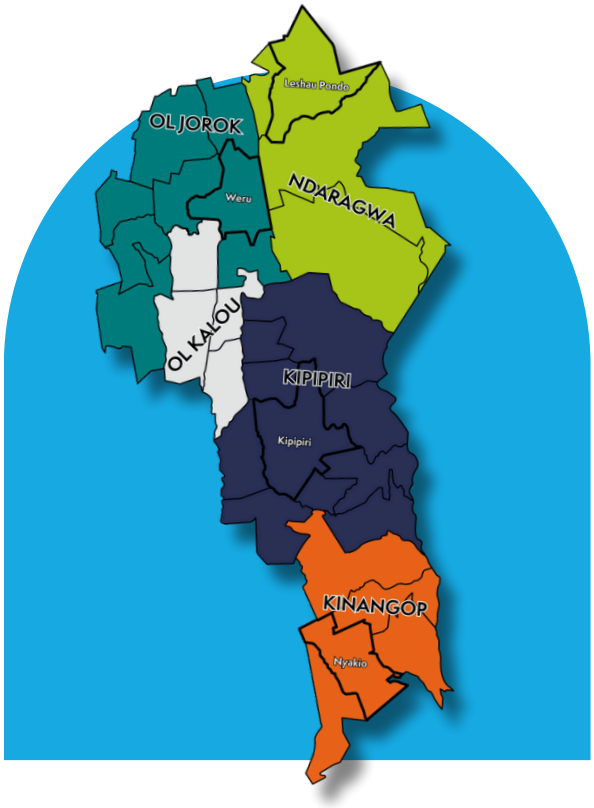
MAY 2024

CLIMATE ACTION IMPLEMENTATION SCHEME

Nyandarua County - Kenya



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WHY THE IMPLEMENTATION SCHEME?

Recognizing the importance of bridging the gap between scientific research, policy formulation, and practical implementation, Clim-Eat, a Dutch-based NGO, conducted a study in Nyandarua County, Kenya, aimed at identifying challenges in implementing climate actions.

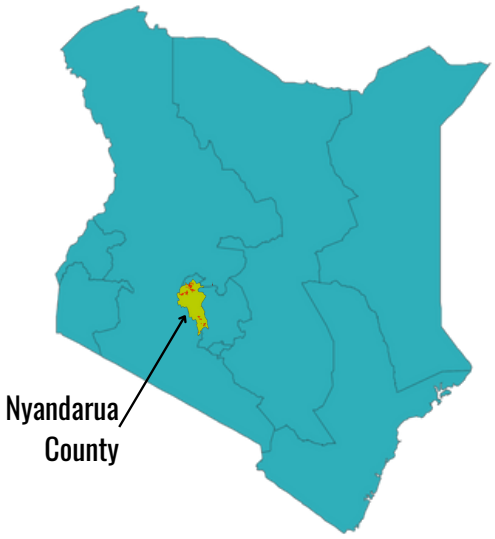
The findings of this study are available for reference here. Following the study, Clim-Eat facilitated a stakeholder dialogue with county officials, local public and private sector stakeholders and local farmers, with the objective of developing a practical and actionable implementation scheme to be executed by the end of the year 2025. The Climate Action Implementation Scheme (CAIS) for Nyandarua County is essential due to the urgent need to address the adverse impacts of climate change on local food systems.

Nyandarua County, located in the highlands of Kenya near the Aberdare Ranges, faces significant challenges including erratic weather patterns, soil degradation, and post-harvest losses. These issues threaten food security and the livelihoods of local farmers. Implementing targeted climate action strategies based on identified priorities as shown in Table 1 is crucial to enhancing the resilience of agricultural practices, reducing environmental degradation, and improving overall food security in the region.

INTRODUCTION

Nyandarua County, situated in the fertile highlands of Kenya, is predominantly an agricultural area. The county's economy relies heavily on farming, with a significant portion of the population engaged in agriculture.

However, climate change poses a substantial threat to this sector, manifesting through unpredictable rainfall, prolonged dry periods, extreme precipitation and increased incidences of pests and diseases (MoALF, 2016). The Climate Action Implementation Scheme aims to address these challenges by promoting sustainable and climate-smart agricultural practices. This scheme is designed to empower farmers, improve productivity, and ensure sustainable food systems in Nyandarua County.



WHAT CONSTITUTES THE CHALLENGE?

Nyandarua County's agricultural sector is grappling with numerous challenges intensified by climate change. Poor soil fertility management has resulted in significant soil degradation, adversely impacting crop yields and long-term sustainability.

High post-harvest losses, particularly in key value chains like potatoes, vegetables, and dairy, are prevalent due to inadequate storage facilities and market linkages (Gitau Ng'ang'a K & Smit W, 2024). Unpredictable weather patterns and prolonged dry periods further disrupt crop and livestock production and threaten food security.

Additionally, farmers have limited access to climate-smart agricultural technologies and practices, which are crucial for adapting to changing climatic conditions. Water scarcity, exacerbated by inadequate water harvesting and irrigation infrastructure, also hampers agricultural productivity, especially during dry seasons.

WHAT IS THE AIM OF THE IMPLEMENTATION SCHEME IN NYANDARUA COUNTY?

The primary aim of the Climate Action Implementation Scheme in Nyandarua County is to enhance the resilience and sustainability of local food systems by implementing a series of targeted climate-smart agricultural practices and infrastructure developments.

This involves::

- Improving soil fertility management;
- Reducing post-harvest losses;
- Promoting drought-tolerant and climate-smart crop varieties;
- Expanding fodder production;
- Enhancing livestock husbandry and health;
- Implementing water harvesting and irrigation systems;
- Establishing agroforestry nurseries;
- Promoting green energy technologies

TABLE 1. DEMAND DRIVEN IMPLEMENTATION SCHEME FOR NYANDARUA COUNTY

Priority Thematic area	**Agriculture**
Priority Climate actions	Recruit 200 Village Based Advisors (VBAs) / Farmers Service Centres (FSCs) to train 15,000 farmers on climate-smart agriculture practices, specifically on integrated soil fertility management (ISFM) to achieve a 60% adoption rate of ISFM among these farmers by the end of the year 2025. This initiative includes recruiting and training the VBAs / FSCs, developing training modules, conducting farmer training sessions, and establishing ongoing monitoring and support systems.
Indicator for success (End-of-2025 Goals)	1. Successfully recruit 200 VBAs / FSCs to train 15,000 farmers 2. Achieve a 60% adoption rate of integrated soil fertility management (ISFM) among the 15,000 trained farmers by the end of 2025.
Cost Estimates (USD)	150.000
Lead stakeholder(s) and Roles	1. Department of Agriculture, Livestock and Fisheries – Overall coordination of training, 2. Cereal Growers Association (CGA) -Recruitment and training of FSCs on integrated soil fertility Management (ISFM)
Supporting stakeholder(s) and Roles	1. International Fertilizer Development Centre (IFDC)- *Recommendation of fertilizers to use* 2. Input suppliers e.g Yara and Baraka for fertilizer – *Supply of inputs e.g fertilizers* 3. Farmer community – *Recipients of the training as well as supply of organic compost manure* 4. Machinery Ring – *Training on tillage to protect the soil, provision of machinery for tillage*
Resources Needed	1.200 FSCs 2.Demo Farms 3.Transport reimbursement 4.Training materials 5.Facilitation allowances 6.soil augers 7.soil bags 8.training costs 9.Machinery for tillage during demos
Estimated Number of Farmer Households to be Impacted	15.000

Priority Thematic area	**Agriculture**
Priority Climate actions	Reduce post-harvest losses by 20% in key value chains such as potatoes, vegetables, and dairy by constructing one cold storage aggregation center in each of three selected wards. Specifically, one center will be dedicated to milk, while the other two will serve potatoes and vegetables. These three centers will act as pilot projects; if successful, this initiative can be scaled to additional wards. Additionally, there is a need to establish market linkages for these products to ensure efficient distribution and minimize spoilage.
Indicator for success (End-of-2025 Goals)	1. Successfully construct three cold storage aggregation centers (one per ward), evenly distributed with one center designated for milk and two for potatoes and vegetables. 2. Achieve a 15%- 20% reduction in post-harvest losses of potatoes, vegetables and dairy products
Cost Estimates (USD)	300.000
Lead stakeholder(s) and Roles	1. AgroTech Plus- Construction of the cold stores, management of the cold stores, maintenance of the cold stores 2. Department of Agriculture, Livestock and Fisheries – *Advocacy, training and mobilization of farmers*
Supporting stakeholder(s) and Roles	Cereal Growers Association (CGA) – Capacity building through FSCs
Resources Needed	1. Capital 2. Land for lease 3. Permits 4. Human Resources 5. Cold stores
Estimated Number of Farmer Households to be Impacted	30.000

Priority Thematic area	**Agriculture**
Priority Climate actions	Promote climate-smart crop varieties, including drought-tolerant crops, targeting 12,500 farmers (500 farmers per ward) by providing knowledge transfer and subsidizing the prices of these varieties.
Indicator for success (End-of-2025 Goals)	1. Number of farmers adopting climate-smart crop varieties, including drought-tolerant crops, reaching at least 12,500 farmers (500 per ward) by the end of 2025. 2. A reduction in the price of climate-smart crop varieties due to subsidies, with at least 80% of the targeted farmers benefiting from the reduced costs.
Cost Estimates (USD)	250.000
Lead stakeholder(s) and Roles	Department of Agriculture, Livestock and Fisheries – Extension, Overall coordination
Supporting stakeholder(s) and Roles	1. Cereal Growers Association (CGA) - Extension through Farmers Service Centres (FSCs), 2. National Agricultural Value Chain Development Project (NAVCDP) - Funding support of micro projects on crops 3. Kenya Agricultural & Livestock Research Organization (KALRO) - Research on crop varieties, supply of planting material 4. Kenya Meteorological Department (KMD) - Weather advisory services
Resources Needed	1. Capital 2. Seeds 3. Seedlings 4. Human resources 5. Demo Farms 6. Transport reimbursement 7. Training materials 8. Facilitation allowances
Estimated Number of Farmer Households to be Impacted	12.500

Priority Thematic area	**Agriculture**
Priority Climate actions	Promote fodder crops among 12,500 farmers (500 farmers per ward) by expanding the acreage dedicated to fodder production by 3125 acres as well as providing relevant training. Fodder species to be cultivated include super napier, desmodium, Lucerne, vetch, and rhode grass.
Indicator for success (End-of-2025 Goals)	Achieve an increase of 3125 acres in the area dedicated to fodder production among 12,500 farmers.
Cost Estimates (USD)	350.000
Lead stakeholder(s) and Roles	Department of Agriculture, Livestock and Fisheries – *Extension and Overall coordination*
Supporting stakeholder(s) and Roles	1. Cereal Growers Association (CGA) - *Extension through Farmers Service Centres (FSCs)* 2. National Agricultural Value Chain Development Project (NAVCDP) - *Funding support of micro projects on livestock & crops* 3. Kenya Agricultural & Livestock Research Organization (KALRO) - *Research on good fodder varieties, supply of planting material* 4. Kenya Meteorological Department (KMD) - *Weather advisory services*
Resources Needed	1. Land 2. Human resources 3. Fodder seedlings/seeds 4. Demo farms 5. Transport reimbursement 7. Training materials 8. Facilitation allowances
Estimated Number of Farmer Households to be Impacted	12.500

Priority Thematic area	**Agriculture**
Priority Climate actions	Enhance livestock husbandry and health for 12,500 farmers (500 farmers per ward) by providing 80,000 Artificial Insemination services for dairy cattle and advocate for adoption of zero grazing units.
Indicator for success (End-of-2025 Goals)	1. Successful administration of 80,000 artificial insemination services among the targeted 12,500 farmers with at least 60% successful conception rate. 2. Establishment of at least 250 zero grazing units (10 units per ward) to serve as model farms for the other farmers.
Cost Estimates (USD)	350.000
Lead stakeholder(s) and Roles	Department of Agriculture, Livestock and Fisheries – *Mobilization of farmers, veterinary services and capacity building.*
Supporting stakeholder(s) and Roles	1. Kenya Veterinary Board (KVB) - *Regulation of animal artificial insemination and vaccination* 2. Kenya Animal Genetic Resource Centre (KAGRIC) - *Supply of semen and liquid nitrogen.* 3. Private service providers - *Vet services and Artificial Insemination (AI).*
Resources Needed	1. Livestock semen 2. Improved animal breeds 3. Veterinary officers 4. Materials for construction of zero grazing units 5. Training related costs
Estimated Number of Farmer Households to be Impacted	12.500

Priority Thematic area	**Agriculture and Environment**
Priority Climate actions	Implement water harvesting for irrigation targeting 2,500 farmers (100 farmers per ward) by subsidizing the purchase and installation of tanks, providing drip kits, excavating water pans, and setting up roof water harvesting systems.
Indicator for success (End-of-2025 Goals)	1. Successfully install water tanks, drip kits, and roof water harvesting systems for 2,500 farmers, with at least 90% of the installations completed and operational by the end of the project period. 2. Excavate and fully utilize water pans for 100 farmers per ward, resulting in a measurable increase in irrigation capacity and crop yield improvements for participating farmers.
Cost Estimates (USD)	500.000
Lead stakeholder(s) and Roles	1. Department of Agriculture, Livestock and Fisheries - *Capacity building on irrigation systems* 2. Department of Water Environment, Climate Change and Natural Resources - *Provision of designs, piping and quality controls.*
Supporting stakeholder(s) and Roles	1. CGA – *Capacity building through FSCs* 2. NAVCDP – *Support in funding directed towards water irrigation system installation* 3. Sunculture - *Supply and installation of drip irrigation kits*
Resources Needed	1. Dam liners 2. Excavation of water pans 3. Water tanks 4. Drip lines 5. Pipes 6. Training related costs
Estimated Number of Farmer Households to be Impacted	2.500

Priority Thematic area	**Environment**
Priority Climate actions	Establish 125 agroforestry nurseries (5 per ward) to raise 12,500,000 seedlings. This will involve selecting suitable locations, constructing nursery infrastructure, procuring seeds and materials, training staff, and setting up seedling production processes to ensure a sustainable supply of high-quality agroforestry seedlings for local farmers.
Indicator for success (End-of-2025 Goals)	1. The successful establishment and operation of 125 agroforestry nurseries, each fully equipped with the necessary infrastructure and staffed with trained personnel. 2. The production and distribution of 12,500,000 high-quality agroforestry seedlings to local farmers.
Cost Estimates (USD)	250.000
Lead stakeholder(s) and Roles	1. Department of Water, Environment, Climate Change and Natural Resources – *Overall coordination, regulation, provision of permits and licenses* 2. Department of Agriculture, Livestock and Fisheries – *Capacity building on agro forestry practices*
Supporting stakeholder(s) and Roles	1. Department of Water, Environment, Climate Change and Natural Resources – Overall coordination, regulation, provision of permits and licenses 2. Department of Agriculture, Livestock and Fisheries – Capacity building on agro forestry practices
Resources Needed	1. Land 2. Seeds/ Seedlings 3. Human resources 4. Permits 5. Tree nurseries
Estimated Number of Farmer Households to be Impacted	140.000

Priority Thematic area	**Environment**
Priority Climate actions	Promote green energy technology for 5,000 farmers (200 farmers per ward) by subsidizing installation of 1,000 biogas systems (40 per ward), 1,000 solar panels (40 per ward), and distribution of 5,000 clean cooking jikos (200 per ward). This initiative involves assessing and selecting eligible farmers, coordinating the procurement and installation of biogas systems and solar panels, and distributing clean cooking jikos. Additionally, provide training and support to farmers on using and maintaining these technologies to ensure successful adoption and long-term benefits.
Indicator for success (End-of-2025 Goals)	1. Success is indicated by reaching 1,000 biogas systems, 1,000 solar panels, and 5,000 clean cooking jikos installed and in use. 2. At least 90% of the farmers demonstrating proper usage and maintenance of the biogas systems, solar panels, and clean cooking jikos within the first year.
Cost Estimates (USD)	900.000
Lead stakeholder(s) and Roles	1. Sistema. Bio – *Installation of Biogas* 2. Akili Holdings – *Supply of cooking stoves, capacity building on carbon credits* 3. M-kopa – *Supply of solar kits*
Supporting stakeholder(s) and Roles	1. Department of Water, Environment, Climate Change and Natural Resources – *Capacity building on renewable energy* 2. Department of Agriculture, Livestock and Fisheries – *Capacity building on the use of bio-slurry fertilizer from biogas*
Resources Needed	1. Biogas installation materials 2. Solar kits 3. Clean cooking jikos 4. Human resources 5. Training costs
Estimated Number of Farmer Households to be Impacted	5.000

ANNEX 1 - PROPOSED WORK PLAN

How is the Implementation scheme developed?

Stakeholder meetings with government officials, community leaders, farmers, NGOs, and other stakeholders were organized in which priority actions, project objectives, roles, and responsibilities were determined.

How do we propose the Implementation to be executed?

1. Project Initiation Phase:
- Identify specific priority projects to be implemented from the implementation scheme.
- Establish Project Team: In liaison with the lead partner, assign roles and responsibilities to team members.
- Kick-off Meeting: Convene a meeting with lead and supporting partners to discuss project objectives, timelines, and deliverables.
- Develop Project Charter: Document project scope, objectives, stakeholders, and challenges.

2. Monitoring and Evaluation of Existing Projects:
- Review previous projects: Evaluate the effectiveness of past initiatives related to water and agriculture.
- Identify Key Learnings: Review successes, challenges, and lessons learned from previous projects.

3. Mapping and Identification Phase:
- Geographic Mapping: Identify and map areas in Nyandaruawhere actions will be implemented.
- Household Identification: Collaborate with local authorities to identify farmers and households in target areas.

4. Procurement Phase:
- Develop Bid Documents: Prepare documents outlining project requirements, scope of work, and evaluation criteria.
- Call for Bidders: Issue requests for proposals (RFPs) to potential vendors and contractors in coordination with partners.
- Bid Evaluation: Evaluate bids received and select vendors based on criteria including expertise, cost, and capacity.

5. Project Execution:
- Partner Collaboration: Work closely with lead and supporting partners to implement project activities.
- Capacity Building: Provide training and support to farmers and households in water management and agricultural practices.
- Infrastructure Development: Implement water conservation measures and agricultural interventions in targeted areas.

6. Monitoring and Evaluation Phase:

- Progress Tracking: Regularly monitor project activities and milestones to ensure alignment with objectives.
- Impact Assessment: Evaluate the efficacy of implemented measures on water conservation and agricultural productivity.
- Stakeholder Feedback: Solicit feedback from farmers, households, and partners to identify areas for improvement.

7. Reporting and Documentation:

- Progress Reports: Compile regular progress reports detailing project activities, achievements, and challenges.
- Lessons Learned: Document key insights and recommendations for future project implementation.
- Final Evaluation: Conduct a comprehensive evaluation of project outcomes and impact.

8. Knowledge Sharing and Dissemination:

- Best Practices Sharing: Share success stories and best practices with stakeholders and the wider community.
- Sustainability Planning: Develop strategies for sustaining project interventions beyond the implementation period.

9. Project Closure:

- Final Review: Conduct a final review of project deliverables and outcomes.
- Stakeholder Engagement: Engage stakeholders in a discussion on project achievements and next steps.
- Closure Report: Prepare a comprehensive closure report summarizing project activities, outcomes, and recommendations.

10. Follow-up and Continuous Improvement:

- Follow-up Actions: Address any outstanding issues or follow-up actions identified during project closure.
- Continuous Learning: Continuously learn from project experiences and adapt strategies for future projects.
- Feedback Mechanism: Establish a feedback mechanism to gather input from stakeholders for ongoing improvement.

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