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CLIMATE SMART AGRICULTURE **EXPERIENCES FROM THE** GLOBAL CLIMATE CHANGE **ALLIANCE TANZANIA**

LESSONS AND RECOMMENDATIONS FROM GCCA TANZANIA

This policy brief describes experiences from five projects that had as objective to strengthen the resilience of vulnerable Tanzanian communities to the adverse effects of climate change and contribute to such as agriculture, livestock and fisheries, water and natural resources. It is based on the experience of the GCCA Tanzania projects in introducing Climate Smart Agriculture interventions in the different agro-eco-logical zones where they were implemented.

The five GCCA Tanzania projects are:

- **Community Forests Pemba** Scalable Resilience: Outspreading Islands of Adaptation (WETE,
- **EcoACT** Eco-Village Adaptation to Climate Change in Central Tanzania (Dodoma)
- **ECOBOMA** A Climate Resilient Model for Maasai
- IGUNGA ECO-VILLAGE PROJECT (Igunga)
- Integrated Approaches for Climate Change Adaptation in the East Usambara Mountains







TANZANIA

KEY MESSAGES

- Most rural communities' livelihoods and income in Tanzania depends on rainfed agriculture, yet rain-fed agriculture is the sector most severely affected by climate change impact.
- Climate smart agriculture interventions are a key adaptation approach for rural farmers but their potential to build climate change resilience is still dependent on a reasonable amount of rainfall, and will reduce significantly in years with extremely low rainfall.
- Some of the CSA interventions require time and resource investments which are not easily accessible to poor households.
- Limited access to and limited affordability of high-quality drought tolerant seeds is one of the main challenges that need to be addressed under CSA policies and programmes.
- Limited capacity and resources (human, financial and technical) at District level restrict Local Government Authorities' (LGAs) support to CSA activities.

KEY RECOMMENDATIONS

- CSA interventions need to be complemented with other adaptation measures, like Savings and Loans groups and alternative income generating activities to strengthen people's resilience, especially in years with extremely low rainfall when CSA measures may be less effective.
- Pro-poor policy approaches are essential to promote CSA technologies and practices to support adaptation by households that are the most vulnerable to impacts of climate change. This should include reducing financial and labour barriers for the adoption of CSA measures.
- Local production of Quality Declared Seeds is important in addressing the availability of affordable quality seeds in rural Tanzania.
- Proven successful CSA measures should be included in district development plans and related budgets, with funding to be provided by Government through dedicated budget lines and codes.

INTRODUCTION

Climate Change is affecting the economy of Tanzania with agriculture being the most vulnerable and severely affected sector (URT, 2012). Given the country's diverse agro-ecological conditions and landscapes, smallholder farmers have sought different ways to build resilience of the food system under increased change and variability in climate.

Country CSA initiatives are aligned with national policies including Tanzania Vision 2025, the Five-Year National Development Plan, National Agriculture Policy 2013, Agriculture Climate Resilient Plan (ACRP) 2014 and the Agriculture Sector Development Programme - Phase 2 (ASDP2). The Tanzania CSA Guideline (2015) provides guidance to stakeholders especially smallholder farmers on a wide range of technologies and practices, but choosing the most effective combination of practices for a specific agro-ecological and sociocultural context remains a challenge.

CSA technologies and practices promoted by GCCA Tanzania

The GCCA Tanzania projects followed an integrated eco-village approach with activities in Agriculture, Water, Forests, and Energy. All projects worked to support CSA with promoted technologies depending on the agro-ecological zone where the project was implemented.

Intervention How it is expected to build Main CSA technologies Main agroclimate resilience promoted by the GCCA ecological zones type projects where applied With increasing rainfall variability, drought tolerant Local production of Semi-arid seeds will increase yield drought tolerant Quality Declared Seeds prospects in years with low rainfall and in case of long drought spells within the rainy Use of drought tolerant season Semi-arid / Plateau crops and seed The practices are generally Land forming: terraces focused on improving water (fanya juu) / contouring / ridges / berms / swales / All availability and bio-fertility for crops (direct CCA) through bunds / vetiver grass soil/water conservation Isolated mountains measures Mulching and use of of Northern manure / composting Highlands / In addition they increase Plateau fertility and/or control pests. Isolated mountains Agro-forestry, mixing of Northern annual crops with perennial Highlands / crops like spices. Coastal Drip irrigation for Coastal (Pemba vegetable gardening island) Push-pull Plateau Improved breeds allow for Improved livestock breeds Semi-arid and arid increased income i.e. increased (cattle, goats, poultry) / Plateau food security. Rangeland monitoring allows for better Semi-arid and arid Improved husbandry management of the rangeland through optimising stocking rates vis-à-vis carrying capacity Semi-arid and arid Rangeland monitoring (the latter likely reducing due / Plateau to climate change). Increase water storage Small earth dams and water availability Semi-arid and arid rehabilitation / for crop production and / Plateau construction livestock to adapt to more frequent droughts and to overall increase in rainfall Wells Plateau unpredictability. Coastal (Pemba Grey water use island)

Table 1 – Overview of CSA technologies promoted by GCCA projects

CHALLENGES

Climate Smart Agriculture is not a cure-all for all agricultural climate change impacts

Climate change is expected to increase the severity, duration frequencies of and extreme events such as droughts and floods, thus affecting agricultural production and threatening lives and livelihoods of millions of poor people (URT, 2017). Adaptation measures should focus on boosting productivity of crops and livestock, especially building the capacity of smallholder farmers to increase their understanding of the impact of temperature rises and rainfall variability on key crops and the measure they can take to adapt to these changing climatic conditions.

Adoption of good CSA practices has shown to increase average yields in years with below average rainfall. However, experience from the GCCA projects indicates that in years with extremely low rainfall (as in the semi-arid and plateau zones in the 2016/2017 rainy season), even correctly implemented CSA practices cannot prevent crop failure. It means that CSA alone is not sufficient to build climate resilience of small-scale farmers in such areas and there will always be a need to complement it with other adaptation strategies such as alternative income generating activities.

Resource intensive CSA technologies remain unaffordable to many farmers

Some of the promoted CSA interventions are very demanding in terms of labour or financial inputs. They require substantial investments including for example financial inputs for promotion of drip irrigation and building sheds for improved goat and chicken breeds, or labour investments for practices like terracing. The investments required for these interventions are not affordable for most poor smallholder farmers and they will need tailored financial and technical assistance to enable them to adopt these practices.



Limited access to appropriate improved seeds

The majority of smallholder farmers has limited access to improved seeds i.e. seeds that are high yielding, fast maturing, drought tolerant, or, for rice, salinity tolerant and/or flood tolerant. This is one of the main reasons for the low crop productivity in the country. In semi-arid areas of Central Tanzania, access to improved seeds is singled out as a major limiting factor to crop production.

The EcoAct Project overcame this problem through the introduction of Quality Declared Seeds. These are high quality seeds produced locally with oversight and quality certification by the Tanzania Official Seed Certification Institute The approach has led to availability and wide scale adoption of affordable high-quality drought tolerant seeds in the project area.

Although the approach was in general very successful, it did face some challenges including the location of fields meant for seed production, since these seeds need to be produced in fields that are isolated from other fields to avoid seed contamination.

Limited resources of districts to implement and up-scale CSA

Although CSA has been accepted widely at country level, the GCCA projects found that climate change issues are not effectively incorporated in the plans (District Agriculture Development Plans – DADPs) and budgets of local government authorities (LGAs). Although all projects managed to have key CSA interventions incorporated in development plans in their target districts, the challenge remains that the capacity and resources (human, financial and technical) at district level are quite limited, restricting the role they can play in effectively supporting and promoting CSA adoption in their district.

POLICY RECOMMENDATIONS

Using pro-poor policy approaches to promote CSA

It is clear from the experience of the five GCCA projects that targeting the poorer and more vulnerable households in communities is not easy. For more effective propoor approaches, it is important to mainstream this element in all aspects of planning and designing of projects and programs. This means for example:

- ensuring poor and vulnerable households are represented when using participatory approaches to design interventions.
- ensuring barriers for poor households for participation in and adoption of proposed interventions are identified.
- reduce such barriers by giving preferential treatment for poor households (e.g. highly subsidised or free inputs) and using low-cost technology where possible.
- if needed, set minimum criteria for percentage of poor households in activities.

To overcome low financial capacity at farmers' level, farm inputs and materials can be made affordable

to poorer farmers in various ways including:

- Facilitating access to finance, such assistance can be in the form of provision of credit at low interest rates, for example through community micro-credit finance institutions.
- Provision of subsidies that are phased out gradually over time.
- Reducing transport costs, particularly for farmers located in enclaved rural areas.

Promote production of Quality Declared Seeds (QDS) at local levels

The introduction of the QDS Production Model by EcoAct has been successful, with most QDS farmers able to adhere to the seed regulations and successfully producing and marketing QDS seeds.

National policies should promote the production of QDS at local level and government and other stakeholders can support this through training of seed producers. It is also important to educate non-seed producers on the requirement not to plant the same crop variety near QDS fields to avoid cross contamination.

Mainstreaming of CSA Interventions in LGAs plans

Mainstreaming of CSA into District Agricultural Development Plans (DADPs) is important to access government funding for implementing and monitoring CSA interventions, in line with National Programmes such as the Agriculture Sector Development Plan-2 (ASDP2). For this to be successful, it needs to go hand in hand with enhancing the capacity of extension staff at local level for the implementation and upscaling of CSA.

National agriculture policies should promote implementation of CSA at all levels to the point of making it mandatory. The Government should also provide specific budget lines and codes for CSA activities.

Promotion of alternative livelihood strategies

Climate Smart Agriculture strategies as a measure to build climate resilience are important but not a panacea for all climate change related impacts. The GCCA experience has shown that in years with extremely low rainfall even drought tolerant seeds and other CSA practices will not be able to produce a yield. In this case, other interventions are required to allow households to diversify away from the dependency on rainfed agriculture. Examples of this type of "indirect" climate change adaptation interventions promoted by GCCA Tanzania include Savings & Loans groups, promoting eco-tourism, beekeeping, leather processing and butterfly keeping. It is important that climate change adaptation policies and programmes recognise the need to mix direct CCA measures like CSA with indirect measures that reduced overall dependency on rainfed agriculture.

References

GCCA Tanzania (2018) Annual Reports and Case Studies URT (2007). National Climate Change Strategy URT (2013). National Agriculture Policy URT (2014). Agriculture Climate Resilience Plan URT (2017). Climate Smart Agriculture Guideline



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