



# EMBU COUNTY

## PARTICIPATORY CLIMATE RISK ASSESSEMENT REPORT



REPUBLIC  
OF  
KENYA



THE WORLD BANK

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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, including 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 complex 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.

## LIST OF ACRONYMS

<b>AEZ</b>	Agro-Ecological Zones
<b>CBOs</b>	Community Based Organizations
<b>CCAP</b>	County Climate Actions
<b>CFAs</b>	Community Forest Associations
<b>CIDP</b>	County Integrated Development Plans
<b>CMIPS</b>	Coupled Model Inter-comparison Project
<b>COP</b>	Conference of Parties
<b>EMCA</b>	Environmental Management Coordination Act
<b>FBOs</b>	Faith Based Organizations
<b>FLLoCA</b>	Financing Locally-Led Climate Actions
<b>ICT</b>	Information and Communication Technology
<b>IDPs</b>	Integrated Development Plans
<b>IFAD</b>	International Fund for Agriculture Development
<b>IPCC</b>	Inter-governmental Panel on Climate Change
<b>ITK</b>	Indigenous Traditional Knowledge
<b>JJAS</b>	June, July, August, September
<b>KFS</b>	Kenya Forest Service
<b>KSH</b>	Kenya shillings
<b>MAM</b>	March April May
<b>MOALF</b>	Ministry of Agriculture, Livestock and Fisheries
<b>NDCs</b>	Nationally Determined Contributions
<b>NDMA</b>	National Drought Management Authority
<b>NEMA</b>	National Environment Management Authority
<b>NGOs</b>	Non-Governmental Organizations
<b>NRM</b>	Natural Resource Management
<b>OND</b>	October, November, December
<b>PCRA</b>	Participatory Climate Risk Assessment
<b>PLWD</b>	People Living With Disability

<b>RCP</b>	Representative Concentration Pathways
<b>SDGs</b>	Sustainable Development Goals
<b>TOTs</b>	Training of Trainers
<b>UNDP</b>	United Nations Development Programme
<b>UNFCCC</b>	United Nations Framework Convention for Climate Change
<b>WCCPC</b>	Ward Climate Change Planning Committee
<b>WRUA</b>	Water Resource Users Association

## 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.

[Name of Key Official/Representative]

[Title/Position]

## Embu County

## ACKNOWLEDGEMENT

Embu County appreciates various stakeholders whose contributions was significant and critical in the process 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.





## EXECUTIVE SUMMARY

This Participatory Climate Risk Assessment (PCRA) provides a comprehensive analysis of current and future climate risks faced by Embu County, along with recommendations for effective climate risk adaptation and resilience-building. The PCRA findings show that Embu County is vulnerable to a range of climate risks, including increased temperatures and a high variability in rainfall patterns. These risks pose significant challenges to various sectors, ecosystems, and vulnerable communities within the County. The potential impacts of these climate risks are diverse and far-reaching. To address these climate risks and enhance the County's resilience, a number of key recommendations and priority actions have been identified. 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 and preparedness. Such investments may include enhancing weather forecasting capabilities, expanding climate data collection networks, and establishing effective communication channels. Other investments may also be in the form of enhancing Water Resource Management; Implement integrated water resource management strategies that promote sustainable use, conservation, and efficient water allocation. Investments in water conservation may involve exploring efficient water harvesting techniques, promoting water-efficient irrigation practices, and enhancing water storage infrastructure. Building the County's resilience would also involve promoting Climate-Smart Agriculture and supporting farmers in adopting climate-smart agricultural practices that increase resilience to climate risks. It also involves promoting agroforestry, conservation agriculture, and crop diversification to enhance soil health, water management, and crop productivity. The county's resilience could also be enhanced by promoting Disaster Risk Reduction and Management; and investing in disaster risk reduction measures and early warning systems to reduce the impacts of extreme weather events. Such measures may include improving drainage systems, enhancing flood mapping and zoning, and developing community-based disaster preparedness and response plans. Other measures include mainstreaming Climate Change Adaptation into Planning and Decision-Making; Integrating climate change considerations into development plans, policies, and decision-making processes at all levels. This involves incorporating climate resilience criteria into infrastructure design, land-use planning, and sectoral policies. To effectively build community resilience in the County, there is also need for empowerment and support to vulnerable communities. This includes providing access to climate information, strengthening community-based organizations, and promoting income-generating activities that enhance adaptive capacity. It may also include strengthening Institutional Capacity and Coordination; and enhancing the capacity of government agencies, local institutions, and stakeholders to effectively address climate risks. This may be done through developing training programs, establishing coordination mechanisms, and promoting knowledge-sharing platforms. These recommendations and priority actions provide a roadmap for building climate resilience in Embu County. They require a multi-stakeholder approach, involving government agencies, communities, civil society organizations, and development partners. Adequate funding, policy support, and institutional coordination are essential for successful implementation. By implementing these actions, Embu County can

enhance its resilience to climate risks, protect livelihoods, safeguard natural resources, and secure a sustainable future for its residents. This PCRA report serves as a valuable tool for decision-makers, providing the necessary information and guidance to inform policies, programs, and investments that address climate risks and promote 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 as their adaptation strategies. PCRA process was necessary as it highlighted the environmental changes caused by climate change who bear the brunt of the changing climate. 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 Embu county government is cognizant of these changes and has been undertaking resilient programmes in collaboration with other stakeholders like Upper Tana development project and the national drought management authority (NDMA) among others. The report highlights community climate stressors such as erratic rainfall and extreme temperatures, and identifies those among them that stand out as the key hazard for the community.

#### 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, administrators, 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: 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
Mbeere South	Kyeni North
	Mwea
	Makima
	Mbeti South
	Mavuria
Mbeere North	Kiambere
	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 Nationally 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 international climate change corporation with the aim of enforcing compliance with NDCs.

The Kyoto Protocol was established with an aim of ensuring emissions 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 framework 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 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.

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.

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 in order to achieve a climate resilient community with greater adaptive capacity. The County Climate Change frameworks include: The Embu County Action Plan serve as a framework for the County to deliver its adaptation plans and adhere to the nationally determined contributions. 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 Embu 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 Embu 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 institutionalised climate change unit that is responsible for all climate change matters in the County.

At the community level the County has established Ward Climate Change Planning Committees (WCCPC) in every ward which plays the role of coordinating all climate change interventions within the community by acting as the liaison 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 Comprehensive 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:

**Provide assessment, location and timing and factors contributing to vulnerability and risk:** The report shows who or what, where and when and internal and external factors contributing to vulnerability of specific group of people, livelihoods, ecosystems, infrastructure and resources within the County.



**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.

**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:** The PCRA team was established in March 2023 with representatives from various sectors-Agriculture and Livestock, Meteorological department, NDMA, County department of disaster and risk management, Roads and infrastructure, Water and Irrigation, Environment and Forestry, Communication department, Social services, Embu municipality, University of Embu, KFS and NEMA among others. The team was trained as TOTs to train other key relevant stakeholders at the ward level. 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. The whole process was completed at the end of the month of April 2023 and the team embarked on PCRA report writing.

**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). This activity was undertaken in early April 2023.

**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 in the months of April to early May 2023. 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 other livelihood activities and events that occur throughout the year. It helps to show when communities are busy, periods of scarcity and stress, outbreaks 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 adapt 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 building 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 interactions 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.

**Vulnerability 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.

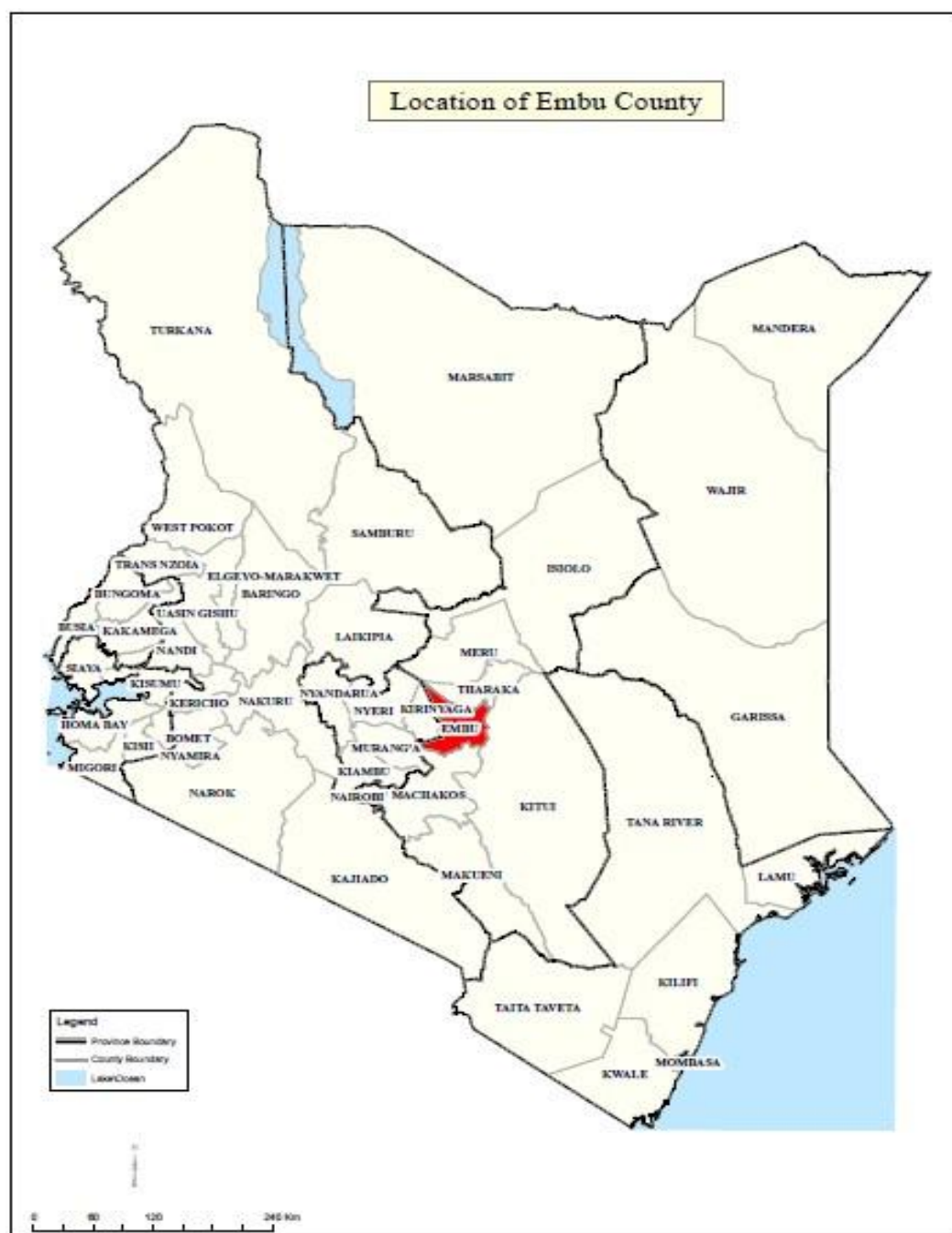
**Data compilation workshops:** Workshops were conducted to compile data that would aid in the PCRA report writing process. Community representatives played a crucial role in compiling and summarizing raw data related to their community's priority adaptation plans, as gathered during

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 in mid May 2023.

**County multi-stakeholder and validation workshop:** These workshops provided opportunities for various stakeholders to provide input and feedback on the PCRA process and was done on 23<sup>rd</sup> and 24<sup>th</sup> of May 2023. 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, Disaster 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 that 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 where we managed to submit the report before the official deadline of 31<sup>st</sup> May 2023.

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: Location of Embu County in Kenya**

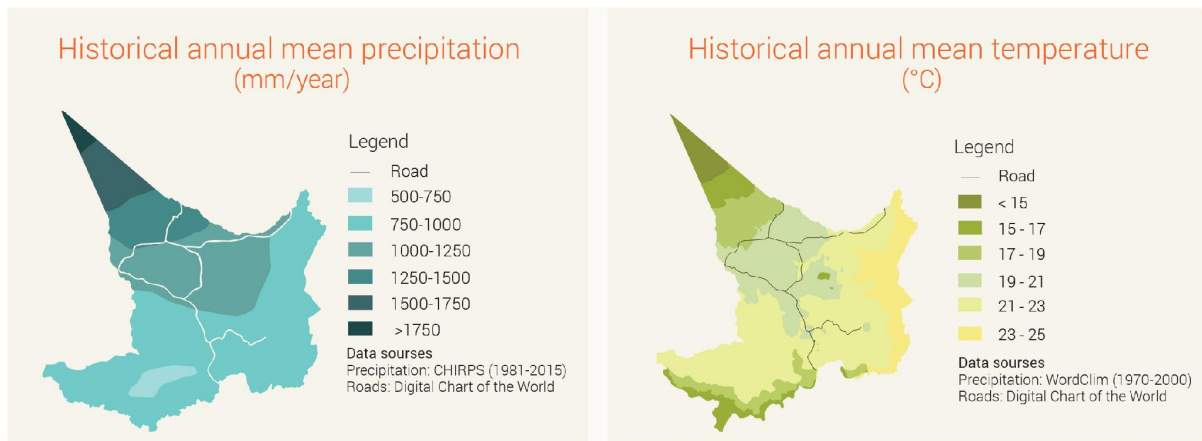
Source: Kenya National Bureau of Statistics

## 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 (Figure 2).

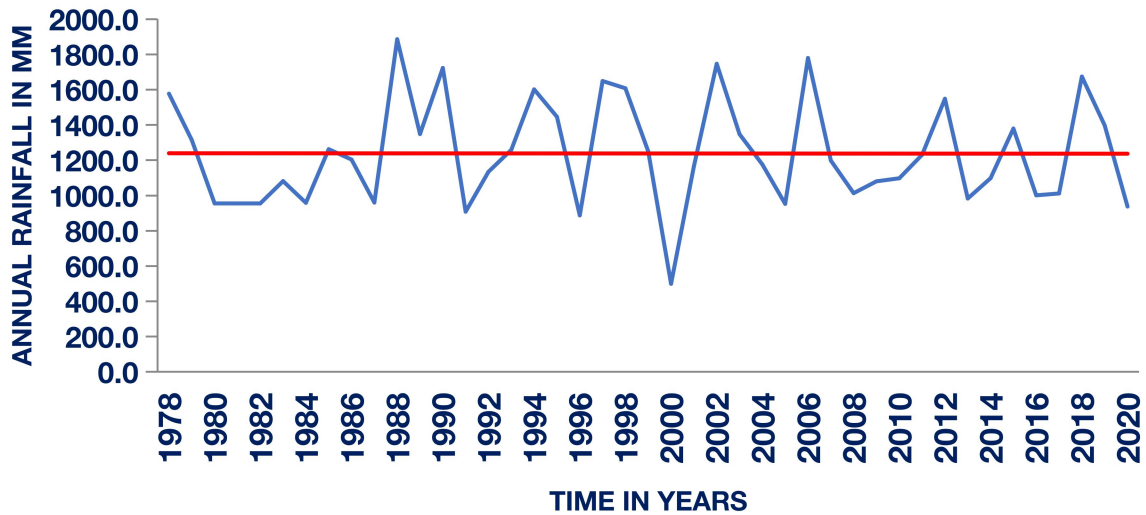
Analysis of historical records of weather indicate that both dry spells and extreme precipitation are recurrent hazards in the County. Dry spells are longer during the second wet season averaging around 65 consecutive days of moisture stress, but ranging between 60 and 80 in any given year (MoALF, 2016).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



**Figure 2: Historical Mean Annual Precipitation and Temperature for Embu County (Adopted from MoALF, 2016)**

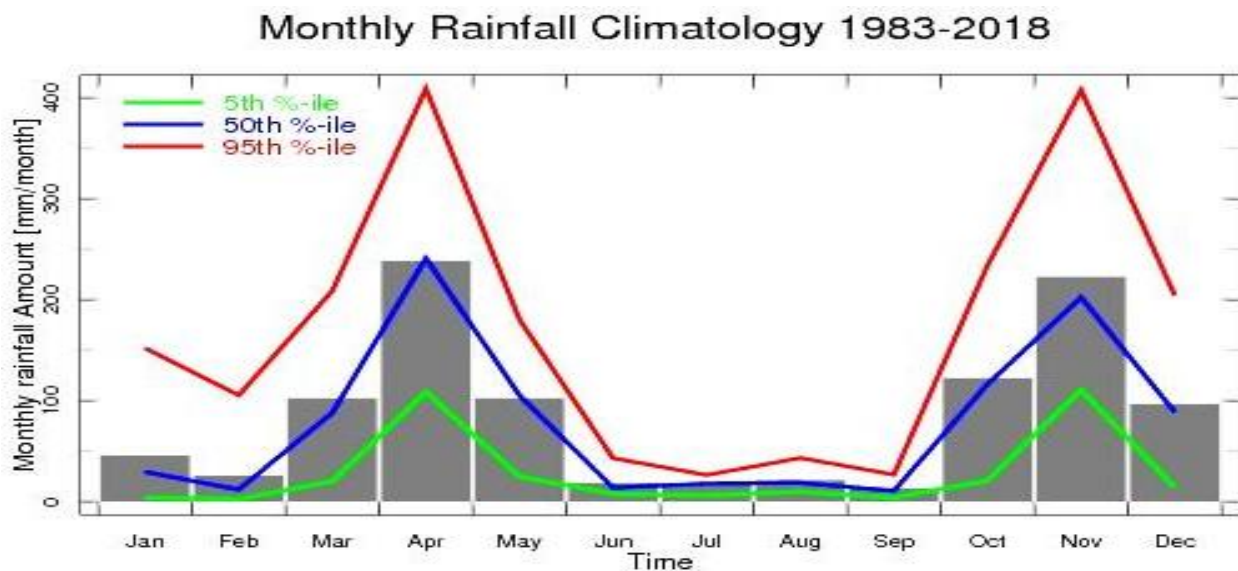
Whereas, the longterm average of precipitation does not show significant changes in total amounts received per year (Figure 3), seasonal variations and anomalies are becoming increasingly more common and unpredictable (Figure 4). The county receives the rainfall in a bimodal form in the seasons of March April May (MAM) and October November and December (OND).





Fig

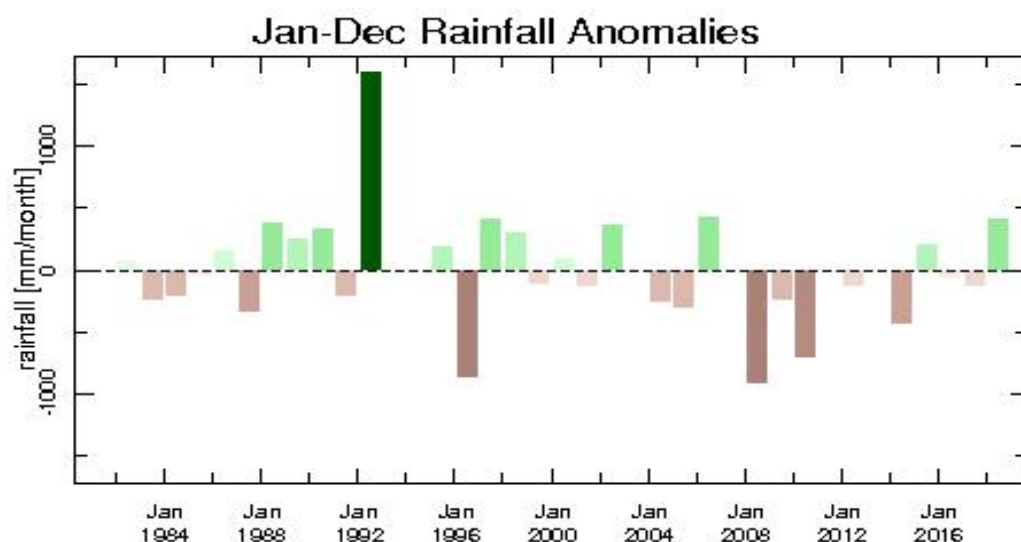
ure 3: Long term trend of rainfall (1978-2020) in Embu County.



**Figure 4: 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 (Figure 5). 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 occurrence of extreme events. In the events where the rainfall exceeds the normal rainfall, it falls in form of very heavy storms.



**Figure 5: 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).

**Table 2: 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



Hazard	Direct effects	Indirect effects
		Increased immorality and early pregnancies
	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

Hazard	Direct effects	Indirect effects
Erratic rains	Crops failure	Reduced productivity/ reduced household income
	Water scarcity	Water rationing
Deforestation	Water shortage	Water conflict, crop failure, Wastage of time, school drop outs
Extreme cold	Increased respiratory diseases	Reduced productive diseases while seeking treatment, High cost of treatment
Uncontrolled wastes	Loss of aesthetic value, increased diseases	Time wasting as medication is outsourced, loss of lives,

### 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 (Figure 6). 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 6: 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 3.

**Table 3: 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

### 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 4.

**Table 4: Summary of the impacts of hazards on the livelihoods and resources on VMGs**

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
<b>Drought</b>		
Women, poor households, youths, People living with disabilities, Minority and marginalized groups	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

Vulnerable Groups	Livelihoods/ Resources	Effects of Exposure and vulnerability
		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,
<b>Erratic rains</b>		
	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,
<b>Emerging livestock crop pest and diseases</b>		
	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
<b>Flush flood</b>		
	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

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. 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 losses 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 were prevalent and water logging of farming lands.

Crop pests and diseases as a key hazard also affect vulnerable groups 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 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 5).

**Table 5: 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 an 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 part 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 1.5°C/ as per the Paris agreement

**RCP 2.6:** The scenario of having carbon dioxide (CO<sub>2</sub>) decline from 2020 and go to zero by 2100. This will have the global temperatures rise to 2.0° C by 2100.

**RCP 3.4:** The scenario of having greenhouse gases considerably reduced from the atmosphere. This scenario is likely to result to global temperatures rising by 2.0-2.4 °C 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<sub>2</sub> to start declining from the year 2045 and reach the half of 2050s concentration amounts by 2100. This will result to global warming of 2.5-3.0° 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 3.0-4.0° 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.

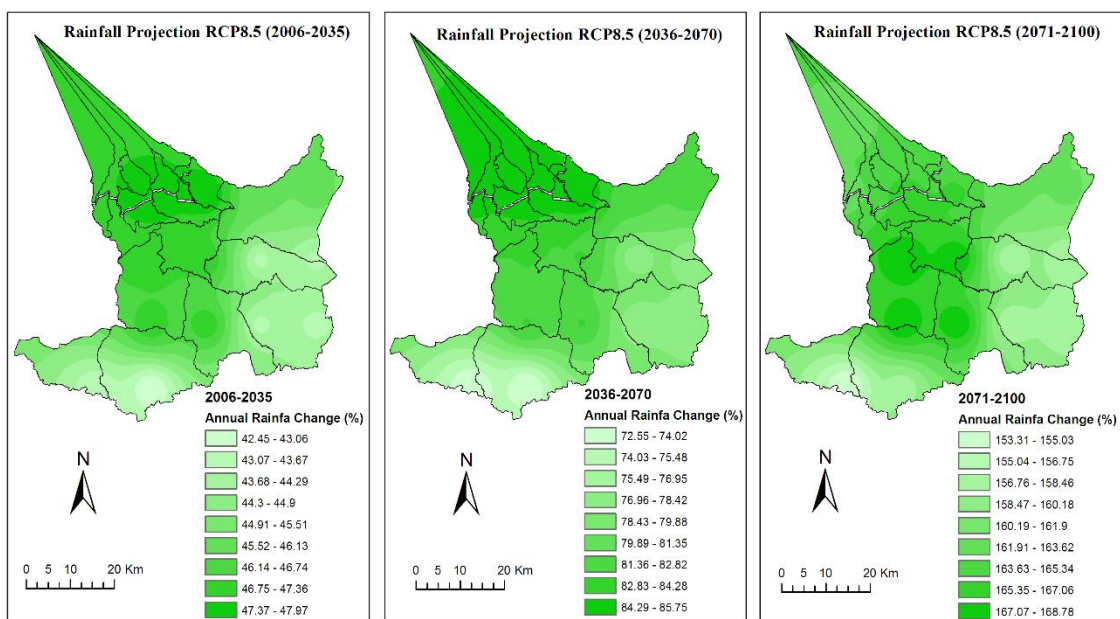
### **Rainfall**

- Precipitation will remain highly variable and coupled with high uncertainty.
- 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

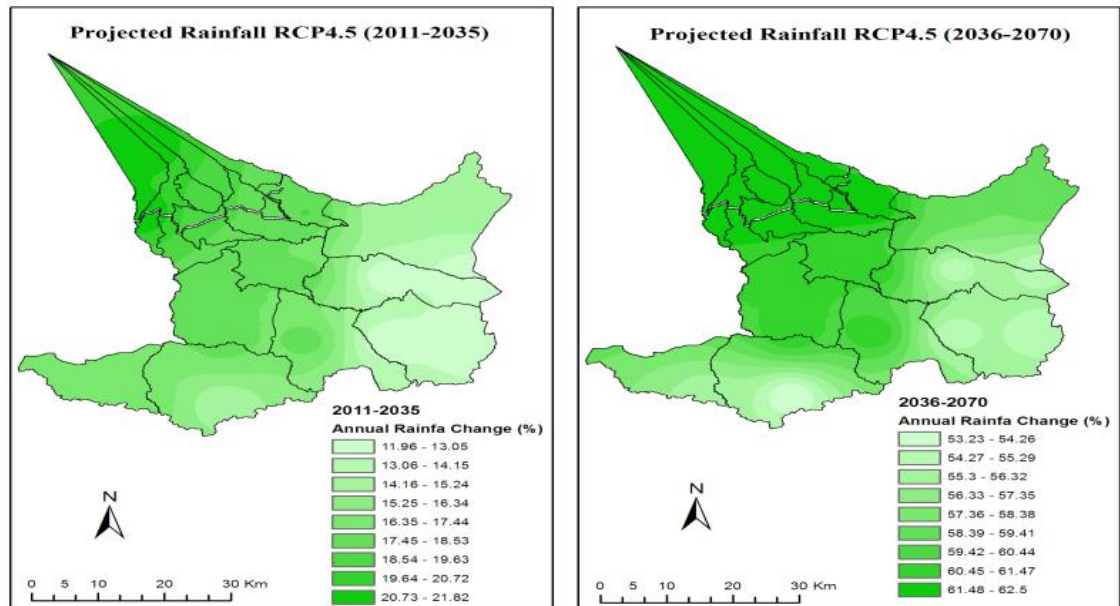
## **3.2 County Future Climate Scenarios**

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 7-12.

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 7 and 8) scenarios compared to the 1981-2005 present climate simulations of best-model ensemble mean.

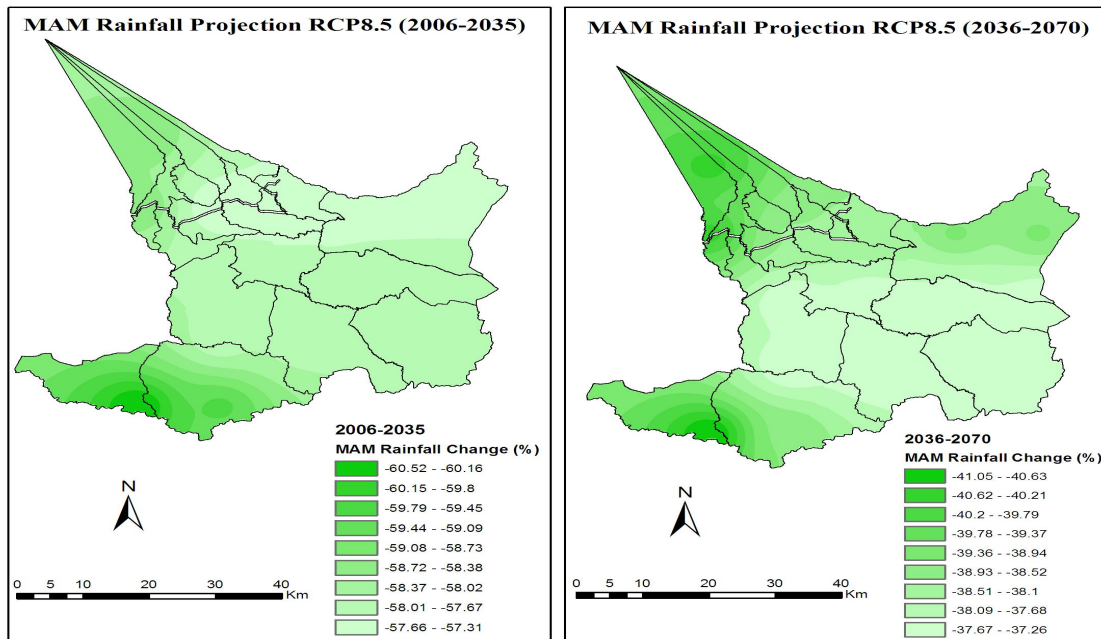


**Figure 7: Annual rainfall changes (mm/day) over Embu County expressed in percentage obtained from CMIP5 model under the RCP8.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2005.**

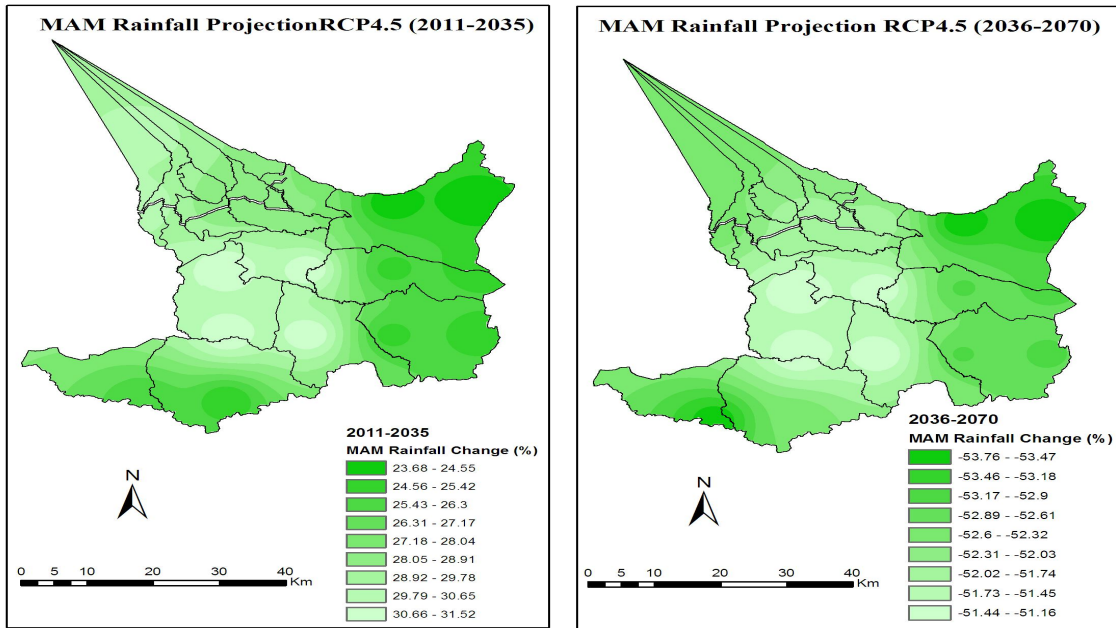


**Figure 8: Annual rainfall changes (mm/day) over Embu County expressed in percentage obtained from CMIP5 model under the RCP4.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2005.**

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 9 and 10 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.

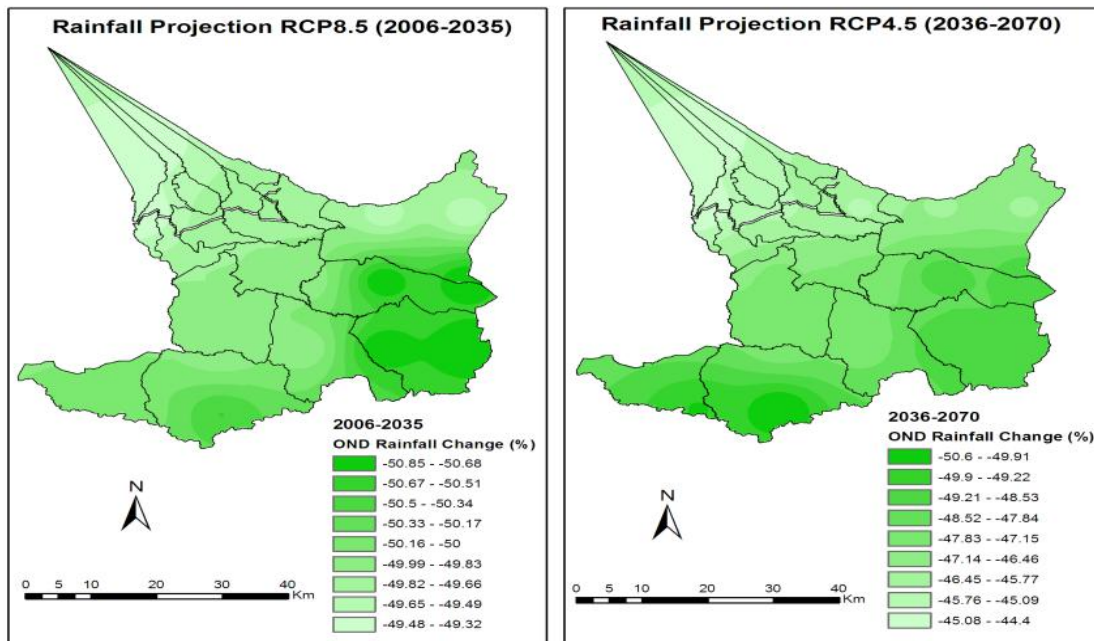


**Figure 9: March-May (MAM) Seasonal rainfall changes (mm/day) over Embu County expressed in percentage obtained from CIMP5 model under the RCP8.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2005.**

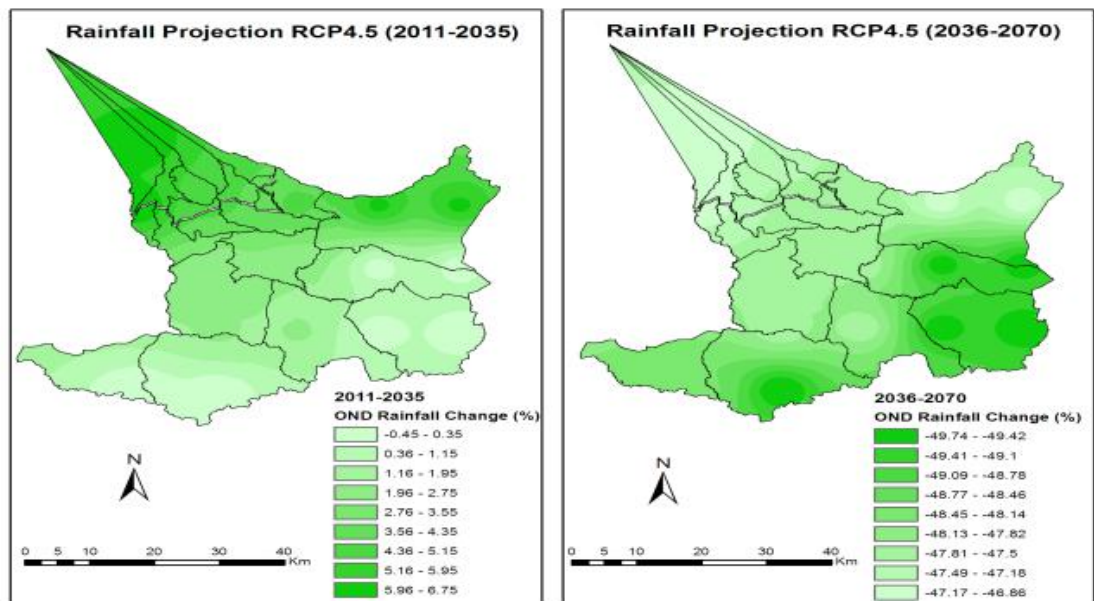


**Figure 10: March-May (MAM) Seasonal rainfall changes (mm/day) over Embu County expressed in percentage obtained from CIMP5 model under the RCP4.5 scenarios for future thirty-year periods from 2011 relative to historical simulations for the period 1981–2005.**

Figures 11 and 12 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 11: 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 1981–2005.**



**Figure 12: 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 the period 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 6)

**Table 6: Response Matrix S3A Local Perspectives of Weather and Climate**

LOCAL PERSPECTIVE OF WEATHER AND CLIMATE			
Table Group	Facilitator:	Notetaker	Date
1	What are the main seasons of the year in your area?	<ul style="list-style-type: none"> <li>• JF-January, February</li> <li>• MAM- March April May</li> <li>• JJAS- June July August September</li> <li>• OND- October November December</li> </ul>	
2	What is the weather usually like during the different seasons in your area? (e.g. rain, hail, snow, storms, temperature, wind, etc.)	<ul style="list-style-type: none"> <li>• JJ- Sunny, extreme temperature, Wind</li> <li>• MAM- Rain, Storms, Wind</li> <li>• JJAS- Cloudy, extreme temperature, Sunny</li> <li>• OND- Rain, Storms, Winds</li> </ul>	
3	Which aspects of normal seasonal weather can cause problems for your community, livelihoods, production systems or industry? (hazards due to normal climate variability)	<ul style="list-style-type: none"> <li>• Heavy rainfall.</li> <li>• Extended dry periods.</li> <li>• Extreme temperatures.</li> </ul>	
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)	<ul style="list-style-type: none"> <li>• Water shortage during the dry months.</li> <li>• Food shortage during the drought and pest and diseases outbreak.</li> <li>• Flooding during the rainy seasons.</li> <li>• Health problems during extreme cold days/nights.</li> </ul>	
5	Have you noticed any changes in the pattern of the seasons over the last 20 years? If so, what changes have you noticed.	<ul style="list-style-type: none"> <li>• Changes in normal rainfall patterns/erratic rains (late onset and late/early cessations, offseason rains)</li> <li>• Change in duration of weather events(extended colds/hot temperatures spells)</li> <li>• High frequency of extreme weather (storms)</li> <li>• Change in intensity of weather events( heavy rainfall/storms, strong winds)</li> <li>• Poor temporal and spatial distribution of rainfall</li> </ul>	
6	Which of these changes are causing problems for your community, livelihoods, production systems or	<ul style="list-style-type: none"> <li>• Economic losses due to erratic rains</li> <li>• Destruction of property and life due to heavy rainfall/storms</li> </ul>	

	industry? (hazards due to slow onset changes)	<ul style="list-style-type: none"> <li>• Drought due to extended extreme temperatures</li> <li>• Food shortage due to crop pests and diseases caused by extreme temperatures</li> </ul>
7	Are any of these changes causing particular problems for vulnerable groups (women/elderly/youth)? 31	<ul style="list-style-type: none"> <li>• Women spend long hours trekking in search of water during dry months.</li> <li>• Women overwork to provide food during the</li> <li>• The elderly are at risk of evacuating from extreme weather events.</li> </ul>
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)	<ul style="list-style-type: none"> <li>• Floods</li> <li>• Drought</li> <li>• Strong winds</li> </ul>
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	<ul style="list-style-type: none"> <li>• The frequency of the events has increased</li> <li>• The intensity of these events has increased</li> <li>• The duration of these events has increased</li> <li>• The predictability of these events changed</li> <li>• The severity of these events has increased</li> </ul>

## 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 7 gives the strategies adopted by various groups and the level of effectiveness.

**Table 7: Adaptation Strategies for Current Climate Risks and Gaps, Embu County**

<b>Current hazard</b>	<b>Current strategies</b>	<b>Gaps (What is Missing)</b>	<b>What needs to be done</b>
Drought	<ul style="list-style-type: none"> <li>Conservation farming- Terracing, mulching, organic manure use</li> </ul>	<ul style="list-style-type: none"> <li>Lack of soil conservation structure</li> <li>Low use of compost manure</li> </ul>	<ul style="list-style-type: none"> <li>Upscale climate smart agriculture</li> <li>Use crop manure</li> <li>Enhance soil and water conservation at the household level</li> </ul>
	<ul style="list-style-type: none"> <li>Small scale water harvesting and storage</li> </ul>	<ul style="list-style-type: none"> <li>Low community capacity to harvest and store water</li> </ul>	<ul style="list-style-type: none"> <li>Training and up scaling on-farm water harvesting technologies</li> <li>Subsidizing water harvesting infrastructure</li> </ul>
	<ul style="list-style-type: none"> <li>Small scale adoption of drought tolerant crops and early maturing crops</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate and high cost of crop seed and planting materials</li> <li>Low awareness among the farmers</li> </ul>	<ul style="list-style-type: none"> <li>Up scaling of early maturing and drought tolerant varieties</li> <li>Community seed bulking</li> </ul>
	<ul style="list-style-type: none"> <li>Sprinkler irrigation</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient water for agriculture</li> </ul>	<ul style="list-style-type: none"> <li>Adoption of drip technology</li> <li>Expansion of irrigation infrastructure</li> </ul>
	<ul style="list-style-type: none"> <li>Household level forage conservation</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate forage conservation practices</li> </ul>	<ul style="list-style-type: none"> <li>Silage technology, hay bailing, pasture reseeding and bulking, construction of community feed stores</li> </ul>
	<ul style="list-style-type: none"> <li>Poultry feed</li> </ul>	<ul style="list-style-type: none"> <li>Upscale feed</li> </ul>	<ul style="list-style-type: none"> <li>Raw materials and</li> </ul>



Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
	formulation-small scale • Low adoption of kitchen gardens	formulation • Upscale use of kitchen gardens	equipment, training • Water harvesting for kitchen gardens promotion
	• 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
	• 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, • Material Recovery

Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
			Facility, <ul style="list-style-type: none"> <li>• Water reuse and recycling,</li> <li>• Promotion of renewable energy for agro-based industry,</li> <li>• Provision of climate services,</li> <li>• Mainstreaming ICT use,</li> <li>• Woodlot establishment,</li> <li>• promotion of commercial forestry,</li> <li>• Energy saving jikos, biogas production technologies,</li> <li>• Solar energy mechanisms</li> </ul>
	<ul style="list-style-type: none"> <li>• Solid waste</li> </ul>	<ul style="list-style-type: none"> <li>• Uncontrolled solid waste</li> </ul>	<ul style="list-style-type: none"> <li>• sustainable solid waste management</li> </ul>
	<ul style="list-style-type: none"> <li>• Sand harvesting</li> </ul>	<ul style="list-style-type: none"> <li>• Uncontrolled Sand harvesting</li> </ul>	<ul style="list-style-type: none"> <li>• Enact appropriate policies and acts to guide on the activity</li> </ul>
	<ul style="list-style-type: none"> <li>• Pro-base method of tarmacking and road repairs</li> </ul>	<ul style="list-style-type: none"> <li>• Dilapidated infrastructure as a result of flooding and flash floods</li> </ul>	<ul style="list-style-type: none"> <li>• Grading and murraming of roads,</li> <li>• Opening of new access roads for market access,</li> <li>• Road bridges and drifts for climate proofing actions</li> <li>• Climate smart industrial parks</li> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>• Reduction of post-harvest losses</li> </ul>	<ul style="list-style-type: none"> <li>• High-post harvest losses</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of new market centers</li> <li>• Construction food stores</li> <li>• Aggregation centres,</li> <li>• milk cooling machines,</li> <li>•</li> </ul>

Current hazard	Current strategies	Gaps (What is Missing)	What needs to be done
Emerging Crop and Animal Pests	<ul style="list-style-type: none"> <li>Breeding for pest and disease resistant</li> <li>Using IPM methods of control</li> <li>Using ITK (Indigenous Traditional Knowledge) methods</li> </ul>	<ul style="list-style-type: none"> <li>Over use of chemical methods of pests and disease control</li> <li>Lack of safe and effective use of agrochemicals</li> </ul>	<ul style="list-style-type: none"> <li>Training on safe and effective use of agro chemicals</li> <li>Safe disposal of chemical wastes</li> <li>Use of bio-pesticides</li> </ul>
Erratic rains	<ul style="list-style-type: none"> <li>Relying on ITK methods</li> <li>Information from the meteorological department</li> </ul>	<ul style="list-style-type: none"> <li>Poor crop germination</li> <li>Poor yields</li> <li>Low animal forage and pasture</li> <li>Poor recharge of rivers and water sources</li> </ul>	<ul style="list-style-type: none"> <li>Reliable weather information</li> <li>Breeding for drought resistance</li> <li>Policy guidelines on river banks protection and water sources</li> </ul>
Flash floods	<ul style="list-style-type: none"> <li>Infrastructure proofing</li> <li>Digging cut off drains</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate funds for infrastructure proofing</li> <li>Lack of technical skills for digging cut of drains and other types of terraces</li> </ul>	<ul style="list-style-type: none"> <li>Resource mobilization for infrastructure exercises</li> </ul>

#### 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.

A summary of Effectiveness of Adaptation/Resilience Strategies to Future Climate Risks, Embu county has been given in Table 8

**Table 8: Effectiveness of Adaptation/Resilience Strategies to Future Climate Risks, Embu county**

<b>Risk/ Hazard</b>	<b>Livelihood/Economic System</b>	<b>Climate Resilience Strategies</b>	<b>Stakeholder Group Applying the Strategy</b>	<b>Gender and Social Inclusion information</b>
Drought	<ul style="list-style-type: none"> <li>• Conservation farming- Terracing, mulching, organic manure use</li> <li>• Small scale water harvesting and storage</li> <li>• Small scale adoption of drought tolerant crops and early maturing crops</li> <li>• Sprinkler irrigation</li> <li>• Household level forage conservation</li> <li>• Poultry feed formulation-small scale</li> <li>• Low adoption of kitchen gardens</li> <li>• Use of hand pump boreholes</li> <li>• Low capacity dams (earth, sand and pans)</li> <li>• Siltation of dams</li> <li>• Small scale irrigation schemes</li> </ul>	<ul style="list-style-type: none"> <li>• Upscale climate smart agriculture</li> <li>• Use crop manure</li> <li>• Enhance soil and water conservation at the household level</li> <li>• Training and up scaling on-farm water harvesting technologies</li> <li>• Subsidizing water harvesting infrastructure</li> <li>• Up scaling of early maturing and drought tolerant varieties</li> <li>• Community seed bulking</li> <li>• Adoption of drip technology</li> <li>• Expansion of irrigation infrastructure</li> <li>• Silage technology, hay bailing, pasture reseeding and bulking, construction of community feed stores</li> <li>• Raw materials and equipment, training</li> <li>• Water harvesting for kitchen gardens promotion</li> <li>• Sinking and rehabilitation of boreholes;</li> <li>• Solarization of existing</li> </ul>	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
	<ul style="list-style-type: none"> <li>Existing natural springs</li> <li>Existing rock outcrops</li> <li>Water harvesting at sub-optimal levels</li> <li>Deforestation,</li> <li>Solid waste</li> <li>Sand harvesting</li> <li>Pro-base method of tarmacking and road repairs</li> <li>Reduction of post-harvest losses</li> <li>Breeding for pest and disease resistant</li> <li>Using IPM methods of control</li> <li>Using ITK (Indigenous Traditional Knowledge) methods</li> <li>Relying on ITK methods</li> <li>Information from the meteorological department</li> <li>Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>boreholes;</li> <li>Rehabilitation of earth dams,</li> <li>Construction of earth dams, sand dams and water pans,</li> <li>Use of liners and green surface cover,</li> <li>promotion of farm pods</li> <li>Extension of existing pipeline</li> <li>spring protection,</li> <li>Rock catchment</li> <li>water tanks, run off water harvesting</li> <li>Afforestation,</li> <li>River line tree planting,</li> <li>Commercial nursery establishment,</li> <li>Bamboo propagation using modern technology,</li> <li>Agroforestry,</li> <li>School greening programs,</li> <li>Climate smart markets,</li> <li>Material Recovery Facility,</li> <li>Water reuse and recycling,</li> <li>Promotion of renewable energy for agro-based industry,</li> <li>Provision of climate services,</li> <li>Mainstreaming ICT use,</li> <li>Woodlot establishment,</li> <li>promotion of commercial</li> </ul>		

Risk/ Hazard	Livelihood/Economic System	Climate Resilience Strategies	Stakeholder Group Applying the Strategy	Gender and Social Inclusion information
	proofing • Digging cut off drains	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 murrming 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 • Policy guidelines on river banks protection and water sources		

<b>Risk/ Hazard</b>	<b>Livelihood/Economic System</b>	<b>Climate Resilience Strategies</b>	<b>Stakeholder Group Applying the Strategy</b>	<b>Gender and Social Inclusion information</b>
		<ul style="list-style-type: none"> <li>Resource mobilization for infrastructure exercises</li> </ul>		
Emerging crop and animal pests and diseases	<ul style="list-style-type: none"> <li>Breeding for pest and disease resistant</li> <li>Using IPM methods of control</li> <li>Using ITK (Indigenous Traditional Knowledge) methods</li> </ul>	<ul style="list-style-type: none"> <li>Training on safe and effective use of agro chemicals</li> <li>Safe disposal of chemical wastes</li> <li>Use of bio-pesticides</li> </ul>		
Erratic rainfall	<ul style="list-style-type: none"> <li>Relying on ITK methods</li> <li>Information from the meteorological department</li> </ul>	<ul style="list-style-type: none"> <li>Reliable weather information</li> <li>Breeding for drought resistance</li> <li>Policy guidelines on river banks protection and water sources</li> </ul>		
Flash floods	<ul style="list-style-type: none"> <li>Infrastructure proofing</li> <li>Digging cut off drains</li> </ul>	<ul style="list-style-type: none"> <li>Resource mobilization for infrastructure exercises</li> </ul>		



## 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 9. 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 (Figure 13)

**Table 9: County climate strategic adaptation investment**

Risk/ Hazard	Livelihood/Economic system	Priority Areas of Investment
	<b>Agriculture and Livestock</b>	
Drought	To Enhance Adaptation And Mitigation To Climate Change	<ol style="list-style-type: none"> <li>1. Adoption of climate smart, technologies, innovation, and management practices (including conservation agriculture, climate smart seeds varieties, ecologically adapted crops, agroforestry, regenerative agriculture).</li> <li>2. Enhancing the use of climate change adaptation information science.</li> <li>3. Weather forecasting and early warning systems</li> </ol>
	To Reduce Overreliance On Rain Fed Agriculture.	<ol style="list-style-type: none"> <li>1. Expansion of irrigation infrastructure including efficient water use technologies (e.g., sensor-based irrigation).</li> <li>2. Investment in water harvesting for crop production (e.g., small earth dams, boreholes, water pan, ponds ).</li> <li>3. Construction of irrigation distribution networks</li> <li>4. Sensitize and train farmers on irrigation water harvesting.</li> <li>5. Support farmer led irrigation projects.</li> </ol>

<b>Risk/ Hazard</b>	<b>Livelihood/Economic system</b>	<b>Priority Areas of Investment</b>
		<ol style="list-style-type: none"> <li>6. Protect catchments areas and riverbanks.</li> <li>7. Provision of water banks for the Vulnerable and the Marginalized Groups</li> </ol>
	Value Addition on Agricultural Products	<ol style="list-style-type: none"> <li>1. To maximize on prices of limited supply of agricultural produce</li> </ol>
	Increase Livestock Productivity.	<ol style="list-style-type: none"> <li>1. Support farmers with high producing and climate adapted breeds</li> <li>2. Promotion of destocking</li> <li>3. Promote climate smart genetic resources</li> </ol>
	Sustainable Livestock Pasture And Fodder Supply	<ol style="list-style-type: none"> <li>1. Promote establishment, conservation &amp; preservation of fodder.</li> <li>2. Promote use of community hay bans</li> <li>3. Promote pasture &amp; fodder production &amp; mechanization</li> <li>4. Establishment of fodder banks</li> </ol>
	To reduce Post-Harvest Losses	<ol style="list-style-type: none"> <li>1. Promote value addition for livestock products &amp; by products.</li> <li>2. Installation of satellite milk coolers.</li> <li>3. Establishment of cold chain infrastructure (satellite coolers, transport, ripening cheeses facilities)</li> <li>4. Construction of milk processing plant</li> <li>5. Establishment of grain banks</li> </ol>
	Promotion of Apiculture as an Alternative Livelihood.	<ol style="list-style-type: none"> <li>1. Support farmers with bee keeping equipment.</li> <li>2. (Hives, harvesting kits)</li> </ol>
	<b>Environment and forestry</b>	
	Sustainable Utilization and Management of County Natural Resources and Landscapes	<ol style="list-style-type: none"> <li>1. Undertake public education and environmental awareness campaigns.</li> <li>2. Protect catchment areas, riverbank and riparian land.</li> <li>3. Promotion of environmentally friendly practices and technologies</li> <li>4. Prepare and disseminate advisories and information.</li> <li>5. Develop legislative framework.</li> <li>6. Rehabilitation and conservation of forests, hills, swamps, wetlands, springs areas</li> </ol>
	Climate change mitigation and adaptation action	<ol style="list-style-type: none"> <li>1. Establishment of climate change policy and legal framework</li> <li>2. Promoting partnership in addressing climate change issues</li> </ol>

<b>Risk/ Hazard</b>	<b>Livelihood/Economic system</b>	<b>Priority Areas of Investment</b>
		3. Implementation of adaptive and mitigative measures 4. Clean energy transition initiatives 5. Weather forecasting and early warning systems
	<b>Water</b>	
	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.
	<b>Climate proofing infrastructure</b>	
	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
<b>Emerging Crop and Livestock Pests and Diseases</b>	<b>Agriculture and Livestock</b>	
	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.
	<b>Environment and Forestry</b>	
	<b>Forest and Wildlife Management</b>	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 agroforestry technologies for the

<b>Risk/ Hazard</b>	<b>Livelihood/Economic system</b>	<b>Priority Areas of Investment</b>
		Vulnerable and the Marginalised Groups
	<b>Water</b>	
	Water Contamination	1. Proper treatment of water to avoid to avoid transmission of diseases and vectors
<b>Erratic rainfall</b>	<b>Agriculture and Livestock</b>	
	Climate change mitigation and adaptation action	<ol style="list-style-type: none"> <li>1. Establishment of grain, seed and fodder banks</li> <li>2. Soil and water conservation structures</li> <li>3. Promotion of reafforestation activities</li> <li>4. Water harvesting structures</li> <li>5. Increase soil surface cover</li> <li>6. Establishment of pasture and fodder fields</li> </ol>
	<b>Environment and forestry</b>	
	Climate change mitigation and adaptation action	<ol style="list-style-type: none"> <li>1. Promotion of fast-growing tree species</li> <li>2. Increased soil surface cover</li> <li>3. Planting of vegetation species that is customized change in ecological conditions</li> <li>4. Promotion of soil and water conservation structures</li> </ol>
	<b>Water</b>	
	To improve access to adequate, reliable, and affordable quality water.	<ol style="list-style-type: none"> <li>1. Construction of Water Banks for Enhanced Storage.</li> <li>2. Drilling of boreholes</li> <li>3. Protection of water sources and catchment areas</li> <li>4. Expansion of Water distribution networks</li> <li>5. Prepare and disseminate advisories on Effective Water Resource Use.</li> <li>6. Installation of water treatment facilities</li> <li>7. Desilting and rehabilitation of existing earth dams</li> </ol>
	<b>Climate proofing infrastructure</b>	
	To build resilient communities to disasters that affect the infrastructure	<ol style="list-style-type: none"> <li>1. Construction of bridges and drifts</li> <li>2. Grading and maraming of access roads</li> <li>3. Unclogging and expansion drainages</li> <li>4. Proper waste management</li> <li>5. Reinforcement and repair of weak infrastructure</li> </ol>

<b>Risk/ Hazard</b>	<b>Livelihood/Economic system</b>	<b>Priority Areas of Investment</b>
<b>Flash Floods</b>	<b>Agriculture and Livestock</b>	
	Climate change mitigation and adaptation action	<ol style="list-style-type: none"> <li>1. Change of crop type</li> <li>2. Evacuation of Livestock</li> <li>3. Increased soil surface by planting cover crops</li> <li>4. Promotion of Farm land terracing</li> <li>5. Manure application and composting to replenish soil biology</li> <li>6. Crop alternation</li> <li>7. Planting of flood resistant/tolerant crops and vegetables</li> </ol>
	<b>Environment and Forestry</b>	
	Community Resilience To Floods	<ol style="list-style-type: none"> <li>1. Afforestation</li> <li>2. Restoration of riparian land</li> <li>3. River bank protection</li> <li>4. Planting of flood resistant trees</li> <li>5. Weather forecasting and early warning systems</li> </ol>
	<b>Water</b>	
	To improve access to adequate, reliable, and affordable quality water.	<ol style="list-style-type: none"> <li>1. Rain water harvesting structures</li> <li>2. Installation of water treatment facilities</li> <li>3. Weather forecasting and early warning systems</li> </ol>
	<b>Climate proofing infrastructure</b>	
	To build resilient communities to disasters that affect the infrastructure	<ol style="list-style-type: none"> <li>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</li> <li>2. Non-structural measures eg evacuation routes, relocation, zoning, building codes,</li> </ol>



**Figure 13: PCRA Project Presentations in Gaturi North Ward and Water Sector Stakeholders Deliberations during the PCRA Process at IFAD Hall, Kangaru**

## **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 all stakeholders in all the Wards including communities and other local actors, and specifically women, youth, ethnic minorities, people living with disabilities and other marginalised and vulnerable groups. 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.

Analysis of historical records of weather indicate that both dry spells and extreme precipitation are recurrent hazards in the County. 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 the household and community levels, there is need to build resilience through promoting Climate-Smart Agriculture and supporting farmers in adopting climate-smart agricultural practices that increase resilience to climate risks. It also involves 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; Integrating climate change considerations into development plans, policies, and decision-making processes at all levels. This involves incorporating climate resilience criteria into infrastructure design, land-use planning, and sectoral policies. To effectively build community resilience in the County, there is also need for empowerment and support to vulnerable communities. The PCRA report serves as a valuable tool for decision-makers, providing the necessary information and guidance to inform policies, programs, and investments that address climate risks and promote climate resilience.



## REFERENCES

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- Kenya National Adaptation Plan 2015-2030, Government of Kenya, July 2016
- MoALF, 2016. Climate Risk Profile for Embu. Kenya County Climate Risk Profile Series. The Kenya Ministry of Agriculture, Livestock and Fisheries (MoALF), Nairobi, Kenya.
- UNDP (2014), Sustainable Development Goals



## 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 23<sup>rd</sup> May 2023 and 24<sup>th</sup> May 2023, Embu County Headquarters Conference Hall, Kangaru.**

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)		18-35 Yrs	35-60 Yrs	Above 60	DAY 1	DAY 2
1.	FELTH Mware	5072142	0729809742		✓	Chairbody		✓			
2.	Guliet Wawira	13571519	0719689442		-	Chairbody		✓			
3.	HARRIET KIVUTI	0235536	0713548952		✓				✓		
4.	FAITH WANJA	24379441	070440372		✓			✓			
5.	Lucy Mawu	13572360	0718437149		✓			✓			
6.	CHRISTOPHER NDERU	07226453	0722645382	✓				✓			

Embu County Climate Change Action Plans Participatory Meeting Attendance List

COMMUNITY

County Embu

Sub County

Ward

Date 23/05/2023

PCRA / ACTION PLAN STAKEHOLDERS  
CONSULTATION MEETING — 23-24 May 2023

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.	BAHCT NTUKI	38208973	0741057224		✓	Community	✓				
68.	IMEDA THADIRA	37004174	0705044696		✓	KITHINU YOUTH REP	✓				
69.	MAIDALENE NDWENDE	25171466	0737636076		✓	Community	✓				
70.	ENKISE NJIRO MUGEST	22791216	0719322996	✓	✓	Community	✓				
71.	CATHINE WEMBIH	26424301	0711362534		✓	Chairperson	✓				
72.	ELUICE GICUKI KINTO	3565694	0720917368		✓	KITHINU YOUTH REP	✓				
73.	PAULINE KAGENDO	12572667	0715061289		✓	Member		✓			
74.	PAULINE KAGENDO	12572667	0715061289		✓	Member		✓			
75.	ALBERT MUNDYI	133339404	0720289136	✓		SEC	✓				
76.	JUSTUS NYERU	9820343	0727300449		✓	CHAIRMAN		✓			
77.	EDMAN GITANI	11482106	0722776995	✓		CHAIRMAN	✓				
78.	EDMAN GITANI	11482106	0722776995	✓		CHAIRMAN	✓				

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 IRENI	26474451	0728147298	✓		MURITI COMMITTEE MEMBER	✓				
56.	LAABASEL KINTIWA	12933314	0724985825	✓		GATUUSOUTH COMMITTEE MEMBER		✓			
57.	ASHA GITIRI	5096058	0724597394		✓	GATUUSOUTH Chairperson		✓			
58.	MAMANE WANDIRI	23466553	0724396619		✓	Community		✓			
59.	MERRI NJERA	2926477	0703631038	✓		EUROPE YOUTH REP	✓				
60.	Florence Karu	22561060	072896510		✓	EUROPE WOMEN REP		✓			
61.	Irene Wanjira	26242991	0723965497		✓	Community	✓				
62.	DAVID KUCUKI	10460723	0724412483	✓		Community		✓			
63.	Catherine mungi	31498156	0705201249		✓	Community	✓				
64.	MARITIK ISIRIWA	10640793	07285220455	✓		Community		✓			
65.	Nicodemus Kiaraba	12402229	0711138881	✓		U-13A					
66.	MURITHI GATUUSOUTH	39534952	0790874666		✓	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 MADIA	12773517	0715099119		<input checked="" type="checkbox"/>	NTHURU KIDENI Reg.		<input checked="" type="checkbox"/>		<del>Signature</del>	
44.	JACKLINE MUNEE	13424638	0712287652		<input checked="" type="checkbox"/>	CENTRAL RURAL CHAIRPERSON		<input checked="" type="checkbox"/>		<del>Signature</del>	
45.	LENA KUMBU	11975931	0701991186		<input checked="" type="checkbox"/>	GAJURI NORTH youth rep	<input checked="" type="checkbox"/>			<del>Signature</del>	
46.	DICKSON NJAGI	05890502	0720580802	<input checked="" type="checkbox"/>		community	<input checked="" type="checkbox"/>			<del>Signature</del>	
47.	Felix Muriuki	39282029	079991398	<input checked="" type="checkbox"/>		communication dept. County	<input checked="" type="checkbox"/>			<del>Signature</del>	
48.	KENNETH Muthia	39236182	0746178990	<input checked="" type="checkbox"/>		community	<input checked="" type="checkbox"/>			<del>Signature</del>	
49.	Brian Mwaniki	41520830	0740672963	<input checked="" type="checkbox"/>		Community	<input checked="" type="checkbox"/>			<del>Signature</del>	
50.	Simon Mwangi	39031525	0114578958		<input checked="" type="checkbox"/>	Community	<input checked="" type="checkbox"/>			<del>Signature</del>	
51.	SILVERIO MUKUGA	20875234	0745493417	<input checked="" type="checkbox"/>		NTHURU youth rep	<input checked="" type="checkbox"/>			<del>Signature</del>	
52.	LAFAT MUKORIDI	25747283	0714878372	<input checked="" type="checkbox"/>		community	<input checked="" type="checkbox"/>			<del>Signature</del>	
53.	ANNE WAMUAY	29910258	0710937672	<input checked="" type="checkbox"/>		Community	<input checked="" type="checkbox"/>			<del>Signature</del>	
54.	MARION NJUGU NJUGA	25539157	0725316074	<input checked="" type="checkbox"/>		GAJURI SOUTH Chairperson	<input checked="" type="checkbox"/>			<del>Signature</del>	

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.	FRANCIS MATHUTHU. M.	27303421	0716105698	F.	✓	WARRIOR NORTH -IDUTH	35	✓			
32.	GUCKUNE WASSA MADO	30667764	0716482066		✓	Community	✓				
33.	DONADE NYAGA	0679141	071505896	-		PWD			✓		
34.	MICHAEL NYELU	10222964	0722223169	✓		WARRIOR		✓			
35.	EDITHA M. ALAAL	13571021	0722899352	✓		Community		✓			
36.	TITUS MUCHELI	33241187	0724873927	✓		MAWARIA SECRETARY		✓			
37.	JOHNSON WAFIWE	27401200	0724147241	✓		Community	✓				
38.	ANKEN MURIMI	28460124	072782470	✓		Community	✓	✓			
39.	FAITH GAKU	95724489	0720217787		✓	Community		✓			
40.	<del>EDITHA M. NYAGA</del>	95224489	0720217787		✓	Community		✓			
41.	EUNICE W. MURIA	13262439	0721275999		✓	COMMUNITY		✓			
42.	Henry Kithiga Secoos	072504844		✓		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.	CHRISTIANE KUUUJI	96523850	0713740718	M		YOUTH REP MYEHI SOUTH	✓				
20.	SABON MUGENDI	35138007	0745109060	F	F	Community	✓				
21.	MILIMU WAMUN	27274166	0722222259	M		Metabolism		✓			
22.	ANTONY KARUKU MTEU	21727742	0729547191	M		MEN/KAGAMEZI MTEU		✓			
23.	MERACI WONGORA HUSSEIN	25630481	0714969383	F	F	MECHANIC	✓				
24.	LENNY MUGAMBI NJIRU	37855981	0716410741	M		Community	✓				
25.	GEORGE RUKUBA MUEA	23691965	0722280259	F	F	Committee MURURUKA		✓			
26.	DAVID KIMATHI, GAKOPE	309445053	0742249344	M		Community	✓				
27.	KIMICATE MUKKATI	29554112	0727491575	F	F	E.C. C Youth Rep Kanyo South	✓				
28.	BRIAN MUMENE	34349282	0700543629	M			✓				
29.	BENSON NYAGA	30661745	070664550	M		EC4	✓				
30.	ROBERT NYUKU	36014446	0717056022	M		EC4	✓				



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.	Peter Mwangi	1332 632	072491633	M		PWD		✓		R	
8.	Daniel Mwangi	21511485	071576882	M		Treasurer		✓			
9.	Michael Mwangi	5083098	0721328297	✓					✓		
10.	JACKLINE NJOGU	35540438	0769945734	F	✓		✓				
11.	CATHERINE MUTHOMI	37971779	0769933542		✓		✓				
12.	ANNE MATHA	27072085	072896265		✓		✓				
13.	Ann M. Muthithi	5096391	0725219179	F	✓	CFM Njiru		✓			
14.	James Mwangi	11241806	0710136932	M		Mt. DEP Victim		✓			
15.	NELSON NYAGA	24977812	0729851016	✓		Chairman presenter		✓			
16.	John Mwangi Njiru	7034283	0765381431	M		PLWD		✓			
17.	Joseph Gitabaki	13619993	0720756005	✓		Chairman Victim		✓			
18.	Silas Kinehi	21937497	0720982044			Chairman		✓			

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	0781229599 0725 111 283		F	Co-ordinator		✓			
80.	Millent Kengendo	26645573	0716757447		F	CHV	✓				
81.	Edna Mwakani	34315694	0791539638		F	CHV	✓				
82.	Dickson Njiru Njiru	7805551	0727627862	M	M	Comm. Tte		✓			
83.	Elizabeth Wanjiru	22150580	0726651760		F			✓			
84.	Isene Njiru	27186477	0726645780		F			✓			
85.	Anthony Mwanja	23778783	078477149	M		Committee		✓			
86.	Moses Munene	09002402	0719079104	M		Chairperson	✓				
87.	Lucy Wambugu	23412153	0712340277		F	Committee		✓			
88.	Anthony Mwanja	28417426	0719766725	M		PLWDs	✓				
89.	Peter Mwanja	13572304	0729288818	M		Committee		✓			
90.	Roseline Wanjiru	35137099	0798793623	F		Joint Rep.					



STAKE HOLDER  
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 Yrs	35- 60Yrs	Above 60		
1.	JOHNNY THORNTON	28430019	0769309484	Male(M)	<input checked="" type="checkbox"/>	ECG	<input checked="" type="checkbox"/>			DAY 1	DAY 2
2.	Caroline Wani	26485010	0724935810	Female(F)	<input checked="" type="checkbox"/>	ECG	<input checked="" type="checkbox"/>				
3.	Newton W. Wadhwa	11022613	0724932442	<input checked="" type="checkbox"/>		ECG		<input checked="" type="checkbox"/>			
4.	Charles N. Oguni	8533423	072782254	<input checked="" type="checkbox"/>		U6m		<input checked="" type="checkbox"/>			
5.	Daniel Mwangi	21782942	0722161870	<input checked="" type="checkbox"/>		U6m					
6.	Wilfred Patrick Nyeri	13339650	0757699719	<input checked="" type="checkbox"/>		ENV1		<input checked="" type="checkbox"/>			

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 Kaimi	27651229	0710369859		✓	Community		✓	DL		
44.	Kachon Nyira	26742614	0723228308		✓	Community		✓	L.M		
45.	Joseph Kinyira	10729559	0721322569	✓		Community		✓	<del>DL</del>		
46.	LILIAN WANGISHI	290027072	0717079164		✓	Community	✓		DL		
47.	Jane W. Mwangi	29200281	0721813402		✓	Community		✓	<del>DL</del>		
48.	Lauris Mwangi	3685752	07205873760	✓		Community	✓		<del>DL</del>		
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 Murene	38866690	0194248038	✓		Community	✓			<i>[Signature]</i>	
92.	<del>Henry AS K. Murene</del>	<del>02934749</del>	<del>072450142</del>	✓		<del>Community</del>			✓	<i>[Signature]</i>	
93.	Kellen K. Ntaga	11460134	0726541313		✓	Kivurwa Committee M. Ag. 2, 12 Secretary		✓		<i>[Signature]</i>	
94.	Henry Nduvira	11023078	071032428	✓		Community		✓		<i>[Signature]</i>	
95.	Wilfred Patrick Nyir	13339650	0757699719	✓		Community		✓		<i>[Signature]</i>	
96.	Samuel Ntaga	96171284	0704201170	✓		Community		✓		<i>[Signature]</i>	
97.	Caroline Murene	22579252	0727640706		✓	Community Member	✓			<i>[Signature]</i>	
98.	MURRAY M. MURRAY	08244873916	0724530586		✓	Community			✓	<i>[Signature]</i>	
99.	JULIET MURRAY MURRAY	33264043	0759925363		✓	Community member	✓			<i>[Signature]</i>	
100.	CHRISTINE MURRAY MURRAY	37225140	0704547946		✓	Community Member	✓			<i>[Signature]</i>	
101.	Edwin Ntaga	33244109	0740336428	✓		Community Member	✓			<i>[Signature]</i>	
102.	MURRAY MURRAY	23324563	0726420589	✓		Community		✓		<i>[Signature]</i>	



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 GILBERT	25410730	0795553787	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				
80.	RONFACE NEMENDA	27817509	0704966078	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				
81.	MR D MURTHI	7451357	0720032235	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				
82.	PETER MURTHI	87088200	0794700681	<input checked="" type="checkbox"/>		Community	<input checked="" type="checkbox"/>				
83.	JOSEPH KUMU	22609221	0720044785	<input checked="" type="checkbox"/>		Sec Regional		<input checked="" type="checkbox"/>			
84.	WIRENCE GILBERT	2246624	0724121838	<input checked="" type="checkbox"/>		CDMUTV		<input checked="" type="checkbox"/>			
85.	Joyce Wadhwa	27810252	0718279022			Community	<input checked="" type="checkbox"/>				
86.	EZEKIEL MUGAMBI	27815823	0703683306	<input checked="" type="checkbox"/>		Community	<input checked="" type="checkbox"/>				
87.	Augustine Njiru	3305080	0712703723	<input checked="" type="checkbox"/>		Community			<input checked="" type="checkbox"/>		
88.	JOSECK NYAHU	21989768	0712785445	<input checked="" type="checkbox"/>		Community		<input checked="" type="checkbox"/>			
89.	BEN RICE SUNDU	1292003	0725179769		<input checked="" type="checkbox"/>	Community			<input checked="" type="checkbox"/>		
90.	BRAID LADU	23324463	0725447997		<input checked="" type="checkbox"/>	Community		<input checked="" type="checkbox"/>			

S/NO	NAME	ID NUMBER	MOBILE NO	GENDER		Category and (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	✓				✓	✓	<i>[Signature]</i>	
68.	Joseph Mwanishi	13646646	0727817198	✓				✓		<i>[Signature]</i>	
69.	Grace Mwanishi	11794643	0723641387		✓			✓		<i>[Signature]</i>	
70.	Esperanza Mwanishi	2913205	0702685779	✓				✓	✓	<i>[Signature]</i>	
71.	Lulise Mwanishi	9412635	0723958236		✓			✓		<i>[Signature]</i>	
72.	Githwa Mwanishi	40126101	0754531602		✓		✓			<i>[Signature]</i>	
73.	Agnes W. Ngari	22015042	0721200356		✓			✓		<i>[Signature]</i>	
74.	Kevin M. Mwanishi	2369635	0729518960	✓				✓		<i>[Signature]</i>	
75.	Kevin Mwanishi	40463192	0701150248	✓			✓			<i>[Signature]</i>	
76.	ETREM Mwanishi	2009330	0721323509	✓				✓		<i>[Signature]</i>	
77.	CAITHERINE Mwanishi	13149414	0703938358		✓	Low unit		✓		<i>[Signature]</i>	
78.	JOHN KIKUYU	13263852	0113662334	✓		Community.		✓		<i>[Signature]</i>	

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.	JANE WANDISI	13111301	0759528887	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N.D.M.A		<input checked="" type="checkbox"/>			
56.	JOSEPH MURUTHI	11023424	0757106631	<input checked="" type="checkbox"/>		WARDA Admin-m/s		<input checked="" type="checkbox"/>			
57.	GEOFFREY NJUKI	9284093	0721582096	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		
58.	ELIAS GACHIGID	3736900	07145381809	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
59.	NIRGUNA MUKIMI	30050452	0713662188		<input checked="" type="checkbox"/>	Community	<input checked="" type="checkbox"/>				
60.	GRACE MURUGI	031616931	07107728621		<input checked="" type="checkbox"/>	YOUTH	<input checked="" type="checkbox"/>				
61.	CHAS					Youth	<input checked="" type="checkbox"/>				
62.	Dennis Muriuki	35107423	0778933866	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			
63.	ELIZABETH NJAGI	0297424	0719458862	<input checked="" type="checkbox"/>		SPECIAL NEEDS		<input checked="" type="checkbox"/>			
64.	JOSEPH KITHWA	7035999	0791192026	<input checked="" type="checkbox"/>		MEN Rep.			<input checked="" type="checkbox"/>		
65.	Moses Karamu	3758445	0725312800	<input checked="" type="checkbox"/>		YOUTH REP	<input checked="" type="checkbox"/>				
66.	Philemon Ngunjiri	24492131	0725961231	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	KITHWA					



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.	MAT MUTHAI	13055072	0720165622		<input checked="" type="checkbox"/>	KITHIMU Executive		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
44.	PERKESAN NIKKAR	22606482	072023067	<input checked="" type="checkbox"/>		Kaavumo Member		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
45.	PAULINE MUTHAI	6207624	0729858435	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Kaagan SW Member		59		<input checked="" type="checkbox"/>	
46.	AREDINA NIGEM	20222108	0746888646		<input checked="" type="checkbox"/>	MANBOO Kaagan SW		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
47.	ABRIEL NIGEM	35100419	071223905	<input checked="" type="checkbox"/>		KYEL		70		<input checked="" type="checkbox"/>	
48.	MULICENI WANJA	25915334	0710725779		<input checked="" type="checkbox"/>	KIRINGA	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
49.	ANSON MUTHAI	28327803	0716244086		<input checked="" type="checkbox"/>	KIRIMATI	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
50.	VIRGINIA WANDU	24116749	070867585			E.C.G MEMBER		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
51.	SIMES MATHAI	1268698	07203147935	<input checked="" type="checkbox"/>		MATHAI		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
52.	Rose MATHAI	24000344	0721728306		<input checked="" type="checkbox"/>	PWD		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
53.	MADAI NIGEM	20203985	0725924445		<input checked="" type="checkbox"/>	WRN		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
54.	ELIJAH KATHIRI	1298127	0712803978	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	

[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
19.	CICELY KANINI NIEBU	28024340	0798825251		✓	YOUTH REP NTHAWA	✓				
20.	JOSAPHINE NIEBU	25034451	0725665613		✓	YOUTH REP NTHAWA	✓				
21.	LOISE VADIMI NYAGA	26736587	0717562081		✓	YOUTH REP NTHAWA	✓				
22.	CITY GICUWA NIEBU	6902444	0707054909	✓		30 GICUWA NIEBU		58			
23.	SEKILA KAGENDO	29250244	0708145082		✓	YOUTH REP NTHAWA	31				
24.	FATHI MUEKA	11353072	0715091195		✓	YOUTH REP NTHAWA	35				
25.	CHARLES KAKO	4952618	0724444444		✓	YOUTH REP NTHAWA	55				
26.	ELIASHA KAKO	13571977	0713619133		✓	YOUTH REP NTHAWA	51				
27.	DOMINIC N. NIEBU	4251362	0728160702	✓		PLWD	68		✓		
28.	SIMONE KAGENDO										
29.	AMBROSE NYAGA	8600769	0721497294	✓		Community		✓			
30.	JATLE MUKIMI	22319667	071921866		✓	SECRETARY MUKIMI	✓				

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.	PATRICIA MURPHY	340974884	0790488166	✓		Member as member	✓				
8.	PATRICK MURPHY	2766631	071534921	✓		Member North Member	✓				
9.	BETSON MURPHY	29379100	070878225	✓		PLWD Member	✓				
10.	Dominic Njeri	20071731	072383232	✓		Member Member		✓			
11.	RICHARD STEPHEN	21937363	072455485		✓	Member South Member		✓			
12.	ELLEN KACHINDA	17882392	0728978839		✓	Member North PLWDs REP		✓			
13.	DONICA KANAUO	20962031	074664662		✓	Member South					
14.	Newy Cichahi	3443181	0705545425		✓	Member South	✓				
15.	CAROLINE KERI	24935914	0712266499		✓	Member Member		✓			
16.	Charles Njiru	20272204	0714539669	✓		Member		✓			
17.	Lincoln N KIRIA	4554020	0721692881	✓		Member					
18.	Emily N. Mahana	35807649	0704284546		✓	Member South	✓				

# 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)		18-35 Yrs	35- 60Yrs	Above 60	DAY 1	DAY 2
1.	Chirwa Njagi	83457228	070593643	✓		Youngster Community	✓			Chirwa	
2.	James Kariuki	1386442	0723511744	✓		SECRETARY NTHAWA		✓		James	
3.	Wend Kariuki	21924984	072505038		✓	SECRETARY NTHAWA		✓		Wend	
4.	Joseph Ngethe	11352438	072398686	✓				✓		Joseph	
5.	Felix Ngethe	10221720	072258115		✓			✓		Felix	
6.	Lucy A. Njagi	22166971	092858572		✓	COMMUNITY NTHAWA		✓		Lucy	



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.											
20.	Mary Mwangi	3426384	0792612900		✓	Community	✓				
21.	Sheila Wanjira	33056421	0702100620		✓	Community	✓				
22.	Sarah Wanga M	31131553	0704840973		✓	Community	✓				
23.	DENNIS FUNDI	2765497	0700362814	✓		Community	✓				
24.	Anthony Rutere	13573121	07616404	✓		Community	✓				
25.	Andrine Mwangi	32805147	0702046925	✓	✓	Community	✓				
26.	MURIN MUGO RUTERE	354494305	0719446758	✓	✓	Community	✓				
27.	Onyanta Mwangi	291695101	0733321590		✓	Community	✓				
28.	Joseph Mwangi	2925530	0727689510			Community	✓				
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 Mutitu Ndungu	7450891	0721818402		✓	Community		✓			
8.	IREKI GACHUNGU	0718127	0724104762	✓		CHAIRMAN		✓			
9.	Baisy muregi	23621394	0725922915		✓	Chairperson		✓			
10.	STEPHEN KARIUKI	241155555	0722729814	✓		Community	✓				
11.	GODFREY Mwangi	33832561	0795104496	✓		Community	✓				
12.	MONICA MUKAMU	32930064	0103315196	✓	✓	Community	✓				
13.	Chushie Mumbi	22273500	0721914462	✓	✓	Community	✓				
14.	JULIUS WARIKWA	32436717	0790851515	✓		Community					
15.	Eunice Mburu	0243297	0700190031		✓	Community		✓			
16.	LUCY KIRAKA	2013376	0724393459		✓	Community		✓			
17.	Lucy Ngugi	24267037	0777427601	✓		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)		18-35 Yrs	35- 60Yrs	Above 60	DAY 1	DAY 2
1.	<del>Walter Mwangi</del>	795735-7									
2.	NELIC HASIO DJEODU	9284925	0712137912	M		C		✓		✓	✓
3.	FRANCA-N. MBOGO	07208421	07113694479		✓	C	✓				
4.	Silvester Mwachia Mwa	34783946	0746657182	M		C	✓				
5.	Jane Kigega	10796670	0720250769		✓	C		✓			
6.	PERKSON NTHIGAHI	34209289	0791427671	M		C	✓				



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 Ngevu	25848322	0726577411	Male		Committee					
92.	Evans N. Gundi	83540861	0700868441	Male							
93.	Rose WONGAAL	222980914	0707213860	Male							
94.	FAITH JULIA ILOKI	33965410	0712351848			Committee					
95.	CHARLES KARUKU	257869248	0726159666	Male		Committee					
96.	AHATIA MBIA	10728739	071664444			Committee					
97.	PATRICK NJIRU	21204832	0713482564			PLWD					
98.	<del>James</del>										
99.	Godwin Mwangi	10461240	07244433								
100.	Polycarp Muchanisi	37980506	0797333191			Community					
101.	Joseph Gidungu	22291014	072117120			Community					
102.	James Mwangi	22024860	0722960659			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
7.	JOSSES KILIA MUNICIPAL	11258849	0721889419	✓		THANDA		✓		✓	
8.	JARTHUS NDAUJIA	11025078	0710324936	✓		SECRETARY		✓		✓	
9.	MIAVEL KAMU	27474786	0722222159	✓		METROLOGY		✓		✓	
10.	JAMES N. NGOKA	20841913	0727834050	✓		WATER ADMIN		✓		✓	
11.	ROBERTY NUCK	9284073	0724582096	✓		WATER ADMIN		✓		✓	
12.	NGATHA NUS	10729187	070998615	✓		WATER ADMIN		✓		✓	
13.	NICODIMUS KHEUTHE	1181258	0723394967	✓		WATER ADMIN		✓		✓	
14.	ALBERU										
15.	C. HAALES N. NGOKA	2394498	072621161	✓		W.A. OFFICER (WATER)		✓		✓	
16.	MICHAEL M. NGOKA	11022964	0723333169	✓		WATER ADMIN		✓		✓	
17.	JANEET LEKESI	25184676	0724220370	✓		TARDA MUNGOK				✓	
18.	SERATI MUDUDU	0767778	0724705609	✓		TARDA MUNGOK				✓	



**APPENDIX 2: Minutes of the Embu County PCRA validation workshop, held at Embu County Headquarters, Kangaru Hall, between 23<sup>rd</sup> and 24<sup>th</sup> May 2023.**

**MINUTES OF THE EMBU COUNTY CLIMATE CHANGE MULTISTAKEHOLDERS WORKSHOP HELD AT THE KANGARU UPPER TANA HALL ON 23<sup>RD</sup> AND 24<sup>TH</sup> 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 23<sup>RD</sup> 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 avocados 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**

<b>KITHIMU</b>	<b>Project</b>	<b>Area of Coverage</b>	<b>Amount KES – (Estimated)</b>
	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 harvesting 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**

<b>EVURORE</b>	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 other marginalized categories) and establishment of a fully equipped mini honey refinery center.	Iriaitune location Kamarandi location Ndurumori location Ishiara location	10
	Fish farming enhancement for special groups (youth, women, plwd)	Identified members existing irrigation groups (Kathiga Gaceru, Kiambindu,	40

	capacity building,liners fingerlings and feeds) provisions	Kangai,Kamarandi,Mlachaki, Genesis	
	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	Kyangi bridge in Kanyuambora location Muringari drift in Muringari location	8
Total			395

**c) Mbeti North Summary proposed projects**

<b>MBETI NORTH</b>	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 Nthunthiuro, 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

15oC while September is the warmest month with an average monthly temperature rising to 27.10C

#### HAZARD/ RESOUCCE 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 Mt Kenya
- Ward KIRITHU
- Date 17th 20th APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/no)		Age			SIGN	
								18-35yrs	35-60yrs	Above 60yrs		
1.	Dickson Kiroatho Gironi	37610472	0759319461	Male				✓			DAY1	DAY2
2.	IMELDA NTAWUA NTAKE	37004174	0705044696		✓			✓			<del>DAY1</del>	<del>DAY2</del>
3.	JOSEPH FUNDI NJIRU	250 92296	0723163519	✓					✓		<del>DAY1</del>	<del>DAY2</del>
4.	GLANDS NYAKIO IBERI	10670879	0729434633		✓					✓	<del>DAY1</del>	<del>DAY2</del>
5.	JOSEPH MUTHI MUMUJI	22651064	0703724875	✓				✓			<del>DAY1</del>	<del>DAY2</del>
6.	JOSEPH NJIRU KURINDA MUMUJI	0236668	0722351117	✓						✓	<del>DAY1</del>	<del>DAY2</del>
7.	Njiru Venera Wanjira	39079641	0798604213		✓			✓			<del>DAY1</del>	<del>DAY2</del>
8.	David E. Livingston	20122312	0726344169	✓				✓			<del>DAY1</del>	<del>DAY2</del>
9.	DANIS NISUE	25896181	0726746101		✓				✓		<del>DAY1</del>	<del>DAY2</del>
10.	STELLA N. KIRITHU	28705865	078635955		✓			✓			<del>DAY1</del>	<del>DAY2</del>
11.	KEVIN N. MURANGI	243397798	0714051440	✓				✓			<del>DAY1</del>	<del>DAY2</del>
12.	JOSEPH MUTOGI NJOKA	30440756	0114400767	✓				✓			<del>DAY1</del>	<del>DAY2</del>
13.	MARY NIMBU IAGAI	7034729	0714645700		✓					✓	<del>DAY1</del>	<del>DAY2</del>
14.	Githongo Ivy GAKI	41264750	0714488943		✓			✓			<del>DAY1</del>	<del>DAY2</del>
15.	N. MUGO NKARUGUTI	5097628	0725689645	✓					✓		<del>DAY1</del>	<del>DAY2</del>
16.	KENNEDY MURITHI N	30680646	0702365314	✓				✓			<del>DAY1</del>	<del>DAY2</del>
17.	NYAGA Julius KIRITHU	34212921	0712646939	✓				✓			<del>DAY1</del>	<del>DAY2</del>

PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County MACHAKOS
- Ward KITHINU
- Date 19<sup>th</sup> 20<sup>th</sup> APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
								18-35Yrs	35-60 Yrs	Above 60Yrs		
18	PAUL NYAGA	28788362	0711760335	Male							DAY1	DAY2
19	Grace Igandu Digi	21090463	0714150942		✓						Grace	Grace
20	Paul Nyaga	28788362	071760335	✓				✓			Paul	Paul
21	Caroline Meki Gathiga	27488809	0712053932		✓						Caroline	Caroline
22	JANE WANIUKI NJIRI	18263652	0718268301		✓				✓		Jane	Jane
23	Dorcy Muega	34059982	0758989911		✓						Dorcy	Dorcy
24	Euseb MURUGU	38449352	0113102132		✓						Euseb	Euseb
25	KEVIN MURIMI	83616324	0705319354	✓				✓			Kevin	Kevin
26	RUPRY KAMUA KIRIE	22348260	0725225890		✓						Rupry	Rupry
27	ANNA NTHOKI NZISA	41795877	0793466775		✓			✓			Anna	Anna
28	DENSON HANWA KIRWA	7450052	0926170242		✓						Denson	Denson
29	DICKSON KANGA	16025052	0722227741	✓					✓		Dickson	Dickson
30	Joyce Kwasia Ngila	26132709	0710577410		✓						Joyce	Joyce
31	ALEX FUNDI	33784611	0711928181	✓				✓			Alex	Alex
32	ANTONY Njiru Njiru	26420133	0716255844	✓					✓		Antony	Antony
33	IAN MURCHARIA MURHIE	37291723	0702365030	✓				✓			Ian	Ian
34	ALI KATHAN NIMANGI	519446406	0799567095	✓				✓			Ali	Ali





# PCRA Consultative Meeting Attendance Form

































- Country ENIG
- Sub County RURINJE
- Ward RURINJE CENTRAL
- Date 12<sup>th</sup> 11<sup>th</sup> 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	TIMIN GREGOR NIMIRIKI	25420168	0795555437	✓			✓	✓				
2	ELIJAH NYABURIKI N.	24639707	0727000222	✓				✓				
3	STELLA NYIRIGA NYIRIGA	2628060	0712607488		✓			✓				
4	DAVIS N. ROMU	13672213	0221713713						✓			
5	ERIC MAMENGE NTERU	36709256	0759830519	✓				✓				
6	STONEN SHAMUKA	44090982	0710830141	✓		✓		✓				
7	JOSEPH MURIKI	22218485	0723360469	✓								
8	HENRY MURUNGU MURIKI	21573256	0727510441	✓					✓			
9	IBERI SINDIGA NYABURIKI	22076603	0721693379	✓				✓				
10	ELWITA MUTHONI	11211642	0721666983		✓				✓			
11	JOSEPHINE NYIRIGA NYIRIGA	26705256	0765826619		✓				✓			
12	ELIJAH KARIKARI KIRIKIRI	13572470	0727691228		✓							
13	CAROLINE NYIRIGA NYIRIGA	23801838	0720547169	✓					✓			
14	CONSOLATA MARIAMU	3305964	0721171085		✓			✓				
15	BENEFIT MAMENGE NTERU	27817509	0704866078	✓					✓			
16	ROBIN NYIRIGA	34291404	0727041935	✓								



# PCRA Consultative Meeting Attendance Form

- County EMBU
- Sub County RUKENJES
- Ward RUKENJES CENTRAL
- Date 13<sup>TH</sup> - 14<sup>TH</sup> MARCH 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
17	LAMECK MURITHI NYAGA	20527123	0769058926	✓					✓			
18	Josiah Nyaga Ngando	11211150	0710676710	✓								
19	CAROLINE IRE R1	244785444	0712306499		✓				✓			
20	Benoni FURIO KENYUA	24040862	0226053726	✓								
21	Nancy MUTHONI NJERU	10058005	0714217737		✓				✓			
22	SHANE WAMBURU NSIRAH	11810901	0758311728		✓				✓			
23	NANCY KAMBURA	13571508	0715454047		✓					✓		
24	John Nyaga Iyeri	7678402	0720128512	✓								
25	CECIL RUCAPWA	21667067	0201144929		✓							
26	ELIJAH NAMU	20652980	0715542050	✓					✓			
27	Emilio Mhogo W	80660136	0722100048	✓								
28	ERIC MURURI K	25915729	0760295564	✓					✓			
29	ANITA RUCAPWA	7034460	0725660442		✓							
30	Martin Nyer	21698397	0705747195	✓				✓				
31	LUCIA WANJA NYAGA	20619076	0791003720		✓				✓			
32	WILFRED P.M NYAGA	13339650	0757699719	✓					✓			
































- County EMERY
- Sub County RUNTEGEL
- Ward RUNTEGEL CENTRAL
- Date 13<sup>TH</sup> - 14<sup>TH</sup> April 2023

[illegible]



# PCRA Consultative Meeting Attendance Form

- County ENOGU
- Sub County MBERRE NORTH
- Ward ENUGORE
- Date 17<sup>th</sup> 12<sup>th</sup> 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	IBERI NELSON MUGAMBI	23211555	0717738912	✓				✓				
2	NTAKI JACKLINE WAMWIRA	29883219	0790199220		✓			✓				
3	EUSTACE MUTEMBEI NYAGA	22122180	0708469238	✓				✓				
4	NORMAN NDURU NSUG	4401471	0715807504	✓				✓				
5	PAUL WEMBEI WEMBEI	13249658	0726706594		✓				✓			
6	JOHNPAUL KITHINI	28524153	0704576332	✓				✓				
7	MAMU WANGONY NYA	35593554	0724915889		✓				✓			
8	KINGRED MUKHANI NYAGI	22932231	0725697442		✓							
9	JOHN NYAGA NYIRU	10222207	0728714704	✓					✓			
10	BENJAMIN MUGO NYUKI	132633419	0719492832	✓				✓				
11	AUSILIA MUKAMU NYIRU	241415880	0708066752		✓			✓				
12	LUCYNE MBURU NYIKA	13934064	0720530033		✓				✓			
13	PHILICA NIOKE NISUE	32640551	0992333747		✓							
14	LUCYNE MBURA NYOMA	138540640	0724530033		✓				✓			
15	JOSEPHAT NYAGA MACARA	7035999	0791192026	✓								
16	BENJAMIN NYAGA NYIRU	22322461	011824824	✓								

# PCRA Consultative Meeting Attendance Form

- County ENTEBU
- Sub County MBERE NO.14
- Ward ENTURU
- Date 17<sup>th</sup>-18<sup>th</sup> APRIL 2023

S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)	Age			SIGN	
							18-35Yrs	35-60 Yrs	Above 60Yrs		
17	ELIJAH NABU	0797424	0719458862	Male		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	DAY1	DAY2
18	JOSPEH KIMATHI KIRI	23422130	0724876940	<input checked="" type="checkbox"/>							
19	ISAAC KARIKI NIERU	11156930	0724465039	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			
20	BENJAMIN MUA KISUKU	13283419	0719492832								
21	IRENE NELSON MUGIMBI	28211555	2821155509173891	<input checked="" type="checkbox"/>							
22	JUDITH KAGENDO NDAI	23419880	0721439431		<input checked="" type="checkbox"/>						
23	MARGARET MURUGU MUTUGU	2011203	078265845		<input checked="" type="checkbox"/>						
24	Flora Kariuki heri	22561060	0728955160		<input checked="" type="checkbox"/>						
25	NSTANI JACHUNE WAWIKA	29883219	0790199220		<input checked="" type="checkbox"/>						
26	TERESA G. MUGA	10461160	0711964963		<input checked="" type="checkbox"/>						
27	Winfred Muthy Njagi	2893231	0725693942		<input checked="" type="checkbox"/>						
28	VERONICA W' NYANGE	0987654	0708034295		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
29	JOSEPH MURUGU	29872461	0742370579	<input checked="" type="checkbox"/>							
30	Kennedy Muthi Nyaga	29101978	0743832473	<input checked="" type="checkbox"/>							
31	NFTALI NTAHA GITENGA	28249842	0706055106	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				
32	Amos Nyaga Mburu	28878357	0706106551	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				



PCRA Consultative Meeting Attendance Form  
County: Essex

- County Embu
- Sub County MGEKE NORTH
- Ward EYUADJE
- Date 17<sup>th</sup>-18<sup>th</sup> APRIL 2023

[illegible]

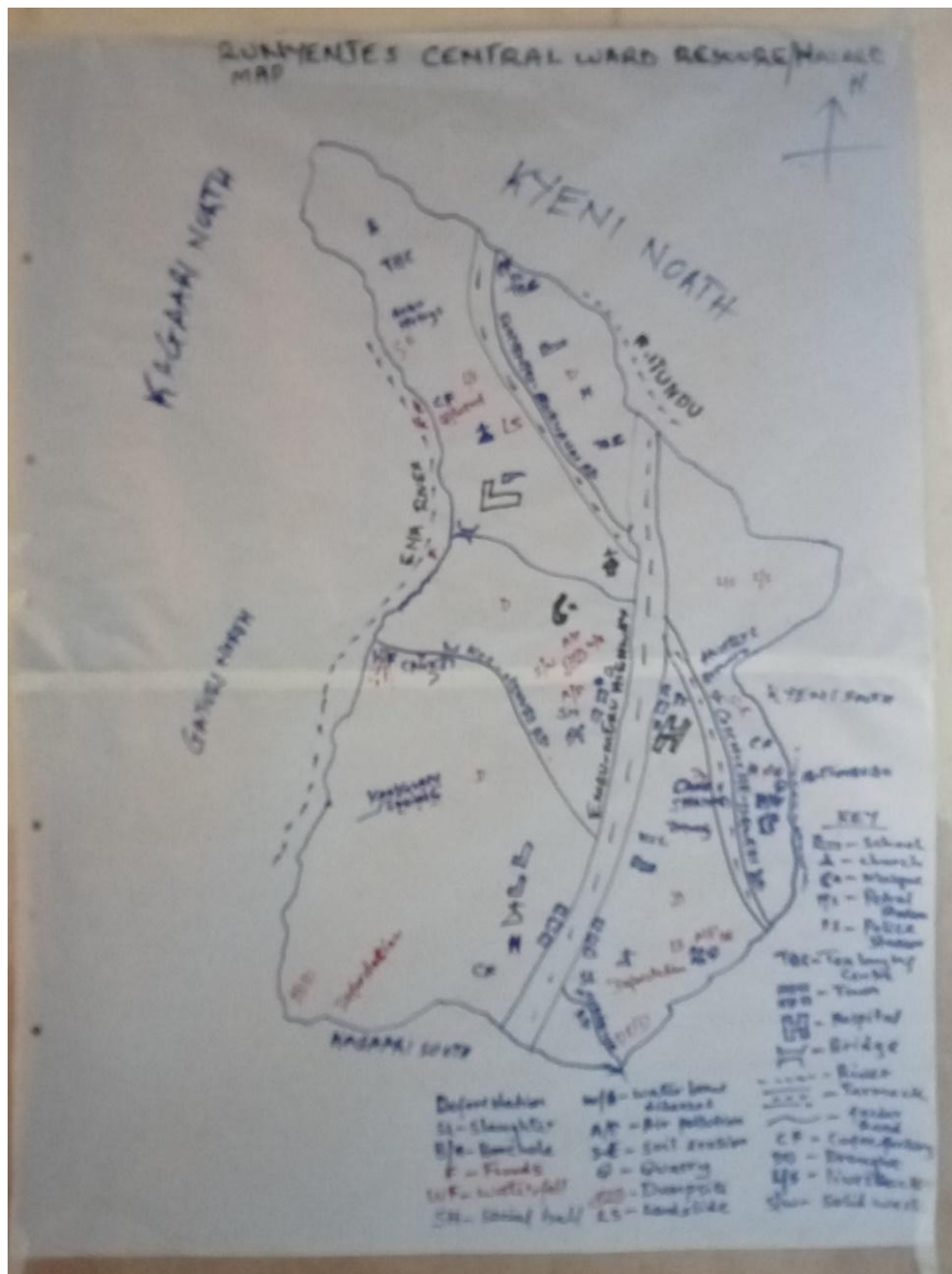


PCRA Consultative Meeting Attendance Form

- County WATERBURY
- Sub County MANATIA
- Ward MANATIA
- Date 13TH 14TH APRIL 2023

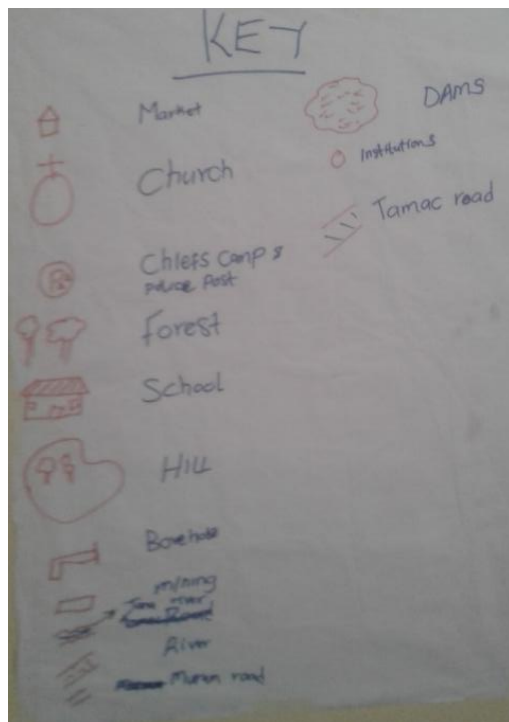
S/No	Name	ID	Mobile number	Gender		People living with disability (yes/ no)		Age			SIGN	
				Male	Female	Yes	No	18-35Yrs	35-60 Yrs	Above 60Yrs	DAY1	DAY2
1	CAROLINE MURUGI NEMGA	09494617	0102633697		✓		✓	✓			<i>[Signature]</i>	<i>[Signature]</i>
2	Exalyn Muriugi Karuki	31027302	0704116544		✓						<i>[Signature]</i>	<i>[Signature]</i>
3	Shabera Abdul Kamotho	31782212	0746221634	✓				✓			<i>[Signature]</i>	<i>[Signature]</i>
4	KETH KARIMI KARUKI	22435417	0717062692		✓				✓		<i>[Signature]</i>	<i>[Signature]</i>
5	SILVIA MANTAGA	39031695	0114678958		✓			✓			<i>[Signature]</i>	<i>[Signature]</i>
6	Jacqueline Muma	9523887	0726431223	✓							<i>[Signature]</i>	<i>[Signature]</i>
7	Joyce Mariage Muringu	25287943	0701689386		✓						<i>[Signature]</i>	<i>[Signature]</i>
8	Amey Abdulkarim	20042319	0715413459		✓		✓		✓		<i>[Signature]</i>	<i>[Signature]</i>
9	IBRIS MUGABIRI	31944738	0791459908	✓				✓			<i>[Signature]</i>	<i>[Signature]</i>
10	John Mideritu	26430019	0269309184	✓				✓			<i>[Signature]</i>	<i>[Signature]</i>
11	Esther Kinukia	31826868	0721342542		✓				✓		<i>[Signature]</i>	<i>[Signature]</i>
12	Josephine Njoki Kuria	11152714	0723308932		✓				✓		<i>[Signature]</i>	<i>[Signature]</i>
13	Flora Mwangi	13449056	0581631410		✓					✓	<i>[Signature]</i>	<i>[Signature]</i>
14	Tabuna Asuma	5660515	0723615616		✓					✓	<i>[Signature]</i>	<i>[Signature]</i>
15	Abst PATRICK Mwendu	0424595	0726929485	✓						✓	<i>[Signature]</i>	<i>[Signature]</i>
16	Wilson Njiru Kariuki	0595894	0702444550	✓							<i>[Signature]</i>	<i>[Signature]</i>

## APPENDIX 7: Community Resource Maps Drawn at the Wards, Embu County



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





Kiambere Resource Map in Mbeere North subcounty





Kyeni North Ward in Runyenjes sub county