviating poverty, and building more resilient livelihoods. It also indicates that smallholder farmers can be an effective part of the response to climate change and make a meaningful contribution to reducing GHG emissions (FAO, 2016).

National Accelerated Agricultural Input Access Programme (NAAIAP)

This program is promoting the use of fertilizers and quality seed among food deficit farmers. Each farmer receives 50kg of planting fertilizer, 50kg top dressing fertilizer, and 10kg hybrid seed. They are expected to obtain high yields and therefore require less land for crop production. Other farmers under the same program receive improved planting cassava and sweet potato cuttings. These are clear CSA projects aimed at improving food security.

Index-based livestock insurance

This project is being implemented in collaboration with commercial partners

which include Equity Bank of Kenya, UAP Insurance and Swiss-Re. The project provides livestock insurance to over 2000 households in Marsabit Sub-County to help livestock herders sustain their livestock-dependent livelihoods during drought. The project was initiated by the International Livestock Research Institute (ILRI) in collaboration with partners from Cornell University, the BASIS Research Program at the University of Wisconsin-Madison, and Syracuse University.

The program uses satellite imagery to determine and predict potential losses of livestock forage, and issues insurance payouts to participating members when incidences of drought occur. The impact of this pilot project is currently under assessment to find out its benefits before it can be scaled up to other sub-counties in the country.

Strengthening capacity for CC Adaptation in Land and Water Management Project

Implemented by KARI and covering approximately 12,000 households, the project is funded by SIDA and the Kenyan government. The project objective is to reduce the impact of climate change and variability on smallholder agriculture through sustainable land and water management technologies, and to contribute to improvement of food security and ecosystem resilience in the selected watersheds and sub-counties of Kenya.

The project promotes livelihood-strategic practices that will enhance carbon storage, ecosystem resilience, and sustainable livelihood options. These include; crop diversification, adoption of drought-tolerant crop varieties, traditional high-value crops, minimum tillage, and water harvesting and conservation, among others.

Capitalising on CSA Opportunities: Recommendations

STRATEGIC OPPORTUNITIES

CSA is context- and location-specific, and should be conceived and implemented with context-specificity in mind to be effective.

Kenya is not a homogenous region, and single, one-size-fits-all interventions will not achieve impact. Agro-ecological zones form a complex patchwork of high- and low-potential areas. In almost any given year, some areas in much of the country are food secure and generate food surpluses for sale, while other areas suffer moderate to severe shortages. Year-to-year fluctuations in rainfall over short distances mean that these patterns are highly variable in time and location. This high variability between counties thus lends itself to decentralized strategies for CSA.

RECOMMENDATION County-level approaches should be employed to maximize success in implementing CSA in Kenya's diverse agro-ecological zones.

Current agricultural and related sectoral policy objectives resonate with a CSA framework to address food security in a sustainable manner that results in adaption to and mitigation of climate change. Encouragingly, governments and policy makers in Kenya have adopted a multi-sectoral approach in drafting the national CSA strategy, and thus **the Kenya Climate-Smart Agriculture Strategy launched in 2017 offers great potential to overcome challenges arising from scattered policy priorities and project disconnects**.

RECOMMENDATION: Scaling up promising CSA practices and innovations requires institutional coordination between private and public agriculture and climate-related institutions at national, regional, and international levels. Efforts must be made to ensure that the implementation of the National CSA strategy complements the implementation of other national climate change initiatives.

Farmers need to be engaged in the planning of CSA, and work jointly with technical specialists and extension workers to identify CSA practices that are suitable to local conditions.

RECOMMENDATION To ensure sustainable and long-term adoption of CSA practices, farmers need to receive immediate and long-term benefits from in terms of improved food security, food production, and income. Governments and policy makers should promote financial incentives that encourage CSA.

KNOWLEDGE SHARING, CAPACITY BUILDING, AND EXTENSION

There are several development and research programs pertinent to CSA in Kenya, which are contributing to the knowledge base around high-potential approaches. However, **since CSA practices are knowledge-intensive, promoting their adoption will require well-designed, inclusive, and innovative knowledge-management systems** that facilitate information-sharing techniques

for and among farmers, and support local and indigenous knowledge.

RECOMMENDATION Efforts must be made to fully engage Kenya's robust research and extension system in promoting the design and uptake of CSA practices and innovations.

Continued research is necessary to develop appropriate low-cost technologies to address the requirements of Kenyan farmers, coupled with continued capacity building among these target groups.

Specifically, considerable policy support and capacity enhancement is needed for climate-risk management, including insurance and safety nets as well as improved access to weather information adapted to farmers` needs.

INVESTMENT FLOW

The Government of Kenya is in the process of creating a National Climate Change Fund (NCCF) through its Climate Change Bill that will support CSA. In addition, the Kenyan Climate-Smart Agriculture Programme is in place as an operational document that provides a good opportunity for coordinating CSA interventions in Kenya.

To date, climate finance has failed to adequately integrate agriculture, though it has great potential for adaptation and mitigation. **Improved monitoring, impact measurement, reporting, and result demonstration will help ensure continuous funding for climate-smart agriculture**.

RECOMMENDATION: Closely monitor the impact and success of CSA projects in the various agro-ecological zones in Kenya to understand the potential of initiatives to contribute to agricultural transformation and livelihoods, and attract increased investment.

Mapping CSA Policy and Practice in Africa

This policy brief is an output emanating from a larger study conducted in collaboration between the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) and the Earth System Governance Project, on policies for climate-smart agriculture. The Earth System Governance Project is an international social science research network in the area of governance and global environmental change. The study was funded by the Norwegian Agency for Development Cooperation (NORAD) and the African Capacity Building Foundation (ACBF).

The research project consisted of a comparative assessment of relevant CSA policies and practices in 15 countries across Eastern and Southern Africa. The research was commissioned by FANRPAN to analyze the barriers and opportunities for promoting CSA in sub-Saharan Africa. This means agriculture that (i) increases productivity and income, (ii) adapts and builds resilience to climate change, and (iii) reduces greenhouse gas emissions where needed.

FANRPAN commissioned CSA Policy scoping studies through the work of national consultants and assessed the responsiveness of policy frameworks in 15 Eastern and Southern African countries (Botswana, Democratic Republic of Congo, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Uganda, Tanzania, Zambia and Zimbabwe).

The main objectives were to:

- Conduct a comprehensive review of the existing CSA policies at national level,
- Analyze gaps in the existing policy frameworks,
- Assess the CSA technologies, innovations and practice (as well as untapped opportunities),
- Identify key stakeholders in CSA,
- Identify relevant policy recommendations, and
- Develop and share policy recommendations at national and regional levels.

The study processes included review of existing documents and interviews with key informants from a wide range of organizations. In all countries, national policy dialogues were convened to a) share the draft CSA scoping study report outputs with stakeholders; b) validate the outputs from the draft CSA scoping study report; and c) solicit policy recommendations from stakeholders. The draft reports were reviewed externally, and both recommendations from the national dialogues and external reviewers were incorporated into the CSA scoping study's final reports.

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About FANRPAN

The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) is an autonomous regional stakeholder driven policy research, analysis and implementation network that was formally established by Ministers of Agriculture from Eastern and Southern Africa in 1997. FANRPAN was borne out of the need for comprehensive policies and strategies required to resuscitate agriculture. FANRPAN is mandated to work in all African countries and currently has activities in 17 countries namely Angola, Benin, Botswana, Democratic Republic of Congo, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

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