

Forum: Environmental Commission

Issue: Advancing Climate-Smart Agriculture Methods in Africa

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INTRODUCTION

Throughout the history of the African continent, agriculture was of the utmost importance. Even in the precolonial Africa, nations relied on agriculture and farming. However, in the past few years, Africa, just like every other region in this world, has been severely affected by climate change. With the constant rise of temperatures and water scarcity, the fight against climate change has become even more difficult.

Agriculture has always had a major influence on a nation's economy. In the case of Africa especially, agriculture has been the main source of income for the majority of the civilians. Unfortunately, though, climate change is the cause of numerous problems, which have affected agriculture in an undesirable manner. Phenomenon's such as floods, soil erosion, desertification, the rise of sea levels and temperatures have been detrimental to the sector of agriculture on a global level, while the lack of food security, the vulnerability to climate change and the economic disability have also been pressing issues. As a result, Climate Smart Agriculture (CSA) was developed: It is the reorientation of regional and national agricultural structures, which enable communities to minimize the damage inflicted by climate change. By applying CSA methods, resilience to climate change is built, food security is reassured, which is very important for LEDCs and unstable economies. In addition, increase in productivity and economic development has been observed, when adapting climate-smart methods. In some cases, CSA methods have also reduced carbon dioxide emissions. Nevertheless, Climate Smart Farming has also had a social impact, a great example of which is the inclusion of women and other minorities in activities related to CSA. Climate Smart Agriculture has brought a variety of environmental and socioeconomic benefits to these communities, though it is not commonly applied.

Despite the fact that some African nations have adopted climate smart agriculture methods, most countries in Africa have yet to invest in this field. However, even when it comes to the ones who have done so, CSA methods are not nationally applied. African powers such as Nigeria, South Africa and Ethiopia, in addition to less powerful nations such as Benin, Niger and Mali have incorporated such practices into their agricultural systems. Nevertheless, there are still a number of African countries that have not conformed to climate smart farming. Unfortunately, the diverse ecosystems and extreme weather conditions of the African continent set barriers to the

widespread use of such methods as well. During the debate your goal will be to find ways to minimize the difficulties African farmers face, in order to adopt CSA methods.

DEFINITION OF KEY-TERMS

Climate-Smart Agriculture

Climate Smart Agriculture also referred to as Climate Smart Farming is an approach for creating agricultural systems resilient to climate change, with sustainably increasing incomes and productivity and the possible reduction in greenhouse gas emissions. CSA methods vary from country to country since

Food Security

Food security is the accessibility to sufficient, healthy and nutritious food that meets the dietary needs of individuals. Food security has a social, financial and environmental extend.

Sustainability

Sustainability is the coherent coexistence of the biosphere and humanity. Sustainability has been one of the main goals of the United Nations.

Resilience

Climate resilience in agriculture is the ability of agricultural systems, facilities and economic systems to not only resist but also adopt to the environmental changes.

Water scarcity

Water scarcity is the lack of sufficient resources of fresh, clean, drinkable water. This phenomenon is a common sight in several areas of the African continent.

Soil degradation

The term soil degradation describes the poor quality of soil, usually caused by its improper use for industrial and urban purposes. Therefore, the land, which has been affected by this severe environmental problem, is unable to grow nutritious crops.

Industrial farming

Industrial farming is the mass production of crops or animals. During this process fertilizers, chemicals and other harmful substances are used in order to speed up the growth of the product, while a harmful use of antibiotics also takes place. This of course has resulted to erosion of the soil and the destruction of ecosystems.

BACKGROUND INFORMATION

Agriculture in Africa

Even prior to colonialism agriculture was an issue of paramount importance for African villages and communities. The African continent had a very variable climate, which has proven to be more beneficial for the development and growth of crops. The soil was fertile and allowed the people to grow a great variety of plants. African tribes started growing crops as a means of survival and later trade. However, when colonizers such as France, Spain, Italy and the United Kingdom arrived, the environmental situation in Africa was altered. Colonizers in Africa demanded substantial amounts of crops. This resulted to the phenomenon we now call soil degradation, which led to limited natural resources to grow plants in the continent. The poor management of resources and misuse of soil has had major effects on the African environment, that have lasted till this day. The uncontrolled and illegal mining and the extraction of oil in some cases created even more damage to environment of Africa. The raise of temperatures has also affected agricultural communities and has been one of the most visible and detrimental effects of climate change. Especially in the northern parts of Africa the Saharan temperatures have impacted the environment and the lifestyle of the locals.

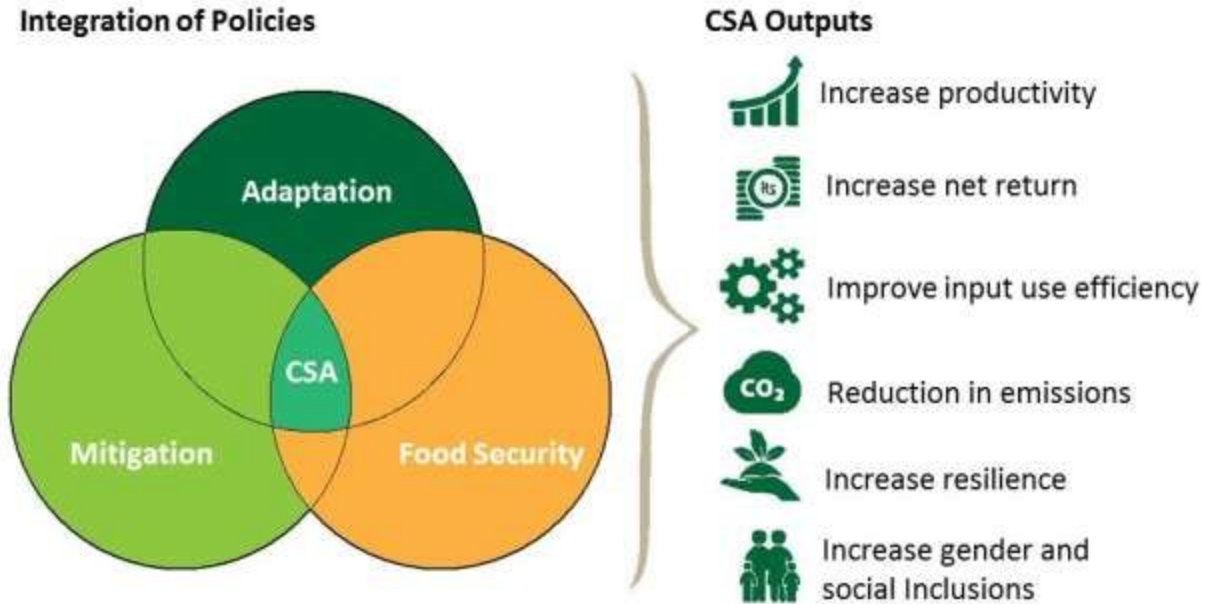


FIGURE 1: THE CONCEPTUAL FRAMEWORK FOR CSA AND ITS EXPECTED OUTPUTS¹

CSA methods

Climate Smart Agriculture is helping communities with numerous issues. Seeing as Africa has several different climate zones, there are different CSA methods that tackle different environmental challenges. Crop rotation is commonly used in order to prevent soil erosion and try to keep the soil healthy and nutritious. Nutrient management methods are commonly used to provide the soil with the appropriate nutrients in order for specific crops to be grown.

In order to tackle water scarcity, methods such as Rainwater Harvesting are used by remote and underdeveloped communities. Drip Irrigation and Cover Crop Methods are applied in order to minimize or even prevent water waste. In more developed nations, creating structures and changing the architectural plans serve the purpose of flood water control.

Climate Smart Agriculture extends to a theoretical level. Data is collected in order to ensure further development and scientific advancements in the sector of agriculture. Research is conducted in order to find Improved Crop Varieties, that will be able to

¹ Shirsath, Paresh. "Conceptual Framework for Climate-Smart Agriculture and Expected Outputs." Research Gate, September 2017, https://www.researchgate.net/figure/Conceptual-Framework-for-Climate-Smart-Agriculture-and-Expected-Outputs_fig3_326847389.

adopt in different climate zones. In order to manage environmental risks seeds are collected in seed and fodder banks.

Livestock plays a major role in climate smart agriculture and climate change. Livestock affects climate change and can create numerous problems. However, CSA practices such as feed and manure management have assisted in tackling the negative effects of climate change. The sector of fisheries is the major economic sector for many African cities and villages. Fisheries have been dramatically impacted by the acidification of the sea and overfishing. Several CSA initiatives focus on fisheries and improving marine ecosystems.

Climate Smart Agriculture has been evolving ever since 2009 and scientists have been trying to invoke methods to better the agricultural sector globally. In the last few years nuclear energy has been used in order to limit greenhouse emissions, ensure food security and increase sustainability in agriculture.

North Africa

The North African region has been one of the most impacted by climate change. The main challenge that north African nations are facing is water scarcity. Most of the water is consumed by agricultural and farming institutions. Climate change is going to make the situation even worse by varying rain patterns and weakening the already existing water resources. Another issue that nations of this region are facing is the deserted area and drought conditions. Nations such as Tunisia and Morocco have adopted water management and water harvesting techniques. With the aim to advance and promote Climate Smart Agriculture, a number of north African nations have collaborated with the Arab league, the Food and Agriculture Organization of the United Nations and the United Nations Development Program.

East Africa

Although, unlike other regions of Africa, East Africa does not face very serious environmental challenges, it is being negatively impacted by climate change. Although collaboration amongst East African countries has taken place, the main challenge that the region is facing is the diverse climate zones of the region, making it even harder for collaboration between them. However, nations such as Kenya and Tanzania have provided smallholders and practitioners with the strategies and methods in order to tackle climate change.

South Africa

The southern region of Africa has also faced a number of environmental challenges. A major issue is water pollution. As many of South African nations such as Angola produce oil, oil spills in major water supplies are not something rare. This of course has severely impacted marine ecosystems and the water systems. Deforestation has also affected the environmental situation in south Africa. South Africa is a state which has understood the value of CSA both on a local as well as on a state level. Governmental organizations have been for years now researching CSA techniques and developing programs and sustainable solutions for South African farmers. For instance, it has been advising farmers to enforce crop rotation and lower seeding and fertilizer rates, according to research it has conducted in recent years. Other bodies, such as the South African Sugar Research Institute have been heavily involved in research regarding similar cropping practices. Numerous farmers' unions have also been implementing various methods of water conservation. What is also interesting is the use of short-term and seasonal weather forecasting. Early warning systems are provided to farmers, while strategic guidance on agriculture based on the expected weather, as well as assistance to farmers who have suffered due to weather, is available through the National Agricultural Disaster Risk Management Committee. In general, South Africa has been active in CSA, and has incorporated it in its legislation and government talk about climate change

West Africa

West Africa has seen a constant raise in temperatures in the past few years. Deforestation and soil degradation are also major environmental issues. Industrial farming has destroyed west African soil and combined with coal and diamond mining the situation has gotten out of hand for a number of west African countries. However, Niger, Burkina Faso, Senegal and Mali are following climate smart technologies. West Africa in general has been very supportive of such methods, with the Economic Community of West African States funding communities and organisations willing to learn and apply such methods.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

Morocco

As a North African nation, Morocco has been severely impacted by climate change. Desertification and water scarcity are some of the most severe environmental

challenges the nation is facing. The constant raise of temperatures combined with the lack of rainfalls has made traditional agriculture methods unsuccessful. The nation has combined the social, financial, environmental and scientific sectors in order to ensure the correct implementation of CSA methods. In collaboration with the Food and Agriculture Organization Morocco and other North African countries created the Near East and North Africa's Water Scarcity Initiative and by doing so tackled one of the biggest environmental issues they are facing.

Kenya

This East African Nation has managed to adopt climate smart farming methods. The nation has provided farmers with assistance in order to improve production and raise the profits. Kenya is one of the countries that have seen a decrease in carbon dioxide emissions, by factories in the country. Kenya has chosen to follow specific guidelines up until 2027 in order to promote climate smart agriculture methods and increase sustainability in the country.

Ethiopia

This landlocked, east African nation has managed to adopt climate smart farming in several parts of the country, hence comprising a leading example of its successful implementation. Ethiopia faces challenges such as warm Sahel temperatures in some parts and floods and rainfall in others. Despite all challenges Ethiopia has managed to promote CSA methods at an international level. West Africa in general has been very supportive of such methods, with the Economic Community of West African States funding communities and organisations willing to learn and apply such methods. Ethiopia has been very successful in analyzing the its lands soil and choosing the proper crops in order to prevent soil degradation. Ethiopia has not only focused on applying CSA methods, but also in researching and constantly developing.

Vietnam

Vietnam is a nation that has been affected by climate change. Vietnam has a heavily industrialised economy with many factories, but has also suffered by floods, typhoons and has a tropical climate. Despite all these issues the country has managed to have a successful agriculture sector, by adopting climate smart agriculture. The country has adopted many CSA methods, in order to tackle the different environmental challenges the nation is facing. Vietnam is the country that has most successfully adopted CSA in

Southeast Asia and is an example for other Asian countries. Although Vietnam's geographical location is not in Africa, it is a leading nation when it comes to climate smart agriculture.

United Nations Development Programme (UNDP)

The United Nations Development Programme's main goal is trying to promote sustainability and improve resilience against climate change. The UNDP has collaborated with FAO in order to further develop CSA. The United Nations Development Programme assists smallholder farmers to adopt such methods and to build resilience against environmental problems.

African Climate Smart Agriculture Alliance (ACSAA)

The African Climate Smart Agriculture Alliance was created in order improve agriculture, build resilience against climate change and to promote gender equality. The Alliance's goal is to improve the agricultural sector in the african continent. The Alliance has funded CSA initiatives by using the nations National Agriculture Investment Plans. The ACSAA is strongly based on collaboration amongst governments, but also with other international organizations, such as the New Partnership for Africa's Development.

Food and Agriculture Organization of the United Nations(FAO)

The Food and Agriculture Organization of the United Nations (FAO) is a United Nations agency, dedicated to ensuring global food security and improving agriculture. In order for stable agricultural systems to be created FAO supports the national adoption of CSA methods. The organization provides the proper basis, strategy and the climate change adoption plans. All nations interested have collaborated with FAO in order to adopt CSA practices. The organization has started several initiatives in African nations, in order to support smallholder farmers to build resilience against climate change. FAO has helped to improve the already existing methods. The Food and Agriculture Organization is collecting data and expanding the scientific basis in order for future progress to be made.

TIMELINE OF EVENTS

DATE	DESCRIPTION OF EVENT
16th of October 1945	The Food and Agriculture Organization is created in Quebec, Canada. The FAO plays a major role in the development of CSA. Since its creation the Organization has tried to ensure food security.
1978	The World Agroforestry Center was founded.
1988	The Intergovernmental Panel on Climate Change is created in order to help nations have a common policy towards global environmental problems.
9th of May 1992	The UN Framework Convention on Climate Change is put into force. The Convention's main goal is to monitor the interference of human activities in the environment.
2009	The concept of Climate Smart Agriculture is first conceived and CSA methods start developing.
2013	A number of organizations collaborate in order to create the Climate Smart Agriculture Sourcebook. This research provides information about CSA practices.
September 2014	The Global Alliance for Climate Smart Agriculture is founded. GACSA is founded in order for CSA to be adoptable for nations. The three basic pillars of GACSA are: the environment, knowledge and investment. The organization provides nations with the ability to discuss about CSA and plan future development.
May 2015	During the UN Climate Week, the African Climate Smart Agriculture Alliance was created.

<p>22nd of April 2016</p>	<p>The Paris agreement is signed. The Paris Agreement's goal is to prepare the global community for climate change.</p>
<p>26 of December 2016</p>	<p>The Convention to tackle desertification is signed. The main goal of the convention is to tackle one of the most detrimental environmental phenomena: desertification. Most african countries have suffered by desertification and it is a major environmental challenge for LEDCs.</p>

RELEVANT UN RESOLUTIONS, TREATIES AND EVENTS

Paris Agreement/22.04.2016

The Paris Agreement has played a major role in tackling climate change the last few years. The agreement's main objective was reducing carbon dioxide emissions, which has had a positive impact on agriculture.

United Nations Framework Convention on Climate Change/9.5.1992

The UNFCCC is an internationally recognized treaty, which was created in order to ensure stability between human activity and the environment.

Convention to combat desertification/26.12.1996

This convention has been very important for the African continent as a whole, since it has been drafted to protect African nations from desertification, a phenomenon that has been impacted by climate change.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Climate smart agriculture has been introduced to Africa thanks to several initiatives, accountable for most of which was the Food and Agriculture Organization of the United Nations as well as the United Nations Development Program.

The FAO has been funded by the Green Fund in order fund projects in several African nations. It important to mention the existence of the CSA African Alliance. The Program of Mitigation of Climate-Change and Agriculture has helped improve farmers lives and help them adapt to climate change.

The World Agroforestry Center has specifically focused on reducing greenhouse emissions and finding sustainable ways to improve the agricultural sector in Africa. In the southern parts of Africa nations have focused on protecting marine ecosystems since a number of villages have fisheries as their main source of income.

In North Africa where water scarcity is one of the biggest issues the region is facing, nations have started the Near East and North Africa's Water Scarcity Initiative, which makes changes at the legal, agricultural and technical policy in order to ensure the correct water management.

The Food and Agriculture Organization has collaborated with several organizations such as the Mitigation of Climate Change and Agriculture in order to start several initiatives in rural African territories. The Benguela Current Commission has tried to improve fisheries in South Africa, while other organizations have tried to improve dairy farms in the central and east parts of Africa.

POSSIBLE SOLUTIONS

In order for climate smart agriculture to be advanced in Africa there needs to be international and national collaboration, between African Nations and with the international community.

As it has been previously mentioned education plays a huge role in promoting and advancing CSA methods. Therefore, raising awareness and education could be helpful to the environmental opinion of the nation and its citizens. Non-governmental organisations could also help by educating people in remote areas, where educational institutions are not able to support such systems. However, NGOs could also teach adults CSA methods in order for already working and experienced farmers to adopt such practices. Raising awareness about climate change and its impact on agriculture is very important for encouraging the advancement of CSA methods.

Collaboration between governments, local institutions, NGOs and UN agencies is necessary for the widespread use of climate smart farming. Organizations such as the African Union could provide African countries, especially the ones who have not been able to adapt to environmental changes, set guidelines in order for them to implement climate smart strategies. In order to advance already existing environmental friendly

agricultural systems, UN agencies and Most Economically Developed Nations could assist with scientific output and technological advancement.

BIBLIOGRAPHY

FAO.org. www.fao.org/climate-smart-agriculture/on-the-ground/africa/south-africa/en/.

FAO.org. www.fao.org/climate-smart-agriculture/on-the-ground/africa/en/.

FAO.org. www.fao.org/climate-smart-agriculture/on-the-ground/africa/eastern-africa/en/.

FAO.org. www.fao.org/climate-smart-agriculture/on-the-ground/near-east/en/.

FAO.org. www.fao.org/climate-smart-agriculture/on-the-ground/en/.

FAO.org. www.fao.org/climate-smart-agriculture/policies-planning/en/.

FAO.org. www.fao.org/climate-smart-agriculture/en/.

Latest Achievements in Climate-Smart Agriculture.

www.worldagroforestry.org/news/latest-achievements-climate-smart-agriculture.

byEvan Girvetz (CCAFS) and Chris Armitage (World Vision). *The Africa CSA Alliance: Path to Implementation*. 26 Sept. 2015, ccafs.cgiar.org/blog/africa-csa-alliance-path-implementation.

3rd Africa Climate Smart Agriculture Alliance Forum: AUDA. www.nepad.org/event/3rd-africa-climate-smart-agriculture-alliance-forum.

Integrating Climate Change Adaptation into National Agricultural Strategy for Small Holder Agriculture - The Case of Tadla-Azilal Region, Morocco.

www.fao.org/economic/est/issues/est-climatechange/cc-morocco/en/.

2 PhD Positions in Climate Smart Agriculture East Africa Program. 24 Oct. 2018, ccafs.cgiar.org/about/careers-and-calls/2-phd-positions-climate-smart-agriculture-east-africa-program.

World Environment Day 2020 - Institutional Arrangements for the Contribution of CSA to Food Systems. www.fao.org/gacsa/en/.

CGIAR Research Program on Climate Change, Agriculture and Food Security. ccafs.cgiar.org/.

