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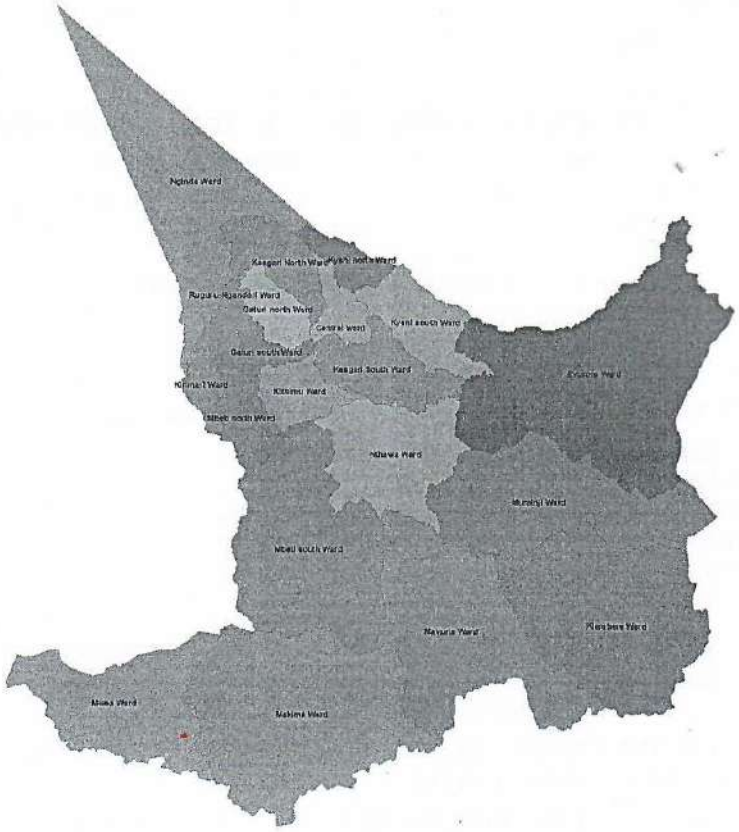
EMBU COUNTY

PARTICIPATORY CLIMATE RISK ASSESSEMENT REPORT (PCRA)



REPUBLIC OF KENYA

THE WORLD BANK

MAY, 2023

EMBU COUNTY

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DEFINITION OF TERMS

Adaptation-Changes made in response to the likely threats and opportunities arising from climate variability and climate change.

Asset(s)-Something that has potential or actual value to an organization.

Climate-Average weather based on the statistical description in terms of the mean and variability of relevant quantities, such as temperature, precipitation and wind, over an extended period of time.

Climate change-A statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer).

Exposure – The presence of people, livelihoods, species or ecosystems, environmental functions, services and resources, infrastructure, or economic, social or cultural assets in places and settings that could be adversely affected (IPCC AR5).

Impact- The effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, I ncluding floods, droughts and sea level rise are a subset of impacts called physical impacts

Infrastructure-Assets and systems of assets that support our society

NOTE: This includes buildings, open space systems, public domain areas and associated landscape infrastructure, and transport, water, power and communications assets.

Mitigation-Reducing causes of climate change

Resilience-Adaptive capacity of an organization, a community,or an individual to a copmlex and changing environment.

Risk The potential for loss, damage or destruction of an asset as a result of a threat exploiting a vulnerability. Lying at the intersection of assets, threats (actual, conceptual, or inherent), and vulnerabilities.

Risk analysis-Process to comprehend the nature of risk and to determine the level of risk.

Risk assessment- A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend (UN, 2004)

Vulnerability-Degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.

ACRONYMS

PCRA	Participatory Climate Risk Assessment
UNFCCC	United Nations Framework Convention for Climate Change
NDCs	Nationally Determined Contributions
IDPs	County Integrated Development Plans
EMCA	Environmental Management Coordination Act
FLLoCA	Financing Locally-Led Climate Actions
NRM	Natural Resource Management
SDGs	Sustainable Development Goals

FOREWORD

Climate change stands as one of our most pressing global challenges, exerting far-reaching impacts on communities, ecosystems, and economies. Much like other regions, Embu County is not exempt from climate change's effects. As we witness increasingly unpredictable weather patterns, rising temperatures, and more frequent extreme events, we must comprehend and address the climate risks that confront us.

I am pleased to present the Participatory Climate Risk Assessment (PCRA) Report for Embu County. This report represents a comprehensive analysis of our County's current and future climate risks, along with an evaluation of our existing adaptation strategies and their efficacy. Its creation has culminated several months of collaborative efforts involving stakeholders from diverse sectors, community representatives, government agencies, and technical experts.

The PCRA report assumes a pivotal role as a tool to inform our decision-making processes and steer our endeavours towards building climate resilience in Embu County. It grants us a profound comprehension of the risks we face, the vulnerabilities present in our communities, and the opportunities for effective adaptation. This report aims to bolster our capacity to anticipate, respond to, and recover from climate-related events.

Embu County stands steadfast in its commitment to climate resilience and sustainable development. We acknowledge that addressing climate risks necessitates a multifaceted approach, which entails strategic investments, community engagement, policy reforms, and partnerships. This report is a testament to our dedication to evidence-based planning and decision-making as we strive to safeguard our communities and natural resources.

I want to extend my heartfelt gratitude to all the individuals, organizations, and communities who actively participated in the PCRA process. Your invaluable input, knowledge, and expertise have shaped the findings and recommendations detailed in this report. Furthermore, I would like to acknowledge the technical support and funding generously provided by the World Bank, whose assistance has been instrumental in conducting this assessment.

I implore all stakeholders, ranging from government agencies to civil society organizations and community members, to thoroughly examine the findings of this report and join hands in implementing the recommended adaptation strategies. Together, we can forge a resilient Embu County capable of withstanding the challenges a changing climate poses, thereby ensuring a sustainable future for generations to come.

Let us seize this opportunity to construct a climate-resilient County where our communities thrive, our ecosystems flourish, and our economy prospers. The journey towards climate resilience commences now, and through collective action, we can effect a lasting and meaningful difference.

H.E. CECILY MBARIRE MGH

GOVERNOR, EMBU COUNTY GOVERNMENT

ACKNOWLEDGEMENT

Embu County appreciates various stakeholders whose contributions was significant and critical in the processs leading to the generation of this report.

First and foremost, we would like to extend our most profound appreciation to the residents of Embu County, whose active participation and invaluable insights have been instrumental in shaping the PCRA report. The enthusiasm and commitment demonstrated by the community members throughout the engagement process have significantly enriched our understanding of the climate risks faced by the County. Your willingness to share your knowledge, experiences, and concerns has been crucial in developing appropriate adaptation strategies.

Our appreciation goes to both Government and Non-government actors which includes Local administration for their role in mobilization of community members, the Ward Climate Change Planning Committees (WCCPC) for coordination, community members and leaders for their role in providing critical information for this process. We also wish to thank other players including CBOs, FBOs, Farmer Groups, WRUAs, CFAs and other youth groups all whose efforts cannot go unrecognized. Your dedication to addressing climate change and your commitment to ensuring the well-being of the County's residents are commendable.

We sincerely appreciate the non-governmental organizations (NGOs) and civil society groups operating in Embu County. Your expertise, on-the-ground experience, and tireless efforts have been invaluable in shaping the PCRA report and identifying priority areas for intervention. Your dedication to improving the County's resilience and supporting vulnerable communities is deeply appreciated.

We would also like to acknowledge the contributions of academic and research institutions that have provided technical expertise, data, and analysis throughout the PCRA process. Your commitment to evidence-based approaches and rigorous analysis has enhanced the credibility and reliability of the findings and recommendations presented in the report.

Further, we thank development partners, international organizations, donors, and development agencies for their financial support and technical assistance. Your financial support has made the roll out of the PCRA a success and we believe this support will continue to play a crucial role in supporting the County's climate adaptation efforts. Your commitment to addressing climate change globally and supporting local communities is commendable.

Lastly, we thank the dedicated team of professionals from The University of Embu, The Meteorological Department, The National Drought Management Authority (NDMA) who have worked tirelessly to compile and analyze the data, draft the report, and coordinate the participatory processes. Your expertise, diligence, and commitment to producing a comprehensive and actionable report have been exemplary.

This PCRA report for Embu County represents a significant milestone in our collective efforts to address climate change and enhance resilience. It is a testament to the power of collaboration, participation, and multi-stakeholder engagement. We are confident that this report's findings, recommendations, and strategic actions will guide the County's decision-making processes, inform policy development, and enable effective climate adaptation.

ENG FLORENCE MUSYOKA, CECM WATER, IRRIGATION, ENVIRONMENT, CLIMATE CHANGE & NATURAL RESOURCES

DR. NICHOLAS KUNGA NGECE, COUNTY CHIEF OFFICER, ENVIRONMENT, CLIMATE CHANGE AND NATURAL RESOURCES

EXECUTIVE SUMMARY

This Participatory Climate Risk Assessment (PCRA) offers a comprehensive evaluation of the current and future climate risks faced by Embu County. It also provides recommendations for effective climate risk adaptation and resilience-building. The findings of the PCRA indicate that the county is exposed to various climate risks, such as rising temperatures and unpredictable rainfall patterns, which pose significant challenges to ecosystems, and vulnerable communities. Therefore, it is crucial to enhance the county's resilience through prioritized actions identified by stakeholders.

These actions include strengthening Climate Information and Early Warning Systems by investing in improved climate monitoring and early warning capabilities. This involves enhancing weather forecasting, expanding climate data collection networks, and establishing efficient communication channels. The water sector is also a priority and entails implementing Integrated Water Management Strategies for sustainable water use, conservation, and efficient allocation. This may involve exploring effective water harvesting techniques, promoting water-efficient irrigation practices, and enhancing water storage infrastructure.

Promoting Climate-Smart Agriculture is also important for building resilience in the county. This includes supporting farmers in adopting climate-smart practices such as agroforestry, conservation agriculture, and crop diversification to improve soil health, water management, and crop productivity. Disaster Risk Reduction and Management are additional measures to consider, involving investments in risk reduction and early warning systems to mitigate the impacts of extreme weather events. This may include improving drainage systems, enhancing flood mapping and zoning, and developing community-based disaster preparedness and response plans.

Mainstreaming Climate Change Adaptation into Planning and Decision-Making across different sectors is essential. This requires incorporating climate resilience criteria into infrastructure design, land-use planning, and sectoral policies. Empowering and supporting vulnerable communities is also crucial, providing access to climate information, strengthening community-based organizations, and promoting income-generating activities to enhance adaptive capacity.

Furthermore, it is important to strengthen Institutional Capacity and Coordination by enhancing the capacity of government agencies, local institutions, and stakeholders to address climate risks effectively. This may involve developing training programs, establishing coordination mechanisms, and promoting platforms for knowledge-sharing. These recommendations and priority actions provide a roadmap for enhancing climate resilience in Embu County. Their successful implementation requires a collaborative approach involving government agencies, communities, civil society organizations, and development partners. Adequate funding, policy support, and institutional coordination are essential for their implementation. By taking these actions, Embu County can enhance its resilience to climate risks, protect livelihoods, conserve natural resources, and ensure a sustainable future for its residents. The PCRA report serves as a valuable tool for decision-makers, providing the necessary information and guidance to inform policies, programs, and investments aimed at addressing climate risks and promoting climate resilience.

1.0 CONTEXT OF THE PARTICIPATORY CLIMATE RISK ASSESSMENT (PCRA)

1.1 Background

This is a report prepared following a participatory process where communities are involved in a series of engagement by use of various tools that help to identify their risks, hazards, capacity as well their adaptation strategies. The report is a culmination of the PCRA process and it helps to outline the climate change challenges of the communities and their priority actions that make them more resilient to climatic hazards/ risks both in the present and the future. The report highlights community climate stressors such as erratic rainfall and extreme temperatures, and identifies those that stand out as the key hazards and risks to their livelihoods.

1.1.1 PCRA Scope

The scope of the Participatory Climate Risk Assessment (PCRA) covered the entire County of Embu (Figure 1). The spatial scale of the assessment was the entire Embu County and temporal scale of analysis depended on ward history and climate data for the last 30 years. This allowed for a comprehensive understanding of climate patterns and their impacts over a significant period of time.

To ensure an all-rounded assessment, expertise was drawn from various professional backgrounds. These included agricultural and environmental experts, social science professionals, administrators, climate scientists, community groups (such as the elderly, women, youths, and people with disabilities), economists, and statisticians. By involving a diverse range of experts, the PCRA process could benefit from their specialized knowledge and perspectives, contributing to a more comprehensive and informed assessment. Expertise were also drawn from the agricultural, environmental and social science professionals, adminstrators, Climate Scientists, community groups (elderly, women, youths, People with Disabilities), economists and statisticians.

The scope also provided for intensive community discussions, scenario analysis, focused groups discussions, analysis of risks and hazards, capacity and vulnerability assessment as well as analysis of various PCRA Tools. The spatial coverage of the PCRA process is detailed in Table 1.

Table 1.1: Sub counties and Wards covered by the PCRA process

Sub-County	**Ward**
Manyatta	Ruguru-Ngandori
	Kithimu
	Nginda
	Mbeti North
	Kirimari
	Gaturi South
Runyenjes	Gaturi North
	Kagaari South
	Runyenjes Central
	Kagaari North

	Kyeni South
	Kyeni North
Mbeere South	Mwea
	Makima
	Mbeti South
	Mavuria
	Kiambere
Mbeere North	Nthawa
	Muminji
	Evurore

Source: KNBS, 2019

1.2 Policy Context

There exists various international, national and sub-national legal and policy framework on climate change that seeks to govern the integration and interaction of various climate change interventions at the various levels in ensuring each level contributes to the Nationaly Determined Contribution (NDC) as outline in the Paris Agreement 2016. The climate legal and policy frameworks are anchored on the United Nations Framework Convention On Climate Change (UNFCCC). The UNFCCC sets the basic legal framework and the principles for internation climate change corporation with the aim of enforcing compliance with NDCs.

The Kyoto Protocol was established with an aim of ensuring emmissions reduction obligations where the obligations were enforced on parties to reduce the Green Houses Gases by a certain amount within a specified time. The Paris Agreement was adopted in December 2015 during COP 21 as a framwework to govern all parties to commit to participate in taking concrete measures against climate change.

The International Climate Change Policy outlined the adaptations to reduce risks and vulnerabilities to climate change hazards, developed in 2012 the main goal is to ensure the industrialized nations get more involved in addressing the issues of climate change.

Since the inception of the UNFCCC and the formulation of international policies to address climate change impacts, Kenya has actively engaged in the process of addressing climate change challenges. The country has committed to safeguarding the climate system for present and future generations by supporting the UNFCCC process, ratifying the Kyoto Protocol in 2005, and participating in continental and regional climate change initiatives. Additionally, Kenya's Constitution of 2010 establishes a legal commitment to achieve ecologically sustainable development, providing a solid foundation to tackle the challenge of climate change while striving to accomplish the development goals outlined in Kenya Vision 2030.

The country is responding to climate change challenges by domesticating legislation, policies, and strategies at National level that are aligned with international climate policies and agreements. Kenya has formulated various climate change policies and legislations to address and to govern interventions related to climate change Climate Change Response Strategy 2010, Climate Change

Act 2016, National Adaptation Policy Programme 2015-2030, National Climate Change Action Plan 2018-2023, National Climate Change Policy, Energy Act, and Nationally Determined Contributions (NDCs). These efforts are commendable, but the key challenge lies in cascading these national efforts to the County and local communities.

Kenya Vision 2030, as the blueprint for national transformation under the social pillar, envisions widespread prosperity by building a just and cohesive society that experiences equitable social development within a clean and secure environment. This pillar aims to improve the quality of life for all Kenyans through various human and social welfare projects and programs. The basis of this transformation lies within eight key social sectors: Education & Training, Health, Water & Sanitation, Environment, Housing & Urbanization, Gender, Youth, Sports & Culture. Additionally, special attention is given to Kenyans with disabilities and previously marginalized communities.

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for promoting peace and prosperity for people and the planet, both in the present and the future. Central to this agenda are the 17 Sustainable Development Goals (SDGs), which urgently call for action from developed and developing nations through a global partnership. It is crucial to simultaneously address poverty and other deprivations, improve health and education, reduce inequality, foster economic growth, tackle climate change, and preserve our oceans and forests.

According to the Constitution of Kenya 2010, specifically under the chapter on Environment, it is stated that every individual has the right to a clean and healthy environment. This includes the right to protect the environment for the benefit of present and future generations through legislative and other measures, as outlined in Article 69. The Country's Climate Change Action which draws from the national climate change action plan 2018-2022. It seeks to address the development agenda by providing mechanisms and measures to achieve low-carbon climate-resilient development with a focus on adaptation at the County level.Furthermore, individuals and legal entities in Kenya and Embu County have obligations to fulfill concerning the environment, as stated in Article 70. This calls for action on climate change by both legal entities and individuals within Kenya and Embu County.

The Embu County Government has established various legislations and frameworks to govern the climate change interventions especially at community levels inorder to achieve a climate resilient community with greater adaptive capacity. The County Climate Change frameworks include: The County Action Plan serve as a framework for the County to deliver its adaptation plans and adhere to the nationally determined contributions under the Paris Agreement of the United Nations Framework Convention for Climate Change (UNFCCC). It is a five-year plan that guides the mainstreaming of adaptation and mitigation actions across the County's sectors. Furthermore, it forms the basis for the engagement and participation of key stakeholders, agencies, development partners, the private sector, civil society, and the general public.

The County Climate Change Fund Bill 2016 which was approved by the County Assembly seeks to govern the framework for the Financing Locally-Led Climate Actions (FLLoCA) program was created. The development objective of this program is to implement locally-led climate resilience

actions and enhance the capacity of the County and national government in managing climate risks.

To safeguard sustainable development, the Embu County Government has formulated the County Climate Change Framework Policy. This policy clearly and concisely outlines the County's response priorities in addressing climate variability and change at the local level. By implementing this framework, the County aims to mitigate the adverse effects of climate change and ensure its residents' resilient and sustainable future.

The County Climate Change policy provides guidelines to sustainable Natural Resource Management (NRM) as well as climate change resilient activities in the County. Embu County Government has institionalised climate change unit that is responsible for all climate change matters in the County.

At the community level the County has established Ward Climate ChangePlanning Committees (WCCPC)in every ward which plays the role of coordinating all climate change interventions within the community by acting as trhe liason between the community and the County government.

1.2.2 The Rationale for a County Climate Change Framework Policy

The rationale for a County Climate Change Framework Policy in Embu County is based on several factors and their relationship to other policies, such as the Environmental Management and Coordination Act (EMCA) and other related policies. Here are the key points:

Commitment to ecologically sustainable development: The Constitution of Kenya emphasizes the importance of ecologically sustainable development. Climate change poses a significant challenge to achieving these sustainable development goals. Therefore, a climate change policy is necessary to address the specific challenges posed by climate change and ensure the County's development is in line with sustainable practices.

Recognition of vulnerability: Embu County, like many other counties in Kenya, is vulnerable to the impacts of climate change. The threats and risks associated with climate change can hinder the achievement of long-term development goals. Therefore, a coordinated and effective response is needed to mitigate and adapt to these challenges.

Integration of climate change considerations: The County Climate Change Framework Policy aims to adopt a mainstreaming approach, ensuring that climate change considerations are integrated into the development planning, budgeting, and implementation processes at the County level. This integration ensures that climate change is not treated as a standalone issue but rather incorporated into all relevant policies and actions.

Coherence and coordination: Prior to the development of this policy, various initiatives to address climate change in Embu County and Kenya as a whole have been reactive and uncoordinated. The County Climate Change Framework Policy aims to provide a coherent and integrated response to climate change, ensuring that initiatives are proactive, well-coordinated, and aligned with each other.

Transition to a low-carbon climate-resilient economy: The policy recognizes the economic, social, and environmental benefits of transitioning to a low-carbon climate-resilient economy. By aligning development pathways with climate resilience and mitigation, the policy aims to capture these benefits and promote sustainable economic growth.

Framework for specific interventions: The policy serves as a framework to guide the development and implementation of specific, detailed, and costed climate change interventions. These interventions will be outlined in regular and periodic Climate Change Action Plans, which will be integrated into the County's Integrated Development Plans (CIDPs). This ensures that climate change considerations are incorporated into the County's overall development planning process.

Enhancing adaptive capacity and building resilience: The County Climate Change Framework Policy aims to enhance the County's adaptive capacity and build resilience to climate variability and change. By taking proactive measures to address climate change, the policy seeks to safeguard the well-being of the County's citizens, protect their property, and ensure the County's overall prosperity in the face of a changing climate.

In context, the County Climate Change Framework Policy in Embu County aims to provide a coordinated, proactive, and integrated response to climate change, ensuring the County's development is sustainable, resilient, and aligned with the national and global climate change goals. It integrates climate change considerations into existing policies and actions, while also providing a framework for specific climate change interventions and action plans.

1.3 Purpose of the PCRA Report

The purpose of the Participatory Climate Risk Assessment (PCRA) report is to outline and highlight the climate stressors, vulnerabilities, and risks faced by communities and other actors within the ward in relation to climate change. The report aims to achieve the following specific objectives:

Identify climate stressors: The PCRA process helps to identify and understand the climate stressors experienced by the community, such as changes in rainfall patterns or temperature. It highlights the specific hazards that the ward is facing and contributes to the understanding of vulnerability.

Provide assessment of vulnerability and risk: The report shows who or what is vulnerable or at risk within the County in relation to climate-related hazards. This includes identifying vulnerable resources such as agricultural investments, livelihoods, or infrastructure, and understanding the specific vulnerabilities they face.

Shows the location and timing of vulnerability: The PCRA report identifies where vulnerable people, ecosystems, infrastructure, and resources are located within the County . It also highlights when these vulnerabilities occur or are likely to occur, such as during dry periods or specific seasons.

Identify factors contributing to vulnerability: The report explores the internal and external factors that contribute to the vulnerability of specific groups of people or resources. This may include factors like poor community cohesion or specific social and economic conditions that exacerbate vulnerability.

Documents existing actions and their effectiveness: The PCRA process examines the actions that people and communities are already taking to reduce their vulnerabilities to climate change. It evaluates the effectiveness of these actions in building resilience and reducing risks.

Evaluate climate stressors in the context of development: The report assesses the extent to which climate stressors, such as extreme temperatures and precipitation that act as barriers to development compared to non-climate stressors like population growth. This report therefore helps in understanding the prioritized interventions for the purpose of resource allocation.

Documents community prioritized adaptation options: Based on the findings of the PCRA, the report helps prioritize options for adaptation to the effects of climate variability and change. It identifies interventions and strategies that can enhance resilience and reduce vulnerability within the County.

The PCRA was chosen as the preferred method of climate assessment because it allows those affected by climate hazards to understand their challenges and assess their own needs. It encourages participants within the ward to propose actions that can make them more resilient and seek external assistance from partners, government, and other stakeholders. The PCRA process helps generate ward-level climate actions that can inform the County Climate Change Action Plan (CCAP) and contribute to more effective and targeted climate change adaptation and mitigation efforts.

1.3.1 Principles of PCRA Process

The PCRA process was guided by a set of principles to ensure its effectiveness and fairness. These principles include:

Transparency: The process aimed to be transparent, providing clear information and openly sharing data, methodologies, and findings. This transparency built trust and credibility among participants.

Inclusivity: The PCRA process sought to include a wide range of stakeholders and ensure their meaningful participation. This included representatives from different social groups, such as youth, women, people with disabilities, elderly individuals, religious leaders, farmers, business people, and political representatives. By involving diverse perspectives, the process aimed to capture a comprehensive understanding of vulnerabilities and risks.

Representation: The principle of representation ensured that different groups and communities within the County were adequately represented in the assessment process. This helped to address power imbalances and ensure that the voices and needs of marginalized or vulnerable groups were considered.

Fairness: The PCRA process aimed to be fair, treating all participants equally and ensuring that their inputs and contributions were given due consideration. Fairness in the process helped to build trust and foster cooperation among stakeholders.

Consensus-building: The PCRA process encouraged consensus-building among participants. This involved actively seeking areas of agreement and working towards collaborative decision-making. Consensus-building helped to foster ownership of the assessment outcomes and increase the likelihood of effective implementation of adaptation measures.

Equality: The principle of equality ensured that all participants had an equal opportunity to contribute and express their views. It aimed to prevent the dominance of certain groups or individuals and create an environment where diverse perspectives were valued and respected.

Responsive: The PCRA process aimed to be responsive to the specific needs, concerns, and priorities of the County and its communities. It sought to address the unique challenges and opportunities presented by climate change in Embu County.

Justice: The principle of justice emphasized the importance of addressing underlying social and economic inequalities that can exacerbate vulnerability to climate change. It aimed to promote fairness, equity, and social justice in the assessment process and the subsequent development of climate change actions.

By adhering to these principles, the PCRA process aimed to ensure effective participation, generate robust and inclusive assessments, and foster ownership and commitment to climate change actions within the County.

1.3.2 PCRA Methodology and Approach

The PCRA process involved the use of distinct and simultaneous methods to gather data and information. Prior to the field data collection, a review of secondary data was conducted, focusing on existing resources and stakeholders in the ward. This preliminary data collection informed the identification and selection of stakeholders who would be invited to participate in the subsequent participatory data collection exercises.

Stakeholder consultations and workshops were conducted as part of the data collection process. These involved interviews, workshops, and group exercises aimed at understanding the impacts of climate change and other factors that contribute to vulnerabilities. Through these consultations, additional analyses were carried out to determine and characterize climate hazards, vulnerabilities, and risks in greater detail. This included mapping of hazards and vulnerabilities, impact modeling, institutional assessment, and impact analysis.

The PCRA approach employed participatory methods to engage stakeholders and facilitate their active involvement in the assessment process. This included expert consultations, group exercises, group presentations, group discussions, plenary sessions, consensus contributions, voting, demonstrations, and event narrations. The facilitation methods utilized various tools and techniques such as electronic presentations, chart drawing, illustrations, audiovisual presentations, storytelling, and plenary discussions.

The approach followed a systematic method where specific PCRA tools were employed during the exercise. These tools helped the community identify and understand specific climatic hazards, the risks they pose, and the damages and losses incurred in Kagaari South ward in the past. The tools also aided in the analysis of important livelihoods, community assets, and investments. They facilitated the examination of gender roles, participation in climate actions, and the differential impacts of climate change on different genders.

Furthermore, the PCRA tools helped identify key stakeholders and institutions that work closely with the community. They provided insights into the roles and activities of these stakeholders and how they could be involved in the elaboration process of action plans and other community support systems. The aim was to develop strategies and interventions that would make the community more resilient and less vulnerable to the impacts of climate change in the future.

By employing participatory methods and tools, the PCRA process ensured that the perspectives, knowledge, and experiences of the community and stakeholders were considered. It fostered a collaborative and inclusive approach, empowering the community to actively contribute to the assessment and decision-making processes.

1.4 Key Steps Followed In The County's PCRA Process

In conducting the PCRA process, the following key steps were followed:

Establishment of task teams/technical working groups: Representatives from various sectors were appointed to spearhead the PCRA process. These teams were responsible for coordinating and overseeing the overall process. Upon appointment the Task force were grouped into clusters and each was assigned a number of wards to cover. Each cluster had a lead trainer who was to be incharge of the ward reports.

Stakeholder identification and mapping: This step involved identifying and mapping stakeholders that were to be engaged in the PCRA process. In identifying the stakeholders key attention was given to those involved in climate actions, interventions, and resilience building, those responsible for climate actions, individuals with expertise in climate-related matters, and those directly impacted by climate change, stakeholders with critical data as well as those impacted by climate actions.In mapping stakeholders the task team identified the stakeholders at the community levels and those at the County level and the stage at which they would be engaged. The invitations for the stakeholders was done with keen interests on: regional representation, women, youth, marginalized groups, minority groups and People Living With Disability (PLWD)

Community engagements: The purpose of community engagements was to validate existing community knowledge and lived experiences. This step aimed to bridge the gap between community knowledge and experiences and the scientific understanding of climate change. It provided opportunities for communities to share new knowledge, concepts, and information. Additionally, community perspectives on climate hazards, risks, and vulnerabilities were sought, and efforts were made to capture the community's inherent capacities.

The community engagements were done ward by ward. It involved discussions with community members in structured groups through scenario analysis, practical engagements and presentations by community members.

Analysis of PCRA tools: In order to get as much information from the community members. various PCRA tools were used. These included:

Hazard map: This is a pictorial illustration of how a particular community perceive their geographical area. It shows the community main livelihood resources, the associated hazards as well as their neighborhood and threats. It provides a simplified way of understanding the community, where vulnerable groups are located, location of livelihood resources, community safe places as well as the threats the community is exposed to.

Historical timelines: This helps understand the community's past hazards and history. The elderly participated more in this since they are more aware of past events and changes over time. It helps document changes that have occurred, community observations and the coping mechanisms. It also helps to know if communities have access to climate information systems and their abilities to manage and cope with the risks as they occur.

Seasonal calendars: It helps to document community seasonal activities and othet livelihood activities and events that occur throughout the year. It helps to show when communities are busy, periods of scarcity and stress, outbereaks of diseases and pests and any adaptation plans

Daily clocks: It helps to illustrate the inequalities in workloads within the households and how this undermines resilience and ability to implement adaptation projects. It also shows how daily activities are affected by climate stressors and how communities adaprts to shocks i.e a daily clock during normal and abnormal seasons.

Gender analysis and decision making pile: This helps to bring out the power dynamics within the households and how it helps or hinders resilience bulduing and adaptation actions. It also shows who has authority to make important decisions e.g where there is equal decision making there is increased resilience. It shows decisions made by men, those made by women and how these decisions change during crisis.

Institutional analysis: It helps to show the communities interractions with different institutions and the importance that they attach to such institutions. It helps to show the services the communities get from different institutions and who can help them fight climate shocks. They used Venn Diagrams where bigger circles closer to the centre illustrated the institutions that they hold dear to their hearts.

Vulnerebility matrix: This was used to show which part of the County is vulnerable and how various groups and livelihood resources are affected by the various hazards. It also helps to develop the adaptation pathways which give rise to macro and micro economic projects.

These tools were employed through interviews, oral and practical engagements, focused discussions, assignment of table groups, preparation of presentations, supporting materials for workshops, and analysis of hazards and their impacts on humans, livelihoods, and resources.

Data compilation workshops: Workshops were conducted to compile data that would aid in the PCRA report writing process. Community representatives played a crucial role in compiling and summarizing raw data related to their community's priority adaptation plans, as gathered during community ward engagements. This exercise was conducted after the PCRA process where community representatives were involved in preparation of summarized data that captured the views raised during the community engagements.

County multi-stakeholder and validation workshop: These workshops provided opportunities for various stakeholders to provide input and feedback on the PCRA process. During the validation stage, the community had the chance to take ownership of the process, ensuring their views and needs were adequately represented. The communities and other stakeholders were grouped into sector groups each coordinated by the lead facilitators. The clustering was done depending on the interests of the different stakeholders. The sectors included: water sector; environment, energy and forestry sector; agriculture sector; infrastructure sector, Disater risk management and tourism sector and projects relating to youth, women, marginalized and people living with disabilities.

Drafting of the final PCRA report: The step involved drafting the PCRA report, which incorporated the findings, analysis, and recommendations resulting from the entire PCRA process. The report was subject to ratification by the cabinet of the Embu County Government before its official submission to the FLLoCA project implementation unit.

By following these key steps, the County successfully conducted the PCRA process, ensuring a comprehensive and inclusive assessment of climate hazards, risks, and vulnerabilities in the region.

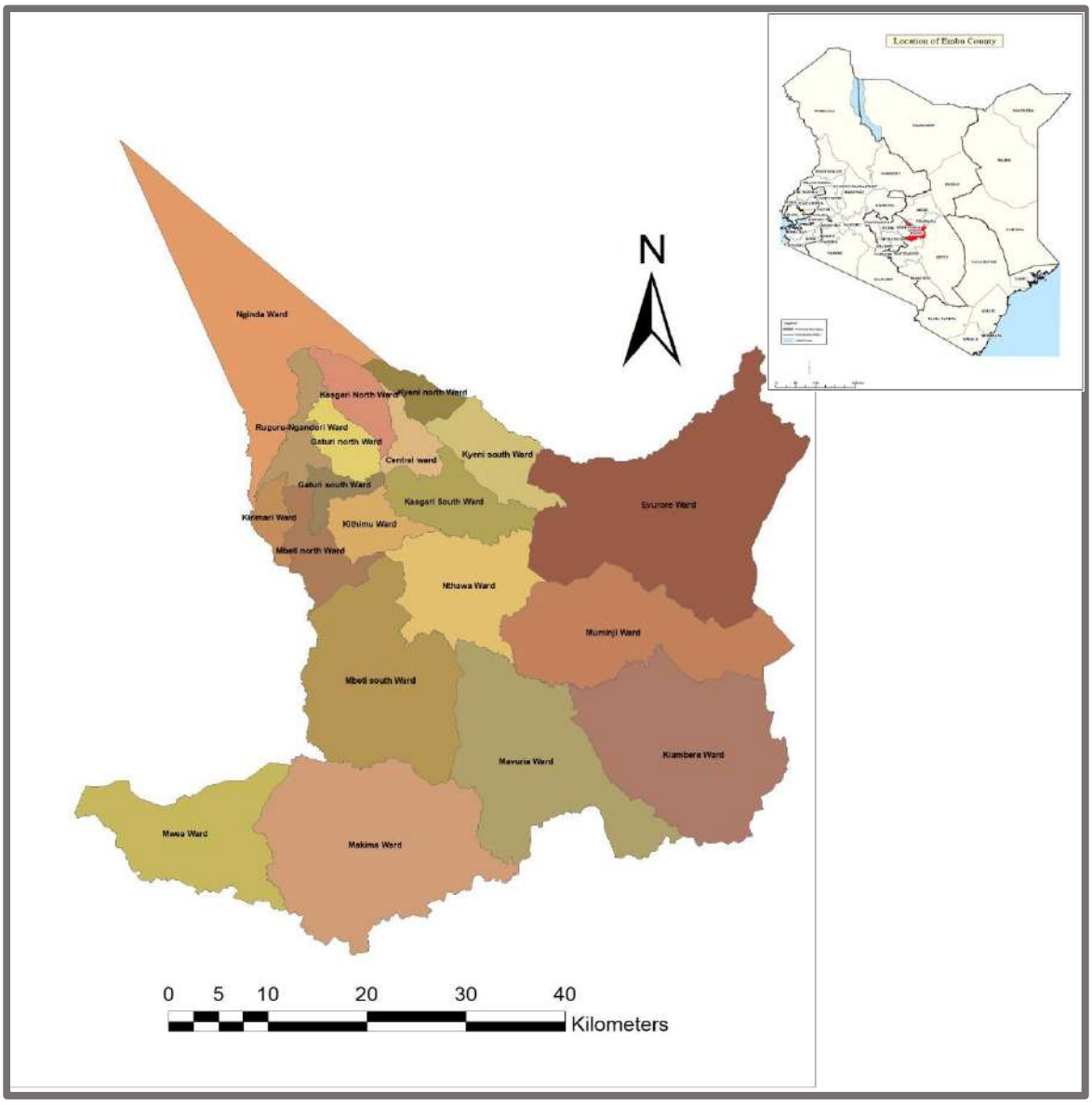

Figure 1.1: Location of Embu County in Kenya

2.0 COUNTY CLIMATE HAZARD PROFILE

2.1 Current and Historical Hazards and Trends

Embu country experiences a range of climatic conditions with a drastic change within short distances as influenced by the agro-ecological zones (AEZ). The cold and wet highlands of Manyatta and Runyenjes on the slopes of Mt. Kenya receive significantly higher amounts of precipitation averaging around 1250 mm annually and temperatures of around 15° C as compared to the hot and dry lower zones of Mbeere North and South with less than 1000mm of rainfall and temperatures often exceeding 24° C (Fig. 2.1).

Analysis of historical records of weather indicate that both dry spells and extreme precipitation are recurrent hazards in the County. Dry spells are longer during the second wet season averaging around 65 consecutive days of moisture stress, but ranging between 60 and 80 in any given year (MoALF, 2016). The first wet season only experienced about 45 consecutive days of moisture stress (ranging from 25 to 70 in any given year).

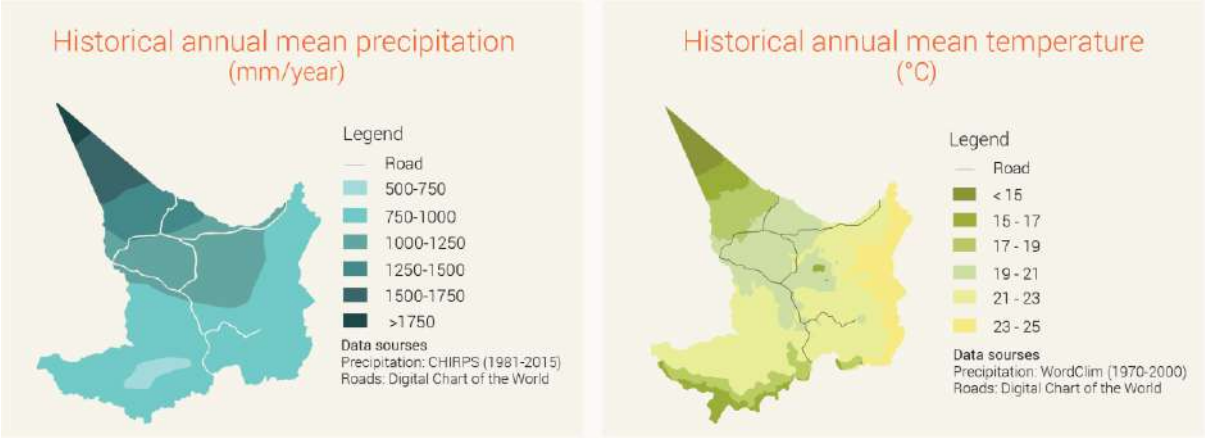

Figure 2.1: Historical Mean Annual Precipitation and Temperature for Embu County (Adopted from MoALF, 2016)

Whereas, the longterm average of precipitation does not show significant changes in total amounts received per year (Fig 2.2), seasonal variations and anomalies are becoming increasingly more common and unpredicatable (Fig. 2.3). The county receives the rainfall in a bimodal form in the seasons of March April May (MAM) and October November and December (OND). The observed variations are consistent with the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), that shows increased evidence that widespread, pervasive impacts to ecosystems, people, settlements, and infrastructure have resulted from observed increases in the frequency and intensity of climate and weather extremes, including hot extremes on land and in the ocean, heavy precipitation events, and drought (IPCC, 2022).

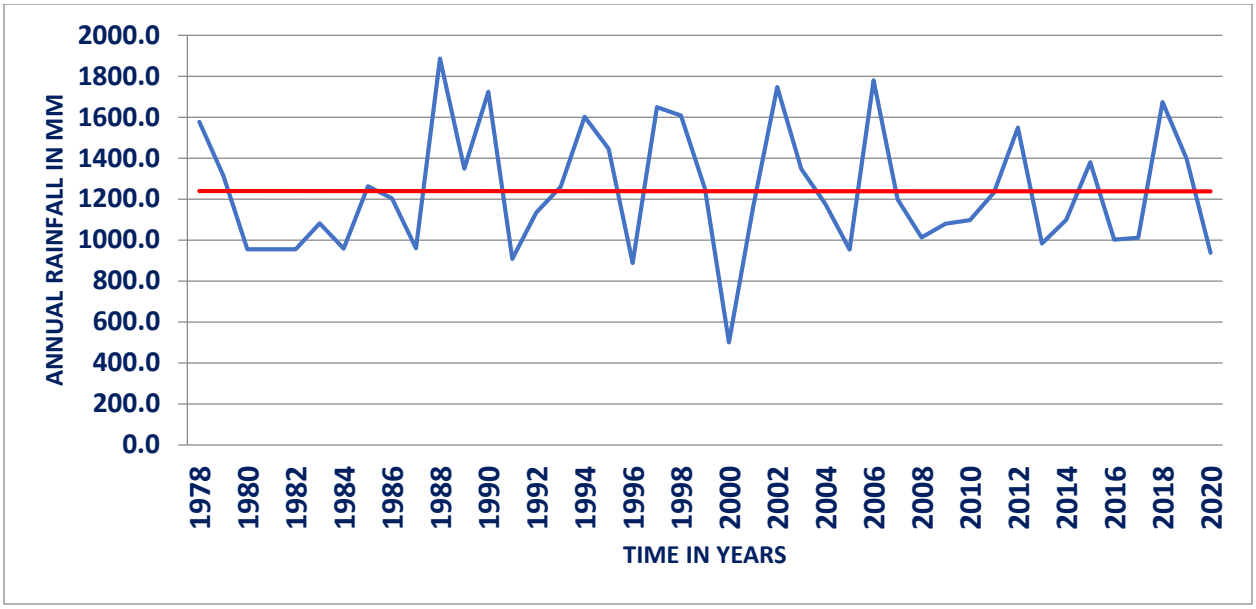

Figure 2.2: Long term trend of rainfall (1978-2020) in Embu County.

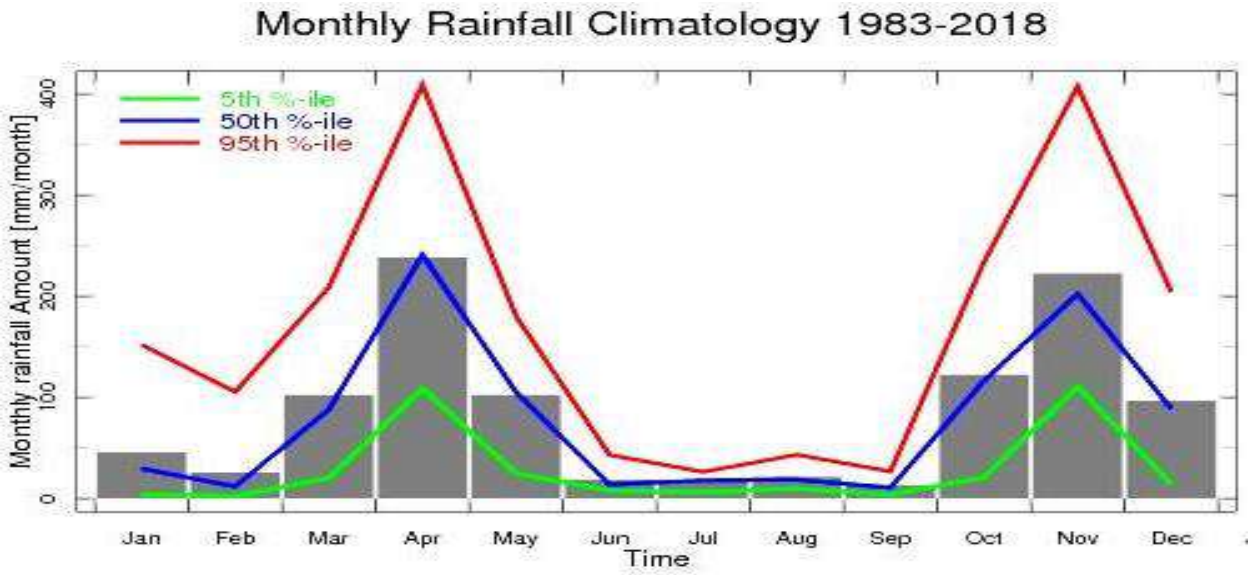

Figure 2.3: Monthly rainfall trend in Embu county

Extreme precipitation and flood risks are quite high on average in both seasons. The anomalies in terms of distribution and extreme events tends to increase (Fig., 2.4). The number of events where the rainfall in Embu county has either decreased or exceeded the normal are becoming more frequent. The events where the rainfall in Embu county has decreased from the normal of either the MAM season or the OND season are becoming frequent. This is relating to the long term trend showing no significant decrease in total amount of rainfall received, but, with an increased occurance of extreme events. In the events where the rainfall exceeds the normal rainfall, it falls in form of very heavy storms.

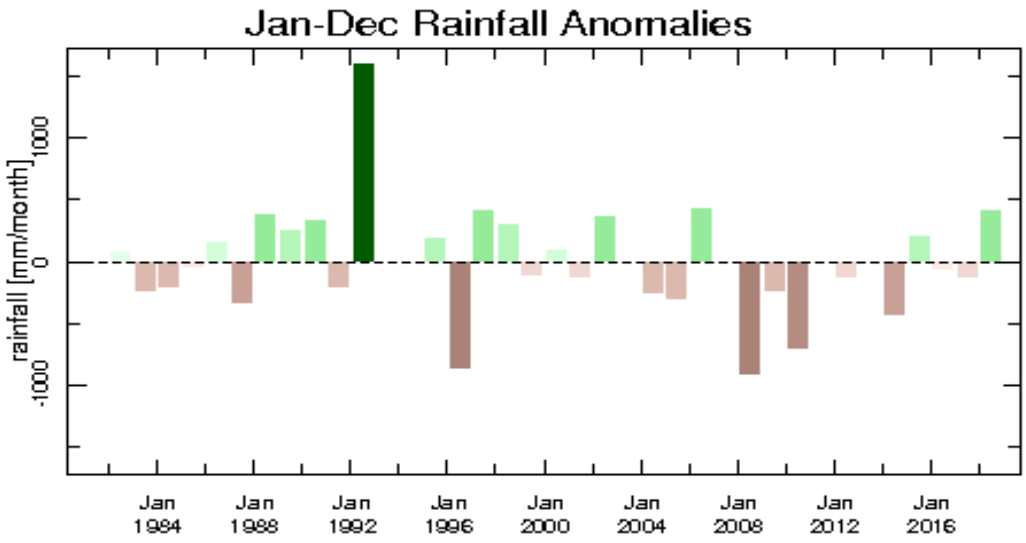

Figure 2.4: Trend of Extreme Rainfall Events

2.1.1 Stakeholder Percetions of Climate Hazards

Through interactive presentations, the participants were able to identify the major climate hazards and risks in the community. They explored the impacts of these hazards and assessed both the direct and indirect effects on their livelihoods and productive systems. Direct impacts refer to the immediate consequences that follow hazards and are related to the physical effects on people, resources, and assets. Indirect impacts occur later and are associated with the social and economic consequences on well-being, health, livelihoods, and productive systems. These impacts can be positive or negative, presenting both benefits and opportunities. The participants were guided through an illustrative presentation on climate change, which helped them understand the differences between weather and climate, hazards and risks, as well as environmental and climatic impacts. Based on this knowledge, the participants were able to identify various climatic hazards which included drought, erratic rains, emerging pest, crops and livestock diseases, flash floods, human wildlife conflicts, deforestation and whirl winds (Table 2.1).

Table 2.1: Hazards Impact Analysis

Hazard	Direct effects	Indirect effects
Drought	Crop drying up	Reduced harvest Famine Reduction of household food stock Increase in food prices Loss of household income Family discontent School drop out Early marriages Increased immorality and early pregnancies

Hazard	Direct effects	Indirect effects
	Pasture drying up	Deterioration of body condition Low market prices for livestock deaths of livestock Loss of livelihood and reduction of household income Low birth rates for livestock Reduced milk production
	water shortage	Increased distance to water points Wasting of time for productive activities High conflict over water Irrigation water reduces
Human wildlife conflict	Injuries to livestock and human beings from crocodiles, monkeys, wild snakes	High Cost of treatment Genesis of some Disabilities Deaths Reduction of household income
	Crop damage Reduced yields No harvests	Food shortage from reduced harvest Increase in food price Loss of household income
Whirl winds	Destruction of infrastructure	Unplanned Cost of repairs Reduction of household income
	Fatalities	Reduction of household income
	Destruction of trees	Reduced land value
	Destruction of crops	Food shortage Increase in food price Loss of household income Reduced harvest Food depletion School drop out Loss of productive time
Emerging Pest and diseases(livestock and crops)	Destruction of crops	Reduced crop yield
	High cost of control	Reduced household income
	Death of livestock	Reduced household income/ loss of livelihood
	Reduced productivity	Low market prices for live animals High cost of animal products
Flash floods	Loss of crops	Reduced household food stocks
	Accelerated riverbank erosion	Reduced productivity
Erratic rains	Crops failure	Reduced productivity/ reduced household income
	Water scarcity	Water rationing

2.1.2 Hazard Mapping

The purpose of this exercise was to gain the community's perspective on current and future changes in hazard occurrences. The participants were asked to indicate areas where changes have been observed or are likely to occur in the future. They were also encouraged to share why these changes were different and what factors were driving them. At the end of each question or whenever valuable information was about to be erased, a top-down photo of the participatory map was taken to document the primary physical hazards identified by the community. Facilitation and support were provided to the participants, including relevant examples extracted from descriptions of climatic hazards. With guidance, the participants generated a hazard map that highlighted specific areas prone to hazards and their potential impacts on assets and livelihoods. The map, which also included community resources, identified drought, flash floods, crop diseases, floods, livestock diseases, air pollution, human-wild animal conflict, and land degradation as notable hazards experienced in the area. Important assets in the ward, such as rivers, roads, coffee mills, bridges, hospitals, schools, and police stations, were also recognized and included on the map.

The overall impacts of the hazards, including their frequency, estimated site impacts, and current actions being taken to mitigate them, were documented for further use in subsequent PCRA tools and exercises**.**

Figure 1.3: A climate hazard and resource map for all the wards in Embu County

2.2 Exposure and Vulnerability Profiles of the County

PCRA tools were used at the Ward level to identify the hazards in Embu county, vulnerabilities and the risks associated with them and capacities that can be tapped to enhance the communities resilience are summarized in Table 2.2.

Table 2.2: Exposure and Vulnerability Profiles of Key Interest Groups

Tool	Hazard	Vulnerability/risks	Capacities identified
Mapping	Drought, environmental degradation, unprotected quarry sites and	Drowning, soil erosion, severe water and food shortages	Irrigation projects Training in conservation farming
Historical timeline	Drought, flooding, crop pests and diseases, human wildlife conflict	Food and water shortages, soil erosion	Post-harvest technologies (use of hematic bags) Irrigation projects Training in conservation farming
Seasonal calendar	Crop diseases, livestock diseases, human diseases, conflicts, drought	Loss of income Loss of livestock	Climate smart farming Use of indigenous knowledge to manage diseases Training on the value chains
Daily clock	Drought Livestock diseases	Lack of water Loss of income	Diversification of livelihood enterprises Capacity and training
Institutional analysis	All	Duplication of roles Poor distribution of resources and projects	Opportunity to resource mobilize in resilience building

2.3 Differentiated Impacts of Climate Trends and Risks

The climate exposure and vulnerability of key groups and livelihoods in the county was assessed using the PCRA process tools. The common livelihood activities and resources considered were farming areas, domestic water, grazing areas, trade/market and roads/mobility

Key vulnerable and marginalized groups (VMGs) considered in process were women, youths, people living with disability, poor households, and the minority and marginalized communities.

The key climate risks and hazards that were identified by the community are:

i. Drought

ii. Erratic rainfall
iii. Crop/animal pest and diseases
iv. Flash Floods

The effect of exposure to these hazards on the livelihoods and resources of the key vulnerable groups is summarized in Table 2.3.

Table 2.3: Summary of the impacts of hazards on the livelihoods and resources on VMGs

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
Drought		
Women	Farming areas	Reduced or crop failure; reduced availability of food; crop diseases and pests; reduced incomes; malnutrition; time wastage in accessing resources;
	Domestic water,	Famine due to prolonged drought; time wastage in accessing resources, Reduced water supply; reduced water quality; increased incidences water borne diseases
	Grazing areas	Declining grazing areas, conflicts over resource use, human-wildlife conflicts, declining livestock production, spend more time to cover long distances to resource
	Trade/Market	Low supply of needed commodities, high market prices, loss of income, conflict over limited commodities,
	Mobility	Impaired mobility due to poor feeding,
	Seasonal and daily calendar	interruption of social interactions, interrupted daily and seasonal activities,
	Subsistence farming,	Reduced income levels, malnutrition and hunger, increased poverty levels,
	Casual labour	Scarce casual jobs, conflicts over limited work opportunities, reduced incomes,
Erratic rains		
	Farming areas	Post-harvest losses, water logging, crop, Crop loss, land degradation,
	Trade/Market	Disrupted market access and activities, loss of marketable stock, loss of market time
	Mobility	disrupted school system
	Seasonal and daily calendar	interruption of social interactions, interrupted daily and seasonal activities,
Emerging livestock crop pest and diseases		
	Crops	Increased cost of crop production, low crop yields, reduced income

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
	livestock	Increased cost of livestock production, low production, reduced income, loss of livestock, transmission of zoonotic diseases
Flash flood		
	Farming areas	Loss of crop, land degradation
	Domestic water,	Contamination of water, water borne diseases
	Grazing areas	Loss of pasture , reduced access to resources
	Trade/Market	reduced access to market and disruption of market activities
	Mobility	Impassable roads
	Seasonal and daily calendar	Disruption of scheduled activities
	Subsistence farming,	Loss of crops and livestock
	Casual labour	Reduced man hours, reduced work opportunities
Drought		
Poor households	Farming areas	Reduced or crop failure; reduced availability of food; crop diseases and pests; reduced incomes; malnutrition; time wastage in accessing resources;
	Domestic water,	Famine due to prolonged drought; time wastage in accessing resources, Reduced water supply; reduced water quality; increased incidences water borne diseases
	Grazing areas	Declining grazing areas, conflicts over resource use, human-wildlife conflicts, declining livestock production, spend more time to cover long distances to resource
	Trade/Market	Low supply of needed commodities, high market prices, loss of income, conflict over limited commodities,
	Mobility	Impaired mobility due to poor feeding,
	Seasonal and daily calendar	interruption of social interactions, interrupted daily and seasonal activities,
	Subsistence farming,	Reduced income levels, malnutrition and hunger, increased poverty levels,
	Casual labour	Scarce casual jobs, conflicts over limited work opportunities, reduced incomes,
Erratic Rains		
	Farming areas	Post-harvest losses, water logging, Crop loss, land degradation,
	Domestic water,	Water quality contamination
	Grazing areas	Reduce quality and quantity of forage areas, increased distances to pastures, accelerated pastureland degradation, poisoning from consumption non-conventional species

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
	Trade/Market	Disrupted market access and activities, loss of marketable stock, loss of market time, disrupted school system
	Mobility	interruption of social interactions, interrupted daily and seasonal activities
	Seasonal and daily calendar	interruption of social interactions, interrupted activities
Emerging Crop and Livestock pest and diseases		
Youth	Subsistence farming,	Reduced income levels, malnutrition and hunger, increased poverty levels, loss of livelihood, disrupted social systems, increased unemployment
	Casual labour	Scarce casual jobs, conflicts over limited work opportunities, reduced incomes,
	Trade/Market	Low supply of needed commodities, high market prices, loss of income, conflict over limited commodities, reduced traded volumes, zoonosis and quarantine
Flash floods		
	Mobility/Transport	interruption of social interactions, interrupted daily and seasonal activities, interrupted trading activities (boda-boda business)
	Trade/Market	Low supply of needed commodities, high market prices, loss of income, conflict over limited commodities, reduced traded volumes
	Crop farming	Reduced income levels, malnutrition and hunger, increased poverty levels, loss of livelihood, disrupted social systems, increased unemployment
Drought		
People living with disabilities	Domestic water,	Famine due to prolonged drought; time wastage in accessing resources, Reduced water supply; reduced water quality; increased incidences water borne diseases, increased distance to water, high cost of portable water
	Trade/Market	Low supply of needed commodities, high market prices, loss of income, conflict over limited commodities,
	Crop farming	Reduced income levels, malnutrition and hunger, increased poverty levels, loss of livelihood, disrupted social systems, increased unemployment
	Alternative income sources	Limited choices,
Erratic rains		
	Trade/Market	Disrupted market access and activities, loss of marketable stock, loss of market time

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
	Mobility	Disrupted school system
	Seasonal and daily calendar	Interruption of social interactions, interrupted activities,
Emerging Crop and Livestock pest and diseases		
	Crops	Increased cost of crop production, low crop yields, reduced income, low dietary varieties
	Livestock	Increased cost of livestock production, low production, reduced income, loss of livestock, transmission of zoonotic diseases and Quarantine
Flash floods		
	Domestic water,	Contamination of water, water borne diseases
	Grazing areas	Loss of pasture , reduced access to resources
	Trade/Market	reduced access to market and disruption of market activities
	Mobility	Impassable roads, loss of productive time, displacement, inability to access safe location
	Seasonal and daily calendar	Disruption of scheduled activities
	Subsistence farming,	Loss of crops and livestock
Drought		
Minority and marginalized communities	Farming areas	Reduced or crop failure; reduced availability of food; crop diseases and pests; reduced incomes; malnutrition; time wastage in accessing resources;
	Domestic water,	Famine due to prolonged drought; time wastage in accessing resources, Reduced water supply; reduced water quality; increased incidences water borne diseases
	Grazing areas	Declining grazing areas, conflicts over resource use, human-wildlife conflicts, declining livestock production, spend more time to cover long distances to resource
	Trade/Market	Low supply of needed commodities, high market prices, loss of income, conflict over limited commodities,
	Seasonal and daily calendar	interruption of social interactions, interrupted daily and seasonal activities,
	Subsistence farming,	Reduced income levels, malnutrition and hunger, increased poverty levels,
	Casual labour	Discrimination over casual jobs, conflicts over limited work opportunities, reduced incomes,
Erratic Rains		
	Farming areas	Post-harvest losses, water logging, crop, Crop loss, land degradation, clashes

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
	Trade/Market	Disrupted market access and activities, loss of marketable stock, loss of market time
	Mobility	Reduced access to social amenities
	Seasonal and daily calendar	interruption of social interactions, interrupted activities,
Emerging livestock crop pest and diseases		
	Crops	Increased cost of crop production, low crop yields, reduced income
	Livestock	Increased cost of livestock production, low production, reduced income, loss of livestock, transmission of zoonotic diseases and quarantine
Flash flood		
	Farming areas	Loss of crop, land degradation
	Domestic water,	Contamination of water, water borne diseases
	Grazing areas	Declining grazing areas, conflicts over resource use, human-wildlife conflicts, declining livestock production, spend more time to cover long distances to resource, accelerated land degradation
	Trade/Market	reduced access to market and disruption of market activities
	Mobility	Impassable roads
	Seasonal and daily calendar	Disruption of scheduled activities due to discrimination
	Subsistence farming,	Loss of crops and livestock, reduced food supply
	Casual labour	Reduced man hours, reduced work opportunities due to discrimination

Analysis of the information from the field observations indicate that the Wards in lower sides of Embu, (the lower midlands) which are predominantly ASALS listed drought as a key major climate hazard. On the upper side of Embu which is relatively cool and wet, the major climate Hazard were pests and diseases as well as frequent erratic rains. The effects of these hazards were analyzed on various vulnerable groups and the effect on the various livelihoods; social, and economic activities. Women being a most vulnerable group claimed to be affected by hazards in that:

- It leads to diminishing/shortage of domestic water
- Walking long distances in search for water resource
- High levels of malnutrition among children
- Crop failure which results to loss of income
- High extreme heat affected their social gatherings as well as their daily activities and seasonal calendars
- Market systems were also affected as low market stocks are available

- Loss of casual jobs opportunities and their economic activities which women seem to engage in for daily living.
- Erratic rains also seemed to cause a lot of disruptions to the women in not only economic activities but also on the social activities

The post-harvest loses were listed as key problem as the said erratic rains are unpredictable ,increase the cost of production especially when one has to plant more than once in a season. The erratic rains seem also to affect the daily calendars such as the meetings times and the market systems.

Flash floods were also identified as key Hazards causing serious displacement, disruptions of school calendars as well as loss of crops and animals. During floods, waterborne diseases ware prevalent and water logging of farming lands.

Crop pests and diseases as a key hazard also affect women in that: -

- They experience loss of livestock like chicken
- Increases the cost of production
- Reduced productivity of crops and livestock
- Loss of income – most women generate their income livelihoods from the sale of animal products like milk, eggs and sustenance vegetable farming and fruits.In conclusion, the vulnerability of this group seemed to be high when faced with extreme hazards as their resilience and adaptive capacity is very low.

Poor Households

Poor households were identified to be those with distinct characteristics which makes them vulnerable;

- They depend on subsistence farming
- no cash crops
- Most of them has have low quality housing (mud)
- Most of them lack critical assets – land and cars.
- They have low-income brackets
- Most of them have no piped water
- have no formal employment
- do menial jobs

2.4 Spatial Distribution of Risks

The spatial distribution of climate risks and hazards in Embu county is influenced by the Agro-ecological Zones (AEZs) depended on the thermal and altitudinal conditions. The AEZs can be summarised into three broad categories with distinct characteristics. The upper highland regions have cold and wet conditions distinct from the lower midland zones with characteristic hot and dry conditions of arid and semi-arid areas. Interphasing the two extremes, there are midlands with moderate conditions. The risks and hazards applicable to each of the spatially distinct ecological zones are outlined (Table 2.4).

Table 2.4: Spatial Distribution of Risks

Ecological zones	**Wards**	**Risks /Hazards**
Upper	Kyeni North, Gaturi North, Ruguru ngandori, Nginda, Kagaari north, Runyenjes Central	Crop pest and diseases Livestock diseases Erratic rains Deforestation Extreme cold Uncontrolled waste
Middle	Mbeti South, Nthawa, Mbeti North, Kithimu, Kirimari, Kagaari South, Kyeni South, Gaturi South	Drought Crop pest and diseases Human wildlife conflict Livestock diseases Uncontrolled waste
Lower	Makima, Mwea, Kiambere, Mavuria, Muminji, Evurore	Drought Human wildlife conflict Crop pest and diseases Livestock diseases Uncontrolled waste

3.0 FUTURE CLIMATE SCENARIOS FOR THE COUNTY

Future climate projections are mathematical simulations of the physical processes of the atmosphere and ocean to model the response of the global climate to increasing concentrations of greenhouse gases, aerosols, and other atmospheric constituents that affect the planet's radiative balance. The projections give and indication of the likely climatic conditions that will occur under different scenarios of global warming levels.

There is considerable uncertainty associated with these projections, particularly at lower scales; this is in partly because the models are large scale approximations to complex physical systems, but also because future emissions pathways are not yet known. The models used for these projections are Coupled Model Inter-comparison Project 5 (CMIP5). This is a project of world climate research program (WCRP) for providing intergovernmental panel on climate change (IPCC) with projected environmental variables. Models are based around 7 different greenhouse gas Representative Concentration Pathways (RCP1.9 RCP2.6 RCP3.4, RCP4.5, RCP6.0 RCP7.0 and RCP8.5) which correspond to different scenarios of atmospheric greenhouse gas concentrations (IPCC, 2007).

RCP 1.9: The scenario of limiting the global warming to below 1.5ºC/ as per the Paris agreement

RCP 2.6: The scenario of having carbon dioxide (CO_2) decline from 2020 and go to zero by 2100. This will have the global temperatures rise to 2.0º C by 2100.

RCP 3.4: The scenario of having greenhouse gasses considerably reduced from the atmosphere. This scenario is likely to result to global temperatures rising by 2.0-2.4 ºC by 2100

RCP 4.5: This is the intermediate scenario where emissions would peak by year 2040 and then start declining. This is the most probable towards exhaustion of fossil/nonrenewable fuels. This requires CO_2 to start declining from the year 2045 and reach the half of 2050s concentration amounts by 2100. This will result to global warming of 2.5-3.0º C rise by 2100. Many plants and animals may be unable to adapt to this scenario and other higher scenarios.

RCP 6.0: This is a scenario where emissions peak by the year 2080 then start declining. The radiative forcing will stabilize after 2100 and result to a global warming of 3.0-4.0º C by 2100.

RCP 7.0: This scenario is more of an outcome than mitigation.

RCP 8.5: This is a scenario where emissions continue to rise throughout 2100 century, resulting to the worst case of climate change. This scenario is unlikely but also possible.

3.1 National and Downscaled Climate Change Projections

The national projections are sourced from the World Bank Kenya Climate Risk County Profiles. Each County's particular experience of climate change (as established in the PCRA process) is

likely to be localised and highly contextual and should be considered alongside these national level trends when generating plausible future scenarios for the Counties.

Temperature

At the national level, under the worst-case RCP 8.5 scenario:

- Average temperatures nationally are expected to continue rising by 1.7% by the 2050s and by 3.5% at the end of the 21st century.
- The number of hot days and hot nights will increase, with hot days projected to occur on 19%- 45% of days by mid-century. Hot nights are expected to increase even more rapidly, projected to occur on 45% - 75% of nights by 2050.
- Cold days and nights are expected to become increasingly rare.

Rainfall

- Precipitation will remain highly variable and coupled with high uncertainity.
- Nationally, average rainfall is expected to increase slightly by 2050, especially for the 'short rains' which occur between October and December. However, each County's experience is likely to be highly contextual and localised. In particular, rainfall in arid zones is likely to decrease.
- The pattern and temporal distribution of rainfall is likely to change:
    - Extreme rainfall events (heavy downpours) are likely to increase in frequency, duration and intensity.
    - The period between heavy rainfall events is likely to increase.
    - The proportion of rainfall that occurs in extreme rainfall events (heavy downpours) is likely to increase

3.2 County Future Climate Scenarios

Future projected changes in rainfall over Embu County were assessed for the near-future (2011-2035), mid-future (2036-2070), and far-future (2071-2100) climates relative to the historical climate (1981-2005) using CMIP5 model simulations under two emission scenarios (RCP 4.5 and RCP 8.5). The projected Annual, MAM and OND rainfall changes are shown in Figures 3.1- 3.6.

The projected rainfall changes (mm/day), expressed in percentage over Embu County and based on the CMIP5 model under RCP 8.5 and RCP 4.5 scenarios were analyzed. Although there were spatial and temporal variability over the future projections i.e. near future (2011-2035), mid future (2036-2070) and far future (2071-2100), there is a general increase in projected annual rainfall over Embu County for both RCP8.5 and RCP 4.5 (Figures 1 and 2) scenarios compared to the 1981-2005 present climate simulations of best-model ensemble mean.

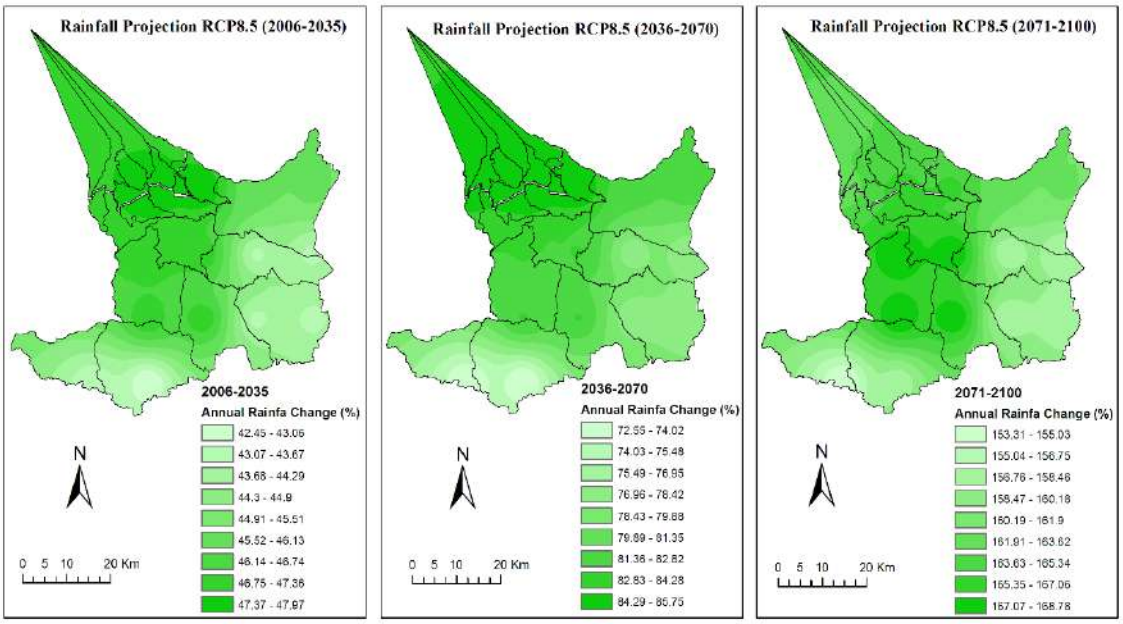

Figure 3.1: Annual rainfall changes (mm/day) over Embu County expressed in percentage obtained from CMIP5 model under the RCP8.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2005.

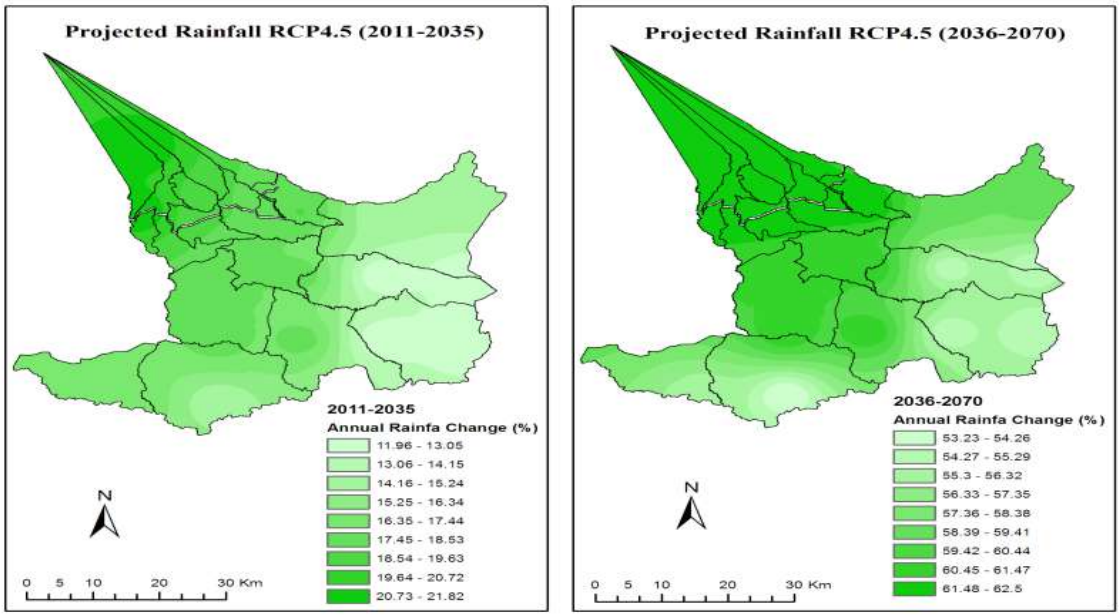

Figure 3.2: Annual rainfall changes (mm/day) over Embu County expressed in percentage obtained from CMIP5 model under the RCP4.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2005.

The MAM and OND projected seasonal trends show highly variable trends of increasing and decreasing rainfall for both RCP 4.5 and RCP 8.5 scenarios. Figures 3.3 and 3.4 shows the future trends of rainfall for MAM season under scenario RCP 8.5 and RCP 4.5 respectively. There is an increase of rainfall in the near future (2011-2035) for RCP4.5 followed by a decrease of rainfall in the mid future (2036-2070) under the same scenario. However, there is a general decrease of rainfall in MAM rainfall season for both near future (2011-2035) and mid future (2036-2070) under the RCP8.5 scenario.

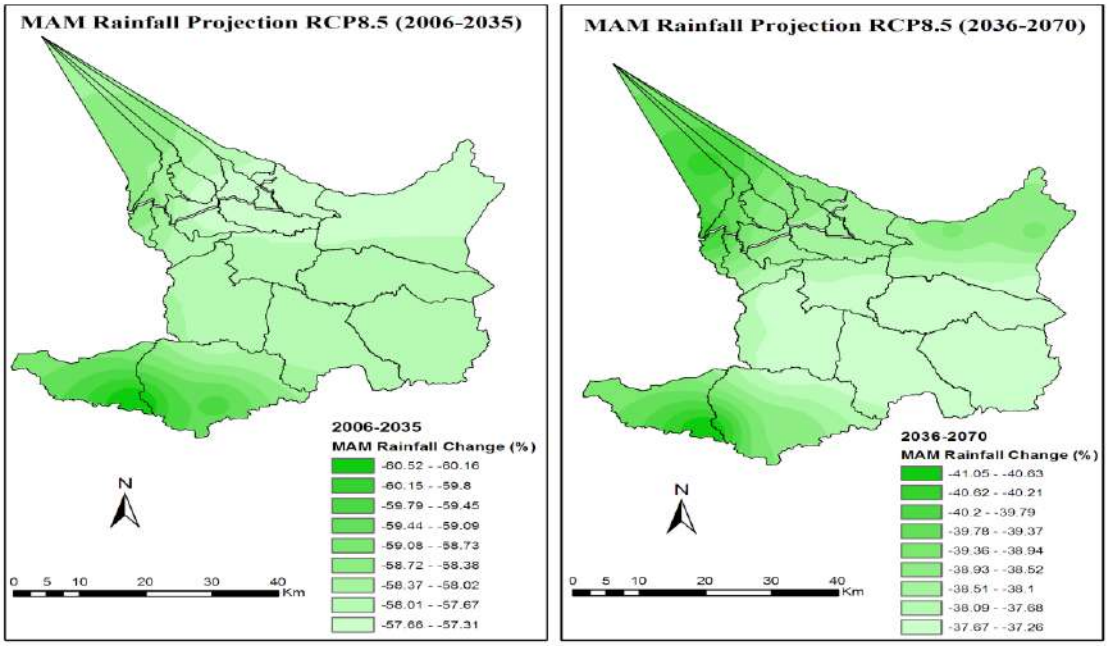

Figure 3.3: March-May (MAM) Seasonal rainfall changes (mm/day) over Embu County expressed in percentage obtained from CIMP5 model under the RCP8.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2

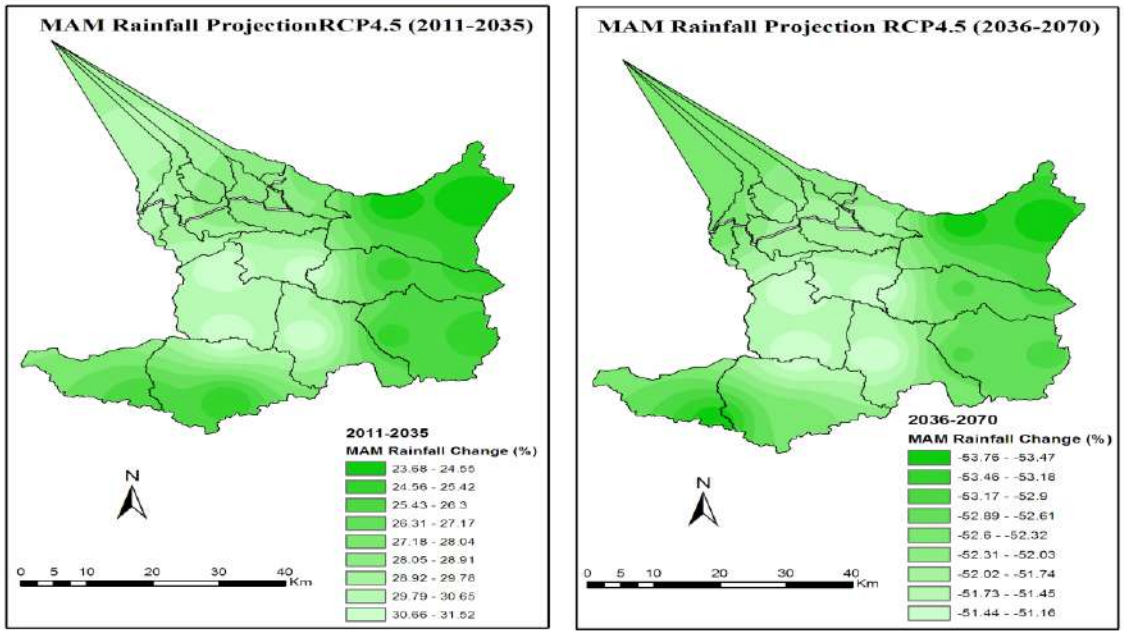

Figure 3.4: March-May (MAM) Seasonal rainfall changes (mm/day) over Embu County expressed in percentage obtained from CIMP5 model under the RCP4.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2

Figures 3.5 and 3.6 shows the future trends of rainfall for OND season under RC P8.5 and RCP 4.5 scenarios respectively. There is an increase of rainfall in the near future (2011-2035) for RCP 4.5 followed by a decrease of rainfall in the mid future (2036-2070) under the same scenario. However, there is a general decrease of rainfall in OND rainfall season for both near future (2011-2035) and mid future (2036-2070) under the RCP 8.5 scenario. The seasonal rainfall change shows the highest decrease in future rainfall under the RCP 8.5 scenario.

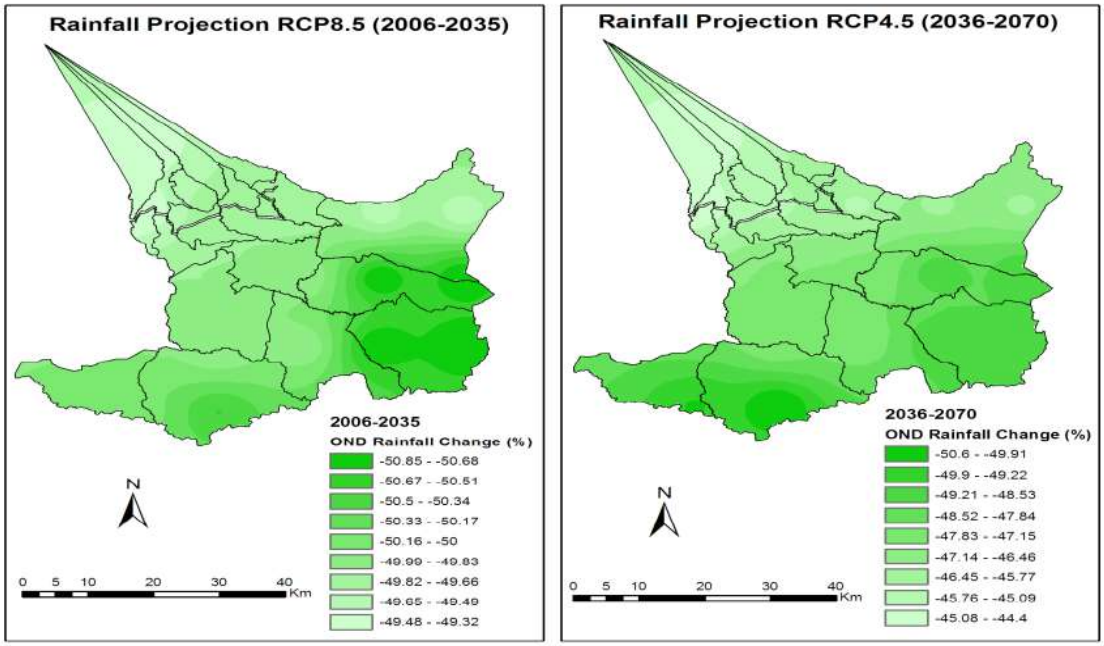

Figure 3.5: October-December (OND) seasonal rainfall changes (mm/day) over Embu County expressed in percentage obtained from CIMP5 model under the RCP8.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period

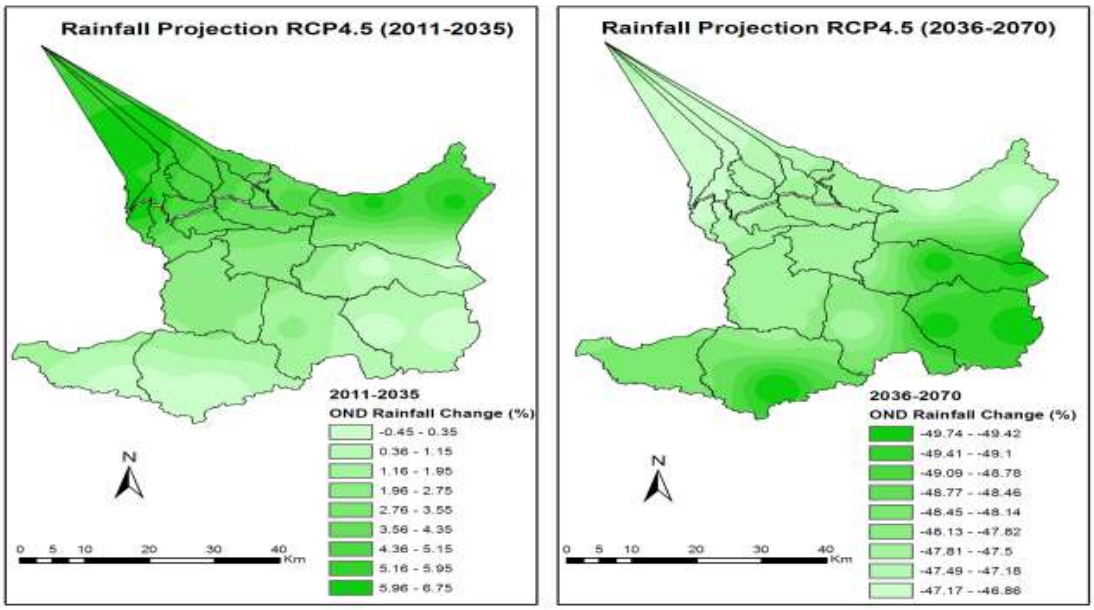

Figure 3.6: October-December (OND) seasonal rainfall changes (mm/day) over Embu County expressed in percentage obtained from CIMP5 model under the RCP4.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for 1981-2005

Further, climate change effects have caused the distribution, onset and cessation of rainfall within the County to vary significantly. The overall annual increase of rainfall within the County and the significant decrease of both MAM and OND seasons is attributed by shift of season from the current main rain season to either January, February (JF) or June, July, August and September (JJAS).

Table 3.1: Response Matrix S3A Local Perspectives of Weather and Climate

	LOCAL PERSPECTIVE OF WEATHER AND CLIMATE	
1	What are the main seasons of the year in your area?	• JF-January, February • MAM- March April May • JJAS- June July August September • OND- October November December
2	What is the weather usually like during the different seasons in your area? (e.g. rain, hail, snow, storms, temperature, wind, etc.)	• JJ- Sunny, extreme temperature, Wind • MAM- Rain, Storms, Wind • JJAS- Cloudy, extreme temperature, Sunny • OND- Rain, Storms, Winds
3	Which aspects of normal seasonal weather can cause problems for your community, livelihoods, production systems or industry? (hazards due to normal climate variability)	• Heavy rainfall. • Extended dry periods. • Extreme temperatures.
4	Do vulnerable groups (women, elderly, young) face any particular problems? (facilitators: consult the vulnerable group profiles developed in session 2 and check livelihood roles/tasks/duties)	• Water shortage during the dry months. • Food shortage during the drought and pest and diseases outbreak. • Flooding during the rainy seasons. • Health problems during extreme cold days/nights.
5	Have you noticed any changes in the pattern of the seasons over the last 20 years? If so, what changes have you noticed.	• Changes in normal rainfall patterns/erratic rains (late onset and late/early cessations, offseason rains) • Change in duration of weather events(extended colds/hot temperatures spells) • High frequency of extreme weather (storms) • Change in intensity of weather events(heavy rainfall/storms, strong winds) • Poor temporal and spatial distribution of rainfall
6	Which of these changes are causing problems for your community, livelihoods, production systems or	• Economic losses due to erratic rains • Destruction of property and life due to heavy rainfall/storms • Drought due to extended extreme temperatures

	LOCAL PERSPECTIVE OF WEATHER AND CLIMATE	
	industry? (hazards due to slow onset changes)	• Food shortage due to crop pests and diseases caused by extreme temperatures
7	Are any of these changes causing particular problems for vulnerable groups (women/elderly/youth)? 31	• Women spend long hours trekking in search of water during dry months. • Women overwork to provide food during the • The elderly are at risk of evacuating from extreme weather events.
8	Which major extreme weather events have happened in your area in the last 20 years? (floods, droughts, storms, high winds, storm surges, tornados etc) (hazards due to extreme weather events) (facilitator: refer to the notes prepared by sub-County officers in Step 4 of the PCRA)	• Floods • Drought • Strong winds
9	Has there been a change in these events over the last 20 years? In what ways have they changed? (e.g. duration, frequency, intensity or other characteristic	• The frequency of the events has increased • The intensity of these events has increased • The duration of these events has increased • The predictability of these events changed • The severity of these events has increased
10	Have sea levels been changing over the last 20 years? In what ways have they changed?	The sea level data at the coast has shown a gradual rise over the last 20 years. Posing a risk of submerging low-lying areas
11	Have rising sea levels been causing problems for community, livelihoods, production systems or industry?	• Popular activities in the coastal area such as tourism, aquaculture and agriculture vulnerable to sea-level rise. Infrastructures in the low-lying areas spreading along the whole coastline are also at risk of significant damaged and/or being submerged under the sea. • Fresh water shortage due to salty water intrusion into aquifers and other sources • Destruction of mangrove forests which are source of livelihoods • Declining marine ecosystem which is resulting to low near-shore fish population which is a major risk to food source. • Destruction of tourist facilities and beaches by sea level rise.
12	Are any of these changes causing particular problems for vulnerable groups (women/elderly/youth)?	• Food insecurity due to declining fish catch. • Loss of employment and poverty due to declining fishing activities.

	LOCAL PERSPECTIVE OF WEATHER AND CLIMATE	
		• Displacement due to flooding in low lying areas which cover 37% of coastal area.

4.0 ANALYSIS OF EXISTING RESILIENCE /ADAPTATION STRATEGIES TO CURRENT AND FUTURE CLIMATE RISKS

4.1 Overview of Existing Adaptation/Resilience Strategies and Their Effectiveness to Current Climate Risks

Table 4.1 gives the current hazard risks in the county and the strategies adopted for resilience as given by women, youths, special groups, PLWDs and other minority groups conducted in the county on various dates in the month of May, 2023. Table …gives the strategies adopted by various groups and the level of effectiveness.

Table 4.1: Adaptation Strategies for Current Climate Risks and Gaps, Embu County

Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
Drought	**Agriculture sector**		
	• Conservation farming- Terracing, mulching, organic manure use	• Lack of soil conservation structure • Low use of compost manure	• Upscale climate smart agriculture • Use crop manure • Enhance soil and water conservation at the household level
	• Small scale water harvesting and storage	• Low community capacity to harvest and store water	• Training and up scaling on-farm water harvesting technologies • Subsidizing water harvesting infrastructure
	• Small scale adoption of drought tolerant crops and early maturing crops	• Inadequate and high cost of crop seed and planting materials • Low awareness among the farmers	• Up scaling of early maturing and drought tolerant varieties • Community seed bulking
	• Sprinkler irrigation	• Insufficient water for agriculture	• Adoption of drip technology • Expansion of irrigation infrastructure
	• Household level forage conservation	• Inadequate forage conservation practices	• Silage technology, hay bailing, pasture reseeding and bulking, construction of community feed stores

Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
	• Poultry feed formulation-small scale • Low adoption of kitchen gardens	• Upscale feed formulation • Upscale use of kitchen gardens	• Raw materials and equipment, training • Water harvesting for kitchen gardens promotion
	B) Water Sector		
	• Use of hand pump boreholes	• Strenuous and time wastage • mechanical breakdown, • low output, high maintenance cost	• Sinking and rehabilitation of boreholes; • Solarization of existing boreholes;
	• Low capacity dams (earth, sand and pans) • Siltation of dams	• Insufficient water, • Evaporative loss, • Deep percolation	• Rehabilitation of earth dams, • Construction of earth dams, sand dams and water pans, • Use of liners and green surface cover, • promotion of farm pods
	• Small scale irrigation schemes	• Low coverage	• Extension of existing pipeline
	• Existing natural springs	• Unmapped, unlegislated and Unprotected springs	• spring protection,
	• Existing rock outcrops	• Not harnessed	• Rock catchment
	• Water harvesting at sub-optimal levels	• Low adoption of water harvesting technologies	• water tanks, run off water harvesting
	C) Environment and forestry		
	• Deforestation,	• Low forest and tree cover,	• Afforestation, • River line tree planting, • Commercial nursery establishment, • Bamboo propagation using modern technology, • Agroforestry, • School greening programs, • Climate smart markets,

Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
			• Material Recovery Facility, • Water reuse and recycling, • Promotion of renewable energy for agro-based industry, • Provision of climate services, • Mainstreaming ICT use, • Woodlot establishment, • promotion of commercial forestry, • Energy saving jikos, biogas production technologies, • Solar energy mechanisms
	• Solid waste	• Uncontrolled solid waste	• sustainable solid waste management
	• Sand harvesting	• Uncontrolled Sand harvesting	• Enact appropriate policies and acts to guide on the activity
	D) Infrastructure		
	• Pro-base method of tarmacking and road repairs	• Dilapidated infrastructure as a result of flooding and flash floods	• Grading and murraming of roads, • Opening of new access roads for market access, • Road bridges and drifts for climate proofing actions • Climate smart industrial parks •
	• Reduction of post-harvest losses	• High-post harvest losses	• Establishment of new market centers • Construction food stores • Aggregation centres, • milk cooling machines,

Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
			•
Emerging Crop and Animal Pests	• Breeding for pest and disease resistant • Using IPM methods of control • Using ITK (Indigenous Traditional Knowledge) methods	• Over use of chemical methods of pests and disease control • Lack of safe and effective use of agrochemicals	• Training on safe and effective use of agro chemicals • Safe disposal of chemical wastes • Use of bio-pesticides
Erratic rains	• Relying on ITK methods • Information from the meteorological department	• Poor crop germination • Poor yields • Low animal forage and pasture • Poor recharge of rivers and water sources	• Reliable weather information • Breeding for drought resistance • Policy guidelines on river banks protection and water sources
Flash floods	• Infrastructure proofing • Digging cut off drains	• Inadequate funds for infrastructure proofing • Lack of technical skills for digging cut of drains and other types of terraces	• Resource mobilization for infrastructure exercises

4.2 Effectiveness of Adaptation/Resilience Strategies to Future Climate Risks

This subsection evaluated the effectiveness of existing adaptation and resilience strategies in Embu County in addressing projected future climate risks. It assessed the suitability and robustness of these strategies in the face of anticipated changes in temperature, precipitation patterns, extreme weather events, and other climate variables. The evaluation identified gaps or areas where additional efforts or new strategies were required to ensure the county's resilience to future climate risks was secured.

Suitability Assessment: The assessment considered the extent to which identified strategies aligned with the anticipated changes in climate conditions and the associated impacts on different sectors and vulnerable communities within Embu County. The assessment examined whether the strategies were appropriately designed for the projected climate scenarios.

Robustness Evaluation: The evaluation was robust and was carried out across the different groups in the social strata. It examined whether the strategies were resilient enough to withstand and recover from potential climate-related shocks and stresses. This included the capacity of the strategies to adapt and evolve as the climate change does over time. The evaluation also examined flexibility, scalability, integration, and the long-term sustainability of the strategies.

Identification of Gaps: During the evaluation, gaps or shortcomings in the existing adaptation and resilience strategies were identified. These gaps included strategies that were insufficient or ineffective in addressing specific future climate risks. For example, there were sectors or communities that were not adequately covered by existing strategies, or emerging climate risks that required additional attention. The identification of gaps helped in identifying new or revised strategies that were needed.

Recommendations for Additional Efforts or New Strategies: Based on the evaluation, recommendations were provided for additional efforts or new strategies were devised to enhance the county's resilience to future climate risks. These recommendations included development of new adaptation measures, policy revisions, capacity-building initiatives, stakeholder engagement, and awareness-raising activities. The aim was to address the identified gaps and ensured that the county was adequately prepared for the anticipated changes in climate conditions.

By evaluating the effectiveness of the existing adaptation and resilience strategies to future climate risks, this subsection provided valuable insights into the county's readiness and preparedness. It identified gaps and areas that required further attention and offered recommendations for strengthening the county's capacity to adapt and build resilience. This evaluation contributed to the ongoing efforts to develop robust and effective strategies that can successfully address the future climate challenges faced by Embu County.

In view of the foregoing, it was recommended that:

i. Mega water harvesting infrastructure required external support.
ii. The expansion of irrigation schemes required a heavy investment that the community needs to lobby for from stakeholders.
iii. Communities needed extensive training on climatic conditions and their impacts.
iv. There was need to adapt to smart technologies that were environmentally friendly and reduce gas emissions.

Table 4.2: Effectiveness of Adaptation/Resilience Strategies to Future Climate Risks, Embu county

Risk/ Hazard	Livelihood/Economic System	Climate Resilience Strategies	Stakeholder Group Applying the Strategy	Gender and Social Inclusion information
Drought	• Conservation farming- Terracing, mulching, organic manure use • Small scale water harvesting and storage • Small scale adoption of drought tolerant crops and early maturing crops • Sprinkler irrigation • Household level forage conservation • Poultry feed formulation-small scale • Low adoption of kitchen gardens • Use of hand pump boreholes • Low capacity dams (earth, sand and pans) • Siltation of dams	• Upscale climate smart agriculture • Use crop manure • Enhance soil and water conservation at the household level • Training and up scaling on-farm water harvesting technologies • Subsidizing water harvesting infrastructure • Up scaling of early maturing and drought tolerant varieties • Community seed bulking • Adoption of drip technology • Expansion of irrigation infrastructure • Silage technology, hay bailing, pasture reseeding and bulking, construction of community feed stores • Raw materials and equipment, training • Water harvesting for kitchen gardens promotion • Sinking and rehabilitation of boreholes;	All categories but in varying intensities; those implementing most of these technologies are large scale farmers, followed by medium scale. Female headed, child headed, youths and PLWDs implement on a micro scale	Most of the technologies require funds for implementation. Majority of the implementers belong to vulnerable groups and cannot implement without funds

Risk/ Hazard	Livelihood/Economic System	Climate Resilience Strategies	Stakeholder Group Applying the Strategy	Gender and Social Inclusion information
	• Small scale irrigation schemes • Existing natural springs • Existing rock outcrops • Water harvesting at sub-optimal levels • Deforestation, • Solid waste • Sand harvesting • Pro-base method of tarmacking and road repairs • Reduction of post-harvest losses • Breeding for pest and disease resistant • Using IPM methods of control • Using ITK (Indigenous Traditional Knowledge) methods • Relying on ITK methods	• Solarization of existing boreholes; • Rehabilitation of earth dams, • Construction of earth dams, sand dams and water pans, • Use of liners and green surface cover, • promotion of farm pods • Extension of existing pipeline • spring protection, • Rock catchment • water tanks, run off water harvesting • Afforestation, • River line tree planting, • Commercial nursery establishment, • Bamboo propagation using modern technology, • Agroforestry, • School greening programs, • Climate smart markets, • Material Recovery Facility, • Water reuse and recycling, • Promotion of renewable energy for agro-based industry, • Provision of climate services, • Mainstreaming ICT use, • Woodlot establishment,		

Risk/ Hazard	Livelihood/Economic System	Climate Resilience Strategies	Stakeholder Group Applying the Strategy	Gender and Social Inclusion information
	• Information from the meteorological department • Infrastructure proofing • Digging cut off drains	• promotion of commercial forestry, • Energy saving jikos, biogas production technologies, • Solar energy mechanisms • sustainable solid waste management • Enact appropriate policies and acts to guide on the activity • Grading and murraming of roads, • Opening of new access roads for market access, • Road bridges and drifts for climate proofing actions • Climate smart industrial parks • Establishment of new market centers • Construction food stores • Aggregation centres, • milk cooling machines, • Training on safe and effective use of agro chemicals • Safe disposal of chemical wastes • Use of bio-pesticides • Reliable weather information • Breeding for drought resistance		

Risk/ Hazard	Livelihood/Economic System	Climate Resilience Strategies	Stakeholder Group Applying the Strategy	Gender and Social Inclusion information
		• Policy guidelines on river banks protection and water sources • Resource mobilization for infrastructure exercises		
Emerging crop and animal pests and diseases	• Breeding for pest and disease resistant • Using IPM methods of control • Using ITK (Indigenous Traditional Knowledge) methods	• Training on safe and effective use of agro chemicals • Safe disposal of chemical wastes • Use of bio-pesticides		
Erratic rainfall	• Relying on ITK methods • Information from the meteorological department	• Reliable weather information • Breeding for drought resistance • Policy guidelines on river banks protection and water sources		
Flash floods	• Infrastructure proofing • Digging cut off drains	• Resource mobilization for infrastructure exercises		

5.0 COUNTY CLIMATE STRATEGIC ADAPTATION INVESTMENT/ACTION PRIORITIES

The section presents the strategic adaptation and resilience investment priorities identified during the climate risk assessment workshops. These priorities aim to strengthen the adaptive capacity and resilience of key livelihood, social and economic systems within the county. Environmental concerns especially those tackling land degradation and climate change are a key strategic intervention. The priorities are aligned with the County Integrated Development Plans and County Climate Policies and reflect the differentiated needs of women, youth, ethnic minorities, people living with disabilities, and other marginalized and vulnerable groups. The priorities address the county, sub-county, and ward levels, and cover a range of strategies, including strengthening local processes and systems, building local capabilities, and physical infrastructure investments.

The priority areas of investment to enhance livelihoods and address risks and hazards are outlined in Table 5.1. Some of the suggested programs, projects and approaches that were developed to respond to current and anticipated climate change impacts in various sectors and areas of potential community concern.

Table 5.1: County climate strategic adaptation investment

Risk/ Hazard	Livelihood/Economic system	Priority Areas of Investment
	Agriculture and Livestock	
Drought	To Enhance Adaptation And Mitigation To Climate Change	1. Adoption of climate smart, technologies, innovation, and management practices (including conservation agriculture, climate smart seeds varieties, ecologically adapted crops, agroforestry, regenerative agriculture). 2. Enhancing the use of climate change adaptation information science. 3. Weather forecasting and early warning systems
	To Reduce Overreliance On Rain Fed Agriculture.	1. Expansion of irrigation infrastructure including efficient water use technologies (e.g., sensor-based irrigation). 2. Investment in water harvesting for crop production (e.g., small earth dams, boreholes, water pan, ponds). 3. Construction of irrigation distribution networks 4. Sensitize and train farmers on irrigation water harvesting. 5. Support farmer led irrigation projects.

Risk/ Hazard	Livelihood/Economic system	Priority Areas of Investment
		6. Protect catchments areas and riverbanks. 7. Provision of water banks for the Vulnerable and the Marginalized Groups
	Value Addition on Agricultural Products	1. To maximize on prices of limited supply of agricultural produce
	Increase Livestock Productivity.	1. Support farmers with high producing and climate adapted breeds 2. Promotion of destocking 3. Promote climate smart genetic resources
	Sustainable Livestock Pasture And Fodder Supply	1. Promote establishment, conservation & preservation of fodder. 2. Promote use of community hay bans 3. Promote pasture & fodder production & mechanization 4. Establishment of fodder banks
	To reduce Post-Harvest Losses	1. Promote value addition for livestock products & by products. 2. Installation of satellite milk coolers. 3. Establishment of cold chain infrastructure (satellite coolers, transport, ripening cheeses facilities) 4. Construction of milk processing plant 5. Establishment of grain banks
	Promotion of Apiculture as an Alternative Livelihood.	1. Support farmers with bee keeping equipment. (Hives, harvesting kits)
	Environment and forestry	
	Sustainable Utilization and Management of County Natural Resources and Landscapes	1. Undertake public education and environmental awareness campaigns. 2. Protect catchment areas, riverbank and riparian land. 3. Promotion of environmentally friendly practices and technologies 4. Prepare and disseminate advisories and information. 5. Develop legislative framework. 6. Rehabilitation and conservation of forests, hills, swamps, wetlands, springs areas
	Climate change mitigation and adaptation action	1. Establishment of climate change policy and legal framework 2. Promoting partnership in addressing climate change issues

Risk/ Hazard	Livelihood/Economic system	Priority Areas of Investment
		3. Implementation of adaptive and mitigative measures 4. Clean energy transition initiatives 5. Weather forecasting and early warning systems
	Water	
	To improve access to adequate, reliable, and affordable quality water.	1. Construction of Water storage tanks 2. Drilling of boreholes 3. Protection of water sources and catchment areas 4. Expansion of Water distribution networks 5. Prepare and disseminate advisories on Effective Water Resource Use. 6. Excavation of new earth dams. 7. Solarization of existing boreholes.
	Climate proofing infrastructure	
	To help residents of Embu build a resilient community in the face of all types of Climate Related effects on Infrastructure	1. Sensitization and provision of timely and actionable information to our people to Mainstream disaster risk mitigation behaviour change through
Emerging Crop and Livestock Pests and Diseases	**Agriculture and Livestock**	
	Climate change mitigation and adaptation action	1. Promotion of pest and disease resistant crops and animal varieties 2. Breed improvement schemes for women, youth and PWDs 3. Enhance research surveillance of emerging pests and diseases 4. Community capacity building on emerging pests and disease control. 5. Integration of herbal medicine in Crop and Livestock pests and diseases management.
	Environment and Forestry	
	Forest and Wildlife Management	1. Proper management of tree forage through bee vectoring technology to reduce on defoliation 2. Forest and wildlife breeding for resistance 3. Restrict interactions between wildlife and domestic Livestock 4. Promotion of indigenous agroforestry technologies for the Vulnerable and the Marginalised Groups

Risk/ Hazard	Livelihood/Economic system	Priority Areas of Investment
	Water	
	Water Contamination	1. Proper treatment of water to avoid to avoid transmission of diseases and vectors
Erratic rainfall	**Agriculture and Livestock**	
	Climate change mitigation and adaptation action	1. Establishment of grain, seed and fodder banks 2. Soil and water conservation structures 3. Promotion of reafforestation activities 4. Water harvesting structures 5. Increase soil surface cover 6. Establishment of pasture and fodder fields
	Environment and forestry	
	Climate change mitigation and adaptation action	1. Promotion of fast-growing tree species 2. Increased soil surface cover 3. Planting of vegetation species that is customed change in ecological conditions 4. Promotion of soil and water conservation structures
	Water	
	To improve access to adequate, reliable, and affordable quality water.	1. Construction of Water Banks for Enhanced Storage. 2. Drilling of boreholes 3. Protection of water sources and catchment areas 4. Expansion of Water distribution networks 5. Prepare and disseminate advisories on Effective Water Resource Use. 6. Installation of water treatment facilities 7. Desilting and rehabilitation of existing earth dams
	Climate proofing infrastructure	
	To build resilient communities to disasters that affect the infrastructure	1. Construction of bridges and drifts 2. Grading and maraming of access roads 3. Unclogging and expansion drainages 4. Proper waste management 5. Reinforcement and repair of weak infrastructure
Flash Floods	**Agriculture and Livestock**	

Risk/ Hazard	Livelihood/Economic system	Priority Areas of Investment
	Climate change mitigation and adaptation action	1. Change of crop type 2. Evacuation of Livestock 3. Increased soil surface by planting cover crops 4. Promotion of Farm land terracing 5. Manure application and composting to replenish soil biology 6. Crop alternation 7. Planting of flood resistant/torelant crops and vegetables
	Environment and Forestry	
	Community Resilience To Floods	1. Afforestation 2. Restoration of riparian land 3. River bank protection 4. Planting of flood resistant trees 5. Weather forecasting and early warning systems
	Water	
	To improve access to adequate, reliable, and affordable quality water.	1. Rain water harvesting structures 2. Installation of water treatment facilities 3. Weather forecasting and early warning systems
	Climate proofing infrastructure	
	To build resilient communities to disasters that affect the infrastructure	1. Structural measures eg flood barriers, sock pit, trenching, mud holes, flood walls, water proofing of buildings, adequate drainage systems, unclogging of water course, maintenance of existing infrastructure eg dams, culverts, bridges 2. Non-structural measures eg evacuation routes, relocation, zoning, building codes,

6.0 CONCLUSION

The Participatory Climate Risk Assessment (PCRA) provides a comprehensive analysis of current and future climate risks and hazards faced by the various communities and residents of Embu County. The PCRA process used participatory tools and procedures to actively engage stakeholders in all the Wards including communities and other local actors. The needs of women, youth, ethnic minorities, people living with disabilities and other marginalised and vulnerable groups were mainstreamed in the process. The perspectives, knowledge, and experiences of the community and other stakeholders on climate risks and hazards were discussed. The process fostered a collaborative and inclusive approach, empowering the communities to actively contribute to the assessment and decision-making processes.

Analysis of historical records of weather indicate that both dry spells and extreme precipitation are recurrent hazards in the County. The seasonal distribution, onset and cessation of rainfall within the county varies significantly for both MAM and OND seasons. The key climate risks and hazards that were identified by the community are: Drought, Erratic rainfall, Crop/animal pest and diseases and Flash Floods. The spatial distribution of climate risks and hazards in Embu county is influenced by the Agro-ecological Zones (AEZs) depended on the thermal and altitudinal conditions. The potential impacts of these climate risks are diverse and far-reaching.

The PCRA gives key recommendations and priority actions that need to be put in place to mitigate the effect of climate risks and hazards. These include strengthening Climate Information and Early Warning Systems and investing in improved climate monitoring and early warning systems so as to provide accurate and timely information for decision-making. Implementation of integrated water resource management strategies that promote sustainable use, conservation, and efficient water allocation.

At community and household levels, there is need to build resilience through promoting Climate-Smart Agriculture and supporting farmers in adopting climate-smart agricultural technologies that increase resilience to climate risks. These may involve promoting agroforestry, conservation agriculture, and crop diversification to enhance soil health, water management, and crop productivity. Other measures include mainstreaming Climate Change Adaptation into planning and decision-making across all other sectors.

The identified priority interventions aim to strengthen key livelihood, social, and economic systems, with a focus on addressing environmental concerns related to land degradation and climate change. The priorities align with the County Integrated Development Plans and County Climate Change Policies, taking into account the specific needs of marginalized and vulnerable groups. The PCRA report provides the necessary information and guidance to inform policies, programs, and investments that address climate change associated hazards and risks and promote cross-sector resilience mechanisms.

.

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APPENDICES

Appendix 1 Scanned copies of the attendance sheet for the validation workshop held to validate the Participatory Climate Change Risk Assessment which formed the basis for the Embu County Climate Change Action Plan held on 23rd May 2023 and 24th May 2023, Embu County Headquarters Conference Hall, Kangaru.

COMMUNITY

Embu County Climate Change Action Plans Participatory Meeting Attendance List

County Embu PCRA/ ACTION PLAN STAKEHOLDERS
Sub County______
Ward______ CONSULTATION MEETING — 23-24/May/2023
Date 23/05/2023

S/NO	Name	ID NO.	Mobile NO	Gender		Category and/ or position (Chairman, Sec, People Living with Disability etc.)		Age (Tick)			SIGN	
				Male(M)	Female(F)	YES	NO	18-35 Yrrs	35-60Yrs	Above 60	DAY 1	DAY 2
1.	Edith Mbiro	5093142	0729809742		✓	Chairlady				✓	[signature]	
2.	Juliet Wawira	13571519	0719689447		✓	Chairlady			✓	✓	[signature]	
3.	HARRIET KIVUTI	8235536	0713548952		✓					✓	[signature]	
4.	FAITH WANJA	24379941	0704460372		✓				✓		[signature]	
5.	Lucy Mary	13572360	0718435149		✓				✓		[signature]	
6.	CHRISTOPHER NJERU	~~0722645~~ 9062014	0722645582	✓					✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
67.	BANCY NJUKI	38208973	0741057224		✓	Community.	✓			[signature]	
68.	IMELDA NYAWIRA	37004174	0705044696		✓	KITHIMU YOUTH REP	✓			[signature]	
69.	MAGDALENE MWENDE	25171866	0727636076		✓	Community	✓			[signature]	
70.	Emilio Njiru Mugeti	22791210	0719322096	✓	✓	Rugurui Member, TREASURER	✓	✓		[signature]	
71.	Cathrine Wambui	26424301	0711362554			Gatumi S. chairperson	✓			[signature]	
72.	Eunice Gicuku Kinyua	3515694	0720917868		✓	Kithimu W. member		✓		[signature]	
73.	PAULINE KAGENDO	12577669	0718061289		✓	Kyeni H. member		✓		[signature]	
74.	PURITY W. NJERU	24154888	0725696286		✓	SEC Kagaari South		✓		[signature]	
75.	ALBERT MUNYI	13339404	0720289136 0720289136	✓		Climate Change		✓		[signature]	
76.	JUSTUS NJERU	9820343	0727300449		✓	CHAIRMAN		✓		[signature]	
77.	Frankline Murimi	36331385	0706438207	✓		mufu Youth Rep	✓			[signature]	
78.	DEDAN GITAHI	11482106	0722716935	✓		chairman		✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
55.	JOSEPH IRERI	26474451	0728147298	✓		MUMINJI COMMITTEE MEMBER	✓				
56.	GABRIEL KINYUA	12933314	0724985825	✓		GATUE SOUTH COMMITTEE M.		✓			
57.	ASHA GITIRI	5096258	0724597394		✓	GATUE SOUTH C/member.		✓			
58.	MARIANNE WANJIRU	23466583	0724396619		✓	COMMUNITY		✓			
59.	MORRIS NJERU	29216477	0703631038	✓		EVURORE YOUTH REP	✓				
60.	Florence Karimi	22561060	0728765116		✓	EVURORE WOMEN RP		✓			
61.	Irene Wanjiru	26242991	0723965497		✓	Community	✓				
62.	DAVID KINYUA	10460723	0724112483	✓		community		✓			
63.	Catherine Mungi	31498156	0705201249		✓	Community	✓				
64.	MARTIN KINYUA	10640793	0725220456	✓		community		✓			
65.	Nicodemus Kiambi	12402229	0711138881	✓		MAKIMA V.BA		✓			
66.	MURITHI GATUG JOYCE	39534952	07908 74666		✓	Community	✓				

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
43.	JANE MARIA	12773517	0715099110		✓	NTHAWA WOMEN Rep.		✓			
44.	JACKLINE MUNEE	13424638	0712896528		✓	CENTRAL RUNJE CHAIRPERSON		✓			
45.	LERA WAMBUI	11975931	0701991186		✓	GATURI NORTH youth rep	✓				
46.	DICKSON NJAGI	25870502	0720580582	✓		Community	✓				
47.	Felix Muriuki	39282029	0799191398	✓		communication dept. County	✓				
48.	Kelvin Maina	39236182	0796778990	✓		Community	✓				
49.	Brian Mwaniki	41520850	0740672963	✓		Community	✓				
50.	Silvia Wanjiga	39031525	0114578958		✓	Community	✓				
51.	Silvario Mwiga	20875234	0715447417	✓		KITHIMU Youth rep	✓				
52.	Labani Mukoshi	25747283	0719878872	✓		Community	✓				
53.	Arnes Wanjiku	29910258	0710937677	✓		Community	✓				
54.	Martin Njue Nyaga	25539157	0725316074	✓		GATURI SOUTH Climate committee	✓				

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
31.	FRACIA NTHENITHII M.	27303421	0716105698	F.	✓	KAGAARI NORTH YOUTH	~~35~~	✓			
32.	JACKLINE WANJA MUGO	30667764	0716481066		✓	COMMUNITY	✓				
33.	Donald Nyaga	9679141	0715058[illegible]	—		PWD			✓		
34.	MICHAEL NJERU	10222964	0722223169	✓		W/ADMIN		✓			
35.	EPHRAIM MUGAI	13571421	0722899852	✓		COMMUNITY		✓			
36.	TITUS MUCHIRI	23241187	0724893927	✓		MAVURIA SECRETARY		✓			
37.	JOHNSON WAITHI	27461290	0724143341	✓		COMMUNITY	✓				
38.	HARON MURIMI	28460124	0792797470	✓		COMMUNITY	✓	✓			
39.	FAITH GAKU	95224489	0720217787		✓	COMMUNITY		✓			
40.	~~EUNICE W. MUTUA~~	9522489	0720217787		✓	COMMUNITY		✓			
41.	EUNICE W. MUTUA	13262439	0721275999		✓	COMMUNITY		✓			
42.	Henry Kithiga	8600805	0725048824	✓		PLWD		✓			

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
19.	CHRISPHINE KUUTI	26523050	0713740718	M		YOUTH REP KYENI SOUTH	✓			[signature]	
20.	SHARON MUGENDI	35132007	0745109060	~~F~~	F	Community	✓			[signature]	
21.	MIANI KAMAU	27474156	0722222159	M		METEOROLOGICAL		✓		[signature]	
22.	ANTONY KARIUKI NJERU	21727742	0729547191	M		MEN /KAGAARI NORTH		✓		[signature]	
23.	MERCY WAWIRA HOSEA	25630481	0714969823	~~F~~	F	WOMEN KAGAARI	✓			[signature]	
24.	LENNY MUGAMBI NJIRU	37855981	0716410741	M		Community	✓			[signature]	
25.	GRACE RUGURU NJERU	23691965	0722-800259	~~F~~	F	Committee MAVURIA		✓		[signature]	
26.	DAVIE KIMATHI GACUMA	30945053	0742249344	M		Community	✓			[signature]	
27.	WINCATE MUKAMI	29554112	0727491575	~~F~~	F	E.C.G	✓			[signature]	
28.	BRIAN MUNENE	34349282	0700543629	M		Youth Rep Kanja South	✓			[signature]	
29.	BENSON NYAGA	30061745	0700014550	M		ECG	✓			[signature]	
30.	ROBERT NJUE	30014445	0717056022	M		ECG	✓			[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER MALE	FEMALE	Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick·) 18-35 Yrs	35-60 Yrs	Above 60 Yrs	SIGN DAY 1	DAY 2
7.	Peter Mwaniki	1337 6532	0724101605	M		PWD		✓		[signature]	
8.	Samson M Mika	21511485	0711 570882	M		Treasurer PWD		✓		[signature]	
9.	Michael Muga	5083098	0721328247	✓					✓	[signature]	
10.	JACKLINE NJOGU	35540438	0769945774	F	✓		✓			[signature]	
11.	CATHERINE MUTHONI	37971779	0769933542		✓		✓			[signature]	
12.	AGNES NYAGA	27072085	0728915265		✓		✓			[signature]	
13.	Ann M. Muriithi	5096391	0725219179	F	✓	CFA Njukiini		✓		[signature]	
14.	James Njeru Nyaga	11241806	0710136907	M		MCA REP Kirimara		✓		[signature]	[signature]
15.	NELSON NYAGA	24977812	0729851016	✓		Kithimu Treasurer		✓		[signature]	
16.	JOHN MUGAMBO NJIRU	7034283	0705381431	M		PLWD		✓		[signature]	
17.	Joseph Gitonga	13619993	0720756005	✓		Rwimenta Kithunguri		✓		[signature]	
18.	Silas Kinehi	21937497	0720982004			Community		✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
79.	Climate Pal Ltd	22044799	0721229599 0725111333		F	Coordinator		✓			
80.	Millicent Keegendo	26645573	0716757447		F	CHV	✓				
81.	Edna Mukami	34315696	0791539838		F	CHV	✓				
82.	DICKSON NJIRU NYOTA	7805551	0727629862	M	M	COMMITTE		✓			
83.	ELIZABETH WANJIR	22150580	0726631760		F			✓			
84.	IRENE NJERI	27286497	0726489301		f			✓			
85.	ANTONY MUSAVA	25778183	0724777149	M		Committee		✓			
86.	MOSES MUNENE	25100240Z	0717079101	M		CHAIRPERSON	✓				
87.	LUCY WAMAITHA	23362753	0722340277		F	Committee		✓			
88.	ANTHONY MAINA	28417426	0719706725	M		PLWDs	✓				
89.	PETER MWAMKI	13572304	0729283818	M		Committee		✓			
90.	ROSELINE WAMIRA K	35157299	0798793623	F		YOUTH REP.					

STAKEHOLDER.

Embu County Climate Change Action Plans Participatory Meeting Attendance List

County Embu

Sub County_____

Ward_____

Date 23/05/2023- 24/05/2023

S/NO	Name	ID NO.	Mobile NO	Gender		Category and/ or position (Chairman, Sec, People Living with Disability etc.)		Age (Tick)			SIGN	
								18-35 Yrrs	35-60Yrs	Above 60		
				Male(M)	Female(F)	YES	NO				DAY 1	DAY 2
1.	JOHN ITIERITU	28430019	0769309484	✓		ECC ✓		✓				
2.	Caroline Weri	26488010	0724935810		✓	ECC ✓		✓				
3.	Newton Mwaolima	11022613	0724324421	✓		ECC			✓			
4.	Charles Nr. Ongiri	853343	0721782254	✓		CoEm			✓			
5.	Daniel Mutungi	21782942	0722161870	✓		LIVESTOCK DPT.						
6.	Wilfred Patrick Nyaga	13339650	0757699719	✓		ENVI			✓			

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
43.	Dorothy Karimi	27651229	0710369859		✓	Community		✓	DK		
44.	Lachan Mjura	2074264	0723228308		✓	Comm.ty		✓	L.M		
45.	Joseph Kinyua	10729559	0721322569	✓		Community		✓			
46.	LILIAN WANGESHI	29002702	0717079164		✓	COMMUNITY	✓				
47.	Jane N Mdwiga	7920081	0721913102		✓	Community		✓			
48.	Lewis Mwenitki	3685752	0745873760	✓		Community	✓				
49.											
50.											
51.											
52.											
53.											
54.											

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
91.	Joshua Munene	38866690	0794248038	✓		Community	✓			[signature]	
92.	THOMAS N. NYAGA	8293479	0724501442	✓		Community			✓	[signature]	
93.	Kellen K. Ntaga	11460134	0726541313		✓	Kivimari Committee M.		✓		[signature]	
94.	JOHN NDWIGA	11023078	0710324758	✓		Kigumo I,Z Secretary		✓		[signature]	
95.	Wilfred Patrick Nyaga	13339650	0757699719	✓		Community		✓		[signature]	
96.	SAMMY NJERU	9819786	0720207170	✓		COMMUNITY		✓		[signature]	
97.	Caroline Wawira	22579252	0727640766		✓	Itangani Committee Member	✓			[signature]	
98.	MILKAH W. NYAGA	4877996	0724870546		✓	community			✓	[signature]	
99.	JULIET WAWIRA MUKIRI	33264043	0759925363		✓	Community	✓			[signature]	
100.	CHRISTINE MURUGI NJERU	37221540	0704547946		✓	committee member Mavuria	✓			[signature]	
101.	EDWIN NGUCI	33248104	0740336428	✓		MAVURIA C-MEMBER	✓			[signature]	
102.	MARTIN MURITHI	23324863	0721648059	✓		Community		✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
79.	JUSTIN GITONGA	25420730	0795555937	✓			✓			[signature]	
80.	BONIFACE MWENDA	27317509	0704986078	✓			✓			[signature]	
81.	DAVID MURIUKI	7451357	0720032255	—			✓			[signature]	
82.	PETER MURITHI	37088200	0794700681	✓		Community	✓			[signature]	
83.	JOSIAH KINYUA	22609221	0720014785	✓		Sec [illegible]		✓		[signature]	
84.	LAWRENCE GITONGA	22216621	0724121879	✓		COMUNITY		✓		[signature]	
85.	Joyce Wadhera	27870252	0718279022			Community	✓			[signature]	
86.	EZEKIAH Mugambi	27815823	0703683306	✓		Community	✓			[signature]	
87.	Augustine Njiru	3305080	0712703723	✓		Community			✓	[signature]	
88.	JOSECK NYAGA	21989768	0712785495	✓		Community		✓		[signature]	
89.	BEATRICE Gicuku	1292023	0725179769		✓	Community			✓	[signature]	
90.	BRIGID IGOKI	23324463	0725447947		✓	Community		✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
67.	SILA MWANIKI	5755725	0715802153	✓				✓	✓		
68.	Joseph muriithi	13644664	0727817128	✓				✓			
69.	Grace Wairimu	11746643	0723661307		✓			✓			
70.	Espon Wanyoike	2913205	0722685179	✓					✓		
71.	LUISE MUNINI	9412635	0723958236		✓			✓			
72.	GLADWELL WAITHIRU	40120901	0754531002		✓		✓				
73.	AGNES W. NGARI	22015042	0721200356		✓			✓			
74.	KAMOY M MWITOKA	23690835	0729513960	✓				✓			
75.	KEVIN MURIMI NYAGA	40463192	0701150148	✓			✓				
76.	EZEKIEL NYAGAH	20009370	0721325304	✓				✓			
77.	CATHERINE NYAKI	13179414	0703935358		✓	COMMUNITY		✓			
78.	JOHN KIRAGU	13263854	0113662334	✓		Community H.		✓			

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER MALE	FEMALE	Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick) 18-35 Yrs	35-60 Yrs	Above 60 Yrs	SIGN DAY 1	DAY 2
55.	JANE WANJARI	13177301	0759528887	F	F	NDMA		✓			
56.	JOSEPH MUNITHI	11023424	0757106031	M				✓			
57.	GODFREY NJUKI	9284073	0721582096	M		WARD ADMIN-M/S		✓			
58.	ELIAS GACIONGO	3736900	0717381809	M	[illegible]				✓		
59.	VIRGINIA MUKAMI	30680452	0713662188		F	Community	✓			[illegible]	
60.	GRACE MURUGI	31616931	0790772621		F	YOUTH	✓				
61.	CHRIS										
62.	Dennismark mwaini	35107423	0798933866	M.		Youth	✓			[illegible]	
63.	ELIJAH NJAGI	0297424	0719458862	M		SPECIAL NEEDS		✓		[illegible]	
64.	JOSPHAT NYAGA	7035999	0791192026	M		MEN REP.		✓		[illegible]	
65.	MOSES KAMAU	3758445	0729312800	M		WARD Ch		✓		[illegible]	
66.	PHILOMENA WANJIRU	24492731	0725961237	F	F	YOUTH REP NTHAWA	✓			[illegible]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
43.	MARY MUTHONI	13755072	0720165622		✓	KITHIMO EXCutive		✓		✓	
44.	PELAGON NJIRU	22606487	0720731167	✓		KARUMO		✓			
45.	PAULINE MUTHONI	6207624	0729858435	✓	✓	member Kaagan S/W		59			
46.	CATEGINA NJERU	22222108	0746888646		✓	member Kaagan S/W		✓			
47.	GABRIEL NYAGA	3510049	0712274015	✓		KYENI		70			
48.	MILLICENT WANJA	25915534	0710725779		✓	KIRINGA	✓				
49.	JAHSON MURIUKI	28327803	0716244086		✓	KIRIMARI	✓				
50.	VIRGINIA WANJIRU	24116749	0701867585			E.C.G		✓			
51.	JAMES MWAURA	26898	0723117935	✓		MBEI NORTH MCH REP		✓			
52.	ROSE NSERI MUGO	24960344	0721728306		✓	PWD		✓			
53.	MARIS NJOKI	20243985	0725924145		✓	WRA		✓			
54.	ELIJAH KAMUNYI	1298127	0712803978	✓				✓			

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec, PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
31.	BONFACE KIETI	2201698	0724777646	✓		WCCPC MAKIMA		✓		✓	
32.	MICHAEL GICHIGA	23205610	0721683115	✓		CHAIRLADY		✓		✓	
33.	NICHOLAS M. NBOGUA	20578482	0723780737	✓		COMMITTEE MEMBER		✓			
34.	Gladys Njeri	32295574	0112752406		✓			✓			
35.	Silas A. Mutana	36875827	0707773620	✓		Committee member	✓				
36.	LUCY WANJIRA KAHANDE	22790566	0703981 353		✓			✓			
37.	IGNATIUS NTHIGA NGAI	13723780	0723997335	✓		COMMITTEE MEMBER		✓			
38.	Gladys Njeri	35298574	0112752406	✓	✓	Community	✓				
39.	Grace Kawira	30365548	0768266633		✓	Community	✓				
40.	Charles M. Mungo	21943860	0721859516	✓		Community		✓			
41.	Evalire muthoni wangai	33065207	0759784956	✓	✓	community	✓				
42.											

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
19.	CICILY KANINI NJERU	28024340	0798825257		✓	YOUTH REP NTHAWA	✓			[signature]	
20.	JOSEPHINE WANJA NJIR?	25034181	0725068013		✓	YOUTH REP NTHAWA	✓			[signature]	
21.	LOISE KARIMI NJAGI?	26936587	0717562081		✓	YOUTH REP NTHAWA	✓			[signature]	
22.	CITY GICERI ?	6900944	0707054909	✓		Social worker		58		[signature]	
23.	Stella Kagendo	29250256	0728145282		✓	YOUTH REP WCCP, R+SE.	31			[signature]	
24.	FAITH Mueke	11353072	0715091495		✓	Mcore?	35			[signature]	
25.	CHARLES Kirato?	4952618	0724447715?			MUTEA?	55			[signature]	
26.	Elizabeth N Kisaw?	13571977	0713619133		✓	W REP Muter?	51			[signature]	
27.	Dominic N. Ngeri	4251362	0728160702	✓		PLWD	68		✓	[signature]	
28.	Simon Mwangi?										
29.	Ambrose Nyaga	8600769	0721497294	✓		Community		✓		[signature]	
30.	JANE MUKAMI	22319667	0719273060?		✓	SECRETARY MAKIMA	✓			[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
7.	PATRICK MURIMI NJERU	34097487	0790488166	✓		Hirimari w member.	✓			[signature]	
8.	PATRICK MUNENE NJERU	27696531	0715349921	✓		KYENI NORTH MEMBER	✓			[signature]	
9.	BENSON MUTUNGA	29379100	0701898225	✓		PLWD MAKIMA	✓			[signature]	
10.	Dominic Njeru	20071731	0723829252	✓		Ward Admin		✓		[signature]	
11.	PURITY K. STEPHEN	21937363	0724555485		✓	MBETI SOUTH WOMEN REP		✓		[signature]	
12.	EUNICE KAGENDO N	12882392	0728978839		✓	MBETI NORTH PWDS REP		✓		[signature]	
13.	DORICA KANANA	20962031	0714561682		✓	Mbeti South				[signature]	
14.	Nelly Ciohohi	31443199	0705545471		✓	Mbeti South	✓			[signature]	
15.	CAROLINE IRERI	24725414	0712306499		✓	RUNYENJES CENTRAL WOMEN REP		✓		[signature]	
16.	Charles Njiru	20272204	0714539647	✓		Evurore Ward		✓		[signature]	
17.	Simeon M KIURA	4554020	0721692881	✓		Kithum C.P.		✓		[signature]	
18.	Emily N. Machara	35807649	0704284546		✓	GATURI SOUTH	✓			[signature]	

Embu County Climate Change Action Plans Participatory Meeting Attendance List

County Embu

Sub County______________

Ward________

Date 23/05/2023- 24/05/2023

S/NO	Name	ID NO.	Mobile NO	Gender		Category and/ or position (Chairman, Sec, People Living with Disability etc.)		Age (Tick)			SIGN	
								18-35 Yrrs	35-60Yrs	Above 60		
				Male(M)	Female(F)	YES	NO				DAY 1	DAY 2
1.	GITONGA NJAGI	33457228	0700593643	✓		Youth Community		27			[signature]	
2.	James KARIUKI	13361462	0723517144	✓		SECRETARY NTHAWA			✓		[signature]	
3.	IRENE KANUENDE	21924984	0725651038		✓	Secretary RUGURU/NGANDORI			✓		[signature]	
4.	Jesphet Ngothu	11352438	0723936806	✓					✓		[signature]	
5.	Faith Muthoni	10227720	0722580175		✓				✓		Faith	
6.	Lucy G. NJAGI	23166971	0728585972		✓	COMMITTEE MBETI NORTH			✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
19.	Mary Mwangi	34267384	0792612920		✓	Community	✓				
20.	Sheila Wanjiku	33056421	0702100620		✓	Community	✓				
21.	Sarah wanja M	31431553	0704840973		✓	COMMUNITY	✓				
22.	DENNIS FUNDI	27654977	0700362814	✓		Community	✓				
23.	Anthony Rutere	13573121	0728164044	✓		Community	✓				
24.	Antonina Wanjiga	32805147	0702046925	✓	✓	Community	✓				
25.	ALVIN MUGO RUTERO	35494305	0719 448956	✓	✓	community	✓				
26.	Onaruta Rigoki	29695101	0733331590		✓	Community	✓				
27.	Joseph Njeru	26255530	0727689510			community	✓				
28.											
29.											
30.											

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
7.	Jane Mutite Mbuiga	7450891	0721813402		✓	Community		✓			
8.	IRERI GACHUNGI	0718129	0724104762.	✓		CHAIRMAN		✓			
9.	Daisy muregi	23627394	0735922915		✓	chairperson		✓			
10.	STEPHEN KARIUKI	8HI55555	0702729394	✓		Community	✓				
11.	GODFREY MGONDI	33633561	0795104496	✓		Community	✓				
12.	MONICA MUKAMI ~~JULIUS~~	32939964	0103375196	✓	✓	Community					
13.	Chrstine Mumbi	22273900	0721914463	✓	✓	Community	✓				
14.	JULIUS WAIKONA	23436717	0790351545	✓		Community					
15.	Eunice Mbura	0243297	0700790031 ~~0700790~~		✓	Community		✓			
16.	LUCY KAHAKA	20132276	0724393459		✓	Community		✓			
17.	Lucy Njungi	24207037	0717427601		✓	Community	✓				
18.	Kenneth Githonga	31495076	0710764445	✓		Community	✓				

Community.

Embu County Climate Change Action Plans Participatory Meeting Attendance List

County Embu

Sub County______________

Ward________

Date 23/05/2023- 24/05/2023

S/NO	Name	ID NO.	Mobile NO	Gender		Category and/ or position (Chairman, Sec, People Living with Disability etc.)		Age (Tick)			SIGN	
				Male(M)	Female(F)	~~YES~~	~~NO~~	18-35 Yrrs	35- 60Yrs	Above 60	DAY 1	DAY 2
1.	DAVID MURIUKI	7457357									[signature]	✓
2.	NICHOLSON NJERU	7284925	0712137912	M		C			✓		✓	✓
3.	FRASIA N. MBOGO	27803421	0713694479		✓	C		✓			[signature]	[signature]
4.	Silvester Macharia Mina	34783946	0746657182	M		C		✓			[signature]	[signature]
5.	Jane Nyaga	10796670	0720250769		✓	C			✓		[signature]	[signature]
6.	PIERSON NJIHIGAH	34209289	0791427671	M		C		✓			[signature]	[signature]

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
91.	John Njeru	25848322	0726577410	Male		Committee		✓		[signature]	
92.	EVANSON NGONDI	23540061	0700869141	MALE				✓		[signature]	
93.	ROSE WANGARI	22980914	0707213960		✓	Commmelee		✓		[signature]	
94.	FAITH JULIA IGOKI	33965410	0712351848		✓	Commettee	✓			[signature]	
95.	CHARLES KARIUKI	25786948	0726159646	Male	✓	Commet		✓		[signature]	
96.	AGATHA NDIGA	10728739	0716884884		✓	PLWD		✓		Ndiga	
97.	Patrick Njiru	21204832	0713952564	✓		PWD		✓		[signature]	
98.	Boro										
99.	Gedion Murage	10461240	072471[illegible]	✓		Community		✓		[signature]	
100.	Polycap Muchangi	37985306	0797333191	✓		Community	✓	✓		[signature]	
101.	Loyal Gichuge	22290146	0721171320	✓		Community		✓		[signature]	
102.	JAMES MACHARIA	22024860	0722960659	M		Community		✓		[signature]	

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and /or position (Chairperson, Sec,PLWDs)	AGE (Tick)			SIGN	
				MALE	FEMALE		18-35 Yrs	35-60 Yrs	Above 60 Yrs	DAY 1	DAY 2
7.	JOSES KIBIA MUCHOMBI	11258469	0721889419	✓		TARDA		✓			✓
8.											
9.	JOHN NAMUIA	11025078	0710324736	✓		SECRETARY		✓			
10.	MIAKEL KAMAN	29474786	0722222159	✓		METEOROLOGY		✓			
11.	JAMES N. NJOKA	20841913	0727834050	✓		WARD ADMIN GUURONE		✓			
12.	GODFREY NJUKI	9284073	0721582096	✓		WARD ADMIN MBETI S.		✓			
13.											
14.	ALBERT										
15.	CHARLES N. NJAU	23974798	0728211661	✓		W.A. OFFICER/ward		✓			
16.											
17.	JANET LEKASI	25184670	0724220370		✓	TARDA MASINGA	✓				
18.	SERAH MUOMBU	2767778	0724705609		✓	TARDA MASINGA	✓				

Appendix 2: Minutes of the Embu County PCRA validation workshop, held at Embu County Headquarters, Kangaru Hall, between 23rd and 24th May 2023.

MINUTES OF THE EMBU COUNTY CLIMATE CHANGE MULTISTAKEHOLDERS WORKSHOP HELD AT THE KANGARU UPPER TANA HALL ON 23RD AND 24TH MAY 2023

Members Present (*List attached*)

AGENDA OF THE WORKSHOP

Day 1.

1. Call to order
2. Setting of Workshop Rules
3. Objectives of the meeting
4. Introductions
5. Remarks by the chief officer department of Environment, Climate Change & Natural Resources
6. Training session 1 on Policies governing FLLOCA
7. Training session 2 on Embu county key climate hazards analysis
8. Tea break
9. Presentation on changes in climate and weather patterns over the years from meteorology department
10. Information technology and Indigenous knowledge with intelligence (ITIKI) Weather & Climate presentation
11. Remarks by the CECM department of Environment, climate change and natural resources
12. Reading of the Embu county governor's speech and official opening of the workshop
13. Group work division and allocation
14. Group work discussions
15. Announcements and closing of the meeting

Day 2.

1. **Recap of Day 1 Activities**
2. **Group work wards climate action plans presentation on the women, youth and vulnerable**
3. **Tea break**
4. **Presentation by Karlo on seed multiplication**
5. **Presentation by Karlo on plant biotechnology**
6. **Group work presentation on the wards Agriculture action plans**
7. **Group work presentation on the water sector ward action plans**
8. **Lunch break**
9. **Group work presentation on forestry, environment and energy wards climate action plans**
10. **Group work presentation on wards trade, tourism and infrastructure climate action plans**
11. **Announcements and closing of the meeting**

DAY I MINUTES ON 23RD MAY 2023

MIN 1/01: Call to order

The meeting was facilitated by the Embu county department of Environment and climate change under the FLLOCA project and it involved stakeholders at the national, county and ward levels. The meeting started at 9:35 am and Mr. Patrick Nyaga a sub county environment officer from the department of Climate change called the meeting to order. The opening prayers were done by Mr. Augustine Njeru a community member.

MIN 2/01: Setting of Workshop Rules

The members and stakeholders present in the workshop agreed on some ground rules to govern the meeting conduct and enable maximum input which included members putting their phones on silent mode, avoiding unnecessary movements and respecting every person's opinion in the meeting discussions.

MIN 3/01: Objectives of the meeting

A brief overview and introduction of the objective of the meeting remarks was done by the Embu county director of climate change madam Mercy Mongo. The members were made aware of the FLLOCA climate change project and the Participatory climate risk assessment process that had been conducted in all the 20 wards of Embu County. The members were also informed that the purpose of the meeting was to have their contributions and any additions or amendments to the wards climate action plans.

MIN 4/01: Introductions

The members present from the 20 wards climate change committees and other stakeholders present in the workshop introduced themselves. The list copies of the members in attendance will be attached in this minutes report.

MIN 5/01: Remarks by the chief officer department of Environment, Climate Change & Natural Resources

The chief officer of the Embu county department of Environment, Climate Change & Natural Resources addressed the members present in the workshop and emphasized on the importance of the FLLOCA project with the overview of the climate friendly projects to be funded under this project.

MIN 6/01: Training session 1 on Policies governing FLLOCA

This training session was handled by Madam Mercy Mongo the director of the climate change department Embu County. The members were defined to terms like weather, climate and climate change. The Members were also enlightened on the national and the sub national levels of climate policies that exist. Some of the national level climate policies include; national climate change response strategy, climate finance policy 2018, climate change Act 2016 and the national climate change action plan. The climate change fund was noted as a sub national level climate policy that has been established in the counties in Kenya.

It was mentioned that the Embu county climate change priority action plans were categorized mainly into sectors of Environment & Forestry, climate smart agriculture, water, climate proofing infrastructure & disaster risk management, clean & renewable energy and projects of the vulnerable and marginalized groups.

Members were made aware that the FLLOCA project implementation was in 3 levels i.e. National level, county level and community level. It was also noted that the grants levels were in 2 type's i.e. the county climate institutional support grant and the county climate resilience investment grant.

The members were also enlightened on the criteria for stakeholder's selection in the ward climate change action plans, the overview of the wards PCRA reports and the action plans formulation. This first training session ended at 11.00 am.

MIN 7/01: Training session 2 on Embu county key climate hazards analysis

This training session was handled by Mr. Patrick Nyaga the sub county environment officer from the department of environment and climate change. It was mentioned that Embu County has 2 distinct ecological zones i.e. the cold & wet upper zones and the hot & dry lower zones.

The hazards were put into 2 categories; climatic hazards and non-climatic hazards. The climatic hazards include drought, flash floods, whirl winds, floods, human wildlife conflicts & deforestation and the non-climatic hazards e.g. poverty, poor governance, poor agriculture practices etc.

MIN 8/01: Tea break

The meeting took a break for members to take tea and refreshments at 11:35 Am.

MIN 9/01: Presentation on changes in climate and weather patterns over the years from meteorology department

The meeting resumed from tea break at 12:15 pm and this presentation on the monthly rainfall climatology history changes over the years experienced in Embu County was done by Mr. Migwi Kamau from department of meteorology Embu town station. It was noted from the presentation that the climate change effects have caused the distribution, onset and cessation of rainfall within the county to vary significantly

MIN 10/01: Information technology and Indigenous knowledge with intelligence (ITIKI) Weather & Climate presentation

This presentation was done by Mr. Peter Ngoci the ITIKI project country manager. Members were informed that ITIKI uses the traditional knowledge to observe and predict weather and climate patterns with the following categories; animal behavior, insects behavior, trees behavior, human behavior, astronomical behavior, plants behavior, birds behavior and beliefs.

MIN 11/01 Remarks by the CECM department of Environment, climate change and natural resources

The CECM department of Environment, climate change and natural resources in Embu county government Madam Florence Ndinda Musyoka addressed the members present and emphasized on the

importance of tree planting in every ward and environment conservation to improve the water flow from the natural forests water sources.

MIN 12/01 Reading of the Embu county governor's speech and official opening of the workshop

The CECM department of trade and tourism Embu county government Mr. Jamal Runyenje gave the apologies of the absence of H.E Governor Cecily Mbarire and read her speech on her behalf declaring the workshop officially opened.

MIN 13/01: Group work division and allocation

The director of climate change department madam Mercy Mongo assigned 5 groups to go into group discussions in the afternoon session after the lunch break to discuss the various action plans in the 20 wards in Embu County. The 5 groups were categorized into the following sectors;

- Water
- Environment, forestry & Energy
- Agriculture & livestock
- Women-youth & PLWD'S
- Infrastructure, trade, tourism and disaster management

MIN 14/01: Lunch Break

The meeting to a break for attendees to take lunch refreshments at 1:30 Pm and the prayers for breaking for lunch were led by Mr. Ethan Kinyua the ward administrator Kirimari ward.

MIN 15/01: Group work discussions

At 2.00 pm to 5.00 pm members present went to the groups allocated for intensive discussions of the ward actions plans with the aim of making amendments, contributions, rectifications and additions in order to have the final action plans for the 20 wards of Embu County.

MIN 16/01: Announcements and closing of the meeting

The chief officer Mr. Nicholas Kunga department of Environment, climate change and natural resources made announcements of the following days meeting time from 9.00 am whereby the secretaries to the 5 groups would each make a presentation of the group work findings. There being no A.O.B's the meeting ended at 5.00 pm.

DAY 2 MEETING MINUTES

MIN 1/02: Recap of Day 1 Activities

The meeting started at 9:30 Am and was called to order by the director of climate change department Madam Mercy Mongo. Mr. Joseph Muriithi a community member led the opening prayers.

MIN 2/02: Group work wards climate action plans presentation on the women, youth and vulnerable

- This was the first group to present was the discussions collected from the previous day group work and the presentation was done Mr. Moses Muriithi.

  Plenaries from the marginalized, women and youths climate action plan

  1. In Kyeni south ward it was noted that provision of energy saving jikos to women and people living with disabilities had been left out and should be included in their climate action plan.
  2. It was suggested that an apiary aggregation center construction in a central place that would serve all the 20 wards would be effective to help the youths with bee keeping, harvesting and value addition knowledge and skills.
  3. It was noted that recycling of second generation bottles and diapers would be a viable project to be included in the youths and marginalized group's climate action plan as a mechanism strategy to improve effective solid waste management systems in Embu county wards while providing a source of income for them.
  4. Madam Fiata Marigu director of Ewasco Kyeni south noted that women in this ward can be supported with trainings for making wool carpets and bead baskets that they can sell and make an income.
  5. It was suggested that women in Kyeni south can also be supported with koko gas for cooking
  6. Mr. Ambrose Nyaga from Kirimari ward proposed the inclusion of constructing a fish aggregation center in Kirimari ward to provide a common central market for fish farmers across all the 20 wards of Embu County.
  7. It was suggested by Mr. Wanyoike from Mwea ward that the youths, women and PLWD'S should be supported with business management trainings in order to ensure the sustainability and effective management of the climate action plan projects for this sector group.
  8. Mr. Gichovi Njuki a ward climate committee member from kagaari south representing the PLWD'S mentioned that he is a successful sweet potato farmer reaping a good income from it and proposed that the PLWD'S across the 20 wards in Embu county should be supported with sweet potato farming project since the market for them is readily available

Successful projects noted that have been done by some of the stakeholders present in the workshop

1. Mr. Elijah Kamau the project manager of I.C.E Kenya highlighted that they did a successful project for supporting youths in Kiambu County whereby youths were trained on strawberry farming and were provided with a yoghurt cooling machine to add value to milk by making strawberry yoghurt from the strawberries they were farming and selling the yoghurt in the local market.
   In Murang'a county I.C.E Kenya supported youth with liners for fish ponds to support them in fish farming project and a vegetable growing project whereby the youths made an income by selling the fish and vegetables produce.

I.C.E Kenya also provided dairy cows and goats to Plwd's in Murang'a and Kiambu counties.

2. Madam Winnie Muriithi from Aspan Kenya N.G.O mentioned that their organization had successfully recruited and trained youths in Embu County on producing and harvesting avocadoes for export standards and youths earned an income from the project. The Aspan N.G.O also is supporting youths with promotion of herbs planting that will be sold and used in extracting oils. The herbs they are concentrating on are lemon grass, rosemary and geranium
3. Mr. John a stakeholder from GIZ proposed that he can be able to offer trainings to youths on energy saving jikos making
4. Mr. Joses k. Mugambi a stake holder from TARDA mentioned that they can train youth groups in Embu county on honey production in order to increase the honey supply to Kiambere honey processing factory.

MIN 3/02: Tea break

The members went for a tea break at 10:50 am

MIN 4/02: Presentation by Karlo on seed multiplication

The members resumed from the tea break at 11:25 am to listen to a presentation from Karlo which was done by Dr. Susan Wanderi. Karlo is an important stakeholder that can assist in the ward climate smart agriculture action plans.

The Karlo Embu office is involved with seed multiplication and production of certified seeds e.g. improved maize hybrids, bean varieties, cassava varieties that can be value added to produce cassava flour and crisps, sweet potato varieties and varieties of Irish potatoes.

They also produce fodder for livestock e.g. Napier grass, Bungoma sweet potato variety for fodder, bracharia, yellow maize and Luciana. The office has tree seedlings nurseries for avocado, macadamia, mango and passion that they sell to farmers at reduced prices.

The members present were informed that Karlo contracts farmers who are involved in multiplying seeds for them after being trained and these farmers earn an income from seed multiplication farming.

MIN 5/02: Presentation by Karlo on plant biotechnology

This presentation was done by Dr. Irene Njagi from Karlo Embu office. The members were informed that the biotechnology tools used by Karlo are; tissue culture, marker assisted selection and genetic modification in crops like coffee, bananas, pineapple, cassava etc.

MIN 6/02: Group work presentation on the wards Agriculture action plans

This presentation was done by Mr. Benson from Gaturi north ward who was also representing farm Africa stakeholders.

Plenaries from the wards agriculture action plans

The Embu county Kirimari requested to be supplied with coffee seedlings to farmers in their Agriculture action plan.

The Mbeti south ward made additions to their agriculture action plan which include; Extraction of Alternative traditional medicine production from herbs at Kianjiru hill, bee keeping project, Muguka value addition, fruit trees like avocado value addition and establishment of a fish aggregation center at Rwika market.

The Kagaari south ward requested the provision of dairy cows as an addition to their agriculture action plan.

The members present requested to have provision for soil testing services and advisory services by Karlo across all the wards in Embu County in order to improve their farming techniques.

MIN 7/02: Group work presentation on the water sector ward action plans

This presentation was done by Mr. Nichodemus Musyoka the Mwea ward administrator.

Plenaries from the wards water sector action plans

It was proposed to have construction of water kiosks on the lower zones of wards in Mbeere North and Mbeere South sub counties whereby community members can access clean water at reduced prices.

MIN 8/02: Lunch break

The meeting took a break for the members to take lunch refreshments at 2:45 pm. The prayers for lunch break were led by Mr. Jamal Runyenje the CECM of trade & tourism department in Embu County.

MIN 9/02: Group work presentation on forestry, environment and energy wards climate action plans

This presentation was done by Mr. Simon Wambua the chairman of Njukiiri CFA

Plenaries from the wards forestry, environment and energy climate action plans

It was proposed that afforestation programs in forests across the wards in Embu County should incorporate planting of more fruit trees to create food for the wild animals therefore minimizing the human wildlife conflicts when animals break into community farms damaging planted crops.

Mr. Taratisio ireri who is a bamboo farmer emphasized to the members present on the need to have projects of planting saddle wood in their farms in the 20 wards of Embu County.

It was noted that in Ruguru-ngandori ward one of the schools i.e. Kiriari day secondary school that had been proposed to be supplied with a biogas system already has a bio digester.

MIN 10/02: Group work presentation on wards trade, tourism and infrastructure climate action plans

This was the last group to present from the 5 groups that had been formed the previous day and the presentation was done by Madam Catherine Njiru a community member from Mbeti south ward.

Plenaries from the wards trade, tourism and infrastructure climate action plans

Mr. Simon Wambua the chairman of Njukiiri CFA proposed on the need to have intensive marketing and creation of awareness of the camp ndunda falls which is a big tourist attraction in Embu County.

It was proposed that there should be construction of sanitation facilities near the water fetching sources for community members in the lower zones of wards in Mbeere north and Mbeere south sub-counties to curb the poor sanitation experienced in this places and contamination of the water sources by human wastes.

Construction of a fish processing facility was proposed to serve fish farmers across the 20 wards

Establishment of camp sites for tourist's attraction and rock water catchment to provide water for community was proposed at Kianjiru hill.

The mbeti north ward proposed the opening of access to the Embu airstrip for school children to be going for educative trips there.

In Kyeni south ward it was noted that there are caves that can be tapped and used as tourists attraction sites in Embu County.

Maranga hills was suggested as a tourist attraction site since it has caves and wild animals

Establishment of recreation parks with trees planted across the 20 wards was proposed

It was also proposed that there should be establishment of access roads to Kirimiri forest to enable tourist's attraction

MIN 12/02: Announcements and closing of the meeting

The members present who belonged to registered groups were requested to register their contacts with Tarda organization so that they would be supplied with seeds to plant. There being no any A.O.Bs the meeting ended at 3:50 pm with closing prayers by Madam Mercy Mongo the director of Embu county climate change department.

Minutes confirmed by: -

Chairperson: James Gathura Signature: ..... Date: 24/5/23

Secretary: Nicholas Kunga Signature: ..... Date: 24/5/23

Appendix 3: Photos of Community members Mapping Climate Hazards

Break away sessions of the PCRA facilitators training in Kitui

Director Agriculture making presentations at Kitui workshop

Facilitating a training session in Mwea ward

Group photo of the community and facilitators at Nthawa ward

Appendix 4: Summary extracts of priority climate actions identified by the stakeholders in the various wards of Embu County

a) Kithimu Ward Summary Proposed projects

KITHIMU	Project	Area of Coverage	Amount KES – (Estimated)
	Milk Processing Plant (for value addition)	Entire ward	500
	Bamboo Processing ✓ Sensitization ✓ Community nurseries ✓ Training of groups	Entire ward	20
	Fish Farming ✓ Construct fish pods, procure fingerings ✓ Solve cases of malnutrition,;L ✓ Alternative protein food source,	500 households in Kithimu Ward @200,000 per fish pond	20
	Greenhouse Farming ✓ Installation/construction ✓ Training of farmers ✓ Water tanks for irrigation water	200 households across Kithimu Ward (Smart farming, roof water harvesting) @KES 200,000 per greenhouse	20
	Biogas Digesters	200 households in Kithimu Ward	3
	Slaughter House (with associated economic activities such as leather tanning and use of horns and hoofs – button making)	Entire ward	10
	Revamping Coffee Factories (3 factories) [Coffee improvement (3 No.); Coffee farming extension; Coffee nurseries; Revive Coffee Co-op Society; Modernize the old coffee equipment; Solarize energy supply (or use sludge to produce biogas); Compost coffee sludge to Bio-solid fertilizer (manure)]	Entire ward	100
	Dam for irrigation	Ndatu	100
	Completion of Kithimu Irrigation Scheme	Entire ward	50
	Solar powered Boreholes (5 No.)	Entire ward	5
	Extension of piped water for domestic use	Entire ward	5
	Climate proofed roads and other Infrastructure	Kivue-Kithimu-Ena Road	500
		Kithimu-Kimangaru Road	132
		Kithimu-Karurina Road	165
		1 Kindu bridge – Kirubu)	10
		Kamuthatha-Ndatu road	5

		Completion of Kithimu Cereals Store	10
		Brick making, Energy saving plant	10
	Greening all Kithimu markets, schools and health facilities; tree nurseries; solar panels; sensitization on preservation of environment	Entire ward	10
	Installation of solar panels in homes	Kithimu Ward (800 vulnerable households) @ 30,000 per HH	10
	Construction of soil conservation structures (gabions, Fanya Juu and Fanya Jini,and Planting of bamboo to prevent further gully erosion)	Entire ward	5
	Roof water havesting in 1000HH		20
	Upgrade of kithimu kithegi water project		100
	Expansion of Kiruki kiende irrigation water		80
	Storm water drainage in Kithimu kithegi and Ndatu		20
	Plastic shredder for youth		5
	Toothpick processing machine		10
	Matchbox making machine		10
	Dairy and Goat meat value chain promotion		20
	Environment climate information hub and centre		3
TOTAL			1958

b) Evurori Ward Summary proposed projects report

EVURORE	Project	Area of Coverage	Amount KES – (Estimated, Millions)
	Solar Powered Mango Processing Unit (Construction, Installation of Solar Panels and Machinery and Equipment) and Capacity Building	Kanyuambora	50
	Goats breeds improvement project for marginalised and vulnerable households (plwhiv, pwd, fhh)-Galla goats purchase and distribution	Iriaitune Kamarandi location Ndurumori location	60
	Pasture and fodder establishment and conservation in 5 locations	Kiang'ombe location Muringari location Nguthi location Kanyuambora Ishiara location	10
	Bee keeping component-purchase and distribution of improved log hives (youths and	Iriatune location Kamarandi location Ndurumori location	10

	other marginalized categories) and establishment of a fully equipped mini honey refinery center.	Ishiara location	
	Fish farming enhancement for special groups (youth,women ,plwd) capacity building,liners fingerlings and feeds) provisions	Identified members existing irrigation groups (Kathiga Gaceru, Kiambindu, Kangai,Kamarandi,Mlachaki, Genesis	40
	Promotion of high value vegetables and crops and kitchen gardens for the marginalized households (capacity building and inputs provision)	Targeted women groups in 8 locations (HHs representatives)	5
	Construction and equipping of cereal aggregation centers for collective marketing initiative at locational level (to reduce on post-harvest losses of locally produced crops)	At the 8 location centers	80
	Excavation of new earth dams and installation on of solar pumping and piping system	Ngoce sub-location-Matendera dam Iriatune sub location-Gekarira dam Kiangombe location-Gachuriri dam	45
	Desilting and rehabilitation of existing earth dams and installation of solar pumping and piping system	Ciikori earth dam Karumba earth dam	6
	Capacity building and provision of inputs for tree nursery establishment and management to self-help groups, irrigation CBOs and CFA's	Kiang'ombe CFA-Ibutuka CBO Kamarandi CBO Kiambindu CBO Kangai CBO other SHG (green belt movement for youth, Kianthenge SHG, rainbow SHG among others)	16
	Agro-forestry and woodlot establishment at house hold level (capacity building and distribution of tree seedlings (Mukau-Melia Volkensii)	Targeted households in the 8 locations	50
	Clean energy adoption (training and financial support to local fabricators/artisans) for mass energy jikos fabrication and distribution	All 8 locations (1 group per location)	5
	Sand harvesting control (check dams construction, river bank protection and capacity building)	3 licensed sand harvesting groups (Marivwe, Mururii and Kieramba)	9
	Climate information services enhancement –participatory scenario planning at ward level and county level for the two seasons (OND and MAM)	Entire ward	1
	Construction of drifts/bridges	Kanyangi bridge in Kanyuambora location Muringari drift in Muringari location	8
Total			395

c) Mbeti North Summary proposed projects

MBETI NORTH	Project	Area of Coverage	Amount KES – (Estimated, Millions)
	Establishment of solar powered boreholes	Ithata – Kimangaru Kambo Mwanwagiti Njumbiri	100
	Completion of Itabua-Muthatari Irrigation Project	Itabua location 1000 households	350
	Upgrading of Kamiu-Kavanga Irrigation project	Kamiu location 300-600HH	100
	Upgrading of Kiaga Irrigation water project	Gatituri Sub-location 400-1000hh	100
	Installation of Biogas	100HH in the larger Mbeti North	40
	Installation of green houses	500HH in the larger Mbeti North	50
	Greening programs	All 9 primary schools, 8 secondary schools,TVET and CBOs	30
	Installation of a sewerage system	Kamiu-Majimbo	100
	Plastic waste recycling machine	Kagonga area	300
	Water harvesting tanks (3000ltrs) 1000hh annually	Entire ward	30
	Poultry keeping Dairy goat rearing	Entire ward	2
	Climate information service	Entire ward	1
TOTAL			1203

d) Makima Ward Summary proposed projects

MAKIMA WARD	Area of Coverage	Amount KES – (Estimated, Millions)
	Solarization and upgrading of boreholes	3.5 3 3.5 4.5
	Masinga dam-ndune hills water project	70 50
	Upgrading of Kanyonga footbridge	20
	Drift construction	10.5
	Establishment of community nurseries	5
	Mukau and Muvesi promotion	2
	Masinga -spillway-Mbondoni- kitoloni- mbonzuki rd	18
	Cultivation of drought resistant crops	2
	Procurement of KTBH	1.5
	Livestock value chain promotion	5

	Green gram threshing machine	3
	Construction of sanddams	30
	Distribution of water from Mbondoni Nthunthiruro,Kamwea,and Kwa nduta boreholes	40
	Clean energy promotion	30
	Riparian Land rehabilitation	
	Hills rehabilitation	20
	Sunflower value chain promotion Through UWEZO CBO Target 1000hh with Apiary establishment	20
	Green Gram value chain promotion	20
	Dairy goats value chain promotion	20
	Pasture bulking and aggregation	10
	Construction of drifts and culverts	
	Soil conservation measures..building gabions and Embarkments	
	Establish a Disaster Response team at Masinga Dam	10
TOTAL		401.5

Appendix 5: Minutes of one of the meetings held in the Wards during the PCRA process.

MINUTES OF THE KITHIMU WARD PCRA TRAINING HELD ON THE 19 TH AND 20 TH APRIL 2023 AT FULL

GOSPEL CHURCH HALL KITHIIMU

MIN/01/2023 PRAYERS AND INTRODUCTIONS

The Meeting began with a Word of prayer followed by brief introduction of the participants and the sub

locations they come from. The Kithimu Ward Climate Change Planning committee was fully represented

with all members present.

It is noteworthy that all the representatives of the Committee were present representing the youth,

men, women, people who are abled differently and the religious bodies in the ward. The Chair of the

committee is a youth a notable feat that points to a great interest of Youth in climate change matters.

MIN/02/2023 OPENING REMARKS

The ward Administrator and the Local chief had mobilized key opinion leaders from all the five sub

locations of kithimu which was commended by Director mercy who gave the opening speech.

The area MCA Hon. Julius karuri alias Kithimu-1 joined the meeting and officially opened the session.

The MCA was impressed by The PCRA process which was participatory, inclusive and transparent. He

Thanked the World bank and the County of Embu for involving the community in the process of

identifying climate action to mitigate the impacts of Climate change. This was a good boost to the PCRA

process as it showed lots of political goodwill from the MCA who promised to lobby his colleagues in the

County assembly to pass the any legislation on climate matters to ameliorate climate change impacts.

MIN/03/2023 FLLoCA OVERVIEW

Director Mercy of the CCU took the participants through common terms that are used in Climate change

matters and asked participants to give the names in Kiembu as they understood them which showed

that they understood climate change matters.

Director mercy also took the participants through the Stakeholder Analysis and institutional analysis

with the participants identifying stakeholders and their role in kithimu. She also explained the interplay

of Influence and Interest among stakeholders.

The University of Embu – a major institutional stakeholder in Embu-were represented by Dr. Nyambane

who was aiding the facilitators of the day.

MIN 04/2023 PCRA TRAINING OBJECTIVES AND TOOLS USED

The PCRA tools Objective included: To equip participants with knowledge on Participatory Vulnerability

and Capacity

assessment skills and to equip participants with practical skills on undertaking PCRA

We used various tools to get information from the community members such as:

-The resource/hazard map for the ward.

-Seasonal calendar, daily clock and household decision making pile

-historical timeline

-Identification of key hazard, Hazard analysis/vulnerability matrix, Impact chains, adaptation pathway

and came up with community projects thereafter which formed the Kithimu ward climate action plan.

The rainfall pattern is bi-modal with two distinct rain seasons. Long rains occur between March and June

while the short rains fall between October and December. Rainfall quantity received varies with altitude

averaging to about 1,067.5 mm annually and ranging from 640 mm in some areas to as high as 1,495

mm per annum. Temperatures range from a minimum of 12oC in July to a maximum of 30oC in March

with a mean average of 21oC. July is usually the coldest month with an average monthly temperature of

150C while September is the warmest month with an average monthly temperature rising to 27.10C

HAZARD/ RESOUCE MAP for KITHIMU WARD.

The objective of drawing a hazard map in the PCRA process was to become familiar with the community

and to see how the place is perceived by different groups within the community. The community

members first drew key resources after they were in agreement and having understood the role of the

map in highlighting the hazards affecting the different areas in the ward

OBJECTIVES.

• To become familiar with the community and to see how the ward is perceived by different groups within the community

• To identify important livelihood resources in and around the community

• To initiate the identification of hazards affecting the community (both climate-related and other)

• Understand neighborhood and threats

• To identify important livelihood resources in and around the community

Historical Timeline:

Seasonal Calendar

Objectives;

• To analyze seasonal changes in activities and periods of stress or scarcity

• To identify important livelihood activities

• To document community observations of changing trends in seasonal patterns

Daily clock

Objectives

• To illustrate the inequality in workloads within the household and how this can undermine resilience and affect the ability to implement the adaptation options,

• To show the value of women's work.

• To understand how daily tasks and the division of responsibilities shift when a climate-related shock occurs.

• To identify key resilience initiatives that can be undertaken during free time and how to reduce some burdens from the burdened category.

It can be deduced that men and women have various roles and this may change if the household is headed by a woman mostly single mothers and widows. The men wake up later than the women but have a late breakfast though they break early. Women are busier than men in household activities.

Household Decision Making Pile Sorting

Objective.

• To explore who in the household has the authority to make important decisions

• To discuss how decision-making could be more equal as a means to increase resilience

Identification of Key hazards

Impact Chains

Objective -To analyse direct and indirect impacts of climate change in Kithimu ward as a basis for identifying options for adaptation an whilst Referring back to the hazard/resource map drawn e Vulnerability Matrix

Objectives

• To identify the highest-priority livelihood assets and hazards

• To analyse the degree of impact of hazards and changes on priority livelihood assets

Venn Diagram

Objectives

• To understand which institutions are most important to communities

• To assess access to services and availability of social safety nets

• Understand gaps that exist in implementation of resilience projects

MIN/05/2023 VOTES OF THANKS AND CLOSING REMARKS

The ward Administrator took over the program and requested one member to give votes of thanks and prayed. The meeting was adjourned at 17.00hours.

Minutes confirmed by: -

Chairperson: Edward Muriithi Signature:..... Date: 19/4/23

Secretary: Wilfred Patrick Signature: ..... Date: 19/4/23

Appendix 6 Sected Ward Attendance List Disaggregated Into Youth, Gender, PLWD and Vulnerable Groups

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MANYATTA
- Ward KITHIMU
- Date 19TH - 20TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
				Male	Female	Yes	No				DAY1	DAY2
1.	Dickson Kiroothi Gitovi	37610472	0759319461					✓			[signature]	[signature]
2.	IMELDA NTHAWIRA NJOKI	37004174	0705044696		✓			✓			[signature]	[signature]
3.	JOSEPH FUNDI NJIRU	25092296	0725163519	✓					✓		[signature]	[signature]
4.	GLADYS NYAKIO IRERI	10670879	0729434633		✓					✓	[signature]	[signature]
5.	Joseph Murithi Mwaniki	32851064	0703724875	✓				✓			[signature]	[signature]
6.	JOSEPH NJIRU RURINJA MANTHI	0236668	0722351117	✓						✓	[signature]	[signature]
7.	Njiru Yvonne Wanjiru	39079641	0798604213		✓			✓			[signature]	[signature]
8.	David K. Livingstone	20122312	0726344169	✓	·			✓			[signature]	[signature]
9.	DAISY NJUE	25898181	0726746721		✓				✓		[signature]	[signature]
10.	STELLA N. KINYUA	28705865	0718635955		✓			✓			[signature]	[signature]
11.	KEVIN MWANGI	33977998	0714054140	✓				✓			[signature]	[signature]
12.	JOSEPH MUTUGI NJOKA	30440756	0114400767	✓				✓			[signature]	[signature]
13.	MARY NDAKU IRERI	7034729	0714645700		✓					✓	[signature]	[signature]
14.	Gitonga Ivy Gakii	41264750	0714488943		✓			✓			[signature]	[signature]
15	V. MUGO NKARUGUTI	5097628	0725689645	✓					✓		[signature]	[signature]
16	KENNEDY MURITHI N	30680646	0702365314	✓				✓			[signature]	[signature]
17	NYAGA JULIUS KIMANTHI	34213921	0712646739	✓				✓			[signature]	[signature]

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MANYATTA
- Ward KITHIMU
- Date 19TH 20TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
				Male	Female	Yes	No				DAY1	DAY2
18	PAUL NYAGA	28788362	0711760335									
19	Grace Igandu Njagi	21090463	0714150942		✓						Grace	Grace
20	Paul Nyaga	28788362.	0711760335	✓	✓			✓			[signature]	[signature]
21	Caroline Njoki Gachagua	27431809	0712053932		✓						[signature]	[signature]
22	JANE WANJIKU NJUE	13263682	0713268301		✓				✓		[signature]	[signature]
23	Daisy Mugo	36059982	0758939911		✓						[signature]	[signature]
24	Susan Murugi	38849357	0112102133		✓						[signature]	[signature]
25	KELVIN MURIMI	33616324	0705319354	✓				✓			[signature]	[signature]
26	Purity Kawira Mtue	22348260	0725225890		✓						[signature]	[signature]
27	ANNA NTHOKI NZISA	41795877	0793466775		✓			✓			[signature]	[signature]
28	ORINDA Mawira Kiura	7? 50057	0726170247		✓						[signature]	[signature]
29	Dickson Kangi	16025052	0722227741	✓					✓		[signature]	[signature]
30	Joyce Wawira Njiru	26732769	0710857410		✓						[signature]	[signature]
31	ALEX FUNDI	33724611	0711928181	✓				✓			[signature]	[signature]
32	Antony Njeru Njiru	26420123	0715255844	✓					✓		[signature]	[signature]
33	IAN MACHARIA MUTHEE	37241727	0702365070	✓				✓			[signature]	[signature]
34	ALI KATHAN NJANGI	31944646	0799567075	✓				✓			[signature]	[signature]

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MANYATTA
- Ward KITHIMU
- Date 19TH - 20TH APRIL 2023.

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
35	Emmanuel Mugambi	25323702	0722306976	Male	Female	Yes	No	✓			DAY1	DAY2
36	Bridget Gaku	41624196	0715462815		✓			✓				
37	Juliet Muthoni	33148613	0714238420		✓							
38	Wilfred P.M. Nyaga	13379650	0757699719	✓					✓			
39	LUCY WANGARI NJERU	29647990	0727104905		✓	✓		✓				
40	JOHN NDERITU	28430019	0769309484	✓				✓				
41	EMILY NJUTHONI	12880432	0723662302	✓	✓				✓			

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County RUNYENJES
- Ward RUNYENJES CENTRAL
- Date 12TH – 14TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
				Male	Female	Yes	No	18-35Yrs	35-60 Yrs	Above 60Yrs	DAY1	DAY2
1	Jeremi George Nguaniki	25420188	0795555937	✓			✓	✓			[illegible]	[illegible]
2	Elijah Mugambi N.	24639707	0727000222	✓				✓			[illegible]	[illegible]
3	Stella Wawira Ndwiga	26280160	0712607488		✓			✓			[illegible]	[illegible]
4	Doris Mbogo	13677713	0721713713		✓				✓		[illegible]	[illegible]
5	ERIC MUNENE NJERU	36709256	0759830519	✓				✓			[illegible]	[illegible]
6	Stephen Kamau	44096932	0710830141	✓		✓		✓			[illegible]	[illegible]
7	Joseph Muriithi	22218485	0723364819	✓							[illegible]	[illegible]
8	Henry Munene Muriuki	21573256	0727510941	✓					✓		[illegible]	[illegible]
9	IRERI SIMON KARIUKI	22076603	0721693379	✓				✓			[illegible]	[illegible]
10	Ewira Muthoni	11211642	0721606933		✓				✓		[illegible]	[illegible]
11	Josephine Wawira Kariuki	56705256	0769530619		✓				✓		[illegible]	[illegible]
12	Juliet Karimi Kithinji	13572470	0727691228		✓						[illegible]	[illegible]
13	Caroline Wawira Murithi	23801538	0720547169		✓				✓		[illegible]	[illegible]
14	Consolata Marigu	3305964	0721171085		✓			✓			[illegible]	[illegible]
15	BONIFACE MWENDA NJERU	27817509	0704866078	✓					✓		[illegible]	[illegible]
16	Robin Munene	34285404	0727041835	✓							[illegible]	[illegible]

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County RUNYENJES
- Ward RUNYENJES CENTRAL
- Date 13TH - 14TH ~~MARCH~~ APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
				Male	Female	Yes	No				DAY1	DAY2
17	LAMECK MURITHI NYAGA	30537123	0769058926	✓					✓			
18	Josiah Nyaga Ngando	11211150	0710676710	✓								
19	CAROLINE IRERI	24726HH	0712306499		✓				✓			
20	[illegible]	24040862	0726053796	✓								
21	Nanci Muthoni Nyaga	10058005	0714217737		✓				✓			
22	JANE WAMBUA NJIAH	11810901	0758311728		✓				✓			
23	NANCY WAMBURA	13571508	0715454047		✓					✓		
24	John Nyaga Iyeri	7678402	0720128512	✓								
25	CECILY WAMBUA	21667057	0701146929		✓							
26	ELIJAH NAMU	20652980	0715542050	✓					✓			
27	Emilo Mbogo W	20680136	0722100048	✓								
28	ERIC MUTWIRI K	25915729	0700295564	✓					✓			
29	ONDATA WAMBUA	7031080	0725660842		✓							
30	Martin Njeru	21698397	0725747193	✓				✓				
31	LUCY WANJA NYAGA	20619076	0727003720		✓				✓			
32	WILFRED P.M NYAGA	13339650	0757699719	✓					✓			

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County RUNYENJES
- Ward RUNYENJES CENTRAL
- Date 13TH - 14TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs	DAY1	DAY2
33	EMILY MUTHONI	12880432	0723602362	Male	Female	Yes	No		✓			
34	Wawira Eparaith	32653820	0716176719		✓			✓				
35	Mary [illegible]	20417498	0723[illegible]3250		✓				✓			
36	Nyaga Kelvin Murage	31625683	0715189130	✓				✓				
37	NJIRU L. MURIMI	30057823	0715421095	✓					✓			
38	Benedeta Miema	20109450	0720196158		✓				✓			
39	PETER MUCHIRI	21900750	0726037003	✓					✓			
40	Emily M. Nyaga	11056210	0725952565		✓				✓			
41	Caroline Njeri Ndiga	26485021O	0724935870		✓							

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MBEERE NORTH
- Ward EVURORE
- Date 17TH, 18TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
				Male	Female	Yes	No	18-35Yrs	35-60 Yrs	Above 60Yrs	DAY1	DAY2
1	IRERI NELSON MUGAMBI	28211555	0717738912	✓				✓			[signature]	[signature]
2	NJAKI JACKLINE WAWIRA	29883219	0790199220		✓			✓			[signature]	[signature]
3	EUSTACE MUTEMBEI NYAGA	22122180	0708469238	✓				✓			[signature]	[signature]
4	NORMAN NDURU NJUE	4401471	0715207504	✓				✓			[signature]	[signature]
5	Pauline Wanyaga Ireri	13249678	0726706594		✓				✓		[signature]	[signature]
6	JOHNPAUL KITHINJI	28524153	0704576332	✓				✓			[signature]	[signature]
7	Naomi Wanjeru Njue	25593554	0724915889		✓				✓		[signature]	[signature]
8	Winfred Muthoni Njagi	22932231	0725697462		✓						[signature]	[signature]
9	John Nyaga Njiru	10222207	0728714704	✓					✓		[signature]	[signature]
10	Benjamin Mugo Njuki	132633419	0719492832	✓				✓			[signature]	[signature]
11	AUSILLA MUKAMI NJERU	29415880	0708066752		✓			✓			[signature]	[signature]
12	Lucyrine Mburo Njoka	13834064	0720530033		✓				✓		[signature]	[signature]
13	PATRICIA NJOKI NJUE	32640551	0792333747		✓			✓			[signature]	[signature]
14	Lucyrine mbura Njoka	138540640	0724530033		✓				✓		[signature]	[signature]
15	JOSPHAT NYAGA MACIRA	7035999	0791190026	✓					✓		[signature]	[signature]
16	Benjamin Mugendi Njagi	22332461	0111854824	✓							[signature]	[signature]

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MBEERE NORTH
- Ward EVURORE
- Date 17TH-18TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
				Male	Female	Yes	No				DAY1	DAY2
17	ELIJAH NJAGI NJAGACHE	07974?4	0719455862	✓		✓				✓		
18	Jospeter Kimathi Kiugi	23422130	0724876940	✓								
19	ISAAC NABULKI NJERU	14156930	0724465038	✓					✓			
20	BENJAMIN MULE NJUKI	13263419	0719493832									
21	IRERI NELSON MUGAMBI	28211555	~~28211555~~ 0717338912	✓								
22	JUDITH KAGENDO NGARI	23419880	0721439431		✓							
23	Margaret Muthoni Mutanga	20118203	0162658145		✓							
24	Florence Karimi Ireri	22561060	0728955160		✓							
25	NJAMI JACKLINE WAWIRA	29883219	0790199220		✓							
26	TERESIA G. NJAKA	10461160	0711969963		✓							
27	Winfred Mathoni Njagi	22952231	0725093942		✓							
28	Veronica W/ Nyange	05987654	0708034295		✓					✓		
29	JOSEPH MUTUAI	29872461	0742570579	✓								
30	Kennedy Muathi Nyaga	29101978	0743837773	✓								
31	NFFTALI NYAGA GITONGA	28249842	0706055106	✓				✓				
32	Amos Nyaga Mbura	24979357	0706106551	✓				✓				

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MBEERE NORTH
- Ward EVURORE
- Date 17TH-18TH APRIL 2023

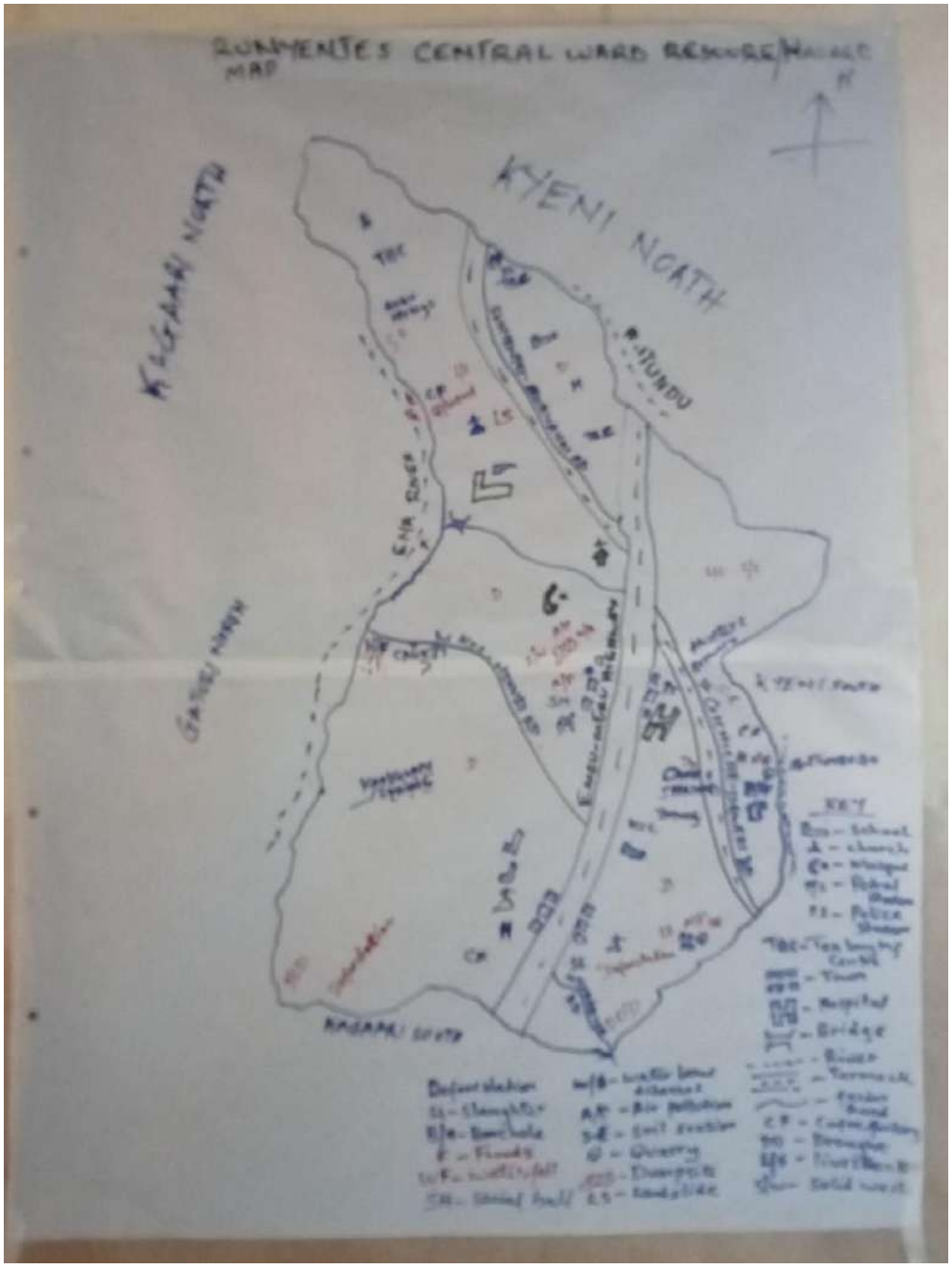
S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
33	~~DIPHORA MUTHONI~~	~~32482502~~	~~0716056~~	Male	Female	Yes	No				DAY1	DAY2
33	DIPHORA MUTHONI	32482502	0716056		✓			✓				
34	JAMES N. NJOKA	20284312	0727834050	✓								

PCRA Consultative Meeting Attendance Form

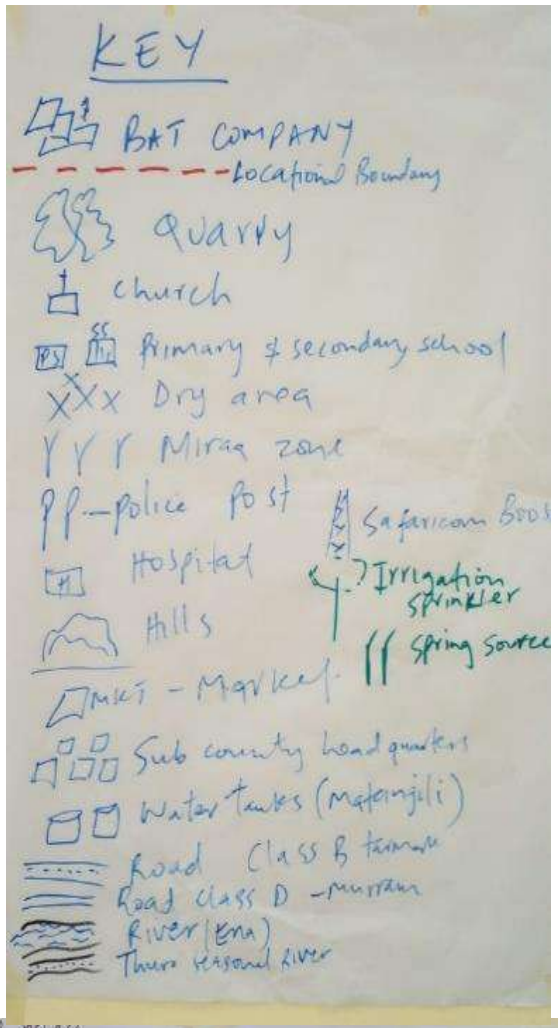
- County ~~NAIROBI~~ EMBU
- Sub County MANYATTA
- Ward KIRIMARI
- Date 13TH TO 14TH APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
				Male	Female	Yes	No				DAY1	DAY2
1.	CAROLINE MURUGI NDEGA	29494617	0702623697		✓		✓	✓				
2.	Evelyn Mungi kariuki	31027302	0704116544		✓							
3.	Shaban Abdul Kamotho	31782212	0796221634	✓				✓				
4	BETH KARIMI KARIUKI	22435417	0717062692		✓				✓			
5	SILVIA WANJAGA	39031625	0114678958		✓			✓				
6	Japhak Nyinga	9523887	0726631423	✓								
7	Joyce Mariga Muringa	25287943	0701689386		✓							
8	Amina Abdul karim	2 0042314	0715413459		✓		✓		✓			
9	IDRIS MUGAMBI	31944738	0791459908	✓				✓				
10	John Ideritu	25H30019	0769309484	✓				✓				
11	Esther Kinyeki	21826868	0721342542		✓			✓				
12	Josephine Njoki kuria	11162714	0723308932		✓				✓			
13	Florence Wanjiku	13849056	0721631410		✓				✓			
14	Fatuma Asuma	8660575	0723817516		✓					✓		
15	ABET PATRICK MUKENDI	04245 96	0726929485	✓						✓		
16	Wilson Njiru kariuki	0595884	0722 44 4550	✓								

Appendix 1: Community Resource Maps Drawn at the Wards, Embu County

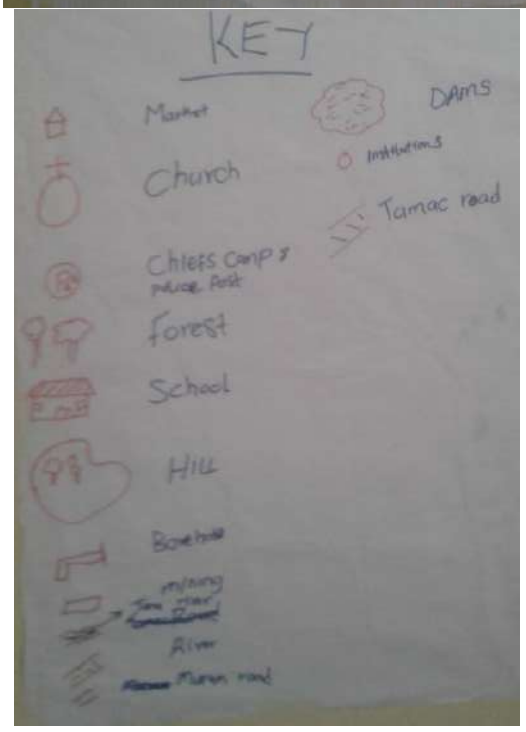


Runyenjes Central ward Map (not drawn to scale) as given by community members


KEY
BAT COMPANY
Locational Boundary
Quarry
church
Primary & secondary school
Dry area
Miraa zone
Police Post
Safaricom Boo
Hospital
Irrigation sprinkler
Hills
Spring source
Mkt - Market
Sub county headquarters
Water tanks (Matenjili)
Road class B tarmac
Road class D - murram
River (Ena)
Thuru seasonal River


NTHAWA MAP
MAVURIA WARD
THURA LOC
GITIBU RI LOC
MBETI SOUTH WARD
MUMINTI WARD
KATUBI SOUTH WARD
KAGAMBU SOUTH WARD

Nthawa ward resource map in Mbeere North Sub County



Kiambere Resource Map in Mbeere North subcounty

Kyeni North Ward in Runyenjes sub county

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