



CLIMATE-SMART AGRICULTURE IN NAMIBIA

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 needs 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). Namibia 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.

KEY RECOMMENDATIONS

- ONE:** There is a clear need for further policy development and finalizing the Nationally Appropriate Mitigation Action (NAMA) and National Adaptation Plan (NAP) should receive high priority.
- THREE:** CSA practices are knowledge-intensive, and promoting their adoption requires well-designed, inclusive, knowledge sharing strategies aimed at stakeholders across different sectors and across all levels. Capacity strengthening – for governments, technical staff, and farmers – is a high priority for enabling the implementation of CSA in Namibia and should be a key area for investment.
- THREE:** Farmers need to be supported (financially and through ongoing extension services) to implement CSA practices and should receive immediate and long-term benefits from adopting CSA.
- FOUR:** Closely monitor the impact and success of CSA projects to understand the potential of initiatives to contribute to agricultural transformation and livelihoods, and attract increased investment.



POPULATION Total population of 2.48 million of which 53% live in rural areas (World Bank, 2016).

ECONOMY Real GDP growth decreased to an estimated 1.3% in 2016, from 5.3% in 2015, with slight increases projected for 2017 and 2018. A stable macroeconomic environment with single-digit inflation (averaging 6.7% in 2016) (African Economic Outlook, 2017).

POVERTY 31% of the population below the international poverty line (World Bank, 2017a).

AGRICULTURE IN ECONOMY Currently less than 5% of GDP is from agriculture. Most of the population (approximately 70%) relies on subsistence agriculture (Frøystad, Hoffmann & Schade, 2009).

CLIMATE CHANGE Botswana’s greenhouse gas emissions contribute 0.05% of global emissions (USAID, 2015). Agriculture contributes 92% of the nation’s greenhouse emissions (World Bank, 2017b).

Context Overview

AGRICULTURE IN NAMIBIA

Cattle play a vital role in the agricultural economy of Namibia. As one of the driest countries on the planet, crop production is second to livestock in importance due to the presence of perennial grass species which are resistant to moisture stress.

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 Namibia, 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 Namibia's National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) projects that mean annual temperature may increase by between 0.6 to 3.8°C for the 2035 – 2065 period. In the absence of interventions, agricultural yields in Namibia will continue to decline.

Namibia stands at a high risk to suffer from the impacts of climate change. The country is one of the biggest and driest in sub-Saharan Africa, with characteristic high climatic variability in the form of

persistent droughts, unpredictable and variable rainfall patterns, high temperature variability, and scarcity of water.

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 Namibia (UN News Centre, 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.

These environmental factors are further complicated by lack of infrastructure, inadequate markets, lack of support services, and limited access to water systems.

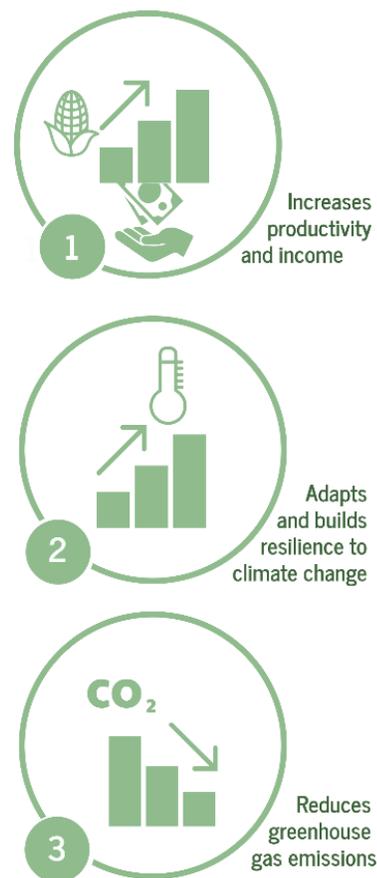
A comparative assessment of fifteen countries (FANRPAN, 2017) reveals that the onset impacts of climate change are already being perceived both by formal experts and by rural populations across sub-Saharan Africa, including Namibia.

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-Smart Agriculture



CSA Related Policy Environment

INTERNATIONAL ENVIRONMENT

Namibia, as a Non-Annex I Party to the UNFCCC, does not have commitments under the Convention, but does have an obligation to report on the anthropogenic sources and sinks of greenhouse gases, and to identify measures to minimize the impacts of global warming and climate change.

Namibia submitted its Intended Nationally Determined Contribution (INDC) to the convention in 2016. The NDC was ratified in late 2016, and states Namibia's intention to achieve an overall emissions reduction of 89% by 2030.

Regionally, Namibia 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. Namibia has not yet signed its CAADP compact and develop its National Agricultural Investment Plan (NAIP).

NATIONAL POLICY ENVIRONMENT

The National Policy on Climate Change for Namibia was produced in 2011 to better translate government's will and commitment to tackle climate change.

Furthermore, a National Climate Change Strategy and Action Plan for the period 2013–2020 has been developed and paves the way to the strategic options to be adopted for coping with climate change challenges, while contributing to the international agenda.

Eastern and Southern African countries generally have policies on agriculture and climate change, and do recognize the impacts of the latter on the former.

In Namibia, a multi-sectoral National Climate Change Committee will oversee the implementation and coordination of sector-specific and cross-sectoral NDC activities, while also providing advice and guidance on them.

The Ministry of Environment and Tourism (MET), which is responsible for all environmental issues in the country, is the National Focal Point for the UNFCCC, and will report on INDC activities to the UNFCCC. The MET will also monitor, track, and follow COP decisions on NDCs, including funding possibilities and transmit these to the concerned institutions. Sectoral activities will rest with the respective Ministries through their concerned Directorates.

Though clear mitigation and adaptation plans have not been fully developed up to now, the endeavor is sincere since these strategies have been mainstreamed in the overall national policy strategies.

Namibia is presently developing its first Nationally Appropriate Mitigation Action (NAMA) and is working on its National Adaptation Plan (NAP) to better guide the country on its way to mitigate and adapt to climate change.

RECOMMENDATION: There is a clear need for further policy development in Namibia. The development of the Nationally Appropriate Mitigation Action (NAMA) and National Adaptation Plan (NAP) should receive high priority.

CSA-RELATED POLICIES

There is currently no specific climate-smart agriculture policy or strategy in place. The Agricultural Policy is the most direct policy that addresses CSA in many forms.

The main objectives of this CSA-supporting policy are to:

- (i) Promote drought-resistant crop varieties;
- (ii) Promote the use of indigenous cattle species (e.g. Sanga/Nguni cattle);
- (iii) Promote minimum tillage of crop lands;
- (iv) Promote water harvesting for irrigation and for livestock use;
- (v) Promote conservation of biodiversity in the management of natural resources; and
- (vi) Protect natural habitats and conserve soils.

SUMMARY OF CLIMATE RELATED POLICIES

National Policy on Climate Change	2011
National Climate Change Strategy and Action Plan	2013-2020
Nationally Appropriate Mitigation Action (NAMA)	In progress
National Adaption Plan	In progress

CSA Practices

Namibia 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.

Several examples of CSA practices and approaches in Namibia are highlighted below.

USE OF HYBRID SEEDS

The country's agricultural policy promotes the growing of drought-tolerant crops - largely been driven by Vision 2030, NDP4 policy statements and the Agricultural Policy. Farmers plant hybrid seed varieties as advised by the Directorate of Engineering and Extension services. The farmers also spread risk by planting a mix of traditional and improved seeds, and overlap growing periods by planting some seed early and some late into the rainy season.

SOIL FERTILITY AND FERTILIZER MANAGEMENT

The use of organic fertilizers (kraal manure) has largely been driven by traditional practices, though the prevailing extension services promotes its proper processing and use.

Due to a system of mixing organic and inorganic fertilizers, maize yields of above two (2) tonnes per hectare have been achieved by some communal farmers in Zambezi and Kavango with a few farmers managing to achieve or even exceed 5-6 tonnes per hectare yields.

CONSERVATION TECHNOLOGIES

Inexpensive conservation technologies used in Namibia include: (i) the incorporation of crop residues into soils rather than allowing them to be grazed, and (ii) zero or minimum tillage.

Adoption of these practices has been driven primarily through policy, and promoted by national extension services.

FODDER FLOW SYSTEMS FOR ANIMALS

Fodder conservation is an important tool for evening out peaks and troughs in pasture production, and for better matching feed supply and demand across seasons. Hay-making is the most common fodder conservation practice, especially on commercial farms. Crop residues and poor-quality hay are treated with urea fertilizer and are fed to cattle during the long dry season. Because most of the livestock farming is done on extensive rangelands, farmers have adopted low-input, optimum production strategies so that they do not destroy the feed base. Fodder flow systems are promoted by the Agricultural Policies. Advocacy is through government extension services, farmer mentoring programs by non-governmental organisations (NGOs).



Gaps and Challenges in Climate-Smart Agriculture

POLICY GAPS

CSA is context- and location-specific; therefore, implementation of the climate-smart agriculture concept in the country's agricultural system should use the existing policy instruments as a launch pad.

The objectives of current agricultural and related sectors policy instruments resonate broadly with a CSA framework to address food security in a sustainable manner that results in adaptation to and mitigation of climate change spin-offs.

However, several key high-level documents remain in the development phase in Namibia which hinders progress towards stated goals. The development of the Nationally Appropriate Mitigation Action (NAMA) and National Adaptation Plan (NAP) should receive high priority. Alongside this, the finalization of Namibia's CAADP compact and associated NAIP must be given due attention.

KNOWLEDGE SHARING, CAPACITY BUILDING, AND EXTENSION

It is important to focus on removing barriers to implementing CSA, which in Namibia include a lack of knowledge on the CSA adaptation options available, and the financial and human resources to implement them.

As stated in Namibia's NDC, *"Implementation of this NDC will represent a major challenge to the government of Namibia. Multiple shortcomings and constraints will have to be overcome while fulfilling the needs*

for systemic, Institutional and human capacity building."

In order for Namibia to successfully implement mitigation and adaptation techniques, a sustained capacity-building programme in prioritized areas, and extensive technical support will be required.

At grassroots level, several challenges prevent the uptake of CSA as an approach – including a lack of information sharing and advisory services.

RECOMMENDATION: Capacity strengthening – for governments, technical staff, and farmers – is a high priority for enabling the implementation of CSA in Namibia and should be a key area for investment.

INVESTMENTS AND FINANCIAL FLOWS

Namibia will need the support of the international community to overcome its existing barriers, for the appropriation of technologies to implement CSA, for a sustained capacity building programme in prioritized areas, and for technical support. It is estimated that the total funding required for Namibia to meet its NDC targets, funding to the tune of some 33 billion US\$ at 2015 prices is required.

RECOMMENDATION: Closely monitor the impact and success of CSA projects to understand the potential of initiatives to contribute to agricultural transformation, and to provide an evidence base to attract increased investment.

Innovative alternatives to enable farmers to access the financial means to implement CSA must be explored. Farmers or cooperatives are not able to borrow money from financial institutions because they do not have a proper business account and therefore cannot provide a financial track record specific to farming that banks can evaluate to establish viability and ability to repay loans. As a result, some food-insecure farmers are not able to invest in CSA practices that requires extra resources like agro-forestry. Land tenure issues present challenges, especially for communal areas, because farmers cannot offer their untitled land as collateral for loans.

Incentives for adoption of CSA practices, including "climate-smart subsidies" for practices with public good elements, need to be put in place. The introduction of other financial incentives like low-interest loans and micro finance schemes may compliment extension policies and support the adoption of new technologies and practices.

Recommendation: Farmers need to be supported (financially and through ongoing extension services) to implement CSA practices and should receive immediate and long-term benefits from adopting CSA.

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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