



CLIMATE-SMART AGRICULTURE (CSA) IN THE SADC REGION

BE CLIMATE SMART. BE PRODUCTIVE

Published by:

CCARDESA Secretariat
The Executive Director
Private Bag 00357
Station Exit Road, Plot 4701, Red Brick
Building, Gaborone, Botswana
Email: ed@ccardesa.org
Phone: +267 391 4997

Implemented by:

GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit
GIZ Programme Office at CCARDESA
SADC Adaptation to Climate Change in Rural Areas in Southern Africa (ACCRA) Programme
Station Exit Road, Plot 4701, Red Brick Building, Gaborone, Botswana
Email: Hanna.Sabass@giz.de
Phone: +267 3914997

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For more information,

Please visit the CCARDESA website and the Southern African Agricultural Knowledge and Information System (www.ccardesa.org), follow us on Facebook (@ccardesa) or join our CCARDESA discussion group by emailing dgroups@ccardesa.org.

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The Executive Director,
CCARDESA Secretariat,
4701 Station Exit Road, Private Bag 00357, Gaborone, Botswana,
Email: ed@ccardesa.org or registry@ccardesa.org,
Website: www.ccardesa.org

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WHAT IS CLIMATE-SMART AGRICULTURE (CSA)?

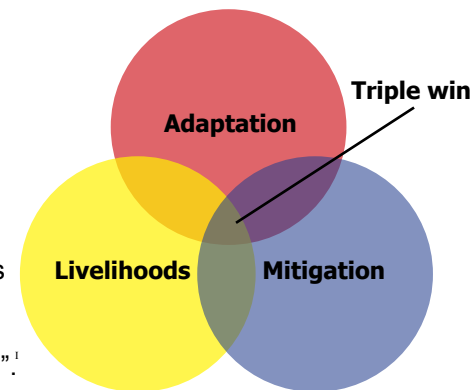
Key messages

- Climate change in SADC is already present and the indicators include rising temperatures, more frequent extreme weather events such as droughts and floods, and changing rainfall patterns.
- Climate change is already having severe impacts on agricultural production and food security in Southern Africa.
- CSA addresses food insecurity and climate change by balancing agricultural productivity increases with adaptation and mitigation.
- CSA is not one solution but offers a set of strategies, practices and technologies that help farmers adapt to climate change.
- Farmers can benefit by using climate-smart agricultural practices and technologies, but these should be relevant and adapted to a specific local context.
- The SADC Regional Agricultural Policy integrates climate-related content and SADC Member States should include this in their national agricultural policies.
- Collaboration, knowledge sharing and capacity strengthening across and within countries are key in order to take climate-smart agriculture in SADC to scale.

Climate-smart agriculture (CSA) supports agriculture's response to the effects of climate change. As such, it is not a new agricultural system nor a completely new set of agricultural practices. It is an approach that aims to transform agricultural development under the new realities of climate change. It tries to ensure food security, to build adaptive capacity and where possible, also to mitigate agricultural impact on climate change.

CSA includes the following pillars:

- Improving **food security** through increased agricultural productivity and incomes from crops, livestock and fish. Attention is paid to poverty reduction, social equity and the avoidance of negative environmental impact;
- Increasing the **adaptive capacity and resilience** of farmers and their families and of agricultural value chains to climate change, by reducing their exposure to climate risks and strengthening their ability to adapt and prosper when considering climate change impacts;
- **Reducing agriculture's contribution to climate change** through management of greenhouse gases and increasing efficiencies in agriculture, where and when possible, to help countries reduce their carbon footprint. CSA is characterised "as agriculture that sustainably increases productivity, enhances resilience (adaptation), reduces/removes greenhouse gases (mitigation) where possible, and enhances achievement of national food security and development goals".¹



¹ FAO. 2017. Climate-smart agriculture: sourcebook. Rome, Italy: FAO.

WHAT IS NEW AND DIFFERENT ABOUT CSA?

The **severity and complexity** of climate change impacts on agriculture requires different responses. At **regional and national level**, enabling environments need to support policies and frameworks, stakeholder engagement, infrastructure and markets. At **local level**, options for climate smart agricultural production and value chains need to support smallholder farmers in managing climate risk.

CSA is unique because **climate change** aspects are systematically integrated into the planning and implementation of agricultural production systems. It aims to increase agricultural productivity, as well as adaptation to and mitigation of climate change, to achieve food security and climate change goals.



CSA is **context specific and tailor made**. There are no blueprint solutions, since all three elements cannot always be reached. Instead CSA manages the **benefits and trade-offs** between food security, adaptation and mitigation by considering different options for specific farmers in specified locations.

CSA includes new **agricultural technologies and practices**, and the policies, laws, institutions and services that provide the **enabling environment** to support agricultural responses to the challenges posed by climate change.

CSA brings together **science and indigenous knowledge**, drawing from farmers' expertise, scientists and others to help households strengthen their livelihoods and adapt to climate change. It closes the gap between scientific research and practical application on-farm.

CSA is a **multi-scale approach** that considers short-term climate risk and long-term climate change, immediate and future food security needs, and local and national conditions and priorities.

CSA considers the needs and priorities of different **stakeholders** and invites their participation. In particular, CSA needs to benefit women and men equally and address the unequal access of **women** have to resources and information, as well as to decision making and economic benefits. CSA also pays attention to the needs of future generations by including the **youth**.

Climate change affects us all! Merely through a joint effort of all groups in society we can respond to the challenges.

AT LOCAL LEVEL: CSA OPTIONS AND BENEFITS FOR FARMERS

Farmers can significantly increase and stabilise their agricultural production and become more resilient to climate risks, while using CSA practices and technologies. To reach this aim, natural resources such as land, water, soils, and biodiversity, along with agricultural inputs, crops and livestock need to be managed as efficiently as possible. CSA practices, technologies and services help improve agricultural production and productivity and in turn, also household food security and incomes, build adaptive capacity, while reducing their contribution to climate change.

Farmers can select and adapt options that are suitable for their farm and their household, taking into consideration their climate, soils, water, and socio-economic and cultural conditions.

Most CSA practices, technologies and services can be integrated easily and cheaply on farm, leading to quick financial gains in terms of agricultural yield, and reducing climate risk in the short- and long-term. Specific outcomes that can be achieved depend on local circumstances.



¹¹ CCAFS. 2015. Climate-smart agriculture 101. Copenhagen: CGIAR Research Program on Climate Change, Agriculture and Food Security. <https://csa.guide/>;
FAO. 2017. Climate-smart agriculture: sourcebook. Rome: FAO.

Examples of **CSA best bet practices, technologies and services** include: ⁱⁱⁱ

Soil, land and water management				
Soil and water conservation, rainwater harvesting.	Conservation agriculture, with reduced tillage, integrated soil fertility management	Mulching and composting, cover crops, crop residue management	Integrated water resource management, improved water use efficiency, improved irrigation techniques, water reuse	
Crop and livestock production				
Diversification and integration of crops and livestock.	Better manure management	Changing crop or livestock varieties or species to those that are early maturing, heat, drought, pest and disease tolerant	Good agronomic practices, e.g. adapted planting dates and densities, land preparation, crop rotation, intercropping	Grazing management, improved pastures and rangeland management, supplementary feeding
Agroforestry and forestry				
Integration of agroforestry species for food, fodder, fuel on the farm		Communal forest management and reforestation		
Information and insurance				
Climate and agro-meteorological information services, with indigenous knowledge, mobile phone based systems	Index based insurance for crops and livestock		Savings and credit systems	
Fisheries and aquaculture				
Homestead ponds		Integrated rice-fish systems		
Post-harvest management				
Improved storage facilities				
Energy management				
Fuel efficient stoves	Biogas and bio-digesters		Solar power	

Smallholder farmers in the SADC Region often do not have sufficient knowledge of and access to locally appropriate, low risk and affordable CSA options. Often, there are no support systems that help determine what best bet CSA options in a particular context are, that fit the conditions, needs and aspirations of a particular farmer. While farmers rely on their own knowledge and that of their fellow farmers in the community, they need better support from agricultural extension, information and financial services. Farmers should be engaged in selecting, designing and implementing best CSA options

on their own farms that meet their specific needs. Governments and development partners need to strengthen the mechanisms for capacity enhancement and technology transfer and help secure funding for implementation and scaling up of CSA ⁱⁱⁱ. In SADC, regional agricultural knowledge sharing is one way of addressing this knowledge gap. The Southern African Agricultural Knowledge System (SAAIKS, available at ccardesa.org) is a regional platform that makes agricultural information regionally available, targeted at farmers, extension services, and policy makers.

ⁱⁱⁱDinesh D (ed). 2016. Agricultural practices and technologies to enhance food security, resilience and productivity in a sustainable manner: Messages for SBSTA 44 agriculture workshops. CCAFS Working Paper 146. Copenhagen: CGIAR Research Program on Climate Change, Agriculture and Food Security.

ENABLING ENVIRONMENTS FOR CSA AT REGIONAL AND NATIONAL LEVEL

Robust policies, laws and institutions provide the framework that supports decision-making at regional, national and local level. SADC has adopted a Regional Agricultural Policy (2014), a Food and Nutrition Security Strategy (2014) and a Climate Change Strategy and Action Plan (2015). These are the basis for cooperation in achieving sustainable agricultural development and food security, and in addressing climate change. The climate strategy recognises the importance of climate proofing agriculture and the agricultural policy recognises climate change as a key area. However, climate-related elements of the RAP have not yet been translated into national policies in some countries. Where agriculture and climate change have been linked in policy documents, implementation of CSA programmes and investments at national and local level still needs support.

In SADC, the challenges to scaling up CSA include the lack of access to knowledge on appropriate CSA practices and technologies, inadequate technical capacity, lack of enabling conditions (i.e. access to infrastructure, markets, credit, inputs, etc.), low private sector involvement, inadequate financing and targeting of women and youth. For CSA to be adopted widely, information and capacity needs of policy makers, extension services, technical staff and farmers need to be considered. Technical ministry and extension staff, and farmers, need to be equipped with the skills to assess climate risks in a particular context, select appropriate CSA options and weigh the synergies and trade-offs between food security, adaptation and mitigation.

EQUITY, GENDER AND YOUTH IN CSA

Women play a key role in providing food for their families, educating their children and keeping their families healthy. At the same time they are amongst the most vulnerable to climate change. On one hand, it is critical to include women in decision-making about CSA and to consider the workload that certain CSA practices and technologies mean for women. On the other hand, women need to directly benefit from CSA, in terms of household food supplies, income or status.

The young people of today will be in the driver's seat tomorrow. They will be shaping the agricultural transformation required for sustainable development. Many young people do not consider agriculture as desirable employment sector, having the hardships of their parents in mind. Yet, agricultural innovation, emerging markets and new business models through information and communication technologies offer fresh prospects for young farmers, particularly in the context of climate-resilient development.



GLOBAL CLIMATE AGREEMENTS

Addressing climate change is on the top of the international agenda. The Paris Agreement on Climate Change (2015) sets out the framework for adaptation and mitigation actions across the globe. Countries are formulating their commitment to the global response, known as Nationally Determined Contributions (NDCs). These are country-specific measures to address adaptation and mitigation.

All 15 SADC Member States endorsed the Paris Agreement and submitted their NDCs, which all prioritise agriculture, focusing mainly on adaptation. Countries have indicated the need for international climate finance to help achieve the specified targets. Different financing mechanisms exist at the global level and countries are being supported in meeting the requirements for accessing funds.

WHY DO WE NEED CSA : CLIMATE CHANGE IMPACTS IN SADC



In the Southern African Development Community (SADC), agriculture is key to economic growth and poverty reduction. It accounts for more than 17% of the region's gross domestic product, employing about 61% of its labour force.^{IV} SADC imports most of its food and food insecurity continues to be a challenge. High population growth, urbanisation and changing food consumption patterns require major increases in food production to satisfy future requirements.

The challenges are worsened by climate change. SADC is already extremely vulnerable to a variable climate, affecting rural livelihoods. But in future, temperatures will be higher, the frequency of extreme weather events (for example, droughts and floods) will increase and rainfall will become more unpredictable. By the end of the 21st century, temperatures are likely to increase by 3-5°C and rainfall is likely to decrease, with a high risk of severe drought. Climate change will have a negative effect on yields. While maize is a major staple in the region, it is

vulnerable and yield losses are estimated at 18% for SADC and 30% for South Africa and Zimbabwe.^V

Climate change will affect certain groups of people more than others. Smallholder farmers are vulnerable as their livelihood is mostly dependent on rainfall. At the same time they often have low capacities to cope with and adapt to climate risks. The reliance on natural resources, coupled with insecure land rights and poor access to

water for irrigation, few options to get credit, limited access to agricultural inputs and innovations, and far-away markets with poor road networks, make smallholder farmers least able to adapt to climate change. Women, youth and children are particularly vulnerable, as they are often the most food insecure, have the least access to resources, and the lowest capacities to cope.

To ensure agricultural productivity and food security for future generations in the SADC Region, our agricultural production systems need to respond to the impacts of climate change. Sustainable development goals help guide the transformation, as food security has to be strengthened without depleting natural resources, and adaptive capacity is to be built while paying attention to specific vulnerabilities of women and youth. Climate-smart agriculture helps to sustain agricultural production into the future.

^{IV} SADC. 2014a. Regional Agricultural Policy. Gaborone: SADC Secretariat.

^V Niang I, Ruppel OC, Abdrabo MA, et al. 2014. Africa. In Climate Change 2014: Impacts, adaptation, and vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Barros VR, Field CB, Dokken DJ, et al. (eds.)). Cambridge: Cambridge University Press, pp. 1199-1265.

PARTNERSHIPS FOR CSA IN SADC

The **SADC Secretariat** provides strategic direction on agriculture and climate change in the region.



The Centre for Coordination of Agricultural Research and Development for Southern Africa (**CCARDESA**) in collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is implementing the **SADC Adaptation to Climate Change in Rural Areas in Southern Africa (ACCRA) Programme**, funded by the **German Ministry for Economic Cooperation and Development (BMZ)**. ACCRA supports implementation of the climate-relevant elements of the SADC RAP. ACCRA aims to increase the capacities of SADC Member States to integrate climate change into agricultural programmes and investments. This will be achieved through promoting regional knowledge dissemination on CSA; and supporting the climate proofing of agricultural value chains.

CCARDESA is a subsidiary organisation of SADC, established in 2011 by the 15 SADC Member States, to coordinate agricultural research and development in the region. Empowering smallholder farmers to improve their production efficiency and generate higher incomes through increased market engagement while undertaking sustainable agricultural practices in the face of worsening climatic conditions, requires better access to appropriate information and harnessing of emerging practices and technologies.

Coordination of agricultural research and development among 15 SADC Member States entails a great degree of transferring knowledge and developing new knowledge together with communications products for different audiences. CCARDESA aims to be a reliable source, broker and facilitator of the free movement of agricultural knowledge and information in the region. To this end, CCARDESA has been mandated with building and operating a regional ICKM system (ccardesa.org) which strengthens its capacity to manage and facilitate access to and broker the sharing of agricultural information.

CCARDESA

Centre for Coordination of Agricultural Research and Development for Southern Africa



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Email: Hanna.Sabass@giz.de
Phone: +267 3914997

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