

MUNICIPALITY OF EMBU



CLIMATE RISK PROFILE

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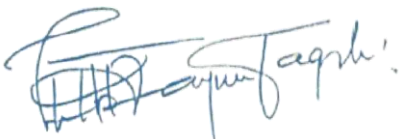
FOREWORD

Solid waste management remains one of the major challenges facing Embu Municipality. The impact of the indiscriminate solid waste disposal continues to adversely affect service delivery and it's against this background that Embu Municipal Board has developed a solid waste Management Policy which will also incorporate the emerging issues in the management of solid waste.

The purpose of this policy is to provide a framework to address solid waste problem in the municipality and aims at achieving zero waste generation. It will also ensure that the Municipality, in collaboration with other stakeholders, is able to sustain the provision of adequate and quality services.

The policy will assist the Municipality in the provision of quality services in solid waste management as one of the core functions especially in guiding the Board in implementing solid waste management programs to facilitate effective and appropriate response to solid waste management challenges. This policy is also an affirmation of the Board's commitment to intensify its campaign against improper disposal of solid and liquid waste into the environment and ensure a harmonized society in the Municipality. The ultimate goal of this policy is to guarantee the residents of Embu municipality a clean, healthy and safe environment as enshrined in the constitution.

I wish to thank the representatives from various departments in the County for their efforts and commitment in the development of this policy. I also wish to thank all stakeholders who participated in one way or the other in making this policy.



Raymond N. Kinyua, OGW
CECM Urban Development -Embu County

PREFACE

During implementation of any project, it is natural to find occurrences that may slow down the process with consequent impact on its results. However, such incidents are not threats as long as they are properly managed. In the current age, where humanity is grappling with the effects of climate change, there is great potential for adverse consequences to both humans and the ecological systems. These may have detrimental impact on lives, health and wellbeing, economic, social and cultural assets and investment, infrastructure, service provision, ecosystem and species.

The essence of this document is to identify the probable climate risks within the Municipality, the exposure and vulnerability. The document will greatly enhance diagnostic, policy and strategic planning through study of trends and projection of changes in key climate parameters.

This document explored a myriad of challenges for urban climate risk and profiled them based on probable occurrence and the vulnerability of the Municipality. Further it described the adaptation process that would postulate appropriate management decision process and data management for strategic or precautionary purpose.



Catherine Nyaga
Municipal Manager & Municipal Board Secretary

ACKNOWLEDGEMENT

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Special gratitude to the following:

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2. The County Executive Committee Member for Urban Development Mr. Raymond Kinyua for unreserved support to the Municipality.
3. The Chief Officer for Urban development; Mr. Benjamin Mutisya Muasa for providing technical & financial Support.
4. Special regards and appreciation to the great team comprising of: -
 - (i) Catherine Nyaga -Municipal Manager &Board Secretary
 - (ii) Jacob Kariuki Gititi- Director Urban Development
 - (iii)John Njeru Mucira -Deputy Director Administration - Municipality of Embu
 - (iv)Dennis Munene -Finance Officer Municipality of Embu
 - (v) Nicholas Mogaka Barare – Legal Officer -Embu Countyfor providing technical expertise in the development of this policy.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

A risk is anything that may slow down a project/ programme implementation and impact on its results. Risks are inherent to the implementation of projects and programmes and are not threats as long as they are properly managed.

Climate risk is the potential for climate change to create adverse consequences for human or ecological systems. These actions impact on lives, health and wellbeing, economic, social and cultural assets and investment, infrastructure, service provision, ecosystem and species. Climate risk is composed of three components; the hazard, exposure and vulnerability.

Climate risk Profile facilitates diagnostic, policy and strategic planning by providing an overview of trends and projected changes in key climate parameters by showing the implication and the relevant policies.

Climate-related hazards impact urban environments and result in risks that are diverse in nature, magnitude, and scale creating challenges unique to each urban setting. There is a dynamic relationship between climatic events, urbanization and human activity. The impacts of a climatic event can be worsened due to the presence and concentration of economic activities (such as the increased exposure due to the built-up infrastructure of city centres) or as a result of human action or inaction (such as the inadequate maintenance of drainage systems or building on flood plains.) These factors sometimes act as catalysts for destruction, even more than the climatic event itself. The complex inter-relationship between human activities and climatic hazards determines who is exposed and susceptible to an event and the degree to which they can manage the consequences. Additionally, structural inequalities play a significant role in determining resource allocation building adaptive capacity for the most vulnerable. As these groups are less likely to pay into formal social security schemes, they are often the ones neglected when prioritizing development efforts

1.2 Nature of Urban Risks

Most urban climate risks are idiosyncratic apart from the particularly extreme catastrophic events that are covariate in nature. A single event will have varying levels of severity and magnitude across urban areas, depending on their exposure and coping capacity. Regular hazards with low levels of risk but repeated occurrence may result in recurring expenses for individuals – particularly those from poor households. Since low-level but regularly occurring

risks are not classified as ‘humanitarian’, external support for these incidents is mostly unavailable. But as these incur important economic costs to individuals, businesses and municipal governments, comprehensive policies, managed and delivered by the Municipality are necessary.

1.3 General Challenges for Urban Climate Risks

- i. The informal settlements by virtue of their nature are not recognized by relevant authorities and hence may not get assistance from the Municipality authorities.
- ii. Daily migrants from the neighbourhood of the Municipality are not documented, meaning that daily wage labourers may lose income to floods in their urban workplaces, but may not get relief as they are not included in Municipality registries.
- iii. Inadequate profiling of chances of occurrence and severity of climate risks, the Municipality may not sufficiently appropriate a budget for mitigation.
- iv. Lack of support from political actors.
- v. Insurance schemes may not be appropriate for most informal workers in urban areas.
- vi. The impression that rural areas are more vulnerable than urban areas can undermine anticipatory efforts by actors.
- vii. Financing will remain a big challenge for Social Protection (SP) in urban areas; however, the possibility of including the private sector in this regard may be explored.
- viii. Poverty in urban and rural areas looks different and manifests in different ways, so merely exporting SP schemes used in a rural context to be used in a city can result in disadvantages

1.4 Urban Climate Hazards in Kenya

The global urban population is projected to grow by 2050, where 2.5 billion more people will be living in urban areas. The urban areas will face risks from sea level rise, heat, increase in tropical cyclones, storm surge, intense rainfall and coastal flooding. In Kenya, climate risks pose serious threats to Kenya sustainable development goals. Kenya is largely dependent on rain-fed agriculture and tourism, which is susceptible to climate variability and change and extreme weather events. In December 2020 a report to the United Nations Framework Convention on Climate Change (UNFCCC) noted that, successive climate change impact in socio-economic losses estimated at 3% to 4% of Gross Domestic Product (GDP) annually, and this impedes development efforts.

1.5 Municipality of Embu Context

The Municipality of Embu has its many informal settlements situated in the peripheral of the Central Business Unit. Flooding occurs annually and these informal settlements, in particular, are affected for days and weeks at a time. In response, roads have been raised and houses have been built on silts and designed to be dismantled during floods. These informal settlements are found throughout the Municipality, wherever there is space available; and are often under-served by proper sanitation or sewage facilities. Flood events damage physical property, residential buildings, transport vehicles and telecommunication and electric, and result in other indirect impacts like loss of income due to the inability to continue with regular economic activities. For the poor, the main consequence of seasonal flooding is the hardship that must be endured, including short-term displacement and loss of assets or income. Variations in seasonal morbidity or mortality have also been observed and are understood to occur as the result of prolonged exposure to flood waters and living in very damp, unhygienic conditions.

1.6 Types of Risks likely to be experienced in the Municipality

The Municipality of Embu is likely to experience the following risks:

- i) **Flooding** -The Municipality experiences relatively high rainfall, being proximate to Mount Kenya. The much flash flood is likely to cause havoc on storm water drainage systems.
- ii) **Land and mud slides** -The upper parts of the Municipality have a high gradient as they are on the Mountain slopes. These areas are likely to experience mud slides and landslides.
- iii) **Tree Falls** -Due to the high rains and storms in the upper forested parts of the Municipality, there is likelihood of trees falling and destroying electricity distribution among other amenities.
- iv) **Draughts** -The lower part of the Municipality experience lower levels of rainfall and are bordering the Arid and Semi-Arid areas (ASALs). These parts of the Municipality are likely to experience draught related risks.

CHAPTER TWO

MITIGATION OF CLIMATE RISKS

2.1 Decisions for Mitigating /Managing Impacts of Urban Climate Risks

Decisions to avoid, mitigate or manage impacts of urban climate risks should commensurate with the consequences of the hazard and complementary to other urban economic and development priorities.

2.2 Methods of Incorporating Climate Risks Adaptation in the Municipality

Climate risk is a global challenge that affect every aspect of urban life and the Municipality being an urban area needs to adapt and mitigate the impacts of a changing climate on the infrastructure, services and communities. This shall be done in the following ways:

- i) **Assess the risk** -This involves understanding the current and the future vulnerabilities of the Municipality. It involves use of tools like, climate projections, vulnerability assessment and risk mapping to identify the most exposed and sensitive areas, sectors and populations. This helps in prioritizing actions and investments that are needed to reduce the risks and enhance the resilience of the Municipality.
- ii) **Integration of Solutions** -This involves integrating climate change adaptation and mitigation solutions into urban policies, plans and projects. It allows use of frameworks such as low carbon developments, greening infrastructure and nature-based solutions to guide decision-making and designs. It also involves adopting standards and regulations that promote energy efficiency, renewable energy, water conservation, waste management and urban greening. All these solutions will reduce greenhouse emissions, improve environmental quality and provide core benefits for the Municipality
- iii) **Engaging Stakeholder** -The Municipality shall engage stakeholders and partners that are affected by the Urban planning strategies. The engagement shall be through participatory planning, community-based adaption and multilevel governance, in order to foster collaboration and coordination among different actors. Sensitization shall be done t raise awareness and build capacity on climate change issues and solutions in order to help create a shared vision, leverage on resources and enhance social inclusion and /equity in the Municipality.
- iv) **Monitoring the Outcome** -This involves monitoring the outcomes of the urban planning strategies on climate risk adaptation and mitigation. It shall involve use of indicators and metrics that measure performance and effectiveness of the strategies and investments. The process shall include feedback and evaluation to identify gaps, challenges and

opportunities for improvement. The process will help track progress, learning from experience and adjusting strategies as need arise.

v) Innovation of the Approaches -The Municipality shall encourage innovation of approaches and methods that incorporate climate change adaptation and mitigation. Use of platforms like research, innovation labs and pilot projects shall be encouraged to test and experiment new ideas and solutions. Networks and alliances for exchange of knowledge and best practices with other municipalities, cities and regions shall be encouraged to foster creativity, learning and scaling up of efforts.

vi) Inspiration and adoption of the Change -The Municipality shall endeavor to inspire change and transformation that is needed to address climate risks. This shall be achieved by documentation and showcasing to demonstrate the benefits of climate change adaptation and mitigation. A culture of change, innovation and resilience shall be created through advocacy and leadership influence.

CHAPTER THREE

IMPLEMENTATION

3.1 Introduction

The Municipality of Embu carries out programmes and projects in order to deliver services to the residents. The programmes and projects are funded by the county government, national government and development partners, key among them is the World Bank. The projects and programmes carried out should have no or low-level risk to the users and the environment.

3.2 Risk Management Register

All projects and programmes face risk at one time or another. A risk register is a tool that helps to flag risks and enables project stakeholders to handle risks in the most appropriate way. The risk register allows managers to proactively deal with risks and focus on the most important ones. A risk register is a document that contains information about:

- i) The identified project risks
- ii) An assessment on the risk severity ie its impact if it occurs
- iii) The likelihood of occurrence, ie medium (31% to 70 %) or high (above 70%)
- iv) A list of possible and preferred solutions to be applied

A risk log will be kept by the Project Implementation Team for each single project. A risk register template in annexed.

Table 1: Risk Management Register Template

Risk Management Register Template								
S/No.	Date Raised	Description of the Risk	Likelihood of Occurrence (Med/ High)	Impact (Scale 1-3)	Severity (Likelihood x Impact)	Mitigation Strategy/ Strategies	Progress on Action	Status
1.								
2.			Low (Green)	Low (Green)	Low (Green)			
3.			Medium (Amber)	Medium (Amber)	Medium (Amber)			
4.			High (Red)	High (Red)	High (Red)			
5.								
6.								
7.								
8.								
9.								
10.								