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The Role of Sustainable Farming Practices in Mitigating Climate Change Effects in Bungoma County

County:	Bungoma County		
Sector/s:	Environment, Climate Change & Forestry	**Sub-sector/Theme:**	Land management and climate change
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Target Audience:	County Departments responsible for Environment, Agriculture & Finance, Development partners and County Governments.		
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Introduction (*Context and Challenge*)

Located in the Western part of Kenya, near the border with Uganda, Bungoma County is a region where agriculture is the backbone of the local economy. A proportion of approximately 70% of households are directly engaged in farming, making agriculture a critical pillar of the County's economy. This sector not only ensures food security but also serves as a source of raw materials for agro-industries.

The agricultural landscape of Bungoma County is diverse, with families cultivating a variety of crops. Staple crops such as maize, beans, sweet potatoes, and various vegetables form the core of the County's agricultural output. These crops, primarily grown for household's consumption, often yield a surplus that is sold to meet other family expenses. Besides these staple crops, the County is also recognized for its production of cash crops such as sugarcane, cotton, coffee, sunflower, and tobacco, which significantly contribute to its economy and serve as a source of income for many families.

However, the agricultural sector in Bungoma County is grappling with significant challenges, primarily stemming from the impacts of climate change. These include erratic rainfall patterns and temperature fluctuations, which have resulted in an increase in pest and disease incidences and resistance to pesticides. Furthermore, these climatic hazards, along with moisture stress and variations in planting seasons, have contributed to a decline in crop yields and an increase in post-harvest losses. Moreover, the County has experienced leadership changes within the Department of Environment, leading to interruptions in the consistent execution of planned activities on climate change. Delays in disbursing funds from the FLLoCA Program have also led to the postponement of the planned climate change activities. The increasing population and land fragmentation have led to a decrease in the average size of landholdings, rendering them uneconomical. Unsustainable farming practices, soil erosion, pollution, and climate change have resulted in land degradation. Coupled with the high costs of farm inputs, poor market infrastructure, inadequate storage facilities, and poor governance in cooperative societies, these factors have led to low agricultural productivity

Despite these challenges, the resilience of the farming community in Bungoma County is evident. Farmers have adopted various adaptation strategies for both crop and livestock production in response to the changing climate.

Implementation of the practice (*Solution Path*)

The County Government has enacted various frameworks, including the ***County Climate Change Policy*** and the ***Climate Change Fund* Act**. These provide the necessary legal backing and financial resources to support climate change adaptation strategies. In addition, the County Government has developed a comprehensive ***County Grievance Plan and a Climate Change Information Plan*** to address grievances related to climate change impacts and disseminate vital information to the communities. In addition, the County Government has established a Climate Change Unit (CCU) which is a requirement for all County Governments for eligibility for climate financing. This unit coordinates the implementation of climate change strategies in the County, facilitates the provision of civic education to communities, and ensures their needs are considered in decision- making on matters climate change. The CCU plays a crucial role in the County's efforts to combat climate change.

To operationalize climate change policies and legislation at the grassroots level, the County Government facilitated the formation of the Ward Climate Change Committees as per the mandate of the Climate Change Act. The formation of these committees was done through a vetting process with the ward administrators giving proposals for members as nominated by the communities through public participation fora. These committees collaborate closely with local communities within their respective wards, aiming to implement climate change initiatives and address specific concerns related to climate resilience. Each committee comprises 11 members, with the ward administrator serving as an ex-officio member. These Committees have been able to bridge the gap between policy formulation and on-the-ground action through establishing linkages with the Department of Environment and Climate Change at the Ward level.

Through participatory processes, the Ward Committee members engage with members of the communities to identify urgent climate-related projects and tailor solutions to address specific challenges faced by residents through proposals to the County. Some of the projects prioritized include sustainable agriculture practices, water resource management, afforestation, and disaster preparedness. By ensuring equitable representation of local contexts and needs, they foster grassroots participation and community ownership of climate change projects. Ward committees are instrumental in identifying priorities, mobilizing resources, and supervising the implementation of sustainable farming practices within their respective wards.

Recognizing the valuable contributions of committee members, the County provides stipends and allowances. These financial provisions cover transport and meals, reinforcing their commitment to climate action. Furthermore, the County allocated Ksh. 5 million towards training community members on effective adaptation strategies, including agroforestry, climate-smart agriculture, indigenous tree identification, and proper seedling selection for tree planting.

In response to the challenges posed by climate change, the Kibingei Ward Committee in Kimilili Sub-County has proactively adopted an integrated approach to land management and soil conservation. Their commitment lies in empowering community members through well-structured training programs. These programs feature County officials from the Department of Environment who impart knowledge on climate change initiatives. Due to resource constraints addressed by the County Government,

the community mobilizes its own resources though monthly contributions of Ksh. 50 to cover meals during these training sessions while the County provides transport reimbursement, each community member receiving Ksh. 500. The contributions also support providing transportation services to community members. These services enable visits to observe and learn from high-performing individuals who are effectively combating climate change. The training sessions follow a dual approach: first, County-led training, and then peer learning facilitated by community members who have successfully implemented various climate change methods and practices. Among the methods emphasized by committee members are Sustainable Agriculture Practices, water resource management, afforestation and disaster preparedness.

The following practices have gained widespread acceptance among community members;

- **Syntropic Farming:** This kind of farming draws inspiration from natural ecosystems, particularly forests. Its core objective is to create resilient and productive landscapes by strategically mimicking the growth and succession patterns observed in forests. When land is disturbed or depleted, a process called succession unfolds. Pioneer species, often hardy plants like weeds, rush in first to stabilize the soil, improve its structure, and pave the way for subsequent stages. Over time, intermediate species replace pioneers, and eventually, mature trees dominate the landscape. This method involves keeping the soil covered with organic materials such as leaves, compost, and plant trimmings to protect the soil from erosion and evaporation, thereby conserving water and enriching the soil.

Figure 1: A photo showing Syntropic Farming

- **Soil Conservation Techniques:** The community has adopted techniques such as building terraces to slow down water runoff and planting vegetation with strong root systems, like sugarcane and Napier grass, to prevent soil erosion.

- **Land Restoration and Soil Nutrient Management:** The committee undertook the restoration of degraded lands and implemented soil nutrient management practices. These practices include composting and the use of organic manure to improve soil fertility.

These practices, which aim to address the challenges posed by climate change and ensure sustainable agriculture in the region, have not only enhanced soil health but also fostered a sense of collective responsibility among community members.

Results of the practice (*outputs and outcomes*)

Through collaborative efforts with the Ward Committee, the County Government has facilitated training programs aimed at empowering community members in Kibingei Ward. These programs, tailored to land management and climate change adaptation and focusing on sustainable farming techniques, have provided knowledge and skills to an estimated 2,390 households. At least half of the households trained have embraced soil conservation techniques and land restoration and soil nutrient management sustainable farming practices. This has seen community members begin to shift their focus on livestock nutrition and management, pasture and fodder production, and commodity value addition (milk, bananas and tomatoes) as opposed to the traditional way of planting sugarcane to enhance food security and value addition.

The community members are actively engaged in decision-making processes, advocating for their needs and interests in government policies and programs related to agriculture and climate change through the Ward Committee.

Lessons learnt:

Despite the obstacles posed due to budgetary constraints and delayed fund allocation on proposed projects from the County Government, the Ward Committee has demonstrated resilience and initiative by taking proactive measures to find solutions for climate change adaptation within the Ward. This has been accomplished through undertaking various training programmes and raising contributions towards the same, as well as fostering peer learning. Consequently, the community has been able to

enhance its skills and knowledge, with the Committee aiming to ensure food security for all community members.

Recommendations (*Conclusion*)

1. When transitioning leadership roles within the Department of Environment, establishing clear guidelines is crucial. These guidelines should outline responsibilities, knowledge transfer, and seamless handover procedures. Additionally, appointing interim officers during leadership transitions ensures continuity and momentum in climate change initiatives.
2. Addressing climate change adaptation is paramount. The communities should receive comprehensive training and be provided with simple, yet affordable, adaptation strategies. It is essential that every community member speaks the same language in terms of understanding and addressing climate change, and participates in idea generation and decision-making processes.
3. Seeking partnerships can help drive the agenda and address resource-related challenges.
4. Establish forums where farmers can learn from each other. Some farmers are already excelling and their success can serve as tangible evidence to others that the practices work.
5. Consider Innovative Bottle Gardens: Transforming waste bottles into compact gardens offers a sustainable solution. These gardens, suitable for both indoor and outdoor spaces, use less water due to reduced evaporation. They enable those with limited land resources to cultivate a variety of plants in a small area.

Further reading:

Bungoma County CIDP II: 2018-2022
https://bungoma.go.ke/wp-content/uploads/2022/06/BUNGOMA-COUNTY-CIDP-2018-2022.pdf

EcoAgriculture Partners. (2015). *Policy focus: Integrated landscape management for agriculture, rural livelihoods, and ecosystem conservation: An assessment of experience from Latin America and the Caribbean* (Vol. 2). Retrieved from https://viagroforestry.org/app/uploads/2019/09/ecoagriculture_policyfocus_march2015_vol2-copy.pdf

Photo Gallery

Figure 2: A section of Napier grass plantation to prevent soil erosion

Figure 3: Land restoration and soil nutrient management

Figure 4: Transforming bottles into sustainable gardens for compact living

Figure 5: Community statement for Kimaeti Ward Climate Change Committee