



CLIMATE-SMART AGRICULTURE IN MOZAMBIQUE

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 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 (GHG) 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).

Mozambique holds great potential for CSA, but this needs to be further explored. Although the country has traditional agricultural practices as well as research-based programmes and techniques that have CSA qualities, CSA promotion requires concerted action from multiple actors to allow for context-specific approaches to be designed, implemented, and monitored.

KEY RECOMMENDATIONS

- ONE:** Establish a national CSA coordination mechanism to enhance the promotion and scaling up of CSA across the country.
- TWO:** Place a strong emphasis on building the capacity of extension workers, and on creating mechanisms to enable farmers to access their services.
- THREE:** Work towards increasing collaboration between private and public agriculture and climate-related institutions at national, regional, and international levels to diversify the scope for CSA activities in Mozambique.
- FOUR:** Improve monitoring and evaluation efforts to demonstrate the benefits and costs of various CSA interventions, and increase budget allocation for CSA in national budgets.



POPULATION Total population of 2.25 million of which two-thirds live in rural areas (World Bank, 2016).

ECONOMY Real GDP growth decreased to an estimated 4.3% in 2016, from 6.6% in 2015, with increases projected for 2017 and 2018. Double-digit inflation averaging 16.7% in 2016 (African Economic Outlook, 2017).

POVERTY More than 70% of the population lives below the international poverty line (World Bank, 2017a).

AGRICULTURE IN ECONOMY Currently 25% of GDP is from agriculture (World Bank, 2017b), and three-quarters of the population derive their income from agriculture.

FOOD SECURITY INDEX Low ratings on the food security index relative to African countries; within lowest 50% of countries globally (Food Security Index, 2015).

Context Overview

AGRICULTURE IN MOZAMBIQUE

The main food crops grown include tuber crops such as cassava and sweet potato; cereal crops such as maize, rice, sorghum, and pearl millet; and root and grain legume crops such as beans.

Livestock production is the predominant agricultural activity throughout Mozambique and consists mostly of cattle, goats, and poultry.

Smallholder farmers dominate the agriculture sector and utilize 99% of family labor. Most of these farmers cultivate small plots of land between 0.5 to 1.5 hectares in size (USAID, 2017).

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 Mozambique, 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

Mozambique's Intended Nationally Determined Contribution (INDC, 2015) to the United Nations Framework Convention on Climate Change (UNFCCC) notes that the country is expected to be 1.5 to 3°C warmer between 2045 and 2065.

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

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 Southern Africa, including Mozambique (UN News Centre, 2016). Although El Niño has receded, the impact of the higher-than-average temperatures and the lower-than-average rainfall continues to be felt.

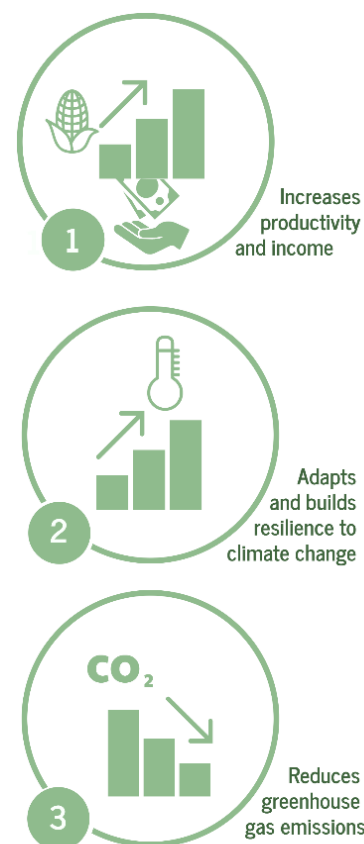
These environmental factors are further complicated by lack of infrastructure, inadequate markets, poor transport systems, and limited access to financial services and agricultural insurance.

AGRICULTURE IN 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-Smart Agriculture



Climate-Smart 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 other countries have National Adaptation Programmes of Action (NAPA) in place, and/or National Climate Change Response Strategies.

INTERNATIONAL ENVIRONMENT

As a non-Annex I party to the Paris agreement, Mozambique has no obligations to reduce GHG emissions, but has an obligation under the UNFCCC Paris Agreement to report on the anthropogenic sources and sinks of GHGs, and to identify measures to minimize the impacts of global warming and climate change.

Mozambique submitted its intended nationally determined contribution (INDC) to the convention in October 2015, but a nationally determined contribution (NDC) has yet to be submitted and ratified. Mozambique’s INDC states its intention to implement a series of policies and measures to reduce GHG emissions by 2030, although there remains a significant level of uncertainty

regarding both current GHG emission levels, as well as intended reductions in emissions. Mozambique requires financial, technological, and capacity-building assistance from the international community in order to implement its INDC.

Regionally, Mozambique is implementing the Comprehensive Africa Agriculture Development Programme (CAADP) Framework (2010), which emphasizes sustainable land and water management for improved agricultural productivity through research, technology adoption and dissemination, and agricultural GHG emissions reduction.

Mozambique signed its CAADP compact in 2011, and has a national agricultural investment plan in place (NAIP).

NATIONAL POLICY ENVIRONMENT

Mozambique has a National Climate Change Adaptation and Mitigation Strategy (NCCAMS) in place which has as its mission increasing resilience against and reducing the impact of climate change. The first NCCAMS action plan, which applies to the period 2015–2019, includes a National Adaptation Plan (NAP). The goal of the NAP is to increase

local resilience by fighting poverty and identifying opportunities for adaptation and low-carbon development at community level.

The Strategic Plan for the Development of the Agriculture Sector (PEDSA) aims at improving the competitiveness of the agriculture sector through, among others, improved use and management of natural resources, and enhanced food security and productivity.

CSA POLICIES

CSA is not specifically addressed in the few existing climate-change-related policies and programs in Mozambique; however, the strategic actions for increasing resilience and reducing risk are compatible with CSA practices.

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

Mozambique has a National Climate Change Adaptation and Mitigation Strategy (NCCAMS)	Goal is to increase resilience against and reduce the impact of climate change.
National Adaptation Plan	Goal is to increase resilience by fighting poverty and identifying opportunities for adaptation and low-carbon development at community level.
Strategic Plan for the Development of the Agriculture Sector	Aimed at improving the competitiveness of the agriculture sector through, among others, improved use and management of natural resources, and enhanced food security and productivity.

Climate-Smart Practices

Since the development of Mozambique's NAPA, several CSA-related initiatives led by governmental and non-governmental actors have been implemented, including conservation farming, agroforestry, organic farming, sustainable soil fertility management, and integrated pest management.

Crop residue management, mulching, composting, and rotations are some of the key climate-smart practices that are being adopted across several production systems in Mozambique. The use of short-season varieties and small-grained crops such as sorghum has also emerged as a key adaptation strategy for farmers.

Some of the key CSA practices identified for livestock are water harvesting, diversification of livestock breeds and species, and supplementary feeding. Given their adaptability to drought conditions, small livestock such as goats are increasingly kept by farmers.

CSA PROJECTS

Mozambique is part of the group of countries that is implementing the Pilot Programme for Climate Resilience (PPCR) (funded by the World Bank), which encompasses support for institutional and policy reform, for the funding of pilot projects, and for knowledge management.

Through the IFAD-supported Pro-Poor Value Chain Development Project in the Maputo and Limpopo Corridors (PROSUL), and with additional funding from the Adaptation for Smallholder Agriculture Programme (ASAP), smallholder farmers in Mozambique are connected with the resources they need to adapt to climate change.

Smallholder farmers, especially those in developing countries, are at the forefront of climate change and are most in need of

adaptation techniques. PROSUL's aim is to develop climate-smart livelihoods for smallholder farmers in the Limpopo corridors.

The Climate-Smart Agriculture Programme (CSAP), funded by the UK's Department for International Development (DFID), works to facilitate transformative change to the systems in which smallholder farmers operate in order to improve their livelihoods within the context of climate variability and change.

CSAP works across East and Southern Africa – including in Mozambique – to increase the climate resilience of smallholder farmers by using targeted evidence, developing approaches for the uptake of sustainable and locally suited agricultural practices, and improving the wider enabling environment.

UPTAKE OF CSA

Uptake of CSA practices and technologies by small-scale farmers is significantly hampered by low access to knowledge and technology, high investment costs, and limited access to credit. A recent survey revealed that less than half of smallholder farmers were adopting CSA approaches in Mozambique (Mucavele, 2014).



Gaps and Challenges in Climate-Smart Agriculture

POLICY GAPS

Coherence, coordination, and integration between sectors dealing with climate change, agricultural development, and food security are key requirements for creating a conducive policy environment for CSA. CSA also requires partnerships with non-state stakeholders involved in CSA.

RECOMMENDATION: Establish a national CSA coordination mechanism to enhance the promotion and scaling up of CSA across the country.

KNOWLEDGE SHARING, CAPACITY BUILDING, AND EXTENSION

A crucial precursor for the uptake of CSA in the country is the sensitization and institutionalization of the concept within the ministry of agriculture through leadership awareness of the potential benefits of CSA.

CSA practices are knowledge-intensive, and promoting their adoption requires well-designed, inclusive, and innovative knowledge-management systems.

Moreover, annual agricultural surveys have shown that not more than 15% of farmers were estimated to have accessed formal extension services annually between 2000 and 2008, with only 8.6% accessing these services in 2009/10 (Relief Web, 2017).

RECOMMENDATION: Place a strong emphasis on building the capacity of extension workers, and on creating mechanisms to enable farmers to access their services.

INVESTMENTS AND FINANCIAL FLOWS

Financing the activities associated with upscaling and mainstreaming CSA is costly. Mozambique lacks the financial and technological resources needed to strengthen the national technical and institutional capacities to fully implement its climate-relevant policies, with most funding currently originating from donors.

The Mozambique government needs to secure funds for mitigating the effects of climate change on the agriculture sector. Mainstreaming of CSA into national- and local-level strategic investment is thus an important step.

RECOMMENDATION: Improve monitoring and evaluation efforts to demonstrate the benefits and costs of various CSA interventions, and increase budget allocation for CSA in national budgets.

Involvement of the private sector in climate-smart agriculture is marginal; however, opportunities exist to engage private sector organizations in CSA through, for example, innovative insurance schemes and investment in (and testing of) new technologies.

Mozambique is currently negotiating access to the Green Climate Fund (GCF), after establishing the Nationally Designated Authority (NDA) under the National Directorate for Monitoring and Evaluation.

RECOMMENDATION: Work towards increasing collaboration between private and public agriculture and climate-related institutions at national, regional, and international levels to diversify the scope for CSA activities in Mozambique.



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 practices (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 (i) share the draft CSA scoping study report outputs with stakeholders; (ii) validate the outputs from the draft CSA scoping study report; and (iii) solicit policy recommendations from stakeholders. The draft reports were reviewed externally, and recommendations from both the national dialogues and the 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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