Republic of Uganda

FINAL REPORT

Conducting and Developing the Climate Change and Vulnerability Assessment (CCVA) Framework

Proc Ref No: *KCCA-GKMA/CONS/2024-2025/00021*

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KAMPALA CAPITAL CITY AUTHORITY
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GREATER KAMPALA
METROPOLITAN AREA
URBAN DEVELOPMENT PROGRAM

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JUNE 2025

Climate Change Risk and Vulnerability Assessment (CCVA) Framework Report

Kampala Capital City Authority (KCCA)

Nabugabo Channel meticulously cleaned by KCCA

On Northern Bypass Road

Nakawa Division

FOREWORD BY THE MINISTER OF KAMPALA CAPITAL CITY AND METROPOLITAN AFFAIRS

Hon. *Minsa Kabanda*
Minister of KCCMA

Climate change remains one of the most pressing development challenges of our time, with cities like Kampala increasingly enduring the most of its impacts through extreme weather events, flooding, and public health risks. As the Minister responsible for overseeing Kampala Capital City and the wider metropolitan affairs, I am pleased to present the Climate Change and Vulnerability Assessment (CCVA) Framework Report for Kampala Capital City Authority (KCCA)—a critical instrument that will guide evidence-based climate resilience planning in Uganda's capital.

The development of this framework is timely and strategic. It reflects the unwavering commitment of the Government of Uganda to achieving sustainable and climate-resilient urbanization as articulated in Vision 2040, the National Development Plan III, and the Uganda Climate Change Act of 2021. The CCVA framework represents a cornerstone in translating policy into action by offering a systematic approach to identifying, assessing, and addressing climate risks in Kampala City.

I take this opportunity to express sincere gratitude to the World Bank for their unwavering support through the Greater Kampala Metropolitan Area Urban Development Program (GKMA-UDP). This partnership reinforces Uganda's goal to transform urban centers into resilient engines of growth. The Ministry of Kampala Capital City and Metropolitan Affairs will continue to work closely with KCCA and our development partners to ensure that the insights and recommendations from this report translate into meaningful adaptation strategies for the people of Kampala.

Let this framework be a beacon for other urban authorities in Uganda and the region as we chart a sustainable path for inclusive, safe, and resilient cities.

Hon. Minsa Kabanda
Minister of Kampala Capital City and Metropolitan Affairs
Republic of Uganda

FOREWORD BY HIS WORSHIP THE LORD MAYOR OF KAMPALA CAPITAL CITY AUTHORITY

His Worship Erias Lukwago
Lord Mayor, KCCA

Kampala, as the heart of Uganda's economic, social, and political life, stands at the frontline of climate change impacts. The increasing frequency of floods, waterborne disease outbreaks, and infrastructure strain calls for bold, innovative, and inclusive solutions. It is in this context that I welcome the Climate Change and Vulnerability Assessment (CCVA) Framework Report for Kampala Capital City Authority (KCCA) with great enthusiasm and appreciation.

This report is more than a technical exercise—it is a strategic tool that empowers local authorities to understand climate risks and act decisively. It echoes the vision of a "Green and Resilient Kampala", where development is not only inclusive and people-centered but also anchored in sustainability and environmental justice.

On behalf of the people of Kampala, I extend sincere thanks to the Government of Uganda and the World Bank, whose support through the Greater Kampala Metropolitan Area Urban Development Program (GKMA-UDP) has made this milestone possible. This collaboration underscores the importance of multilevel governance and development financing in building climate-smart cities.

As Lord Mayor, I remain committed to collaborating with stakeholders, especially the urban poor, youth, and informal communities, who are often the most affected by climate change. Together, we can turn this framework into a roadmap for resilience and a model of climate leadership for other cities.

Let us act now—and let Kampala lead.

His Worship Erias Lukwago
Lord Mayor
Kampala Capital City Authority

FOREWORD BY THE EXECUTIVE DIRECTOR OF KAMPALA CAPITAL CITY AUTHORITY

Hajjat Sharifah Buzeki
Executive Director, KCCA

Urban resilience is no longer a choice—it is a necessity. As the Executive Director of Kampala Capital City Authority (KCCA), I am proud to present the Climate Change and Vulnerability Assessment (CCVA) Framework Report, which serves as a key deliverable under our broader vision to make Kampala a smart, sustainable, and livable city for all.

The CCVA Framework provides a structured methodology for diagnosing climate risks across critical sectors such as health, infrastructure, water, energy, and urban livelihoods. It will inform our planning, budgeting, and implementation of targeted climate adaptation interventions, in line with the KCCA Strategic Plan, the Kampala Climate Change Action Strategy, and Uganda's broader climate and development frameworks.

We are particularly grateful for the financial and technical support provided by the World Bank under the Greater Kampala Metropolitan Area Urban Development Program (GKMA-UDP), and the commitment of the Government of Uganda in prioritizing climate resilience as a national imperative. This partnership has enabled us to enhance our institutional capacity, gather actionable data, and engage a diverse range of stakeholders in climate governance.

As a capital city authority, we are committed to mainstreaming climate risk management into all our operations. The insights from this report will not only guide adaptation planning but also inform us of our engagement with communities, civil society, and private sector actors toward building a resilient Kampala.

We look forward to translating the recommendations into action, ensuring that Kampala becomes a model city in climate change adaptation and urban resilience across Africa.

Hajjat Sharifah Buzeki
Executive Director
Kampala Capital City Authority

EXECUTIVE SUMMARY

Overview of the Report

This Climate Change and Vulnerability Assessment (CCVA) for Kampala Capital City Authority (KCCA) provides a systematic, evidence-based analysis of climate change risks and vulnerabilities across Kampala's five administrative divisions: Central, Kawempe, Lubaga, Makindye, and Nakawa. The report responds to the urgent need for locally relevant climate adaptation planning, as Kampala faces increasing impacts from a changing climate namely, rising temperatures, erratic rainfall, and more frequent extreme weather events. The assessment aligns with Uganda's National and International climate policy commitments, including the National Climate Change Policy, the National Climate Change Act, 2021 and The Paris Agreement, 2015. It adopts a holistic approach, analyzing climate impacts on critical urban sectors (infrastructure, water, health, ecosystems, and livelihoods) and integrating both quantitative climate data and qualitative stakeholder insights. The CCVA aims to help KCCA and its partners incorporate climate risk management into urban development, infrastructure investments, and disaster risk programs, protecting the city's people, economy, and environment.

Key Findings and Highlights

- **Multiple Climate Hazards** – Kampala is increasingly exposed to frequent flooding, particularly in low-lying informal settlements like Bwaise, Katwe, and Namuwongo. Droughts affect water supply and urban agriculture in Makindye, Nakawa, and Lubaga. Notably in Nakawa, areas such as Kulambiro and Kyanja, where the KCCA Resource Centre is located, are experiencing increasing drought-related impacts. Heat stress is exacerbated by the urban heat island effect in Central and Nakawa. Intense storms, marked by high winds and hailstones, damage fragile infrastructure in Kawempe and Lubaga.

- **High Vulnerability and Sensitivity** – Over 13.8% of households live in informal structures without proper drainage, and nearly 40% of respondents report lacking infrastructure and resources to adapt. Vulnerable groups including the elderly, children, persons with disabilities, and female-headed households, face compounded risks. Additionally, urban ecosystems such as wetlands, green spaces, and urban forests are under increasing pressure from land use change and climate stresses, reducing their ability to provide essential services like flood regulation, cooling, and water purification.

- **Kampala District Vulnerability Index (DVI) -** Based on indicators such as housing quality, income, education, and health access, the report identifies Nakawa, Makindye, and Kawempe as having the highest DVI scores, indicating structural and socio-economic fragility.

- **Sectoral Impacts -** Flooding is the most severe and recurrent hazard, causing displacement, infrastructure damage, business losses, and disease outbreaks. Heat stress is intensifying, particularly in densely built and vegetated-deficient areas, leading to health risks and productivity losses. Water scarcity is growing, especially for slum dwellers reliant on springs and shared taps, with droughts and flooding compounding contamination and supply disruptions. Ecosystem degradation, notably wetland loss, reduces natural flood attenuation and increases exposure to hazards.

- **Adaptive Capacity Gaps -** The Cty's adaptive capacity is constrained by poverty, limited financial resources, poor infrastructure, low educational attainment, and weak institutional

coordination. While community-based coping strategies exist, they are often insufficient for large-scale or repeated hazards.

- **Community Awareness Gaps -** Only 30% of surveyed residents were aware of climate-related policies, and more than half viewed them as ineffective—underscoring the need for grassroots communication and education on resilience measures.
- **Future Projections -** Climate models indicate continued warming (up to 3°C by 2100), increased frequency and intensity of floods, heatwaves, and water scarcity, and rising greenhouse gas emissions driven by urbanization and fossil fuel use. By 2050, Kampala is projected to face a 1.5°C–3°C rise in temperatures, more frequent and intense rainfall events, and increased drought cycles. Greenhouse gas emissions are expected to grow by 55% between 2020 and 2030, largely driven by the transport, energy, and waste sectors. Without intervention, these trends will exacerbate vulnerabilities and undermine urban development.

Priority Risks, Vulnerabilities, and Recommendations

Priority Risks

- **Flooding** - Most acute in informal settlements and low-lying areas, driven by intense rainfall, inadequate drainage, and wetland degradation.
- **Droughts** - Threaten peri-urban agriculture and water supply in borehole-reliant communities.
- **Water Scarcity** - Affects slum dwellers and peri-urban communities, exacerbated by droughts, unreliable piped supply, and contamination during floods.
- **Heat Stress** - Intensifies health risks and economic losses in high-density areas with poor housing and no ventilation.
- **Storms** - Increase destruction of roofs, power infrastructure, and livelihoods, especially in settlements with poor building standards.
- **Disease Outbreaks** - Water- and vector-borne diseases surge after extreme weather, with hotspots in Bwaise III, Katanga, and Kiganda.
- **Ecosystem Degradation** - Accelerated wetland loss and deforestation reduce resilience to climate hazards.

Vulnerabilities

- Informal housing and unregulated development, particularly in wetland and floodplain areas.
- Low adaptive capacity due to limited education, poverty, and lack of access to financial or technical resources.
- Inadequate infrastructure, such as aging drainage, insufficient water supply systems, and poor sanitation.
- Weak institutional coordination and under-resourced Divisional Disaster Risk Management Committees (DDRMCs).

Recommendations

i. **Resilient Infrastructure**

Upgrade drainage systems, invest in sustainable urban drainage solutions, and enforce wetland and building regulations to reduce flood risk.

ii. **Green Urban Planning**

Promote urban greening, use of reflective roofing, and climate-sensitive building designs to mitigate urban heat and improve environmental quality.

iii. **Water Security**

Expand rainwater harvesting, and diversify water supply sources to reduce dependence on Lake Victoria.

iv. **Livelihood Diversification**

Support climate-resilient enterprises through vocational training, access to finance, and targeted programs for informal sector workers.

v. **Institutional Strengthening**

Fully operationalize Divisional Disaster Risk Management Committees (DDRMCs), improve inter-agency coordination, and integrate climate resilience into local government operations.

vi. **Health and Social Protection**

Strengthen public health systems, establish early warning mechanisms, and provide tailored support for vulnerable populations, including the elderly, children, and people with disabilities.

vii. **Community Engagement and Education**

Enhance public awareness, community participation, and climate education, with special attention to the inclusion of women, youth, and marginalized groups.

viii. **Policy Integration**

Mainstream climate risk management into all KCCA sectoral and development plans, ensuring alignment with National and Global frameworks (e.g. NDCs, SDGs, Sendai Framework).

ix. **Monitoring, Evaluation, and Learning (MEL)**

Establish a robust MEL framework to track resilience outcomes, inform adaptive management, and guide future investment decisions.

x. **Climate Financing and Implementation**

Mobilize blended finance from public, private, and international sources, and empower local structures (e.g. DDRMCs) to implement and scale resilience interventions.

Thes CCVA provides a foundation for evidence-based, inclusive, and forward-looking climate adaptation in Kampala, supporting the City's transition to a safer, more resilient, and sustainable urban future.

ACRONYMS

BAU – Business-As-Usual

CCVA – Climate Change Vulnerability Assessment

CRVA - Climate Risk and Vulnerability Assessment

CBOs – Community-Based Organizations

CSA – Climate Smart Agriculture

DDRMCs – Divisional Disaster Risk Management Committees

DRM – Disaster Risk Management

DRR – Disaster Risk Reduction

EBA – Ecosystem-Based Adaptation

GHG – Greenhouse Gas

IPCC – Intergovernmental Panel on Climate Change

KCCA – Kampala Capital City Authority

MEL – Monitoring, Evaluation, and Learning

MWE – Ministry of Water and Environment

NDCs – Nationally Determined Contributions

NEMA – National Environment Management Authority

SD – Sustainable Development

SDGs – Sustainable Development Goals

SPAs – Shared Policy Assumptions

SSPs – Shared Socioeconomic Pathways

UNFCCC – United Nations Framework Convention on Climate Change

UN-Habitat – United Nations Human Settlements Programme

UNMA – Uganda National Meteorological Authority

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CHAPTER ONE

1. INTRODUCTION

1.1 Background and Context

Kampala, Uganda's capital, is increasingly affected by climate change, with warming trends and erratic rainfall exacerbating urban vulnerabilities. Average national temperatures have risen by approximately 0.23°C per decade since 1950, and projections indicate potential increases of 1.5 to 3.5°C by 2080 under medium to high emissions scenarios (UNFCCC, 2022; GIZ, 2021). Although Kampala's total annual rainfall remains relatively stable, more intense and unpredictable rainstorms are now common, overwhelming drainage systems and contributing to frequent flooding in low-lying settlements like Bwaise (World Bank, 2023). Uganda emitted about 40.5 million metric tonnes of CO_2 equivalent in 2021, with growing emissions primarily from land use change and agriculture, according to the Uganda National Meteorological Authority and international tracking tools (Emission Index, 2023).

Kampala, Uganda's capital city, continues to face mounting urban and climate-related challenges, now intensified by recent demographic growth and persistent governance weaknesses. As of the 2024 National Population and Housing Census, Kampala's resident population is approximately 1.8 million, with a daytime influx pushing the total to over 2.5 million due to migration and daily urban activity (UBOS, 2024, p. 20). This rapid and largely unplanned urban expansion has strained infrastructure and service delivery systems, especially in informal settlements. Nearly 70% of households in the city rent their homes, and over half reside in congested tenement housing units (locally known as *muzigos*), which often lack proper sanitation, drainage, or durable construction (UBOS, 2024, p. 132). Many of these dwellings are located in flood-prone wetlands such as Bwaise, where poor drainage and informal construction heighten exposure to flood risks.

Beyond physical vulnerabilities, governance-related issues further exacerbate Kampala's climate risk profile. Weak enforcement of land use regulations, fragmented institutional coordination, and limited planning oversight undermine the city's ability to manage expansion sustainably. Despite Kampala having the highest share of households with legal land tenure in Uganda (81.1%) (UBOS, 2024, p. 162), widespread non-compliance with planning standards persists, contributing to haphazard development and high vulnerability to climate hazards like urban flooding. These compounding pressures underscore the urgency of conducting a dedicated Climate Change Vulnerability Assessment to identify at-risk populations and infrastructure, and to support evidence-based resilience strategies.

Undertaking the CCVA is also driven by the commitment of Kampala city authorities to national and global climate goals. Uganda's national development agenda recognizes climate change as a key threat to socio-economic progress, as reflected in the Uganda Vision 2040 and the National Development Plans (MWE, 2015). The Government of Uganda has developed a National Climate Change Policy (2015) aiming for a climate-resilient and low-carbon development path. This policy and Uganda's

Climate Change Act (2021) call for the integration of climate risk assessments into all sectors and at all levels of governance. Kampala Capital City Authority (KCCA), as the urban authority, must therefore align with these directives by assessing climate vulnerabilities within the city. Internationally, Uganda is party to the Paris Agreement and has pledged adaptation actions in its Nationally Determined Contribution (NDC) under the UNFCCC (MWE, 2021). Uganda's leaders emphasize that increasing frequency of extreme events – more erratic rains, floods, and prolonged dry spells – are already hampering the country's development (UNCDF, 2022). Uganda consistently ranks among the world's most climate-vulnerable nations (for instance, 10th most at-risk according to the ND-GAIN index) (UNCDF, 2022). As the nation's economic hub, Kampala faces climate risks that could undermine not only local well-being but also national development if left unaddressed. The CCVA will provide the evidence base to inform city-specific climate adaptation strategies, while also supporting Uganda's fulfillment of its broader climate policy objectives and international commitments.

The present assessment reflects a growing global consensus that cities must be at the forefront of climate resilience efforts. Urban areas house over half the world's population and concentrate infrastructure, economic activity, and social services—making them acutely vulnerable to climate-related shocks. The IPCC's Sixth Assessment Report highlights that Africa's fast-growing cities will be "hotspots of risks" from climate change, with rural-to-urban migration, environmental degradation, and infrastructure stress compounding these threats (IPCC, 2022). In Kampala, rural-to-urban migration is driving the rapid expansion of informal and peri-urban settlements, where new arrivals often settle on ecologically sensitive and poorly serviced land such as wetlands and floodplains. These zones are particularly exposed to climate hazards like flooding and heat stress due to limited infrastructure, unregulated construction, and weak service provision. The vulnerability is further deepened by socio-economic precarity, inadequate tenure security, and overstretched governance systems. Yet, cities like Kampala are also strategic arenas for climate action—urban adaptation can protect lives, infrastructure, and essential services, with national-level ripple effects. By undertaking a Climate Change Vulnerability Assessment (CCVA), the Kampala Capital City Authority (KCCA) aligns with the Sustainable Development Goals (SDG 11 on sustainable cities and SDG 13 on climate action) and the New Urban Agenda, reinforcing its commitment to locally grounded, globally informed climate resilience. Kampala's CCVA is therefore a timely, strategic step toward a more sustainable and equitable urban future.

1.2 Purpose and Objectives

The primary purpose of the Climate Change Vulnerability Assessment (CCVA) for Kampala was to provide a systematic, evidence-based analysis of the city's climate risks and vulnerabilities, in order to guide planning for resilience. In essence, the CCVA aims to identify the key climate hazards facing Kampala, determine who and what are most vulnerable to these hazards, and formulate appropriate adaptation responses. This involved assessing current climate impacts as well as future projections, across the neighborhoods and sectors of the city.

Specifically, the CCVA's objectives included the following:

i. To identify the current and future vulnerabilities caused by the impact of climate change on the communities.
ii. To identify the major drivers of vulnerability on the local communities and the ecosystems in the city.

iii. Develop and document climate change mitigation strategies.
iv. Identify and document existing coping and adaptive climate change strategies.
v. Conduct comprehensive stakeholder engagements to develop the climate change vulnerability assessment framework.

Through these objectives, the CCVA produced a knowledge base and set of recommendations that KCCA and its partners can use to integrate climate change considerations into urban development plans, infrastructure investments, and disaster risk management programs. The CCVA serves as a decision-support tool which identifies priority areas for intervention and building consensus on how to protect Kampala's people, economy, and environment from the growing threats of climate change. The CCVA will also serve as a model for the other new cities in Uganda and other cities especially in developing countries.

1.3 Scope of the Study

1.3.1. **Geographical coverage**

This vulnerability assessment encompasses five divisions of Kampala City, ensuring a city-wide analysis of climate risks. Kampala is administratively divided into Central, Kawempe, Makindye, Nakawa, and Lubaga divisions. Each division represents a distinct urban setting – from the high-density commercial and residential hub of Central Division, to the informal settlements and peri-urban fringes found in parts of Kawempe and Makindye.

The CCVA captures spatial variations in climate exposure and sensitivity across the city. For instance, low-lying areas along Kampala's wetlands (Lubigi, Nakivubo, Kinawataka, among others) are prone to flash floods, while hilltop neighborhoods experience runoff and heat stress. The present assessment drilled down to local hotspots of vulnerability, identifying specific communities and locations that experience the brunt of climate hazards. This geographic scope ensures that adaptation strategies resulting from the study are evidence-based and targeted to the needs of each part of the city.

1.3.2. Sectors and systems analyzed

The CCVA adopted a holistic view of Kampala's urban system by examining a broad range of sectors that are critical to Kampala's sustenance and are highly sensitive to climate variability and extremes. These include: infrastructure (transportation networks, buildings, energy, and waste management systems), water resources and sanitation, human health, ecosystems and environment, and livelihoods and socio-economic systems. The rationale for focusing on these sectors is clear – they collectively represent the backbone of urban life, and climate change impacts on any of these can have cascading effects on well-being and development.

For example, intense rainfall and flooding can severely damage roads, bridges and drainage infrastructure, often leading to traffic disruptions and economic losses. Floodwaters also strain water supply and sanitation systems, causing contamination of water sources and sewer overflows; indeed,

increased heavy rainfall and warming have already begun to put pressure on Kampala's water, sanitation and drainage infrastructure. The health sector is another focus: climate-related hazards are linked to rising cases of malaria, cholera and other diseases, and heat waves or flood events can overwhelm clinics and hospitals, undermining public health. Urban ecosystems such as wetlands, forests and green spaces are analyzed for the vital services they provide – wetlands like Nakivubo swamp, for instance, naturally filter water and mitigate floods, but their degradation has led to increased flooding risk in the city.

The assessment also considers livelihoods, particularly those of the urban poor who often work in climate-sensitive sectors (such as urban agriculture, informal trading, or transport). Climate shocks can disrupt livelihoods – a flood might destroy vendors' merchandise or halt boda-boda (motorcycle taxi) operations – directly affecting income and food security for vulnerable households. By covering infrastructure, water, health, ecosystems, and livelihoods, the CCVA adopts a holistic view of Kampala's urban system, recognizing the interconnected nature of these sectors. It will evaluate how climate change threatens each sector and also how risks in one domain (say, infrastructure) can ripple into others (like livelihoods and health), thereby identifying critical vulnerabilities and entry points for intervention.

1.3.3. Analytical approach and scale

The study's scope is deliberately multi-scale and multi-disciplinary. It entails analysis at the city level (macro trends), the division/neighborhood level (meso patterns), and in certain cases the community or household level (micro insights). Climate data (historical trends and model projections) was reviewed to understand city-wide trends in temperature, precipitation, and extreme events. At the same time, localized assessments were carried out – including community surveys, stakeholder interviews, and GIS mapping – to capture fine-grained information on vulnerability and adaptive capacity in different parts of Kampala. This localized focus was critical because vulnerability is highly context-specific: the factors that make a neighborhood like Kisenyi (downtown) vulnerable – e.g. overcrowded housing and poor drainage – may differ from those in a peri-urban parish on the city's periphery.

The CCVA linked broader climate risks (like increasing frequency of heavy rainfall) to on-the-ground impacts in specific locales (like the inundation of a particular residential area). Such an approach recognizes that not all communities are affected equally and that effective adaptation requires pinpointing the most vulnerable groups and areas. The scope of analysis also spanned different time horizons: the current climate baseline, recent decades of experience (e.g. the patterns of floods/droughts in the last 10–20 years), and future projections through mid-century and beyond. Considering future scenarios (for example, how a 2°C or 3°C rise in temperature could impact urban heat stress, or how a shift in seasonal rainfall could affect water availability) allowed the study to recommend forward-looking resilience measures.

1.3.4. Importance of localized assessment

The CCVA's city-specific scope addresses a vital gap, as most national-level assessments lack the resolution to inform local action. Climate risk is ultimately experienced at the local scale, where unique geographic and socio-economic conditions shape how severe impacts can be. Zeroing in on Kampala's five divisions reinforces that the study acknowledges that effective climate adaptation must be grounded in local realities. This approach is in line with international best practices that call for empowering cities and local governments to lead on resilience. Urban authorities like KCCA are often the first responders to climate impacts (clearing blocked drains during floods, managing health responses to disease outbreaks, etc.), so they need detailed risk information at the neighborhood level.

The scope of this CCVA – spanning local infrastructure, communities, and ecosystems – provides exactly that. It will enable KCCA to prioritize investments (e.g. where to build new drainage channels or flood retention ponds) based on vulnerability hotspots identified by the study. Furthermore, the process of conducting the CCVA with stakeholder participation in each division enabled building local awareness and capacity, making the assessment an exercise in resilience planning as much as a research study. This localized focus also contributes to broader learning: Kampala's experience can offer insights for other Ugandan cities and for global efforts to adapt urban areas to climate change. This will serve as a foundation for developing targeted climate change adaptation actions that safeguard Kampala's urban development and the well-being of its citizens in the face of a changing climate.

1.4 Overview of Methods Used

1.4.1. Data Sources, Analytical Methods, and Stakeholder Engagement

The methodology adopted for the CCVA integrates both quantitative and qualitative approaches, drawing upon a wide array of data sources to assess climate risk and vulnerability across Kampala's five administrative divisions. The data sources include historical and projected climate datasets from the Uganda Meteorological Authority (UNMA), socio-economic and demographic data from UBOS, land use and ecological data from NFA and KCCA, and policy documents from the Ministry of Water and Environment. Literature reviews of IPCC reports and local climate studies complement primary data collection efforts. Analytical methods applied include statistical analysis of climate trends, correlation analysis of vulnerability drivers, and policy reviews to understand institutional frameworks influencing exposure and adaptive capacity.

To enhance the contextual relevance of the CCVA, a robust stakeholder engagement strategy has been embedded into the process. The approach included household surveys (400 respondents), 20 focus group discussions (FGDs)—segmented by gender, youth, and persons with disabilities—and 30 key informant interviews (KIIs) with representatives from KCCA, CSOs, academia, local councils, and the private sector. A stratified purposive sampling method ensures inclusion of climate-vulnerable communities such as informal settlements, flood-prone areas, and socio-economically disadvantaged zones. Stakeholder feedback is continuously captured through public meetings, participatory workshops, and collaborative review sessions, ensuring co-production and validation of findings throughout the assignment's life cycle.

1.4.2. Tools, Techniques, Limitations, and Assumptions

The CCVA utilizes a suite of tools and techniques to generate a multi-dimensional understanding of climate risk. GIS and remote sensing technologies are used for mapping socio-economic data and geospatial trends, identifying vulnerability hotspots across divisions. The GIS specialist uses tools like ArcGIS and QGIS to visualize data and overlay climate, socio-economic, and infrastructure layers. Climate modelling tools, including the Climate Change Adaptation Planning Tool, are employed to generate future climate risk scenarios, complemented by trend analysis using SPSS and R for statistical interpretation. Qualitative data is analyzed thematically (per Braun & Clarke, 2006), facilitating the extraction of perceptions, coping strategies, and adaptive capacities from FGDs and KIIs.

1.4.3. Limitations and Assumptions

Nonetheless, several limitations and assumptions underpin this approach. One limitation relates to the availability and resolution of localized climate data, which may restrict the granularity of certain projections. In some areas, climate data spans back only to the 1980s, and historical disaster records may be incomplete. Another assumption is that the current socio-economic profiles and coping strategies reflect relatively stable patterns—despite the rapidly evolving urban environment. Furthermore, there is an inherent reliance on the accuracy of self-reported data from community engagements and the assumption that stakeholders are available and willing to participate throughout the assessment phases. These risks are mitigated through data triangulation, cross-validation with secondary sources, and ongoing collaboration with KCCA technical teams, including skills transfer during data analysis and report preparation.

CHAPTER TWO

2. VISION, GOALS, AND GUIDING PRINCIPLES

2.1 Vision Statement

Kampala envisions becoming a **climate-resilient, inclusive, and sustainable city** that safeguards its people, infrastructure, ecosystems, and economy from the adverse impacts of climate change. This vision reflects KCCA's commitment to proactive urban climate governance, aligning with Uganda's National Development Plan IV, the Climate Change Act (2021), and the Kampala Climate Change Action Strategy (2020).

2.2 Strategic Goals

The Climate Change and Vulnerability Assessment (CCVA) is guided by four strategic goals:

1. **Enhance Risk Awareness and Resilience** - Improve understanding of climate risks across communities, institutions, and sectors to strengthen adaptive capacity.
2. **Protect Vulnerable Populations and Infrastructure** - Identify and prioritize support for informal settlements, flood-prone areas, and socio-economically disadvantaged groups most exposed to climate hazards.
3. **Integrate Climate Risk into Urban Planning and Investment** - Embed climate vulnerability data and projections into KCCA's planning, infrastructure design, and service delivery mechanisms.
4. **Support Inclusive, Multi-Level Climate Governance** - Promote collaboration among national agencies, city divisions, local leaders, and community-based organizations for effective and equitable climate action.

2.3 Guiding Principles

The following principles underpin the development and implementation of Kampala's CCVA:

- **Equity and Inclusion**: Prioritize the needs of marginalized groups, including women, youth, persons with disabilities, and residents of informal settlements.
- **Evidence-Based Decision Making**: Use scientifically grounded climate projections and localized vulnerability data to guide planning and action.
- **Systems Thinking**: Recognize the interconnectedness of climate risks across sectors—health, infrastructure, water, and livelihoods—and promote integrated responses.
- **Resilience through Nature**: Promote nature-based solutions such as wetland restoration, green urban spaces, and sustainable land use to enhance ecological resilience.
- **Participatory Governance**: Foster inclusive dialogue and shared ownership of climate solutions through active engagement with residents, civil society, and the private sector.

- **Transparency and Accountability**: Ensure that climate actions are supported by clear roles, measurable indicators, and consistent monitoring at all levels.
- **Alignment with Global and National Commitments**: Ground local action in frameworks such as the SDGs (especially SDG 11 and 13), Uganda's Updated NDCs, and the Sendai Framework for Disaster Risk Reduction.

CHAPTER THREE

3. POLICY AND INSTITUTIONAL CONTEXT

3.1 Relevant Policies and Frameworks

Effective climate risk and vulnerability assessments must align with existing international, regional and national policy frameworks that guide action on climate change mitigation, adaptation, resilience building, and sustainable development. This chapter reviews relevant international and regional frameworks and policies that inform KCCA's climate response.

3.1.1 International Frameworks

The Paris Agreement (2015), adopted under the United Nations Framework Convention on Climate Change (UNFCCC), is a landmark global accord that seeks to strengthen the global response to climate change. Its three central goals include limiting global temperature rise to well below 2°C above pre-industrial levels, pursuing efforts to limit it to 1.5°C, enhancing adaptive capacity, and aligning financial flows with low-emissions, climate-resilient development pathways. The agreement emphasizes equity and the principle of "common but differentiated responsibilities," which is particularly relevant for African cities like Kampala that face disproportionate climate risks yet have contributed the least to global emissions.

Kampala City contributes an extremely small fraction—likely less than 0.03%—to global greenhouse gas emissions, despite being Uganda's largest urban center and a hub of economic activity. This minimal contribution aligns with Uganda's overall emissions share of about 0.1% of global totals (Climate Watch, 2023) and Africa's broader contribution of only 3–4% (UN-Habitat, 2021; World Bank, 2019). Unlike heavily industrialized cities in the Global North, where urban emissions are highly concentrated, Kampala's emissions stem largely from transport, solid waste, and inefficient energy use. Yet, the city faces disproportionate climate impacts, including frequent flooding, heat stress, and drought, reinforcing the principle of "common but differentiated responsibilities" under the Paris Agreement, which acknowledges that cities like Kampala are among the least responsible for climate change yet among the most affected.

The Sendai Framework for Disaster Risk Reduction (2015–2030) compliments the climate agenda by focusing on risk-informed development and resilience to both natural and man-made hazards. Its four priority areas—understanding disaster risk, strengthening risk governance, investing in resilience, and enhancing disaster preparedness—are essential for integrating disaster risk reduction into urban planning and infrastructure development. It promotes "Building Back Better" in post-disaster recovery and prioritizes inclusive participation, particularly of vulnerable groups, aligning closely with urban resilience efforts in Kampala.

The Kunming – Montreal Global Biodiversity Framework (KMGBF) 2022, developed within the framework of the Convention on Biological Diversity (CBD). Specifically, Target 8: Minimize the impacts of climate change on biodiversity and build resilience; and Target 12: Enhance green spaces and urban planning for human well-being; are relevant for the CCVA.

3.1.2 Regional Frameworks

The African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032) is a continental response framework designed to coordinate and scale climate action across Africa. The Strategy envisions a "sustainable, prosperous, equitable, and climate-resilient Africa" and outlines key axes such as governance, transformative development pathways, means of implementation, and leveraging regional flagship initiatives. It stresses regional cooperation, anticipatory planning, inclusive participation, and alignment with Agenda 2063, providing strategic relevance for subnational actors like KCCA.

The African Union Agenda 2063 also plays a significant role by embedding climate action into the broader continental vision of a prosperous and peaceful Africa. It recognizes environmental sustainability, climate resilience, and low-carbon development as essential to achieving long-term socio-economic transformation.

The East African Community (EAC) Climate Change Policy (2011) establishes a regional commitment to tackle climate challenges by harmonizing responses and enhancing cooperation among Partner States. The policy highlights the need for integration of climate change adaptation and mitigation in national and regional development strategies and places strong emphasis on vulnerable sectors such as water, energy, and health.

The EAC Climate Change Strategy (2011–2016) builds upon the policy by proposing a regional roadmap for coordinated action. It promotes the development of early warning systems, disaster preparedness mechanisms, sustainable agriculture, energy efficiency, and capacity building for effective climate governance.

The EAC Climate Change Master Plan (2011–2031) offers a long-term vision to ensure climate-resilient people, economies, and ecosystems across the region. It outlines key pillars including adaptation, mitigation, technology transfer, capacity building, and climate finance. The plan is especially relevant for urban centers like Kampala that are exposed to transboundary climate risks and require robust institutional coordination.

3.1.3 National Frameworks

Uganda has established a robust set of national policies and legislative frameworks that anchor climate action in its development pathway. These frameworks guide subnational authorities like Kampala Capital City Authority (KCCA) in mainstreaming climate resilience into urban planning and service delivery.

Uganda Vision 2040
Uganda Vision 2040 is the country's long-term development blueprint aiming to transform Uganda from a predominantly low-income to an upper-middle-income country by 2040. It identifies climate change as a major development challenge and emphasizes sustainable use of natural resources, climate-resilient infrastructure, and low-carbon development as enablers for economic transformation.

Fourth National Development Plan (NDP IV, 2025/26–2029/30)
The NDP IV integrates climate change across multiple development priorities. It outlines strategic interventions in natural resource management, urban development, sustainable transport, and green energy transitions. The plan calls for climate-proofing infrastructure, strengthening urban resilience, and implementing Uganda's climate-related international commitments. It prioritizes risk-informed development, nature-based solutions, and green financing.

National Climate Change Policy (2015)
This policy provides the overarching framework for climate change adaptation and mitigation in Uganda. Its goal is to ensure a harmonized and coordinated response to climate change while promoting low-carbon and climate-resilient development. The policy mandates integration of climate risks in sectoral and local government planning, including urban development policies relevant to KCCA.

National Climate Change Act (2021)
The Climate Change Act operationalizes Uganda's obligations under international agreements including the UNFCCC and the Paris Agreement. It mandates the formulation of national, sectoral, and district-level climate change action plans, which are legally binding. The Act also promotes the use of climate information systems, carbon markets, and climate financing instruments, making it central to the implementation of city-level climate actions.

Nationally Determined Contribution (Updated, 2022)
Uganda's Updated NDC commits to a 24.7% reduction in greenhouse gas emissions by 2030 relative to business-as-usual levels. Adaptation remains a national priority, with a broadened sectoral scope that includes urban development, transport, infrastructure, and ecosystems. The NDC explicitly recognizes the role of local governments in delivering adaptation and mitigation actions.

National Environment Management Policy (2014) and National Environment Act (2019)
These provide the regulatory backbone for environmental sustainability and climate governance in Uganda. The Environment Act emphasizes the precautionary principle, climate change mainstreaming, ecosystem-based adaptation, and green economy transitions. Local governments like KCCA are mandated to integrate environmental considerations into planning and enforce environmental regulations.

Uganda Green Growth Development Strategy (UGGDS), 2017/18–2030/31
The UGGDS operationalizes Uganda's commitment to inclusive, low-carbon economic development. It focuses on five key areas: natural capital management, sustainable transport, green cities, agriculture, and energy. For Kampala, the strategy supports initiatives in urban resilience, green jobs, and climate-smart infrastructure.

National Disaster Risk Reduction and Management Policies (2010, 2013)
Uganda's disaster policies provide frameworks for anticipating, mitigating, and managing climate-related disasters such as floods, landslides, and disease outbreaks. The policies mandate local governments to establish disaster risk management structures, early warning systems, and contingency plans—all essential for urban resilience in Kampala.

3.2 Institutional Structures and Governance

Climate resilience and disaster risk management in Kampala are shaped by a dynamic interaction of national policies, local strategies, and cross-sectoral coordination mechanisms. This section outlines the institutional landscape, clarifying the structures and governance frameworks supporting climate adaptation and resilience in the city.

3.2.1 Institutional Arrangements for Climate Adaptation and Resilience in Kampala

Kampala Capital City Authority (KCCA) plays a central role in the governance and implementation of climate adaptation and disaster risk reduction (DRR) measures within Uganda's capital. The city's efforts are guided by both national and local strategies that emphasize integration, coordination, and inclusiveness.

KCCA has adopted the **Kampala Disaster Risk and Climate Change Resilience Strategy (2022)** as its primary framework for institutionalizing disaster preparedness and climate adaptation. The strategy emphasizes the need for systems-based resilience across urban planning, infrastructure, public health, and environmental management. The institutional design includes dedicated units for climate change, DRR, environmental services, and urban planning, enabling integrated approaches to risk mitigation and climate resilience.

The KCCA Strategic Plan 2020/21–2024/25 also reinforces this mandate by embedding climate change as a cross-cutting theme in service delivery, infrastructure planning, and environmental conservation. Moreover, Kampala's five urban divisions, Central, Kawempe, Lubaga, Makindye, and Nakawa, are encouraged and somehow empowered to localize resilience strategies based on their distinct exposure and vulnerabilities to climate hazards.

3.2.2 Roles and Responsibilities of KCCA, National Agencies, and Stakeholders

The institutional framework for climate action in Kampala involves collaboration between KCCA and a wide array of national and local stakeholders as shown in Figure 1.

- **KCCA** is the lead institution for implementing resilience measures at the city level. It is responsible for developing and operationalizing climate action plans, enforcing building codes, coordinating disaster preparedness, managing drainage infrastructure, and engaging communities.
- **Ministry of Water and Environment (MWE)**, through its Climate Change Department (CCD), provides overarching guidance and technical support. MWE ensures that KCCA aligns with national frameworks such as the National Climate Change Act (2021) and Uganda's Updated NDC (2022).
- **Office of the Prime Minister (OPM)** plays a central coordination role for disaster risk management through the National Emergency Coordination and Operations Centre. It liaises with KCCA and ensures that Kampala's disaster preparedness is embedded in the National Policy for Disaster Preparedness and Management (2010).
- **National Environment Management Authority (NEMA)** guides environmental planning and assessments in Kampala under the National Environment Act (2019), including enforcement of environmental regulations and climate risk screening.
- **Ministry of Health (MoH)** contributes to building climate-health resilience through the Health National Adaptation Plan (H-NAP 2025–2030), which identifies urban centers like Kampala as priority areas for health systems strengthening and disaster health preparedness.

- **Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)** supports climate-smart agriculture and urban food systems in line with the Agriculture NAP (2018–2025), including resilience planning for urban agriculture and food security in Kampala's informal settlements.
- **Development partners, academia, and civil society organizations** (e.g., World Bank, UNDP, Red Cross, Makerere University) provide financing, research, and implementation support across multiple resilience-building initiatives.

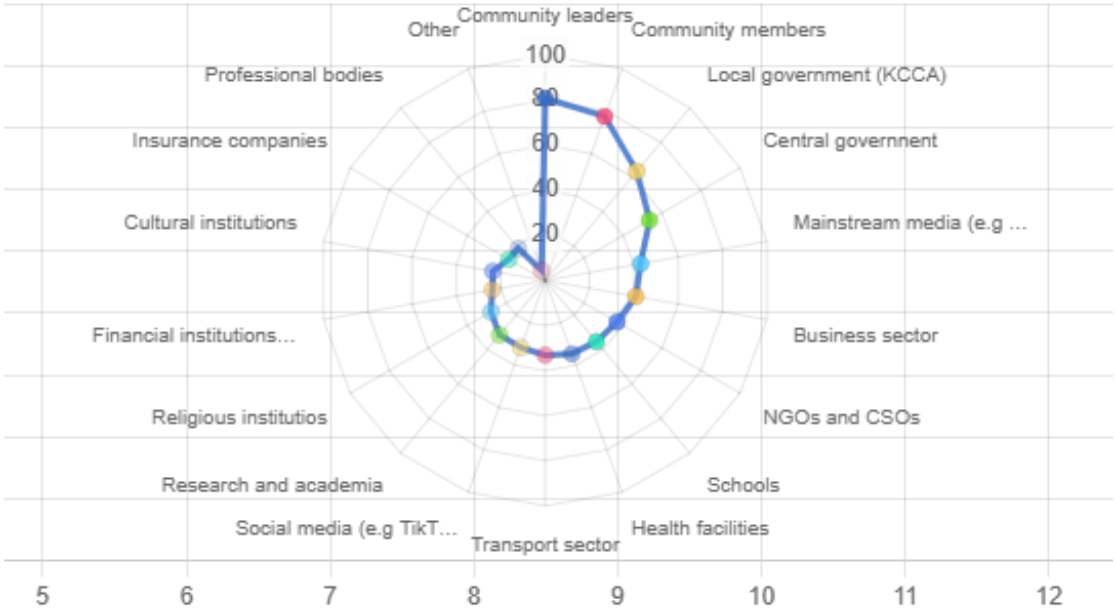


Figure 1. Stakeholders involved in the CCVA framework of KCCA.

3.2.3 Establishment and Operational Framework of Divisional Disaster Risk Management Committees (DDRMCs)

In order to decentralize disaster risk management matters, KCCA has established Divisional Disaster Risk Management Committees **(DDRMCs)** in the five city divisions. The committees are mandated to:

- Develop divisional contingency and response plans
- Coordinate disaster risk assessments and early warning systems
- Mobilize communities for disaster preparedness and environmental protection
- Monitor implementation of DRR actions at the grassroots level

The **DDRMCs** are guided by Uganda's national disaster policy and should receive technical and logistical support from KCCA's Management. Their establishment follows the principles outlined in the Kampala Disaster Risk and Climate Change Resilience Strategy (2022), which provides for community-level engagement, cross-sectoral coordination, and gender-responsive planning.

In order to ensure their effectiveness, the DDRMCs will operate within the broader emergency preparedness and response framework (Annex F of the Resilience Strategy), which outlines

responsibilities, resource mobilization mechanisms, and coordination protocols with national agencies and humanitarian actors.

3.3 Community awareness about policies and institutional framework

Less than 30% the local communities within the five divisions of Kampala are aware of policies aimed at reducing the climate change impacts in their localities.

About 25% (167) of the 643 respondents were able to provide opinions regarding the effectiveness of existing policies. Up to 54% of these felt that the policies are not effective. In effect, 54% of the community members consider the policies not effective.

CHAPTER FOUR

4. CLIMATE PROFILE AND TRENDS

The climate of Kampala is classified as a tropical rainforest climate (Af) under the Köppen–Geiger climate classification system, characterized by consistently warm temperatures throughout the year and significant rainfall (Beck et al., 2028).

The City's climate is influenced by a complex interplay of geographic, environmental, and anthropogenic factors. Its proximity to Lake Victoria contributes to a tropical climate with bimodal rainfall patterns, though land and lake breeze effects have been disrupted by urban expansion, leading to more erratic precipitation (Li et al., 2021). Urbanization has driven significant land-use changes, including the encroachment of 46% of wetlands by 1999 and 96.7% degradation by 2002, reducing natural flood buffers and exacerbating runoff during intense rains (UN-Habitat, 2009). The urban heat island (UHI) effect intensifies local temperatures, with informal settlements experiencing up to 31°C due to dense housing, limited vegetation, and dark impervious surfaces (Opiyo et al., 2020).

Precipitation changes include heavier rains overwhelming inadequate drainage systems, particularly in low-lying informal settlements like Bwaise and Kinawataka, where 45% of buildings are flood-prone (UN-Habitat, 2009). Anthropogenic factors such as fossil fuel-dependent transportation (contributing 54% of Greater Kampala's GHG emissions) and biomass energy use (75% of households) further drive warming and air pollution (GIZ & KCCA. (2022). These intersecting factors—geographic setting, ecosystem degradation, infrastructure deficits, and emissions—create a feedback loop that amplifies climate vulnerabilities across Kampala's five divisions (Li et al., 2021).

4.1 Historical Climate Conditions and Trends

4.1.1 Temperature Patterns

Annual Temperature Trends

Over the past decade, 2004 - 2024, Kampala has exhibited a gradual but consistent increase in mean

annual temperatures, reflecting the broader impacts of global climate change and localized urban heat island effects (Figure 2). The urbanization and land cover changes—particularly the reduction in green spaces and expansion of impervious surfaces—have contributed significantly to rising temperatures in the city. Across the five divisions, the data show a warming trend, with average annual temperatures increasing by approximately 0.2°C to 0.4°C per decade. Central and Kawempe Divisions, which are more densely built, recorded slightly higher annual temperature increments compared to Makindye and Nakawa, indicating a correlation between population density, infrastructure intensity, and localized warming. These trends suggest the need for integrated urban heat management strategies, including climate-smart infrastructure and green urban planning.

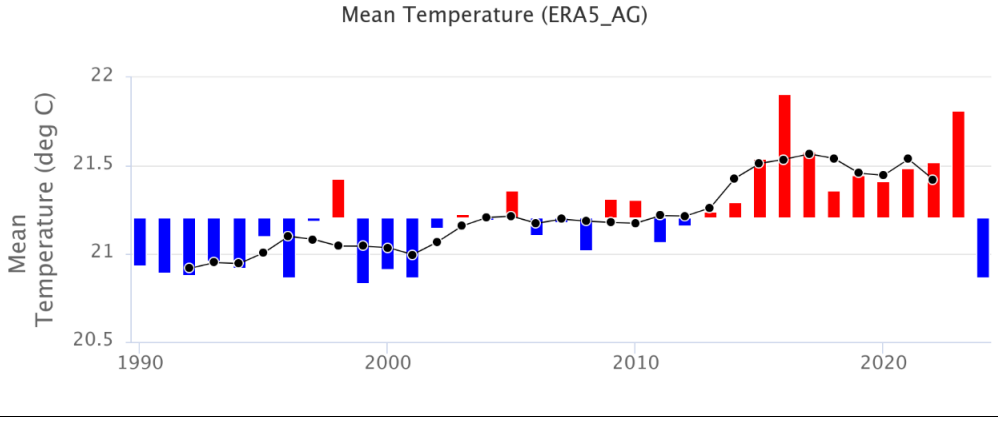
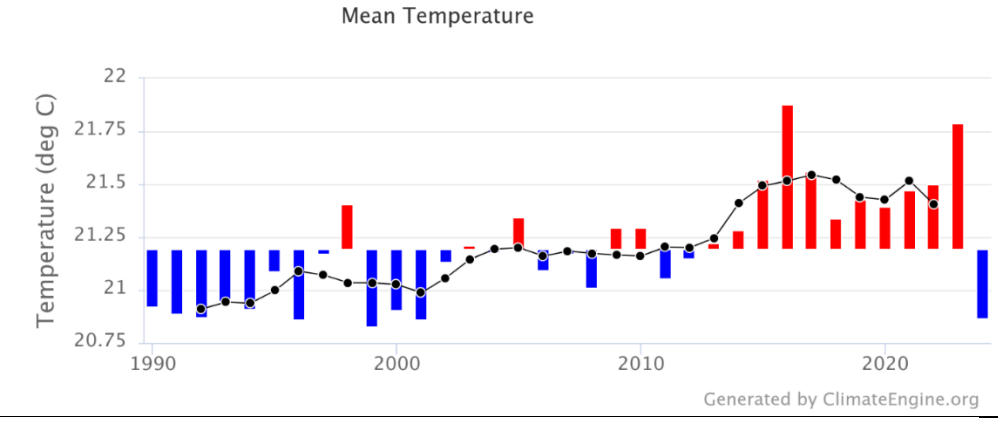
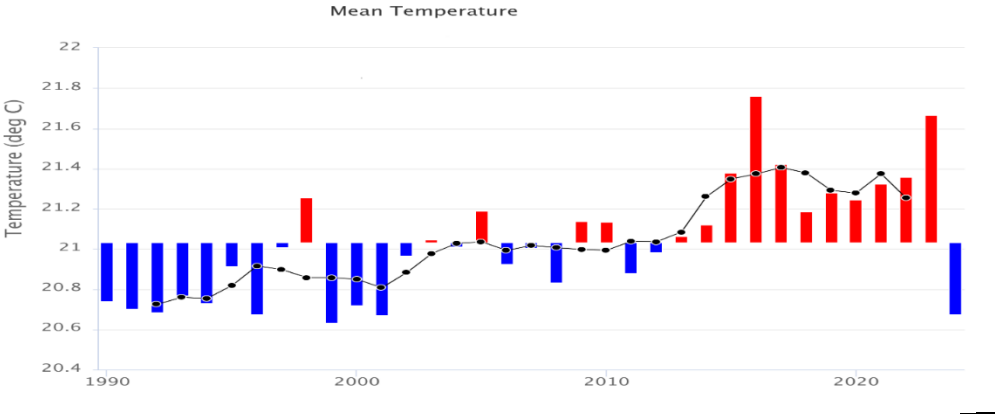
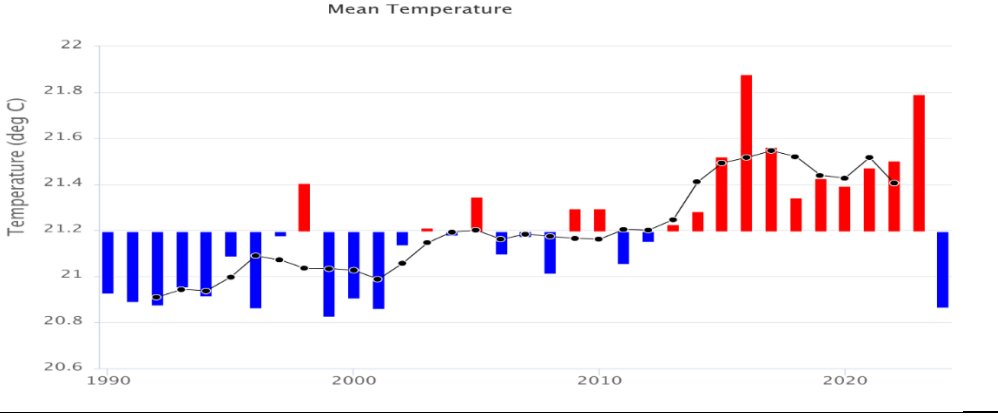
Seasonal Temperature Trends in Kampala

Seasonal analysis of temperature trends across Kampala's divisions shows notable variations tied to Uganda's bimodal rainfall seasons (Figure 3). During DJF (December – January –February) and JJA (June–July –August)—typically the warmer and drier periods—the city experiences higher average daily maximum temperatures, with DJF generally registering the peak values across all divisions. MAM (March–May) and SON (September–November), which correspond to the major and minor rainy seasons, show relatively moderated temperature profiles due to increased cloud cover and precipitation. However, inter-seasonal variability has intensified, with more frequent occurrences of extreme temperature days particularly during DJF, suggesting a shift in the microclimatic behavior of Kampala. Lubaga and Central Divisions tend to warm faster during DJF and JJA, likely due to higher building densities and limited vegetation cover.

Spatial Temperature Trends across Kampala Divisions

Spatially, temperature distribution across Kampala is heterogeneous, with observable gradients driven by land use, elevation, vegetation cover, and proximity to urban centers. Central Division, being the commercial and administrative core, consistently reports the highest average temperatures throughout the year, exacerbated by extensive concrete structures and traffic-related heat emissions. In contrast, divisions like Makindye and Nakawa, which still retain considerable green spaces and are less densely developed, experience comparatively milder temperatures, especially in the evenings and early mornings. Kawempe and Lubaga, though urbanizing rapidly, display moderate temperature levels but show increasing warming trends, pointing to future risk of urban heat stress. The spatial analysis underscores the critical need for spatially targeted interventions such as urban greening, promotion

of reflective roofing materials, and improved ventilation in building codes to mitigate the spatially unequal impacts of rising urban temperatures.

Kampala	
Central Division	
Kawempe Division	
Lubaga Division	

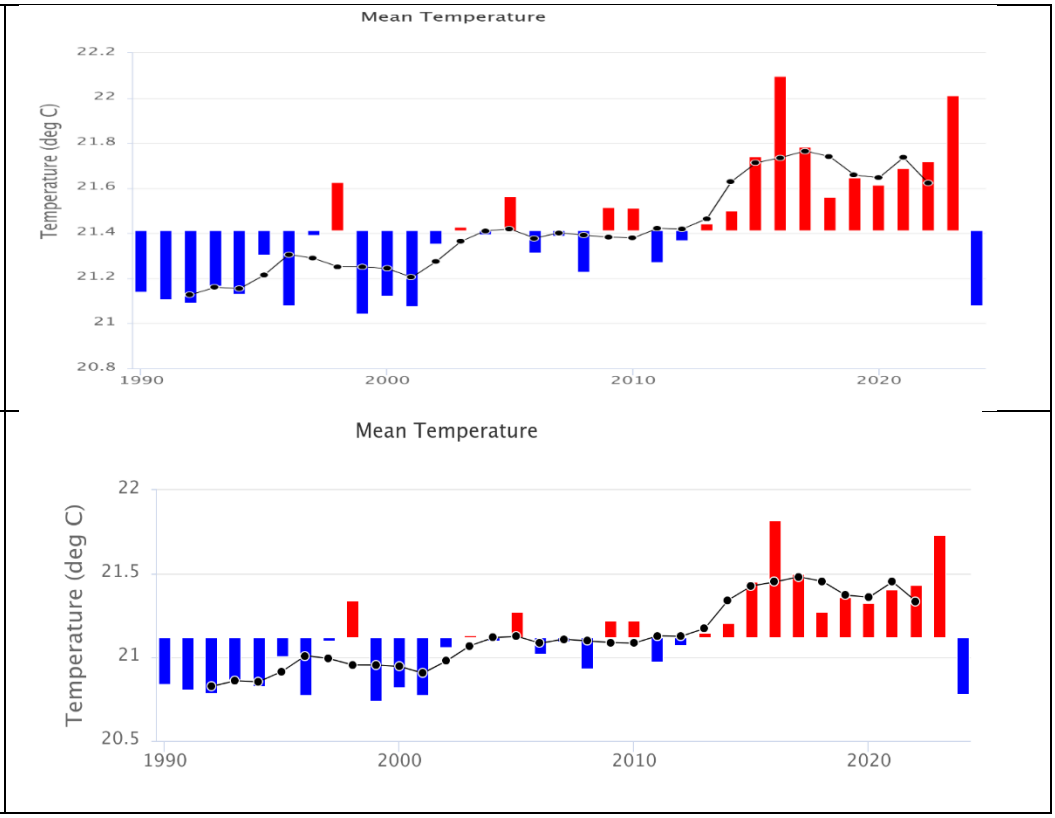
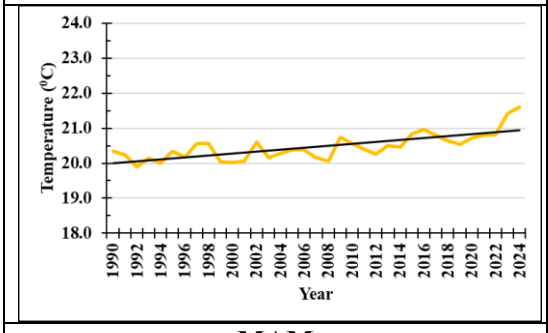
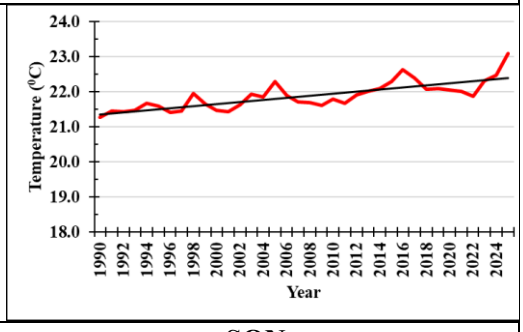
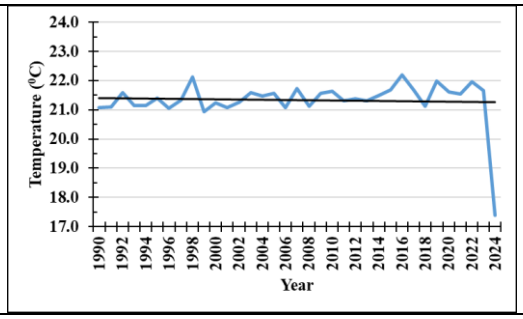
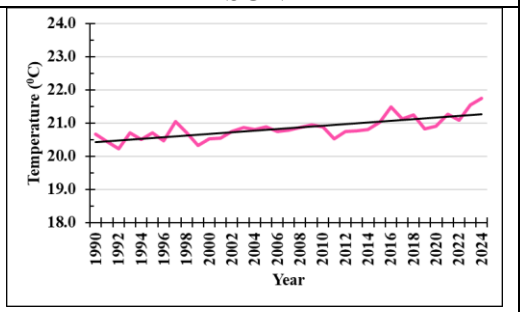
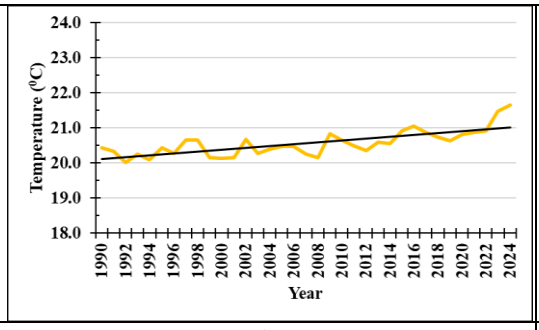
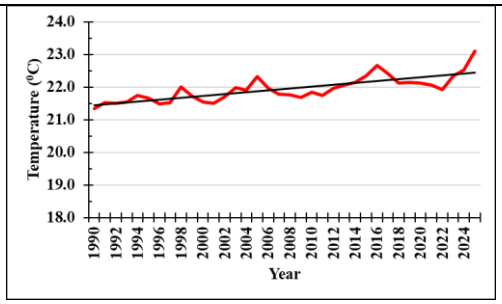
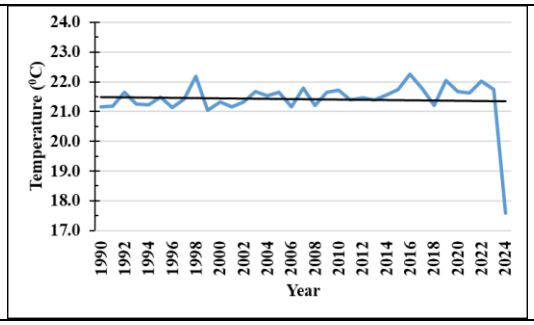
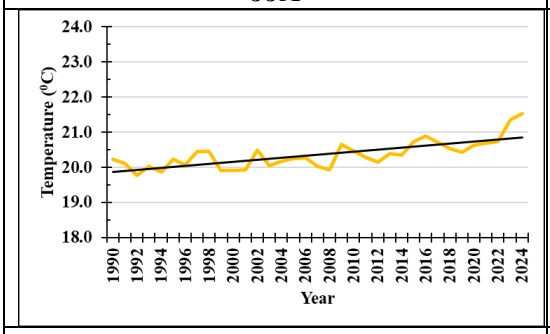
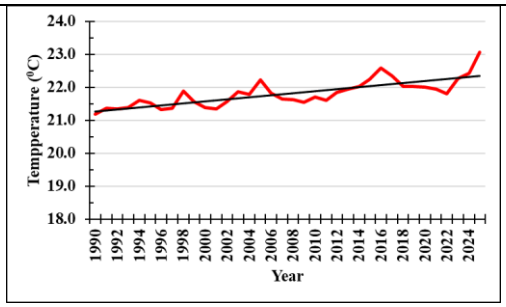
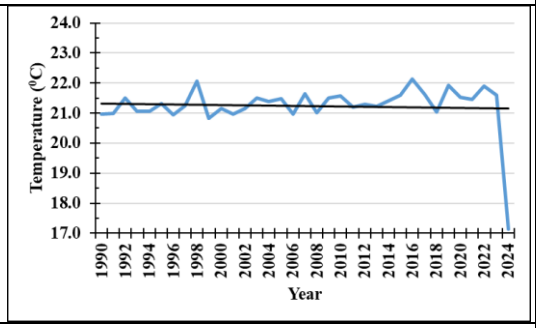
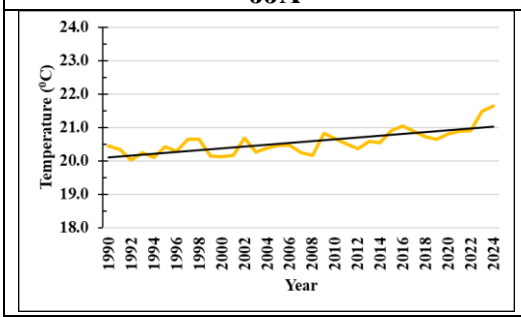
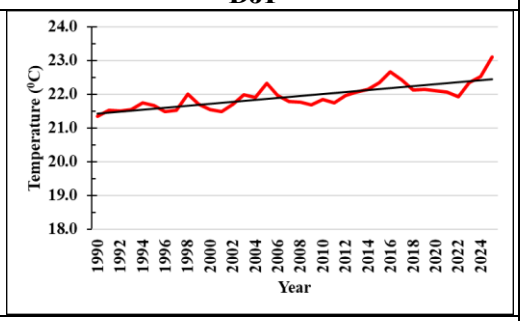
Makindye Division	
Nakawa Division	

Figure 2. Annual mean temperatures for Kampala, Kawempe, Lubaga, Makindye and Nakawa Divisions

Seasonal Temperatures

Kampala	JJA	DJF
		
	MAM	SON
		
	JJA	DJF

Central Division		
	MAM	**SON**
		
Kawempe Division	**JJA**	**DJF**
		
	MAM	**SON**
		
Lubaga Division	**JJA**	**DJF**
		
	MAM	**SON**

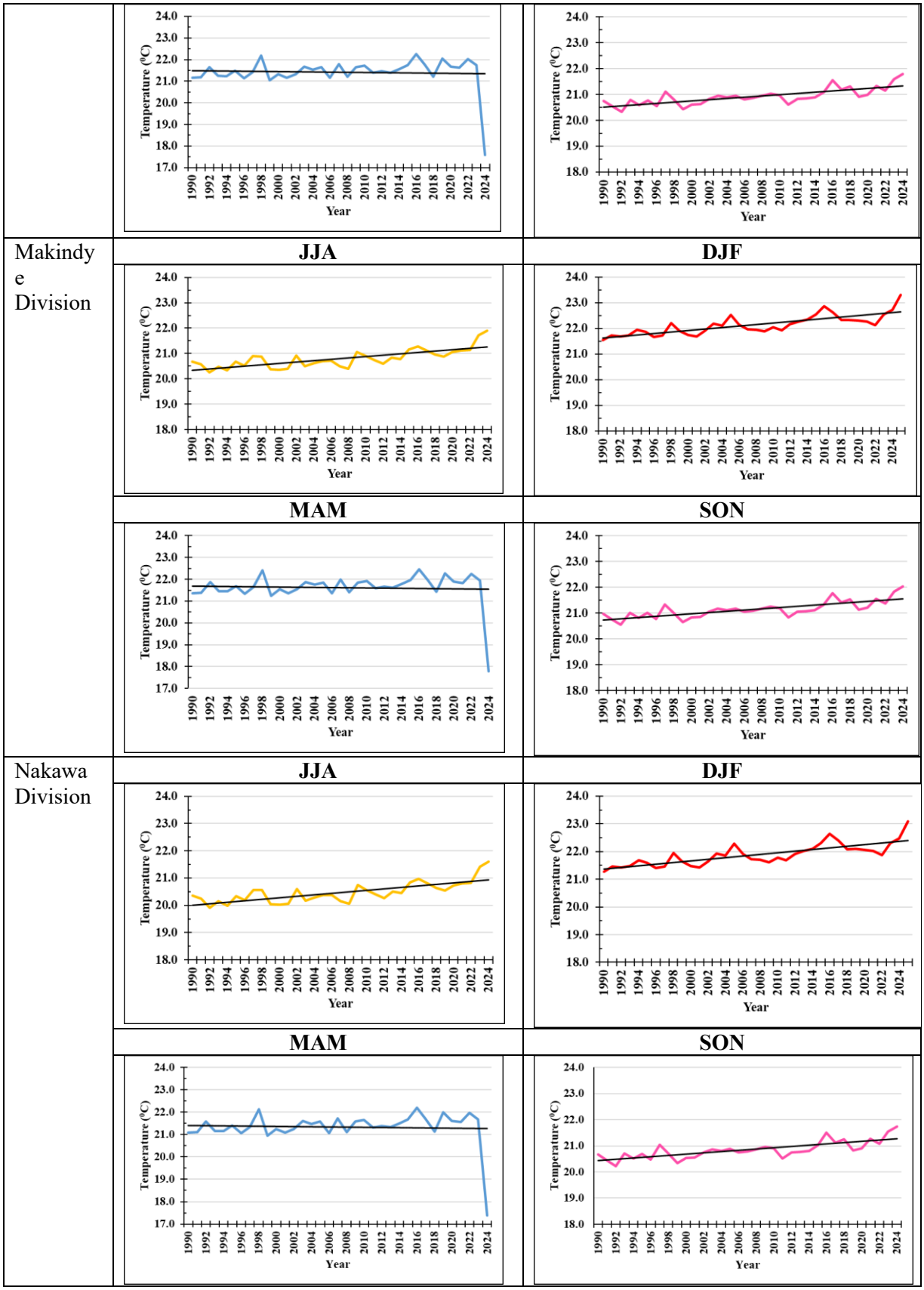


Figure 3. Seasonal Temperatures for Central, Kawempe, Makindye, Lubaga and Nakawa Divisions. December-February (DJF), March-May (MAM), June-August (JJA) and September-November (SON)

4.1.2 Precipitation Trends

Annual Precipitation Trends in Kampala

Kampala has shown fluctuating but generally increasing trends in annual precipitation over the past decades, reflective of intensifying rainfall patterns associated with climate variability and change. The city receives an annual average of approximately 1,200 to 1,500 mm of rainfall, but this has become increasingly variable year-on-year. Divisions such as Makindye and Nakawa have recorded relatively more stable annual precipitation patterns, while Kawempe and Lubaga have experienced more pronounced interannual variability, including years with unusually high rainfall (Figure 4). These shifts are often attributed to regional climate drivers such as the Inter-Tropical Convergence Zone (ITCZ) and localized effects of urban expansion, which can alter atmospheric moisture convergence and convective activity. Overall, the increasing trend in total annual rainfall suggests heightened exposure to flood risks and underscores the need for enhanced urban drainage and stormwater management infrastructure.

Seasonal Precipitation Trends in Kampala

Seasonally, Kampala follows a bimodal rainfall regime, with peak precipitation occurring during March–May (MAM) and September–November (SON). Data indicates that MAM has become increasingly erratic, with some years experiencing heavy downpours over shorter periods—raising the frequency of flash floods, especially in low-lying and poorly drained urban zones (Figure 5). SON seasons have shown more consistent rainfall patterns but with notable year-to-year shifts in onset and cessation, which affects agricultural activities and water resource planning. The dry seasons—June–August (JJA) and December–February (DJF)—have remained relatively dry but are beginning to show isolated rainfall events, possibly linked to localized convection or climate anomalies. Makindye and Nakawa tend to receive slightly higher rainfall in MAM due to their topographical orientation and vegetation cover, while Central Division shows increasingly intense rainfall events during SON, likely influenced by the urban heat island effect.

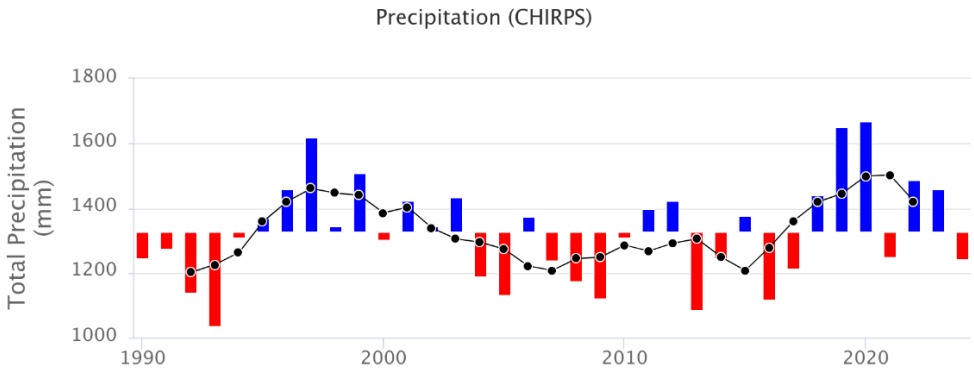
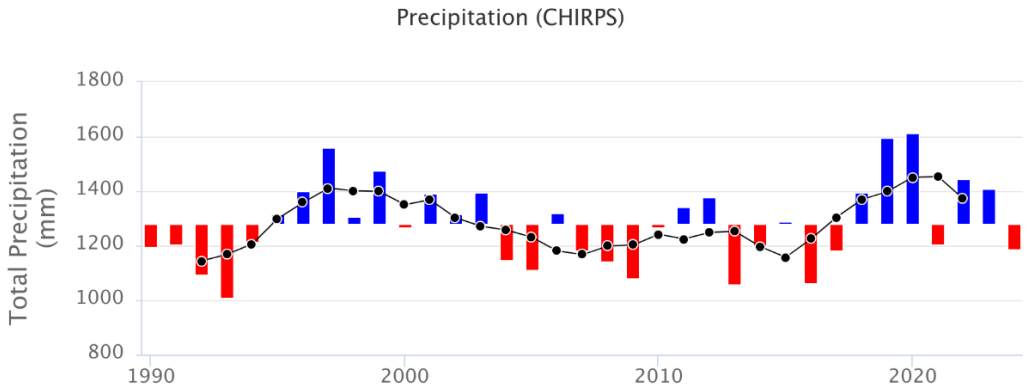
Spatial Precipitation Trends across Kampala Divisions

Spatially, precipitation in Kampala exhibits significant variation across its five administrative divisions. Makindye and Nakawa Divisions, characterized by a mix of urban and peri-urban land use and higher green cover, tend to receive more rainfall throughout the year, particularly during the MAM season

(Figure 6). These areas benefit from slightly higher elevation and natural drainage, contributing to greater rainfall accumulation and runoff. Central Division, being the most urbanized, often records high-intensity but short-duration rainfall events that lead to surface water flooding due to limited infiltration capacity and impervious surfaces. Kawempe and Lubaga, which are rapidly urbanizing, are increasingly susceptible to irregular rainfall distribution and waterlogging, particularly in informal settlements with poor drainage. These spatial differences emphasize the importance of localized climate adaptation measures and spatially targeted investments in climate-resilient infrastructure.

Precipitation

Annual trends

Kampala	
Central Division	

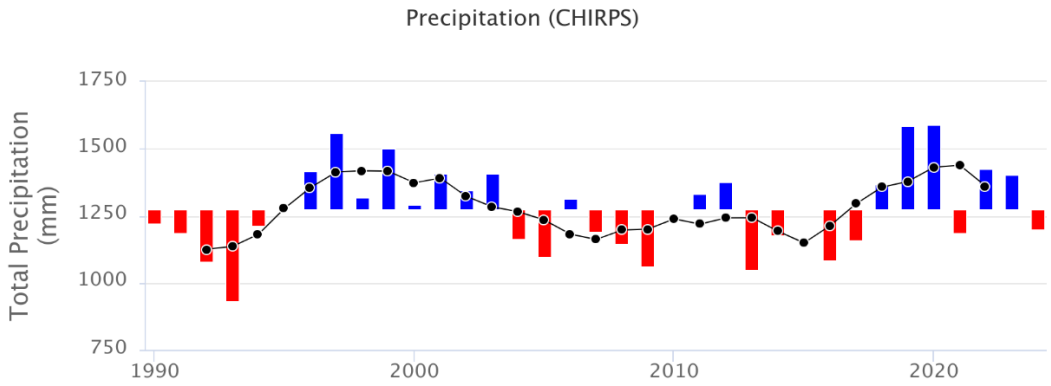
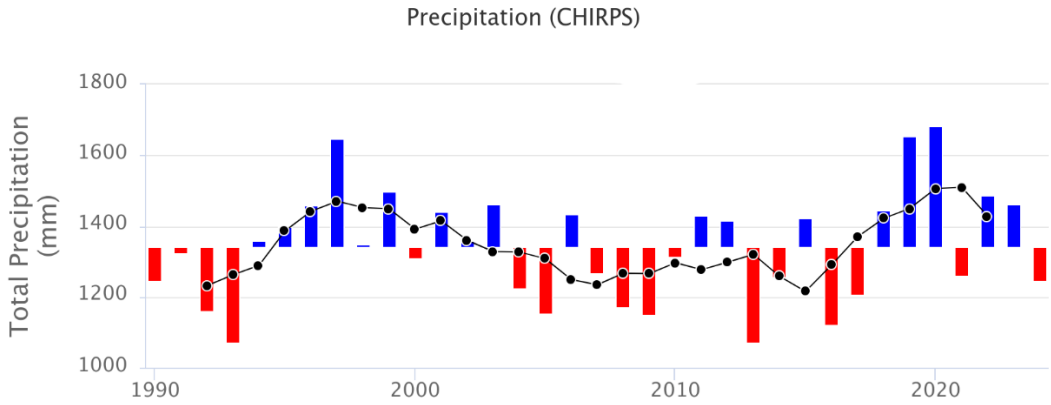
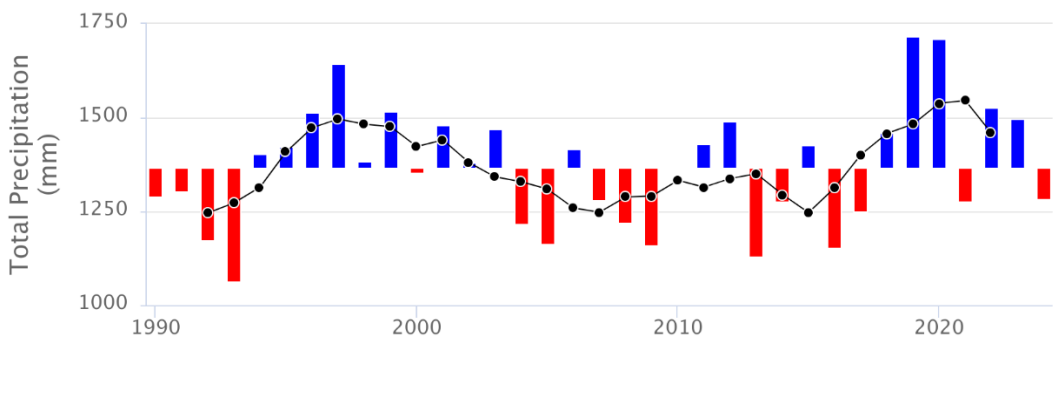
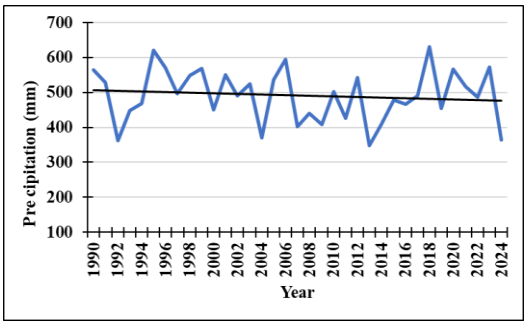
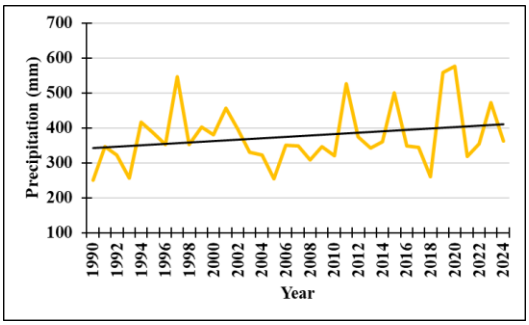
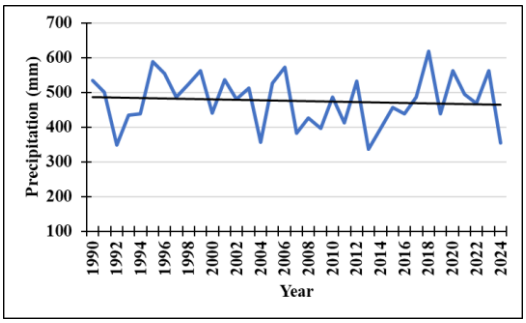
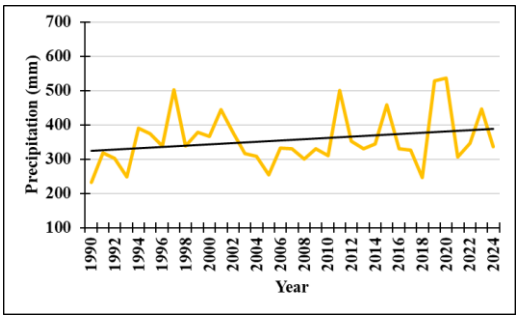
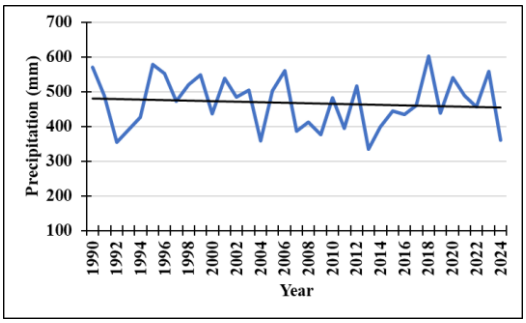
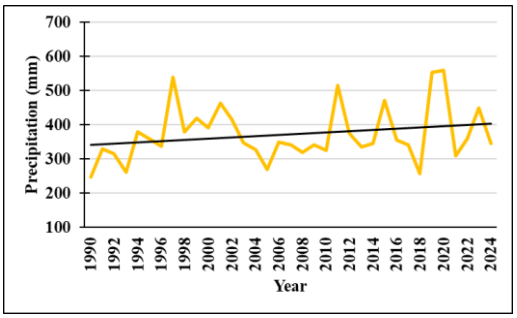
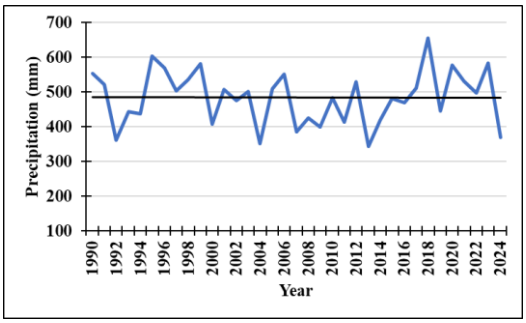
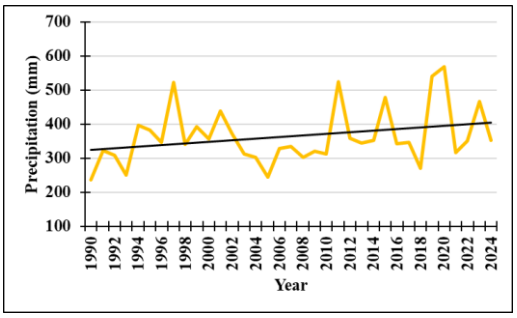
Kawempe Division	
Lubaga Division	
Makindye Division	
Nakawa Division	

Figure 4. Annual precipitation for Kampala, Kawempe, Lubaga, Makindye and Nakawa Divisions

Seasonal

	MAM	SON
Kampala		
Central Division		
Kawempe Division		
Lubaga Division		

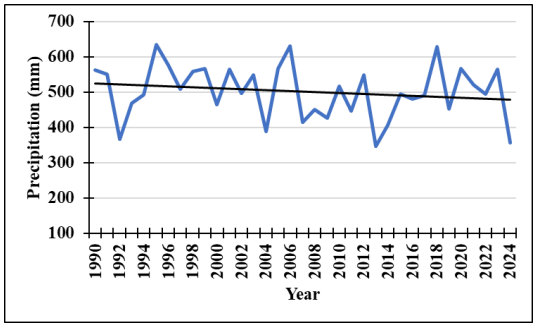
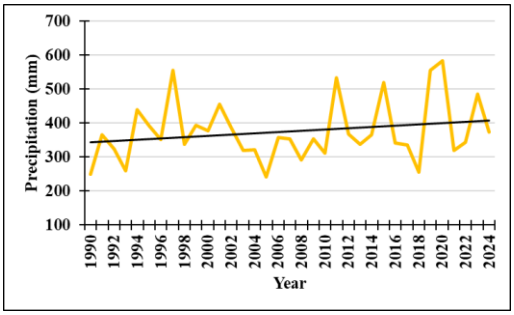
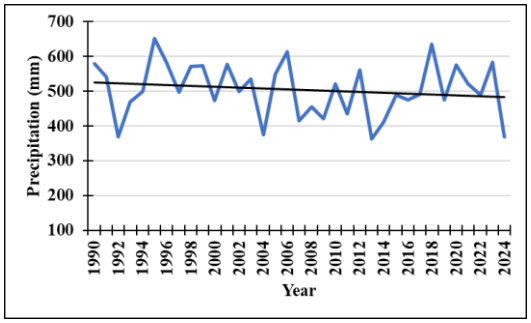
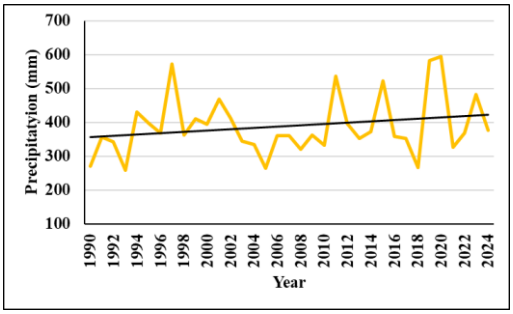
Makindye Division		
Nakawa Division		

Figure 5. Seasonal precipation for Central, Kawempe, Makindye, Lubaga and Nakawa Divisions. December-February (DJF), March-May (MAM), June-August (JJA) and September-November (SON)

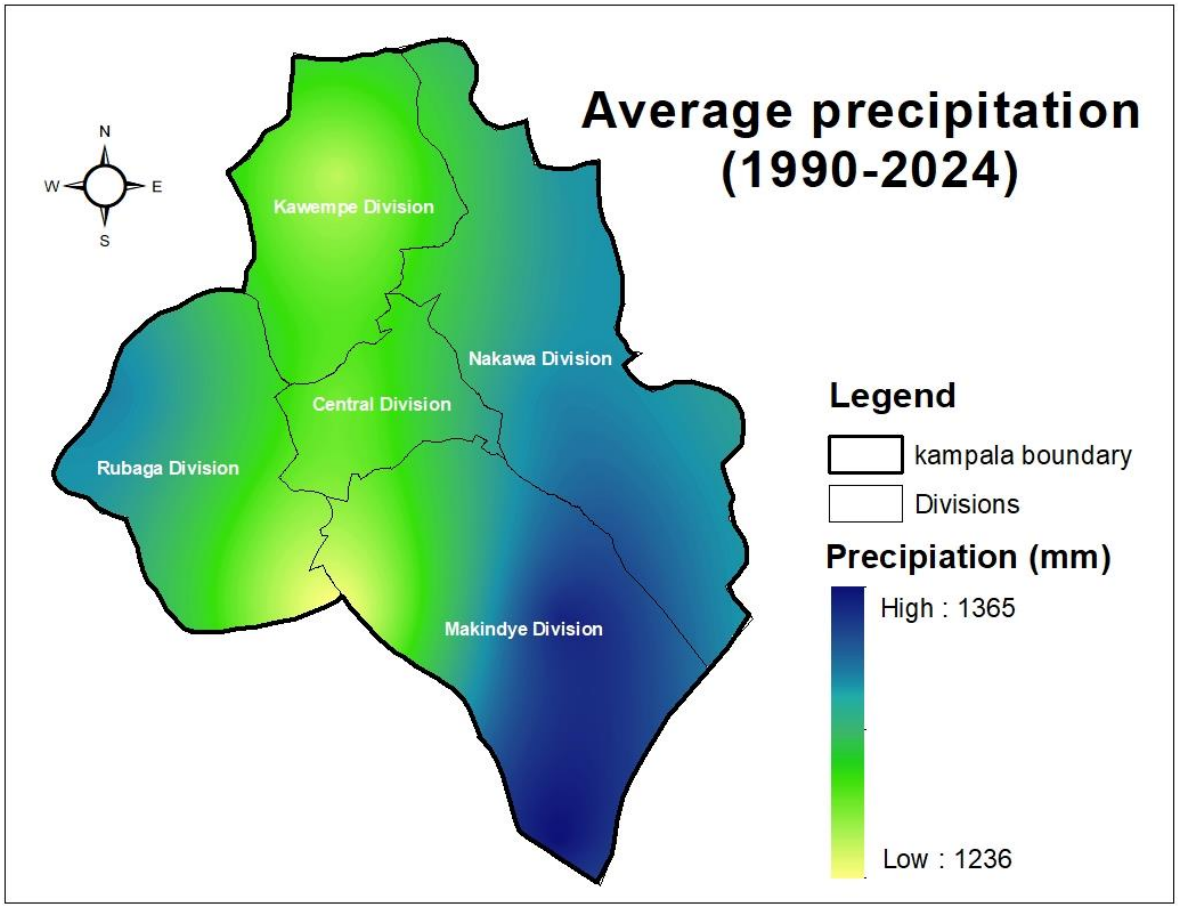


Figure 6. Average precipitation for Kampala City for the period 1990-2024

4.1.3 Historical Extreme Weather Events

Historical records indicate a pattern of increasing extreme weather events affecting Kampala in recent decades. Flooding is one of the most frequent and destructive extreme weather events in the city, particularly in settlements located in flood plains and reclaimed wetlands (UN-Habitat, 2009). These flood events have become more common and severe, resulting in loss of lives and property damage, especially in areas lacking adequate drainage systems (UN-Habitat, 2009).

Disease outbreaks frequently follow extreme weather events in Kampala. Cholera outbreaks were recorded in 1997 and recurred in 1999, 2004, 2006, and 2008, coinciding with increased flooding in the city (UN-Habitat, 2009). Similarly, heavy rains have been associated with malaria upsurges, while flooding often leads to diarrheal diseases and drought conditions predispose the population to meningitis epidemics and other diseases caused by inadequate water for sanitation (UN-Habitat, 2009).

The increasing frequency and intensity of these extreme weather events reflect broader climate change patterns and are exacerbated by Kampala's urban development challenges, including poor city planning, inadequate drainage infrastructure, and settlements in vulnerable areas.

4.2 Future Climate Projections

4.2.1 Climate Scenarios and Modeling Results

Climate projections for Kampala indicate a continuation and intensification of observed warming trends. Temperature increases of between 1.5°C and 3°C are projected by the end of the century, according to the Kampala Climate Change Action strategy developed by the Kampala Capital City Authority (KCCA) (KCCA, 2020). These projections are based on current climate trends and modeling scenarios that account for various greenhouse gas emission pathways.

The situation will be further exacerbated by the urban heat island effect as Kampala's built-up area continues to expand rapidly. Heat mapping conducted as part of the Kampala Climate Change Action planning shows significant temperature differentials across the city that are expected to intensify by 2050 if no intervention measures are implemented. These projections highlight the urgent need for climate-responsive urban planning and development strategies.

In terms of greenhouse gas emissions, projections indicate a concerning upward trajectory. In a business-as-usual scenario, emissions at the Greater Kampala Metropolitan Area (GKMA) level are projected to increase from 6.9 million tons in 2014 to 9.1 million tons CO2 equivalent in 2020, and further to 14.6 million tons by 2030. This represents a 55% increase in overall emissions from 2020 to 2030, primarily driven by the transport, household, freight, waste, tertiary, and industrial sectors.

Projected Precipitation Under SSP1-2.6 (Low Emissions Scenario)

Under the low-emissions pathway (SSP1-2.6), the HadGEM3-GC31-LL model projects a gradual increase in precipitation across Kampala between 2021 and 2100, ranging from approximately 1231 mm to 1465 mm (Figure 7). The most noticeable increases are concentrated in divisions like Makindye, Nakawa, and Central, where natural drainage systems are already under pressure. This incremental wetting trend is consistent with past analyses that suggest wetter future climates for East African urban zones under stabilized global warming conditions (Otieno & Anyah, 2013). Although the increase is moderate, flood-prone divisions may still experience intensified runoff and seasonal flooding, particularly in wetlands and low-lying settlements—a trend also noted in Kampala-specific studies by Molina et al. (2015), which linked spatial urban patterns to increased hydrological risk (Molina et al., 2015).

Projected Precipitation Under SSP2-4.5 (Intermediate Emissions Scenario)

In contrast, the intermediate emissions pathway (SSP2-4.5) shows more pronounced increases in rainfall across Kampala, with projected precipitation rising from 1317 mm to 1506 mm by mid-century and stabilizing around 1475 mm toward the century's end (Figure 7). The sharpest increases are observed in Makindye, Lubaga, and Kawempe, areas already known for urban sprawl and wetland encroachment. These trends reinforce findings from Umer et al. (2019), who used coupled hydrological-climate modeling to show that flood hazards in Kampala intensify under scenarios of unregulated urban growth and rising rainfall patterns (Umer et al., 2019). This highlights the importance of scaling up stormwater retention systems, wetland protection, and climate-resilient land use planning, particularly in vulnerable informal settlements where infrastructure is most fragile (Mukwaya et al., 2012).

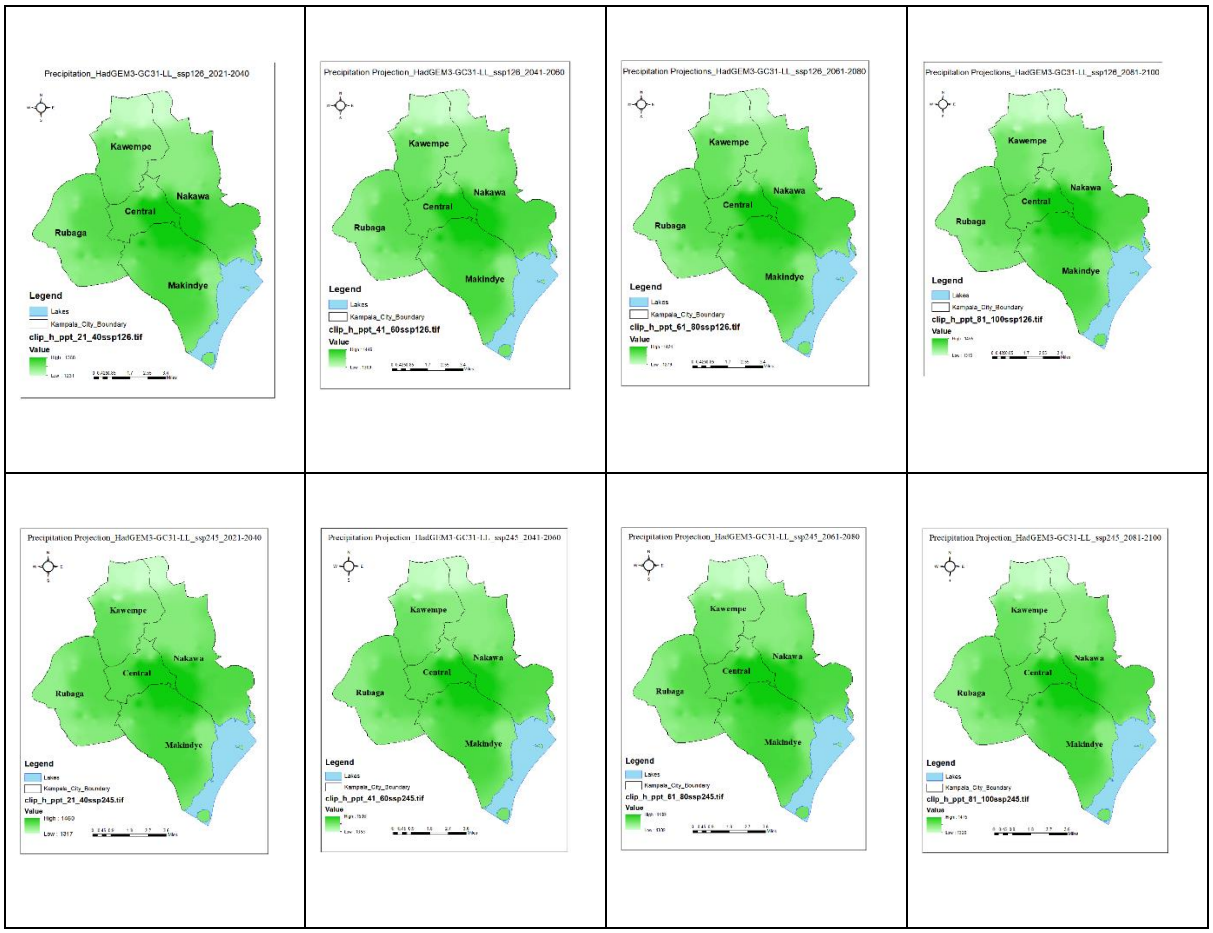


Figure 7. Projected precipitation in Kampala City

SSP1-2.6 (Low Emissions Scenario) – Maximum Temperature Projections

Under the SSP1-2.6 scenario, maximum temperatures across Kampala divisions are projected to steadily rise from approximately 27.7°C (2021–2040) to around 29.8°C by the end of the century. Notably, divisions such as Central and Nakawa show higher warming gradients in successive decades, with heat hotspots becoming more distinct in the inner urban core, while Makindye's lakeside zones remain relatively moderated due to Lake Victoria's influence. This gradual increase aligns with regional assessments that show that even under strong mitigation, tropical urban centers will continue to

experience thermal stress due to population density and urban heat island effects (Niang et al., 2014, IPCC AR5). Earlier studies by Lwasa (2010) also confirmed Kampala's vulnerability to rising urban temperatures, particularly in informal settlements with low albedo surfaces and limited green cover.

SSP2-4.5 (Intermediate Emissions Scenario) – Maximum Temperature Projections

The SSP2-4.5 scenario presents a more intense warming trajectory for Kampala, with maximum temperatures projected to increase from 27.4°C in the 2020s to over 30.8°C by 2100. This trend shows a spatial expansion of heat-intensified zones, especially in Central, Nakawa, and Kawempe divisions, where red-gradient zones dominate the maps. The rise in maximum temperatures exacerbates heat stress risks, especially in areas with high population density, limited vegetation, and poor housing quality. These projections are consistent with broader findings by the World Bank (2020), which notes that cities like Kampala are likely to face increased heatwave days and elevated public health burdens under moderate emissions pathways. The Uganda Meteorological Authority and UNEP have similarly emphasized the need to integrate passive cooling, urban forestry, and heat-resilient infrastructure into city planning to mitigate such risks (UNMA, 2021; UNEP, 2022).

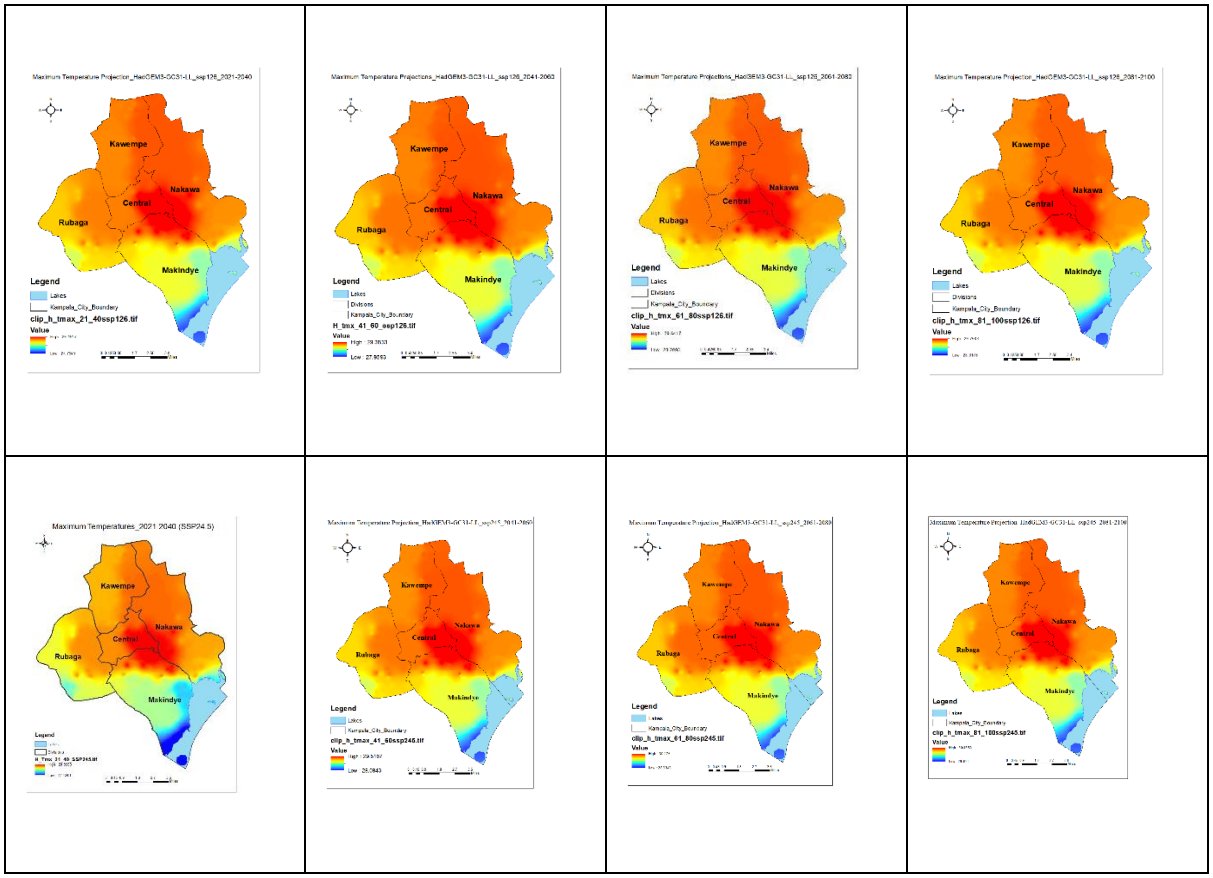


Figure 8. Projected minimum temperatures.

SSP1-2.6 (Low Emissions Scenario) – Projected Minimum Temperature Trends

Under the low-emissions pathway (SSP1-2.6), Kampala is expected to experience a gradual but steady rise in minimum temperatures, increasing from around 17.6°C to 19.5°C by the end of the century. The warming pattern is most notable in the northern and central divisions of Kawempe, Nakawa, and Central, which show consistently higher minimum temperatures across all projected periods (2021–2100). In contrast, Makindye, especially its southern lakeside zones, remains relatively cooler due to its proximity to Lake Victoria, which exerts a moderating influence. These trends reflect broader East African regional projections showing incremental warming under strong mitigation scenarios, with minimum temperatures rising more slowly but steadily (Otieno & Anyah, 2013). While less severe, even minor increases in nighttime temperatures can impact urban heat stress, energy demand, and health outcomes, especially in informal settlements lacking ventilation and cooling infrastructure [(IPCC, 2022)].

SSP2-4.5 (Intermediate Emissions Scenario) – Projected Minimum Temperature Trends

The SSP2-4.5 scenario projects a sharper increase in minimum temperatures, with values rising from approximately 17.4°C to over 20.5°C by 2100. Northern divisions, particularly Kawempe and parts of Nakawa, emerge as heat concentration zones, showing consistently higher values throughout the projection period. Makindye, although relatively cooler, also shows notable warming, especially near urbanized inland areas. These findings are consistent with earlier Kampala-based simulations by Lwasa et al. (2010), which warned that intermediate emissions could push urban minimum temperatures closer to thresholds that increase heat-related illnesses, particularly for vulnerable populations in high-density neighborhoods (Lwasa, 2010). Prolonged elevated nighttime temperatures may also degrade sleep quality and productivity, as emphasized in global urban health literature (Watts et al., 2021). These trends underscore the urgent need to integrate urban greening, passive cooling, and heat-sensitive urban design into Kampala's adaptation planning.

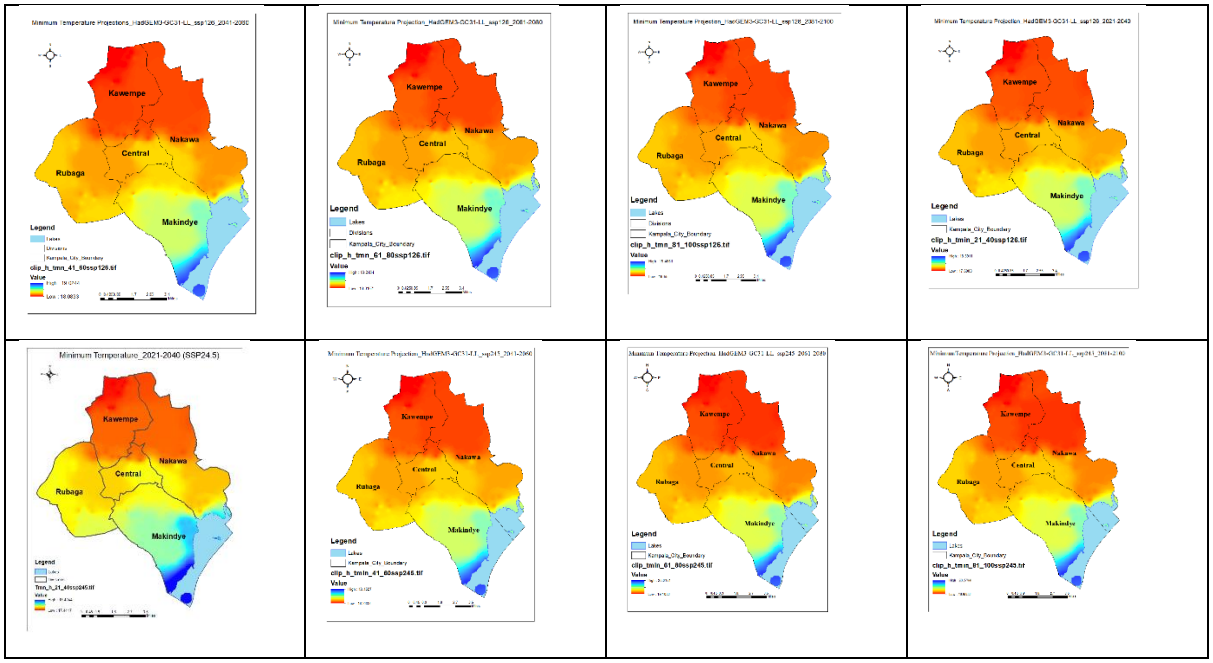


Figure 9. Projected maximum temperatures

Projected mean temperatures for Kampala City

Based on the projected maximum (Tmax) and minimum (Tmin) temperatures across Kampala's divisions under both SSP1-2.6 and SSP2-4.5 scenarios, the mean annual temperatures are expected to rise significantly throughout the 21st century. By averaging Tmax and Tmin values, the mean temperature in Kampala is projected to increase from approximately 22.5°C in the 2020s to 24.1–25.0°C by 2100, depending on the emissions pathway. Under the low-emission scenario (SSP1-2.6), the increase ranges from +1.0°C to +1.6°C, while under the intermediate pathway (SSP2-4.5), the mean temperature may rise by +1.5°C to +2.5°C. Inner urban divisions such as Nakawa, Central, and Kawempe consistently show the highest mean temperature increases due to combined effects of urban heat islands and population density, whereas Makindye's lakeside areas experience relatively moderated warming. These patterns are consistent with regional climate models for East Africa, which project rising baseline temperatures that can intensify heat stress, alter disease ecology, and increase cooling energy demands in growing cities like Kampala (Niang et al., 2014).

4.2.2 Projected Climate Hazards and Extremes

Future climate scenarios project an increase in the frequency and intensity of climate hazards affecting Kampala. **Flooding** remains the most significant projected climate hazard, with modeling indicating extensive flood-prone areas across all five divisions of the city. The Kampala Climate Change Action strategy includes 1000-year modeled flood extent maps that highlight vulnerable areas throughout Kawempe, Nakawa, Central, Lubaga, and Makindye divisions (KCCA, 2020).

Heat stress is projected to become an increasingly significant hazard for Kampala residents. Recent research indicates a general increase in the number of heatwave events in Kampala, with future projections showing the city will experience an increase in warm days and nights[4]. Urban heat island estimation maps for 2015 versus 2050 demonstrate substantial warming across the city if current development patterns continue[5][7].

Water scarcity presents another projected climate hazard for Kampala. The city's heavy reliance on Lake Victoria for water supply and on hydropower for electricity makes it vulnerable to drought conditions[6][5]. Climate projections suggest that changes in temperature and precipitation patterns will have significant implications for water resources, food security, natural resource management, human health, settlements, and infrastructure[9].

4.3.3 Climatic Hazards Impacting Kampala

Climate change impacts are increasingly evident in Kampala, manifesting through rising temperatures, erratic rainfall patterns, and more frequent and intense extreme weather events. These hazards severely affect urban infrastructure, public health, ecosystems, and economic livelihoods. Across Kampala's five administrative divisions, Central, Kawempe, Lubaga, Makindye, and Nakawa, communities experience these hazards differently, with informal settlements, low-lying areas, and densely populated neighborhoods being disproportionately affected.

1. Flooding

Flooding is consistently reported as the most severe climate hazard affecting Kampala, especially during the MAM and SON rainy seasons. Informal settlements such as Bwaise, Katwe, Kisenyi, Kifumbira, and Kinawataka are frequently inundated, primarily due to clogged and undersized drainage systems, wetland degradation, and poor solid waste management. In Kawempe Division, for example, the Nakamiro Drainage Channel frequently overflows, leading to displacement, damage to homes, markets, roads, and public health facilities. Stakeholders attributed this to unplanned urban development, with 45% of residential buildings in flood-prone areas, and to human behaviors such as dumping waste into drainage systems. Flooding has cascading effects including disruption of transport networks (e.g., Entebbe Road), loss of business assets, and increased disease incidence.

2. Heat Stress

Kampala has reported experiencing temperatures exceeding 31°C from the known average of 27°C[4]. Temperature extremes have become more frequent, with reported spikes above 31°C in densely populated urban zones, compared to historical averages of 27°C. Informal settlements in Kawempe and the Central Business District experience more intense heat stress due to lack of vegetation, high population density, and poor housing design. The urban heat island effect is particularly pronounced in areas like Nakivubo, Kalerwe, and Kisenyi, where buildings are poorly ventilated and lack cooling infrastructure. Reported health impacts include dehydration, respiratory complications, fatigue, and increased cases of heat strokes, especially among children, the elderly, and those with pre-existing health conditions.

3. Water Scarcity

Decreased water availability is a growing hazard, especially for slum dwellers in Kampala who lack access to running water and rely primarily on natural springs[9][6]. During flooding events, these water sources often become contaminated due to poor sanitary conditions, creating additional public health risks[9]. The city's vulnerability to drought is significant, as Kampala has not adequately identified and developed alternative water supply sources beyond Lake Victoria[6].

Water insecurity, particularly during the dry seasons, affects thousands of residents in informal settlements such as Katanga, Kifumbira, and Kimombasa. Many rely on contaminated springs or shared public taps, which often run dry or are rendered unusable by flooding events. Reports from Kawempe during the consultations for the this CRVA, indicated that piped water in some areas had been unavailable for up to four weeks. This scarcity forces communities to rely on unsafe water sources, increasing vulnerability to diseases like cholera and typhoid. Moreover, the city lacks diversified and climate-resilient water supply options beyond Lake Victoria, heightening exposure to drought.

4. Disease Outbreaks

Climate-sensitive infectious diseases, particularly water-related and air-borne illnesses, are prevalent in many neighborhoods of Kampala[9]. Historical data shows that extreme weather events are frequently followed by disease outbreaks, with heavy rains leading to malaria upsurges, flooding followed by diarrheal diseases, and drought conditions predisposing the population to meningitis epidemics and other diseases related to inadequate water for sanitation[9].

Outbreaks of waterborne and vector-borne diseases are on the rise in Kampala, with hotspots such as Bwaise III, Katanga, and Kiganda reporting increased cases of malaria, cholera, typhoid, and more recently, Mpox. These outbreaks often follow extreme rainfall events or droughts, which compromise water and sanitation infrastructure (UN-Habitat, 2021; KCCA, 2020). Stakeholders noted that stagnant water in silted channels provides breeding grounds for mosquitoes, and the use of “flying toilets” in dense settlements exacerbates fecal contamination (WHO, 2022). In addition to infectious disease burdens, rising **mental health challenges** have been observed, driven by chronic heat exposure, repeated displacement, and loss of livelihoods (Opiyo et al., 2020; Uganda Red Cross Society, 2023).

5. Ecosystem Degradation

The ecosystem of Kampala is under significant threat from climate change and urbanization pressures. Wetland destruction, biodiversity loss, and soil erosion from vegetation clearing on hill slopes indicate ecosystem decline[9]. In 1993, only 13% of wetland area was severely degraded (with 87% intact), but by 1999, this had increased to 46%, and by 2002, only 3.3% of the total wetland area remained intact[9]. This degradation significantly reduces the city's natural flood attenuation capacity and exacerbates climate vulnerabilities. Thus, urban expansion and weak enforcement of environmental regulations have led to massive degradation of Kampala’s wetlands and green spaces. Encroachment by developments such as shopping malls and residential estates has reduced the city’s natural flood buffers and biodiversity. Soil erosion from deforested hill slopes, especially in Makindye and Nakawa, worsens

runoff and sedimentation of drainage channels. Loss of ecosystem services undermines the city's resilience to climate hazards.

6. Energy Insecurity

Climate variability has impacted energy availability, particularly hydropower reliability due to fluctuating water levels in Lake Victoria. This has increased reliance on diesel generators, exacerbating urban air pollution and GHG emissions. Up to 10% of commercial entities, and 5% of industry in Kampala rely on wood for energy, while charcoal production meets 10% of the city's energy needs, creating additional climate and environmental challenges[9]. Additionally, over 75% of households still depend on biomass fuels such as charcoal and firewood, contributing to deforestation and indoor air pollution. Initiatives like clean cooking campaigns and solar lighting in markets (e.g., Owino) are underway, but affordability and limited distribution slow their uptake.

These climate hazards do not impact Kampala's five divisions equally. Informal settlements and low-income areas across all divisions face disproportionate vulnerabilities due to their location in flood-prone areas, limited access to quality infrastructure, and fewer resources for adaptation[6][4]. As Kampala's population is projected to grow from the current approximately 4 million to 7 million people by 2035, these climate hazards are expected to impact an increasing number of residents, with potentially severe consequences for the city's functioning and development[10].

CHAPTER FIVE

5. SOCIO-ECONOMIC PROFILE

5.1 Demographic Characteristics

1. Population Distribution and Growth Trends in Kampala

Kampala Capital City had a de facto population of 1,797,722 people in 2024, comprising 1,004,884 males and 792,838 females (UBOS 2024 National Population and Housing Census Final Report). It registered the highest daytime population among Ugandan cities at 2,503,174 persons, reflecting its centrality to commerce, employment, and service delivery.

The city also showed signs of population concentration, with an average household size of 2.9, notably smaller than the national average of 4.2. This can be attributed to increased urbanization, migration, and the prevalence of smaller household units due to economic constraints and housing shortages. Kampala's population dynamics reflect both rapid urban growth and infrastructural strain.

Demographic Characteristics and Vulnerable Groups

Kampala has a relatively young and working-age dominated population, with:

- 673,957 children (0–17 years),
- 1,123,765 adults (18+ years),
- 433,864 youth (15–24 years),
- 587,136 young adults (18–30 years),
- 1,235,262 working-age individuals (15–64 years),
- and 57,629 older persons (60+ years).

This structure indicates a high dependency burden from children, but also a large potential workforce. However, urban poverty and informal employment limit the productivity and resilience of this demographic.

The vulnerable groups in Kampala include:

- Older persons, constituting over 57,000, many of whom may face social exclusion, chronic illness, and inadequate income support;
- Children and youth, susceptible to educational dropouts, child labor, and exploitation;
- Slum dwellers and low-income households, who often lack access to reliable housing, water, and sanitation;

- People with disabilities, part of the 3.4% national disability prevalence rate, facing barriers to inclusion;
- And female-headed households, especially in informal settlements, which are disproportionately exposed to economic vulnerability and climate-related risks.

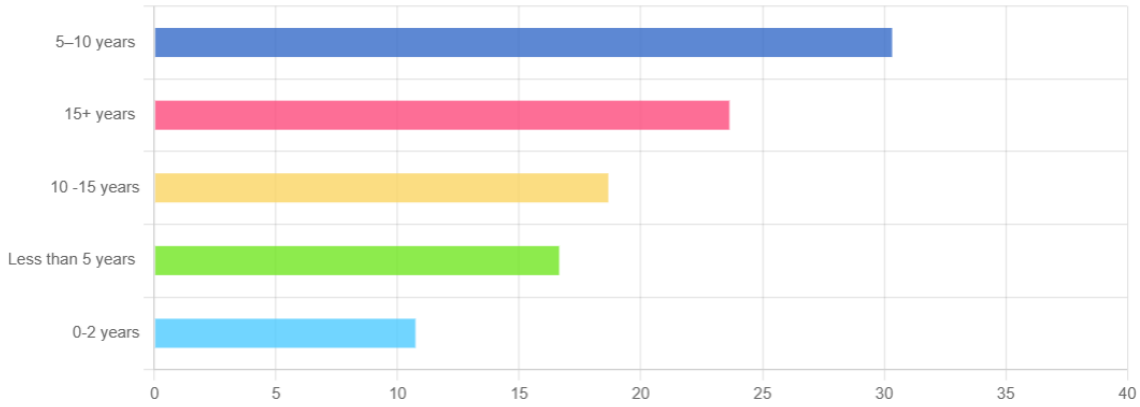
This demographic and spatial distribution underscores the urgent need for integrated urban planning and targeted service delivery to support Kampala's growing and diverse population.

Distribution of Survey Respondents Across Divisions

The survey covered a relatively balanced representation across the five administrative divisions of Kampala, with the largest number of respondents from Kawempe Division (136) and the lowest from Central Division (105). Lubaga (133), Nakawa (132), and Makindye (130) followed closely. This balanced geographical coverage provides a strong foundation for analyzing intra-urban disparities and spatial vulnerabilities, particularly in understanding how demographics relate to exposure to climate risks such as flooding and heat stress across different parts of the city.

Residential Tenure and Migration Patterns

The population's residential stability was evident, with a majority of respondents reporting that they had lived in their current areas for over 10 years (Figure 7), indicating the presence of well-established communities. However, the data also highlight a notable inflow of new residents (0–2 years)—a clear marker of recent urban migration. These short-term residents are likely settling in informal or peri-urban areas due to lower housing costs and proximity to emerging economic opportunities. This trend reflects Kampala's broader urban expansion challenges and the increasing pressure on infrastructure and services in high-density, low-income areas, which are typically more vulnerable to climate hazards.



Value	Frequency	Percentage
5–10 years	195	30.33
15+ years	152	23.64
10 -15 years	120	18.66
Less than 5 years	107	16.64
0-2 years	69	10.73

Figure 10. Percentage respondents who have lived in Kampala City for particular periods

Age, Gender, and Household Composition

The survey population is predominantly within the 25–54-year age range (Figure xxx), corresponding to the economically active segment of the population. This reflects a city characterized by a young and vibrant labor force. Gender distribution is relatively balanced (Figure 8), enabling inclusive gender-based analyses of risk, adaptive capacity, and access to services. However, challenges remain in terms of social protection and access to income security, particularly among households with dependents (children and older persons), which were not detailed in full but are crucial for vulnerability assessments.

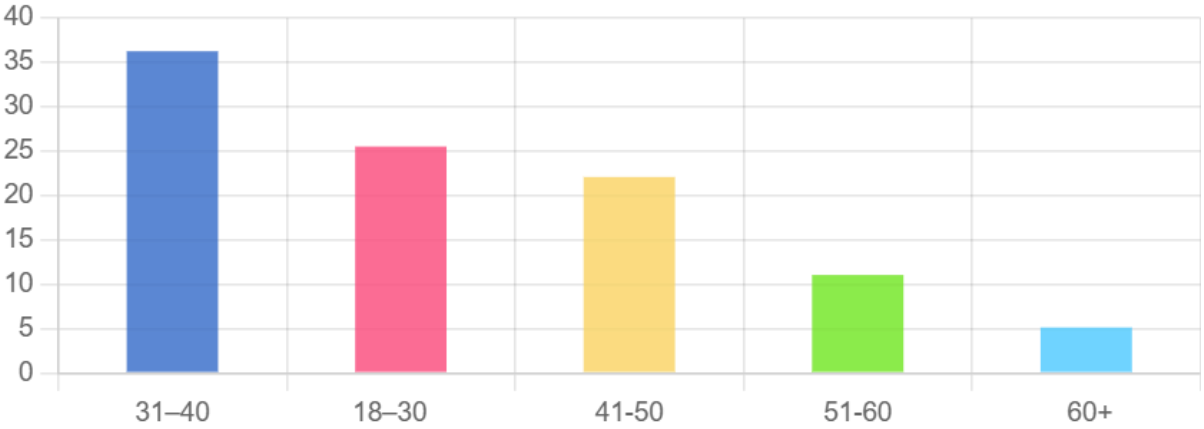


Figure 11. Percentage of Age groups of respondents in Kampala

Housing Conditions and Ownership

Most respondents reside in semi-permanent or informal housing structures (Figure 10), often located in environmentally sensitive zones. These dwellings are typically constructed using substandard materials, lack climate resilience features, and are highly susceptible to flooding and heat-related impacts. Moreover, low home ownership rates—with the majority being tenants (Figure xxx)—suggest a reduced willingness or ability to invest in long-term resilience measures such as home elevation, drainage improvements, or energy-efficient modifications. This is particularly problematic in disaster-prone areas where informal tenure also limits access to post-disaster assistance.

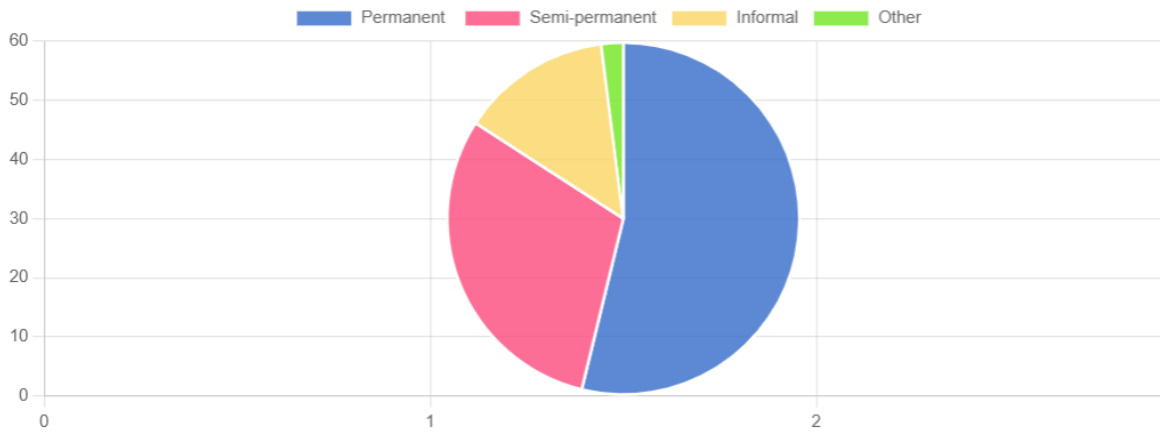


Figure 12. Percentage of housing condition for respondents in Kampala City

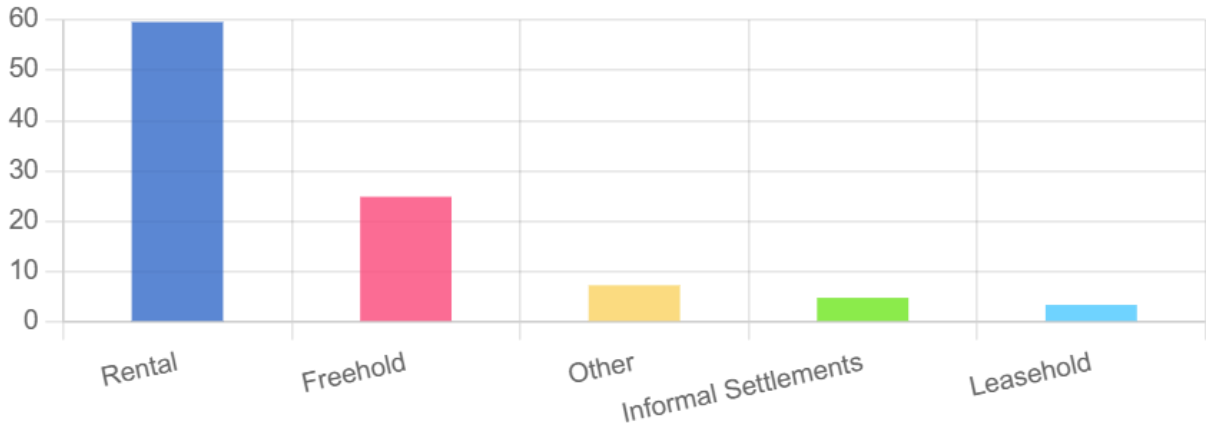


Figure 13. Housing ownership percentage

Educational Attainment and Implications

A large proportion of respondents have attained only primary or lower secondary education (Figure 11), which has implications for public awareness, access to early warning systems, and participation in adaptation initiatives. Limited educational attainment restricts individuals' ability to engage with digital platforms and technical programs, thereby lowering the reach and effectiveness of climate action campaigns and urban resilience programs.

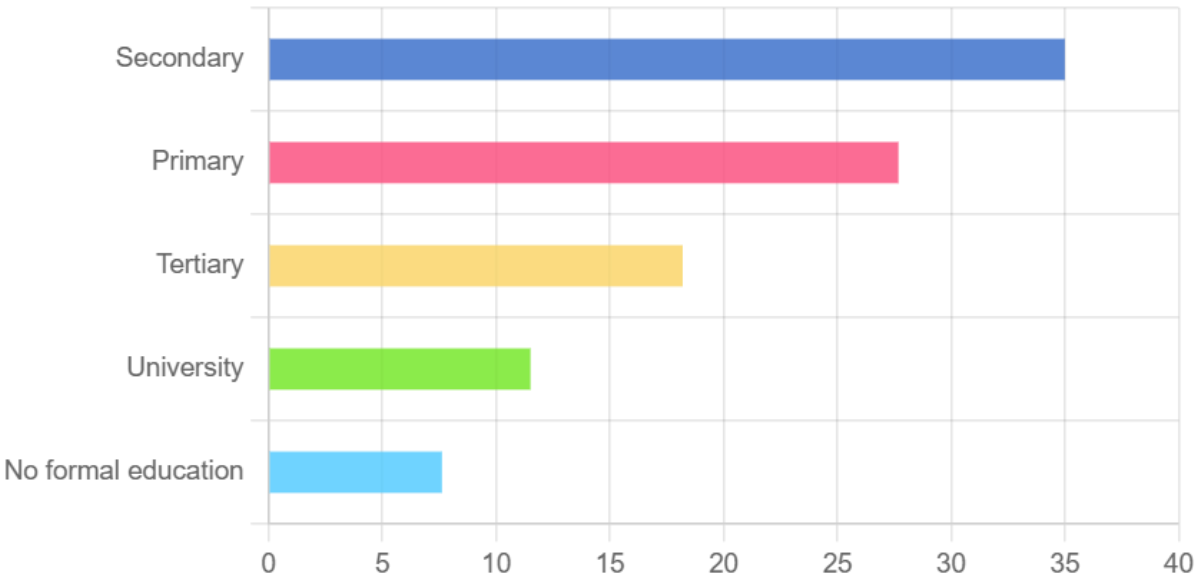


Figure 14. Percentage of respondents attaining a highest level

Vulnerable Groups – Disability Status

Between 12% and 15% of households surveyed reported having at least one member with a disability, including mobility, visual impairments, hearing, and mental health challenges (Table 1). These households often face heightened risks during climate-induced events due to limited mobility, inadequate infrastructure (e.g., inaccessible shelters), and a lack of targeted support mechanisms. The intersection of disability and poverty exacerbates vulnerability, underscoring the need for inclusive resilience planning. Households with disabled members face additional challenges in accessing services and relocating during extreme events.

Table 1. Disability status for people in Kampala City

Value	Frequency	Percentage
Physical disability (e.g., mobility issues)	39	6.07
Visual impairment	29	4.51
Hearing impairment	13	2.02
Mental health condition	9	1.4
Intellectual or developmental disability	4	0.62
Other	3	0.47
Prefer not to say	2	0.31

5.2 Economic Activities and Livelihoods

The livelihoods of residents across Kampala's five divisions are predominantly centered in climate-sensitive sectors such as informal businesses, casual labor, and small-scale agriculture (Table 2). These sectors are especially prevalent in peri-urban areas and informal settlements, where formal employment opportunities are scarce. In the Central Division, micro-businesses dominate, while the outskirts see more involvement in subsistence and urban farming. These occupations are highly vulnerable to weather shocks like floods, droughts, and extreme heat, which disrupt supply chains and daily earnings, exposing households to recurring income instability.

Infrastructure inadequacies exacerbate these vulnerabilities. For instance, a study revealed that 70% of Ugandans expressed concern over inadequate consultations in public infrastructure projects, indicating a disconnect between infrastructure development and community needs. Additionally, the Kampala Institutional and Infrastructure Development Project Phase 2 (KIIDP2) audit highlighted challenges such as non-implementation of strategic plans and underperformance of revenue, which hinder effective infrastructure development (The World Bank, 2020). These findings underscore the need for climate adaptation strategies that not only protect livelihoods but also strengthen social safety nets and target support to at-risk demographic groups. Enhancing infrastructure planning and execution, coupled with inclusive community engagement, is vital to building resilience against climate-induced disruptions.

In addition to the climate exposure, the economic insecurity of these groups is compounded by the lack of protective infrastructure and financial safety nets. Informal enterprises—often operating in unregulated, hazard-prone environments—face repeated disruptions without access to business insurance, climate-proof premises, or post-disaster relief. Flooding events, for instance, destroy merchandise and interrupt foot traffic, while excessive heat reduces working hours for street vendors and other outdoor workers. The absence of social protection mechanisms exacerbates their vulnerability, pushing many into deeper poverty after each climate shock.

Table 2. Type of livelihood for respondents in Kampala City

Value	Frequency	Percentage
Business	373	58.01
Casual labour	101	15.71
Formal Employment	56	8.71
Informal Employment	44	6.84
Unemployed	37	5.75
Other	23	3.58
Agriculture	6	0.93

Educational attainment among respondents further limits livelihood diversification and access to adaptive technologies. A large portion of the population has attained only primary or lower secondary education, restricting their ability to engage in formal training or transition to more resilient income-generating activities. This educational constraint narrows the opportunity space, forcing individuals to depend heavily on environmentally sensitive means of earning a living. To enhance resilience, city-wide climate adaptation strategies must prioritize livelihood diversification, targeted skills training, and support for climate-resilient enterprises.

5.3 Infrastructure and Cri t cal Services

Field data from across Kampala's divisions reveals the widespread strain that climate change places on urban infrastructure and critical services. One of the most affected sectors is transport, especially during periods of heavy rainfall. Inadequate drainage systems and poorly maintained roads contribute to extensive flooding that severely limits mobility. Informal settlements are the most affected, with roads rendered impassable during floods, disrupting access to vital services such as markets, healthcare, and schools. While specific transport data was limited, the frequency of reported challenges points to a systemic problem that worsens with each extreme weather event.

Water and sanitation systems are also under immense pressure, particularly in high-density, unplanned settlements. Respondents consistently linked flooding with overflowing latrines and the contamination of drinking water sources. These conditions have directly contributed to the rise in waterborne diseases, as noted by 86 respondents, who reported illness and health disruptions following sanitation failures. The absence of formal sewerage systems exacerbates the risks, especially in areas like Bwaise and Kinawataka, where seasonal flooding combines with unregulated waste disposal to create chronic public health emergencies.

Energy access remains a pressing vulnerability, with frequent power outages and limited adoption of renewable alternatives such as solar energy. Less than 20% of respondents found solar power to be a reliable or effective option, citing high initial costs and low efficiency during cloudy or rainy periods. Power cuts—reported by 15% of respondents—negatively affect household comfort, disrupt business activities, and compromise emergency communication and access to information. Health and education services are also constrained by poor infrastructure, with flood events making health facilities inaccessible and school closures likely in poorly built areas. These findings point to an urgent need for integrated investments in resilient transport, decentralized water systems, sustainable energy, and disaster-proof public facilities.

5.4 Social Vulnerability Factors

Kampala's residents face a complex web of social vulnerabilities that heighten their susceptibility to climate-related shocks. The survey data reveals that poverty and limited access to financial resources are the most frequently cited barriers to adaptation. About 40.1% of respondents reported facing simultaneous challenges including poverty, lack of infrastructure, and inadequate knowledge, while an additional 16.3% cited financial constraints paired with limited awareness. These figures illustrate how deeply embedded structural inequalities leave households ill-equipped to respond to or recover from

climate hazards. Addressing these gaps requires not only financial assistance but also infrastructure development and widespread knowledge dissemination.

Gender dynamics, while not overtly skewed in the sample (with 50.6% male and 49.4% female respondents), still influence vulnerability levels. Female-headed households—though not explicitly isolated in the data—are known from broader literature to face systemic disadvantages, including limited control over resources, reduced access to credit, and lower involvement in decision-making processes. Consequently, gender-responsive planning is essential in building equitable climate resilience, particularly in sectors like housing, agriculture, and small business, where women play prominent but under-supported roles.

Housing quality also emerged as a powerful indicator of vulnerability. While 53.7% of respondents live in permanent structures, 30.3% live in semi-permanent housing and 13.8% in informal dwellings, often located in flood-prone areas with no drainage or basic services. These residents are disproportionately affected by climate events and often lack legal tenure or relocation options. Additionally, 13.4% of households reported having at least one member with a disability, with a further 12.2% unwilling to disclose, suggesting underreporting due to stigma. Persons with disabilities face unique challenges during evacuations and in accessing climate information. Lastly, education levels correlate with vulnerability, as those with no or only primary education may struggle to interpret weather warnings or engage in adaptation initiatives. This underscores the need for inclusive communication strategies and capacity building targeting low-literacy populations. Together, these factors form a socially layered landscape of vulnerability that must be addressed through targeted, equity-focused interventions.

CHAPTER SIX

6. RISK AND VULNERABILITY ASSESSMENT

6.1 Hazard Profiles

Floods

Flooding is the most prevalent and recurrent natural hazard affecting Kampala City. This is primarily due to the city's topography, which includes numerous valleys and low-lying zones, combined with widespread encroachment on wetlands and insufficient stormwater drainage infrastructure. Flash floods occur frequently during the two rainy seasons, often overwhelming drainage systems and causing extensive water accumulation in poorly planned neighborhoods. All five administrative divisions—Central, Makindye, Kawempe, Nakawa, and Lubaga—are affected, though the impacts are most severe in informal settlements such as Bwaise, Katwe, Namuwongo, Kalerwe, and Kibuli. These areas are densely populated and typically lack proper infrastructure, making them particularly susceptible to flood-related destruction.

The impacts of flooding in Kampala are wide-ranging and deeply disruptive. Floods routinely damage critical infrastructure such as roads, markets, and drainage systems, displacing residents—especially in low-lying informal settlements—and increasing outbreaks of waterborne diseases like cholera and typhoid. Economic activities suffer significantly due to road inaccessibility, particularly in the central business district and along key transport corridors. According to KCCA and UN-Habitat, over 10% of Kampala's population lives in flood-prone informal settlements with inadequate drainage, making them highly susceptible even to moderate rainfall events (UN-Habitat, 2021; KCCA, 2020). Despite repeated flood events, institutional preparedness remains limited. Existing drainage infrastructure covers only a fraction of the city and is often poorly maintained, while response systems lack adequate early warning mechanisms, inter-agency coordination, and contingency planning. Recent audits of projects like the Kampala Institutional and Infrastructure Development Project (KIIDP-II) reveal delays in implementation, weak enforcement of land use regulations, and underfunding of essential maintenance—all of which constrain the city's ability to respond proactively to infrastructure-related climate shocks. These institutional gaps highlight the urgency for integrated flood management systems, strengthened governance, and sustained investment in resilient urban infrastructure.

The flood map in Figure 12 illustrates locations in Kampala City that were reported by respondents to experience frequent flooding, with a concentration of flood points mapped against the city's topography and wetland systems. Flood-prone areas are primarily concentrated in low-altitude zones, especially around natural drainage paths and encroached wetlands. Divisions such as Makindye, Central, Nakawa, Kawempe, and Lubaga all show significant clusters of flood events, particularly in neighborhoods such as Namuwongo, Katwe, Bwaise, Kalerwe, and Kibuli. These areas are characterized by low-lying elevation (as indicated by the orange-to-light-yellow digital elevation gradient), poor drainage, and proximity to wetlands. The map further reveals the strong relationship between flood risk and both natural drainage basins and anthropogenic encroachment into wetlands, highlighting the urgent need for drainage infrastructure upgrades and enforcement of wetland protection in flood-prone urban zones.

The flood maps presented in Figures 12 and 13 consistently highlight areas in Kampala City that are most vulnerable to frequent flooding. Both maps reveal a strong spatial overlap, with flood-prone zones concentrated in low-altitude areas along major natural drainage paths and within or near wetlands. Divisions such as Makindye, Central, Kawempe, Nakawa, and Lubaga repeatedly emerge as flood hotspots. Notably, neighborhoods like Bwaise, Kalerwe, Katwe, Kibuli, and Namuwongo appear across both datasets as recurring flood-affected areas. These locations are typified by low-lying topography (as shown by the orange-to-yellow elevation gradients), informal settlement growth, and encroachment into ecologically sensitive wetlands. The second map from KCCA (Figure 13) further validates these findings by illustrating drainage channels and flood points that align precisely with the flooding zones identified through community-reported data in the first map. This concurrence reinforces the strong linkage between flood risk, inadequate drainage infrastructure, and unregulated land use. The maps collectively underscore the urgent need for comprehensive drainage system upgrades, enforcement of wetland protection policies, and spatial planning reforms to mitigate flood risks in Kampala's most vulnerable zones.

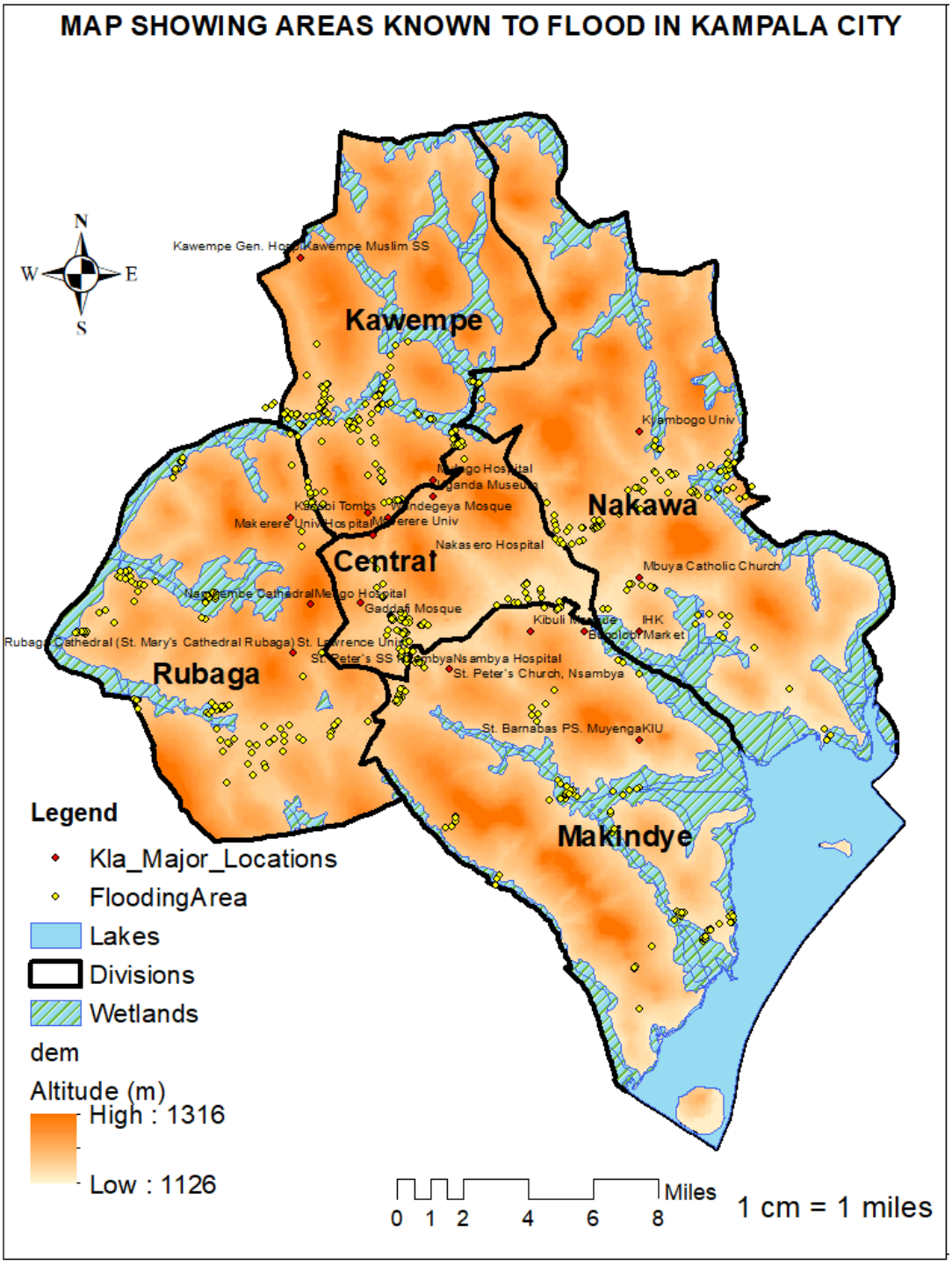


Figure 15. Map showing areas reported to be flooding by the respondents in Kampala City

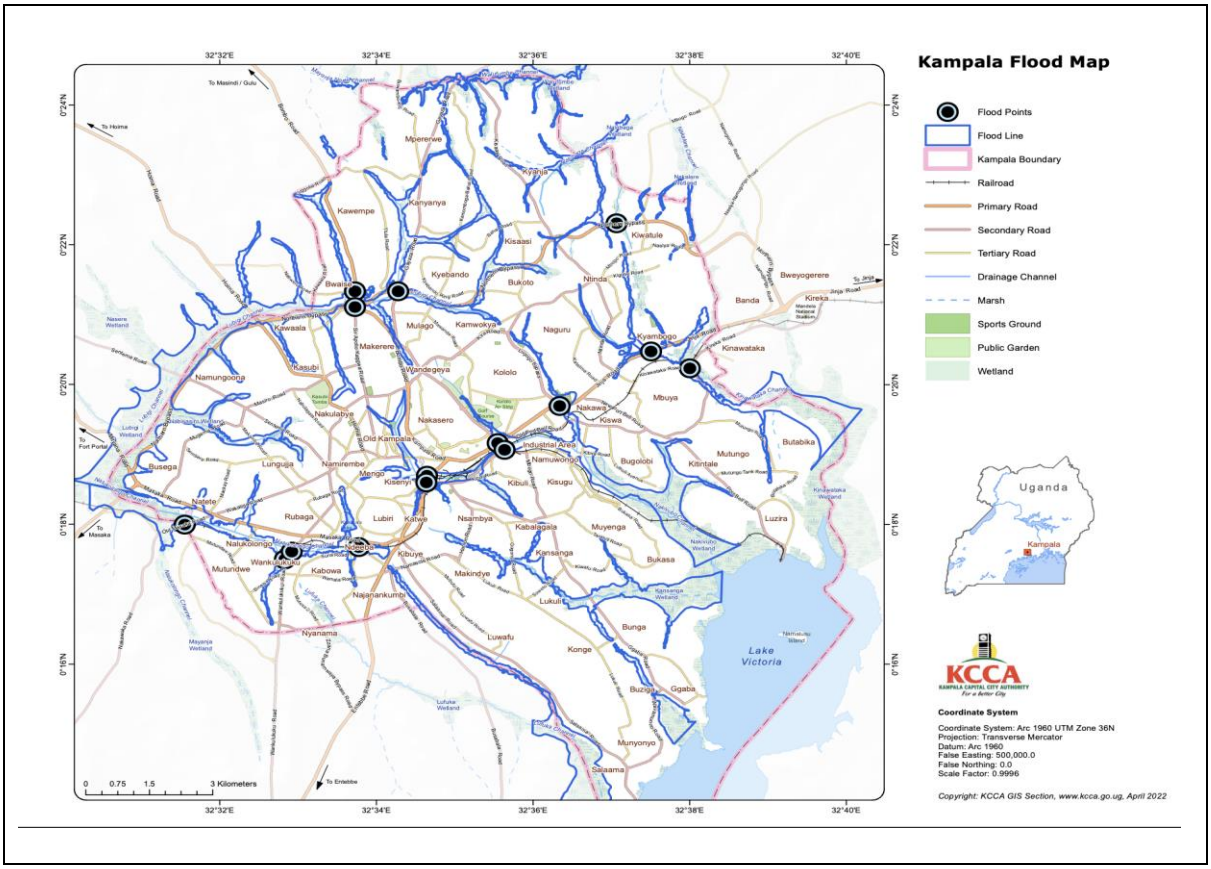


Figure 16. Kampala flood map. Source: KCCA GIS Section, 2022

Droughts

Drought, though less dramatic in appearance than flooding, poses a substantial risk to Kampala City, especially in the context of urban food production and water supply. It is particularly evident in divisions such as Nakawa, Kawempe, and Makindye, where urban agriculture and borehole-dependent communities are common. With increasing rainfall variability, periods of below-average precipitation have become more frequent, leading to both meteorological and hydrological droughts. These dry spells directly threaten the viability of urban gardens, peri-urban farms, and household water security, especially in underserved neighborhoods that rely on shallow wells or seasonal water sources.

The impacts of drought are wide-ranging. Reduced agricultural productivity affects both household nutrition and informal market supply chains. As piped water systems become strained or intermittent during dry periods, residents increasingly rely on alternative water sources, including jerrycan vendors, whose prices tend to spike. This places a disproportionate burden on low-income urban residents. The Uganda National Meteorological Authority (UNMA) highlights that dry spells—particularly during the

March–May and September–November rainy seasons—are becoming more common and erratic, further disrupting Kampala's food production systems and urban vegetation cover (UNMA, 2019; Nabulo et al., 2021).

Figure 14 shows the spatial distribution of drought-affected zones across Kampala's five administrative divisions: Kawempe, Central, Nakawa, Lubaga, and Makindye. Drought-affected areas are marked with black diamonds, and are notably dispersed across all divisions, though they appear more concentrated in elevated, inland, and densely settled neighborhoods, particularly in Kawempe, Makindye, and Nakawa. These locations are generally situated away from lakes, wetlands, and other natural water sources, which reduces their resilience during periods of water scarcity. The underlying digital elevation model (DEM) shows that many drought-prone areas lie in mid-to-high altitude zones (orange to darker shades), which likely experience lower water table recharge and increased runoff. The map highlights the growing challenge of urban drought in Kampala, particularly in informal settlements and borehole-dependent communities, and underscores the importance of integrating water harvesting, infrastructure improvements, and climate-resilient planning to mitigate the impacts of recurrent dry spells in these vulnerable zones.

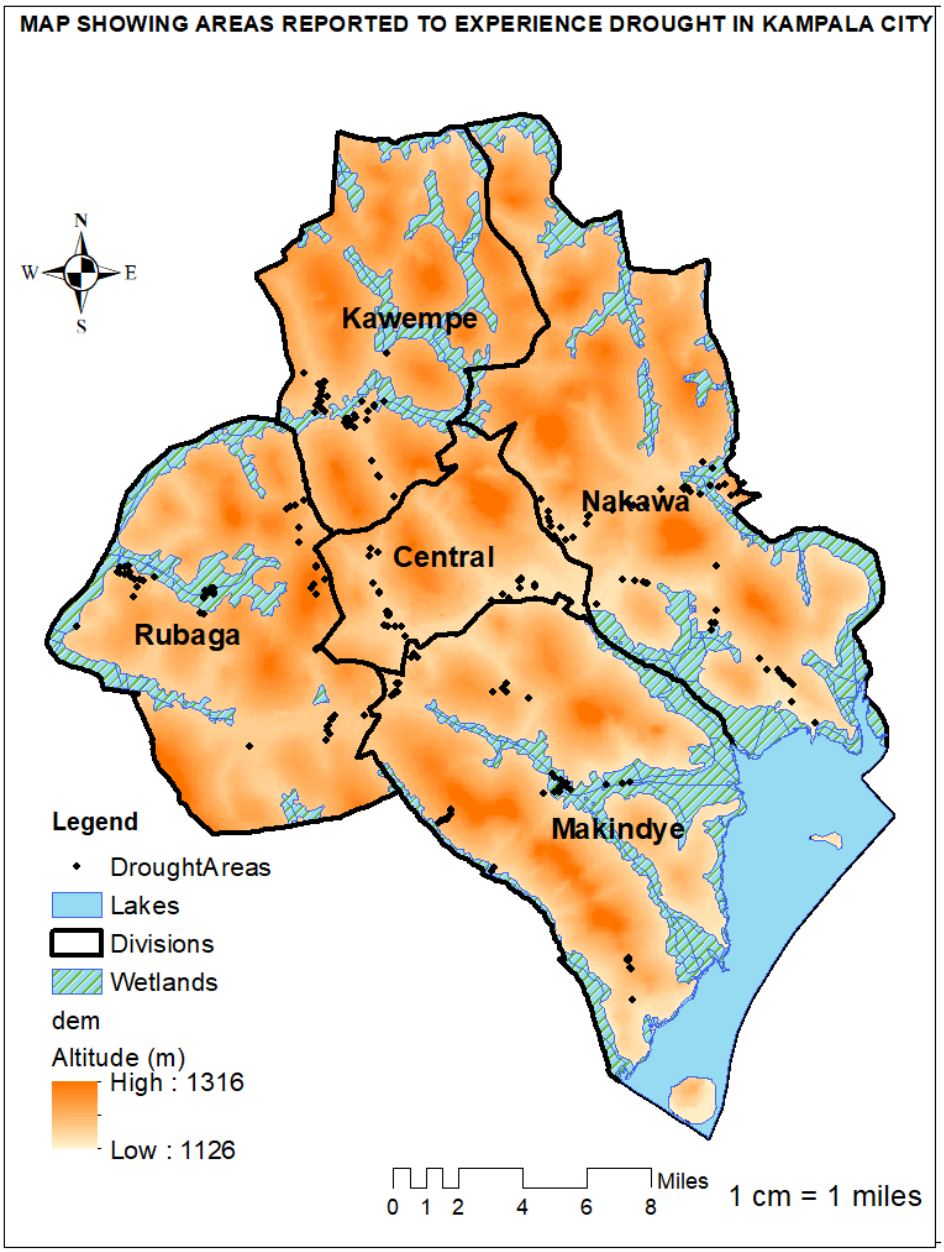


Figure 17. Map showing areas reported to experience drought in Kampala City

Heat Stress

Heat stress is an emerging hazard in Kampala that is becoming more significant as urbanization accelerates. The expansion of built-up areas and the reduction of tree cover have led to the formation of urban heat islands—zones within the city that experience significantly higher temperatures than surrounding rural areas. Central and Nakawa divisions are particularly vulnerable due to their dense building configurations and limited urban forestry. These areas host numerous commercial and institutional structures with sealed surfaces that intensify heat accumulation during dry seasons.

The consequences of heat stress are both health-related and economic. Exposure to high temperatures can lead to dehydration, heat stroke, and cardiovascular stress, especially among outdoor workers like boda-boda riders, market vendors, and security personnel. Additionally, rising temperatures increase the demand for cooling in office buildings and residential spaces, leading to higher energy consumption and associated costs. Research by Adelekan et al. (2015) and Opiyo et al. (2020) found that urban temperatures in Kampala can exceed 34°C during the dry season, particularly in neighborhoods lacking vegetation and reflective infrastructure. The combination of heat and limited adaptive infrastructure makes heat stress a growing public health and productivity concern for Kampala's urban poor.

Figure 15 displays areas across Kampala City that are reported to experience elevated urban heat stress, particularly during dry seasons. Reported hotspots are marked in dark red and are widespread across all five divisions, with Central, Nakawa, and Makindye exhibiting a notably high density of heat stress points. These areas align closely with regions of high surface sealing and dense urban development, as indicated by their mid-to-high elevation and minimal proximity to cooling features such as wetlands or water bodies. In contrast, areas closer to wetlands—though not exempt—exhibit relatively fewer heat stress reports. The pattern observed suggests that the Urban Heat Island (UHI) effect is strongest in areas with high building density, limited green space, and reflective surfaces, underscoring the role of poor land cover in exacerbating thermal discomfort for urban populations.

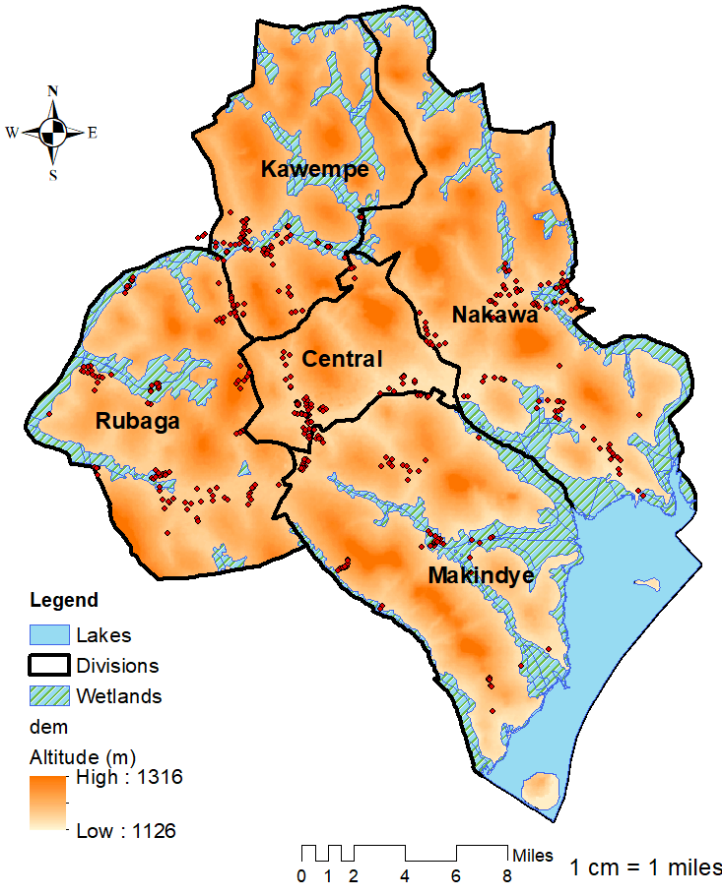


Figure 18. Map showing areas reported to experience heat stress in Kampala City

Storms

Kampala also experiences increasingly intense thunderstorms, particularly during the transitional months of the rainy seasons. These storms are often accompanied by strong winds, heavy rainfall, and occasional hailstones. While all divisions are exposed to storm hazards, the impacts tend to be more severe in Kawempe and Lubaga divisions, where informal settlements with fragile housing structures are common. The city's aging or poorly maintained tree cover also becomes hazardous during high winds, as falling trees and branches can cause damage to homes and power lines.

Storm impacts include the uprooting of trees, destruction of electrical infrastructure, and roof blow-offs, especially in low-income areas where building materials are substandard. Heavy rainfall from storms can trigger localized flooding and soil erosion, further compounding the effects of poor land use and drainage. According to the Uganda Disaster Risk Profile compiled by the Office of the Prime Minister (2017), climate variability has led to an increase in the frequency and intensity of such storm events in Kampala. The city’s limited disaster preparedness systems and weak building code enforcement leave many communities vulnerable to these high-impact, short-duration weather events.

Figure 16 visualizes storm-affected zones across Kampala, focusing on areas that have reported strong winds, hailstorms, and destructive rainfall events. Storm occurrence points are represented with yellow markers and are distributed throughout the city, although higher densities appear in Kawempe, Lubaga, and Makindye divisions. Many of these storm-prone areas also coincide with lower elevation terrain or fringe wetlands, which may be susceptible to localized wind intensification and waterlogging. The widespread spatial coverage suggests that storm events in Kampala are not confined to a few localized pockets but rather represent a city-wide hazard, exacerbated by the city's vulnerability due to poor roofing materials in informal settlements and fragile power infrastructure. The alignment of storms with wetlands and drainage systems may also indicate storm-induced secondary hazards like tree falls, flash floods, and infrastructure damage.

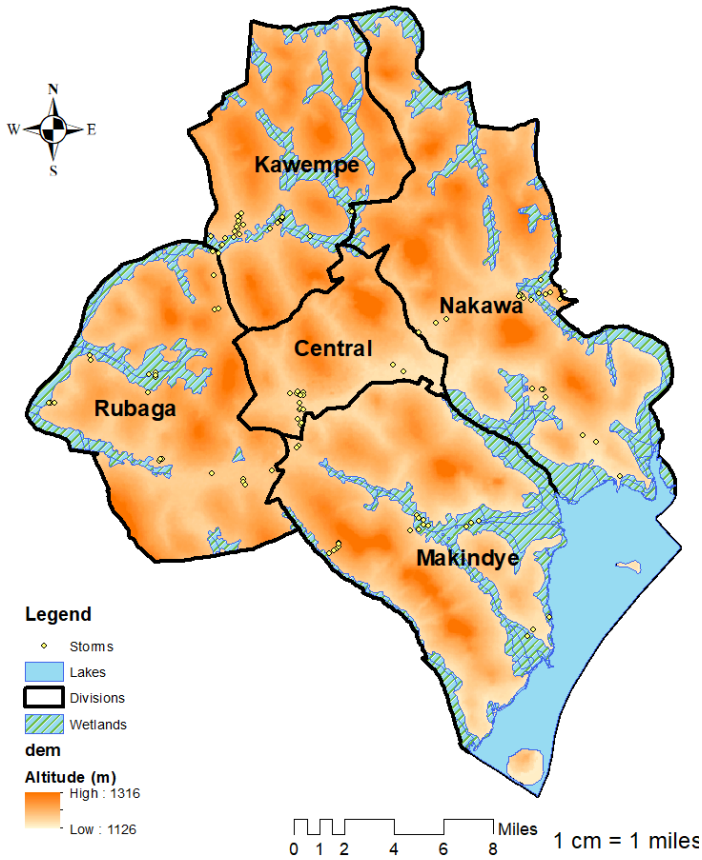


Figure 19.Map showing areas reported to experience wind storms in Kampala City

6.2 Exposure Analysis

Kampala City faces high exposure to multiple climate-induced hazards, with flooding being the most immediate and widespread threat. The city's natural topography, marked by hills interspersed with valleys and wetlands, predisposes low-lying areas to seasonal and flash floods. Divisions such as Central, Makindye, and Kawempe are especially affected, with communities in neighborhoods like *Bwaise, Katwe, Kisenyi, and Namuwongo* experiencing frequent inundation. The proximity of these settlements to clogged or encroached drainage channels, compounded by unplanned urbanization and poor solid waste management, increases their vulnerability. Infrastructure such as roads, markets, schools, and health centers are regularly disrupted, and contaminated floodwaters pose severe public health risks, including cholera outbreaks and diarrheal diseases (UN-Habitat, 2021; KCCA, 2020).

In addition to flooding, drought exposure is a growing concern, particularly in the more peripheral and semi-rural parts of Nakawa, Lubaga, and Makindye divisions. These areas host a mix of formal and informal settlements where communities rely heavily on boreholes, rainwater harvesting, and small-scale urban agriculture. As rainfall patterns become increasingly erratic—characterized by short, intense rains followed by prolonged dry spells—residents face heightened water scarcity. This impacts household consumption and significantly threatens food security, especially for informal urban farmers growing vegetables and staple crops for household and market use. The Uganda National

Meteorological Authority (UNMA, 2019) has reported a consistent increase in the occurrence of 10–15-day dry spells in Kampala, and the effects are more pronounced in neighborhoods with limited access to piped water or drought-resilient infrastructure.

Heat stress has emerged as a major but often underestimated hazard in Kampala, driven by the city's rapid urbanization and the resulting decline in vegetative cover. Areas in Central and Nakawa divisions—which host dense clusters of commercial, institutional, and residential developments—experience extreme surface temperatures due to the urban heat island (UHI) effect. Informal settlements in Kawempe and Makindye are also highly exposed due to poor housing quality and lack of ventilation. Vulnerable groups include market vendors, motorcycle (boda-boda) riders, street workers, and children in overcrowded schools. Studies have shown that heat-related illnesses and productivity losses are rising in these high-density, low-green-cover environments, with daytime temperatures surpassing 34°C in dry months (Opiyo et al., 2020; Adelekan et al., 2015). The lack of urban tree cover, reflective surfaces, and heat-resilient infrastructure worsens these impacts.

The threat of storm events—marked by heavy rainfall, strong winds, and occasionally hail—is another growing concern in Kampala. These are particularly hazardous in Lubaga and Kawempe divisions, where informal structures are often poorly built and prone to damage from wind gusts and falling trees. Roofs are frequently blown off, power lines cut, and poorly drained roads rendered impassable. Schools, markets, and low-income homes are especially vulnerable to destruction, disrupting essential services and displacing already at-risk populations. The Office of the Prime Minister (2017) has noted a marked increase in storm frequency and intensity in Kampala, attributing this to climate variability and the absence of effective urban resilience planning. The exposure is further heightened in hilly regions where runoff leads to rapid erosion and slope instability.

Exposure to these climate hazards is compounded by social vulnerability factors, including poverty, insecure land tenure, and limited access to basic services. Informal settlements—home to a significant portion of Kampala's population—are the epicenter of multi-hazard exposure. These communities often lack legal recognition, are built in marginal zones (wetlands, floodplains, steep slopes), and have minimal access to early warning systems or emergency relief. Women, children, elderly residents, and people with disabilities are particularly at risk due to their reduced mobility and dependence on local infrastructure and social services. In areas like *Kyanja, Luzira, Mutundwe,* and *Kyebando*, residents face compounded hazards where flooding, drought, and heat converge, resulting in cyclical livelihood shocks.

In conclusion, exposure to floods, droughts, heat stress, and storms in Kampala is geographically widespread but unequally distributed, with informal settlements and marginalized communities bearing the brunt. Each division faces unique exposure dynamics influenced by topography, infrastructure quality, land use, and socioeconomic conditions. Effective risk reduction strategies must therefore be context-specific and multidimensional, combining infrastructure upgrades, wetland restoration, inclusive urban planning, and targeted investments in early warning systems and community resilience programs. Integration of spatial hazard mapping and local knowledge into

Kampala's development agenda will be critical to protecting vulnerable populations and building long-term urban resilience (UN-Habitat, 2021; MWE, 2020; KCCA, 2020).

6.3 Vulnerability Analysis

6.3.1 Sensitivity

Sensitivity to climate change in Kampala is strongly influenced by socio-economic and physical conditions within the city's divisions. A significant proportion of the population—13.8% (88 households)—reside in informal housing structures that lack durable construction, drainage infrastructure, and access to basic services. These dwellings are often located in flood-prone areas, exposing residents to seasonal flooding, which damages property, disrupts livelihoods, and heightens health risks. Nearly 40% of respondents also identified poor infrastructure—particularly roads, drainage, and sanitation systems—as a central concern intensifying vulnerability during extreme weather events. These findings are consistent with previous research showing that informal settlement residents in Kampala are disproportionately exposed to flood risks due to insecure housing tenure, poor infrastructure, and degraded ecosystems, all of which limit their adaptive capacity (Twinomuhangi et al., 2021).

Vulnerable groups such as the elderly and persons with disabilities are particularly sensitive to climate hazards due to mobility limitations and reduced access to services. About 13.4% of surveyed households reported having at least one member with a disability, complicating both evacuation and adaptation responses. As climate impacts escalate—through more intense rainfall or prolonged heatwaves—these groups will face increasing barriers to recovery. Prior studies highlight similar patterns, emphasizing that climate risks disproportionately affect Kampala's low-income and socially marginalized populations, especially in informal settlements with poor service delivery and minimal institutional protection (Polgár & Carton, 2024), (Gall, 2021). Major drivers of vulnerability—unregulated urban expansion, wetland degradation, poverty, and exclusionary urban planning—continue to weaken the city's social and ecological resilience. This reaffirms the need for inclusive, data-driven planning that prioritizes the needs of the most vulnerable urban populations in Kampala.

6.3.2 Adaptive Capacity

The adaptive capacity of Kampala's urban population is constrained by a combination of resource scarcity, infrastructural limitations, and knowledge gaps. Forty percent of respondents explicitly reported that a lack of financial resources, compounded by poor infrastructure and limited awareness, significantly hinders their ability to implement effective adaptation measures. Educational disparities also play a role—7.6% of respondents (48 individuals) reported having no formal education, restricting access to vital information and tools needed for climate preparedness. These findings align with previous research showing that socio-economic attributes such as low income, low education, and insecure housing tenure significantly reduce adaptive capacity in Kampala's informal settlements (Twinomuhangi et al., 2021).

Further studies also emphasize that adaptive capacity varies across slum areas, shaped by spatial and social factors such as social networks, place attachment, and length of residence, which can either support or constrain resilience to climate shocks (Waters & Adger, 2017). Moreover, lack of access to climate information services, limited institutional engagement, and underdeveloped community knowledge-sharing systems were identified as systemic barriers to building local resilience. These constraints reduce the likelihood of proactive behaviors such as reinforcing homes or utilizing early warning systems—further reinforcing cycles of vulnerability.

At the institutional level, adaptive capacity is shaped by the effectiveness of policies, governance structures, and coordination among stakeholders. Weak institutional arrangements and limited resource allocation often result in fragmented and reactive responses to climate risks. The city's ability to mobilize technical expertise, integrate climate data into planning, and implement nature-based solutions remains limited, although efforts are ongoing. Meanwhile, at the community and household levels, adaptive strategies rely heavily on informal social networks, shared knowledge, and local coping mechanisms. However, these are often insufficient when faced with large-scale or repeated hazards. Strengthening both institutional frameworks and community-based resilience is therefore essential for building long-term adaptive capacity in Kampala's rapidly urbanizing environment.

6.3.3 Kampala District Vulnerability Index (DVI)

Vulnerability Index

DVI Methodology and Indicators

The District Vulnerability Index (DVI) is a composite metric designed to quantify the relative vulnerability of populations to climate risks across administrative divisions. The methodology is based on widely accepted frameworks for vulnerability assessment that define vulnerability as a function of exposure, sensitivity, and adaptive capacity (IPCC, 2014). In this analysis, the DVI was constructed to focus on social and infrastructural sensitivity, using household-level survey data.

Indicator Selection and Scoring

Four key indicators were selected based on their relevance to urban climate vulnerability and their availability in the Kampala City Climate Change and Vulnerability Assessment (CCVA) survey data shown in Table 3:

Table 3. Indicators were selected based on their relevance to urban climate vulnerability and their availability in the Kampala City Climate Change and Vulnerability Assessment (CCVA) survey data

Indicator	Rationale
Housing Type	Reflects structural resilience of dwellings to hazards like floods or storms
Education Level	Proxy for awareness, adaptive capacity, and information access
Income Source	Captures economic stability and access to coping resources
Disability Presence	Indicates physical and health-related sensitivity to environmental risks

Each indicator was scored on a scale from **1 (least vulnerable)** to **4 (most vulnerable)** based on predefined criteria derived from vulnerability literature (Brooks et al., 2005; Cutter et al., 2003). For instance, informal housing scored highest due to its fragility, while tertiary education scored lowest due to its association with higher adaptive capacity.

- **Housing Score**: 1–4 (Permanent = 1, Informal = 4)
- **Education Score**: 1–4 (Tertiary = 1, None = 4)
- **Income Score**: 2 (formal employment) or 4 (casual/informal)
- **Disability Score**: 1 (No disability) or 4 (Presence of disability)

Computation Procedure

Each respondent's total DVI was calculated by summing their individual scores across the four indicators. The composite scores were then **aggregated by division** to compute the average DVI per division using:

$$\text{DVI}_{\text{division}} = \frac{1}{n} \sum_{i=1}^{n} (\text{Housing}_i + \text{Education}_i + \text{Income}_i + \text{Disability}_i)$$

This method follows a linear additive model, which is commonly used in social vulnerability indices (Tate, 2012) and assumes equal weight across all dimensions.

City Vulnerability Index

The computed Citywide Vulnerability Index (CVI) for Kampala City, based on the five official divisions (Central, Kawempe, Makindye, Nakawa, and Lubaga), is:

CVI = 9.48

This average reflects the combined vulnerability from key social and structural factors across the city's divisions, reinforcing the need for comprehensive, inclusive, and division-specific climate resilience planning.

The computed Citywide Vulnerability Index (CVI) of 9.48 provides a quantitative representation of the overall climate vulnerability facing Kampala City. This value, derived from a composite assessment of housing conditions, education levels, income sources, and disability status across the five official city divisions, highlights the widespread and systemic nature of social and infrastructural sensitivity to climate-related risks. While the index does not capture all possible dimensions of vulnerability, such as exposure to specific hazards or adaptive capacity in governance, it offers a robust and scalable method for identifying populations that are at greater risk of suffering adverse effects from climate variability and extremes. The relatively high CVI underscores that vulnerability is not confined to isolated pockets of the city; rather, it is a cross-cutting issue affecting both informal settlements and certain institutional or commercial zones that are underserved in terms of climate resilience infrastructure.

In the context of a broader Climate Change Vulnerability Assessment (CCVA) framework, the CVI serves as a critical input for guiding resource allocation, adaptation planning, and policy prioritization. The CVI enables planners and decision-makers to target interventions more equitably and effectively by providing an evidence-based metric that reflects disparities in socio-economic resilience and infrastructure quality. For instance, divisions with above-average vulnerability scores—such as Nakawa, Kawempe, and Makindye—can be prioritized for infrastructure upgrades, public health services, and community-based resilience initiatives. Moreover, the CVI facilitates monitoring and evaluation over time, offering a benchmark against which progress in reducing vulnerability can be measured. As climate risks continue to intensify, integrating vulnerability indices into urban planning systems will be essential for ensuring adaptive, inclusive, and sustainable development across Kampala.

Division-Level DVI Results

The vulnerability assessment reveals that Nakawa, Kawempe, and Makindye Divisions exhibit the highest levels of climate vulnerability in Kampala City (Table 4). These divisions are characterized by a high prevalence of informal settlements, limited infrastructure, and a concentration of low-income households. Many residents rely on boreholes for water and engage in subsistence or small-scale urban farming, making them particularly sensitive to disruptions caused by drought and erratic rainfall. The poor quality of housing and inadequate access to services such as healthcare and sanitation further exacerbate their exposure to climate-induced hazards, including floods, heat stress, and storm events. These factors collectively drive up vulnerability scores in these divisions, indicating an urgent need for integrated, community-centered resilience planning.

Although Central Division is the administrative and commercial heart of Kampala and benefits from more permanent infrastructure and services, it still records a moderately high vulnerability index. This stems from its high population density, congestion, and significant socio-economic disparities. Many low-income residents live in informal or overcrowded housing conditions, particularly in inner-

city neighborhoods like Kisenyi and Katwe, which are also prone to frequent flooding. Moreover, the concentration of commercial activities places additional pressure on water and sanitation services, increasing exposure during climate stress events. The situation in Central Division underscores the fact that structural development alone does not guarantee resilience if access to services is unevenly distributed.

In contrast, Lubaga Division registers the lowest average vulnerability score among Kampala's five divisions. This can be attributed to a combination of better housing conditions, relatively higher rates of land tenure security, and improved access to natural resources such as green spaces and springs. Parts of Lubaga have more established neighborhoods with tree cover and relatively less encroachment on wetlands, which contributes to lower heat stress and flood exposure. While still vulnerable in certain informal pockets, Lubaga's overall resilience reflects the benefits of environmental preservation and more regulated urban development. These disparities in vulnerability across divisions highlight the necessity for targeted climate adaptation strategies that prioritize areas with both high exposure and low adaptive capacity.

The findings from Kampala align with urban vulnerability trends in other African cities that share characteristics such as informal urbanization, infrastructure deficits, and socio-economic inequalities.

- In Nairobi, Kenya, similar vulnerability indices computed for informal settlements like Kibera showed high composite vulnerability scores due to insecure housing, lack of water infrastructure, and health risks (Kabiru et al., 2018).
- In Accra, Ghana, vulnerability mapping based on household surveys found that informal neighborhoods like Agbogbloshie scored between 9–12 on comparable scales, primarily driven by poor drainage, waste accumulation, and low education levels (Codjoe et al., 2016).
- In Dar es Salaam, Tanzania, districts such as Temeke and Ilala displayed high vulnerability due to dependence on informal livelihoods, inadequate health services, and flood exposure—again, resulting in average indices above 9 (UN-Habitat, 2014).

These comparative results suggest that Kampala's vulnerability levels are not unusual in the Sub-Saharan African context, but they also highlight the urgency of urban resilience planning, particularly in informal and peri-urban zones where adaptive capacity remains low.

Table 4. Division vulnerability scores

Division	Average DVI Score
Nakawa Division	9.56
Kawempe Division	9.55
Makindye Division	9.55
Central Division	9.50
Lubaga Division	9.25

Interpretation and Strategic Use of DVI for Kampala City and Its Divisions

The District Vulnerability Index (DVI) provides a valuable framework for analyzing the spatial and socio-economic dimensions of climate vulnerability across Kampala City. With a Citywide Vulnerability Index (CVI) of 9.48—on a scale where scores closer to 16 indicate extreme vulnerability—Kampala demonstrates significant exposure to climate risks rooted in systemic social, economic, and infrastructural deficiencies. These include limited access to durable housing, reliable income, healthcare, and inclusive urban services. Such findings mirror broader research showing that climate vulnerability in Kampala is highly correlated with socio-economic inequality, ecosystem degradation, and infrastructure gaps, particularly in informal settlements where adaptive capacity is constrained by poor planning and limited institutional responsiveness (Twinomuhangi et al., 2021).

At the division level, the DVI reveals intra-city disparities that reflect both environmental and governance dimensions of vulnerability:

- **Nakawa Division (DVI 9.56)** exhibits high vulnerability due to rapid, unregulated urban growth, widespread informal housing, and dependence on boreholes for water. These patterns are consistent with earlier findings that stress the link between water insecurity and structural vulnerabilities in Kampala's expanding urban margins (Richmond et al., 2018).
- **Kawempe Division (DVI 9.55)** faces challenges tied to dense slum populations, waste accumulation, and high unemployment. Similar spatial patterns of vulnerability—concentrated around socio-economically marginalized communities—have been documented in assessments of health and environmental stressors in Kampala's northern periphery (Clarke et al., 2022).
- **Makindye Division (DVI 9.55)** suffers from urban encroachment into wetland buffers, dependency on urban farming, and weak public service coverage. These vulnerabilities are amplified by unregulated sprawl, echoing findings that point to wetland degradation as a critical factor reducing the city's ecological resilience (White et al., 2015).
- **Central Division (DVI 9.50)**, despite having better infrastructure, remains vulnerable due to high population density, inequality, and aging infrastructure systems. Polgár and Carton (2024) highlight that even relatively better-serviced areas in Kampala exhibit infrastructure stress under climate shocks due to poor vertical planning and maintenance systems (Polgár & Carton, 2024).
- **Lubaga Division (DVI 9.25)** scores lowest in vulnerability but is not immune to risk. While it retains greater green space and more formal housing, rapid informal expansion threatens to erode existing resilience. Similar dynamics were observed by Gall (2021), who linked spatial inequality and urban form to emerging vulnerabilities in areas previously considered low-risk (Gall, 2021).

Collectively, these assessments affirm the DVI's relevance in capturing both the chronic and spatially differentiated nature of climate vulnerability in Kampala, underscoring the need for targeted, multi-sectoral resilience strategies across city divisions.

In terms of strategic use, the DVI should be integrated into Kampala's climate adaptation and urban planning frameworks, such as the Kampala Physical Development Plan (KPDP) and the Kampala Climate Change Action Strategy. It should inform the prioritization of infrastructure investments, such as the placement of drainage upgrades, renewable energy infrastructure, and resilient housing projects. Furthermore, DVI metrics are ideal for supporting climate finance proposals, donor targeting, and local governance engagement, as they provide data-driven justifications for interventions that are aligned with equity and inclusion principles. By leveraging the DVI in policymaking, Kampala can enhance its ability to build adaptive capacity while ensuring no community is left behind in the face of escalating climate risks.

6.4 Risk Assessment and Hotspot Analysis by Hazard

Flood Risk

Spatial Distribution of Flood Risk

Kampala, Uganda's capital city, is located in a topographically undulating landscape interspersed with numerous low-lying wetlands and natural drainage channels, making it particularly vulnerable to recurrent flooding. The spatial distribution of flood risk across the city is closely tied to the configuration of its drainage infrastructure, ecological systems, and settlement patterns—especially in areas where rapid urbanization has encroached upon wetlands. The flood hotspots analyzed in this assessment were identified through extensive consultations with stakeholders at the division headquarters, including local government officials, community representatives, and technical staff, and are further validated by previously documented flood-prone areas compiled by the Kampala Capital City Authority (KCCA). Using layered mapping that delineates high, moderate, and low flood risk zones across the city's five divisions—Central, Kawempe, Makindye, Nakawa, and Lubaga—clear spatial patterns emerge, revealing persistent flood risk in specific neighborhoods. These findings reflect both natural vulnerabilities and long-standing infrastructure and planning deficits that require urgent and targeted interventions.

Figure 17 shows the intricate web of KCCA major and minor drainage systems intertwined with wetlands. It sets a critical backdrop for understanding the spatial vulnerability of neighborhoods adjacent to these wetlands. The Figure 18, which isolates *high flood risk areas*, reveals that flood hotspots predominantly occur along drainage basins and encroached wetlands, particularly in Makindye, Nakawa, and Central divisions. These areas, such as Namuwongo and Bwaise, are densely populated informal settlements with poor infrastructure, increasing their exposure to flood hazards.

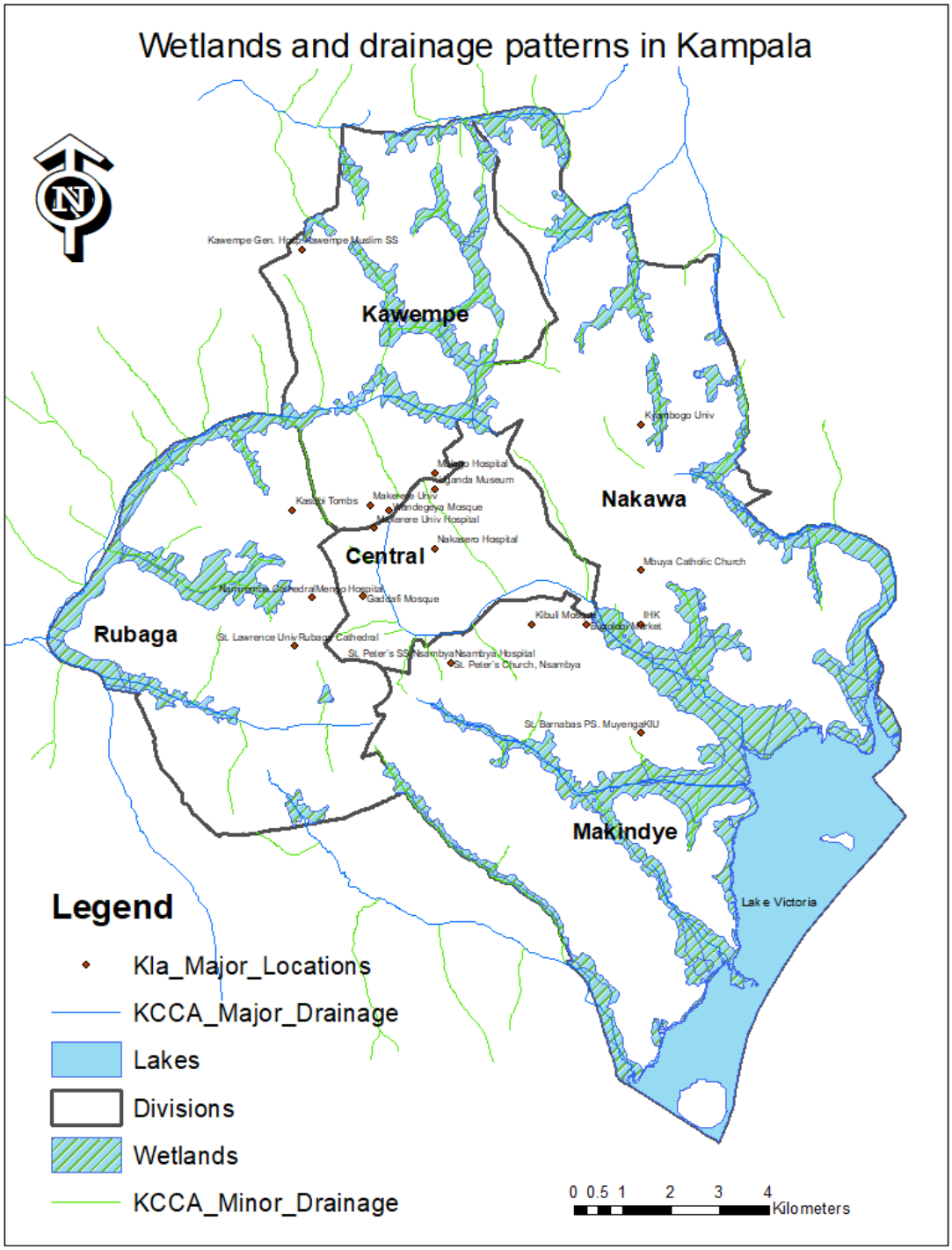


Figure 20. Wetlands and drainage patterns in Kampala

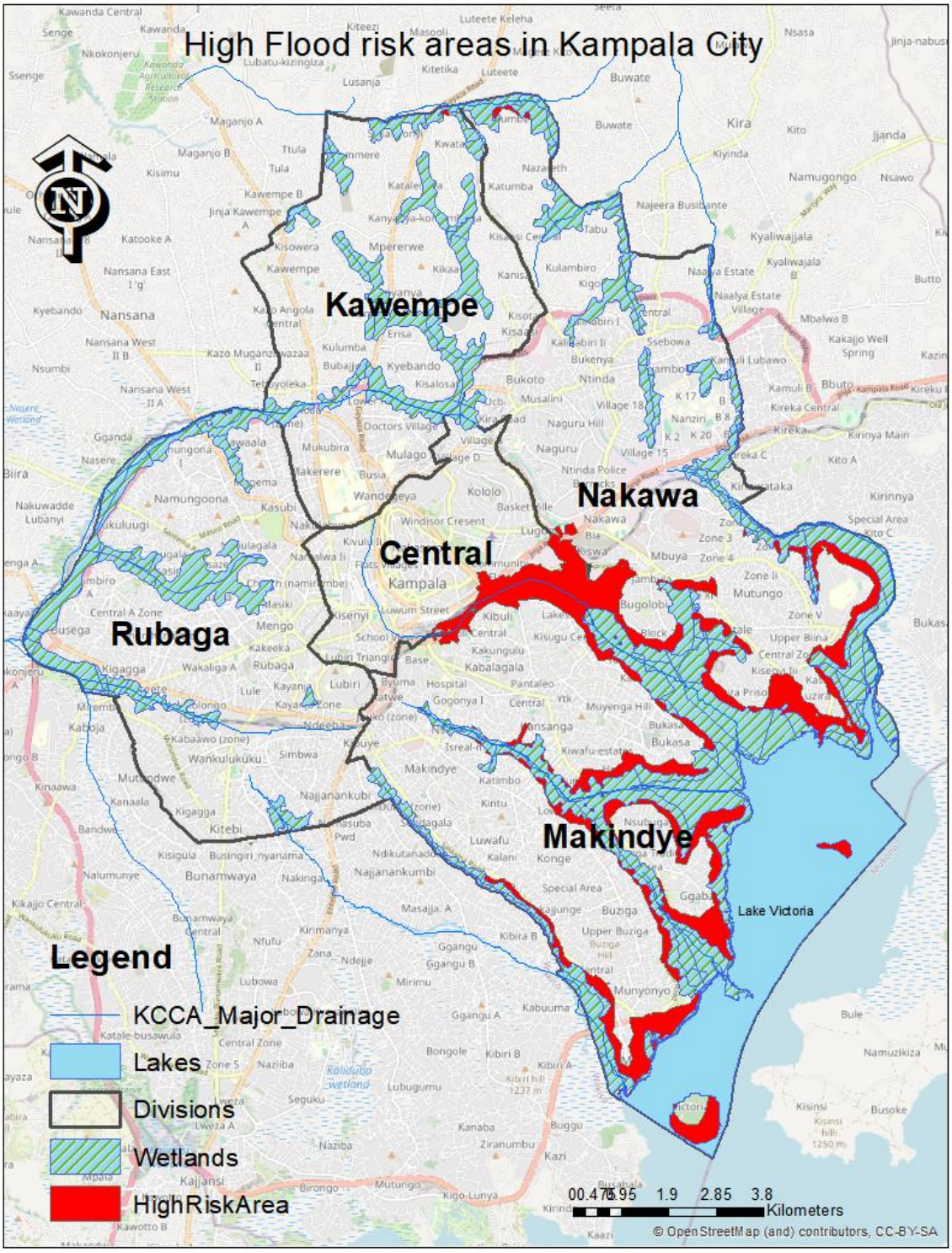


Figure 21. High flood risk areas in Kampala City

Figures 19 and 20 build upon the high-risk zones by including moderate and low-risk areas, providing a comprehensive citywide flood risk overview. When compared with the tabulated data on affected parishes and villages (Table 5), Makindye Division stands out as one of the most critical flood hotspots, with 2 parishes and 20 villages under high risk, 4 parishes and 42 villages at moderate risk, and 6 parishes and 66 villages in low-risk zones. These patterns are visually reinforced in the flood risk maps,

particularly the fourth map, which shows extensive red and yellow shading along wetland buffers and low-lying settlements bordering Lake Victoria.

In Central Division, areas like Civic Center and Kisenyi II register 4 parishes and 45 villages at high flood risk. Kawempe Division also shows a heavy burden, especially in Bwaise I and Kawempe I, which account for 3 parishes and 36 villages in high-risk zones, with additional exposure in 5 moderate and 6 low-risk parishes. Nakawa Division reflects a mixed residential and semi-industrial profile, with 3 high-, 3 moderate-, and 5 low-risk parishes affecting 28, 37, and 65 villages, respectively. Lubaga Division, while relatively less exposed, still reports 3 high-risk parishes with 24 villages affected.

These localized patterns are strongly corroborated by earlier research. For instance, Mukwaya et al. (2012) emphasized that flood exposure in Kampala is not uniformly distributed but concentrated in wetlands and low-lying informal settlements, particularly in divisions like Makindye and Kawempe, where flood resilience is weakened by poor infrastructure and unregulated land use (Mukwaya et al., 2012). Molina et al. (2015) further found that the spatial configuration of urban growth critically influences flood exposure, especially where development encroaches on floodplains and buffers (Molina et al., 2015). These findings align with simulations by Umer et al. (2019), which demonstrated that flash flood impacts in Kampala can be accurately predicted when integrating topography, land use, and rainfall distribution—validating the high-risk classifications used in city planning maps (Umer et al., 2019).

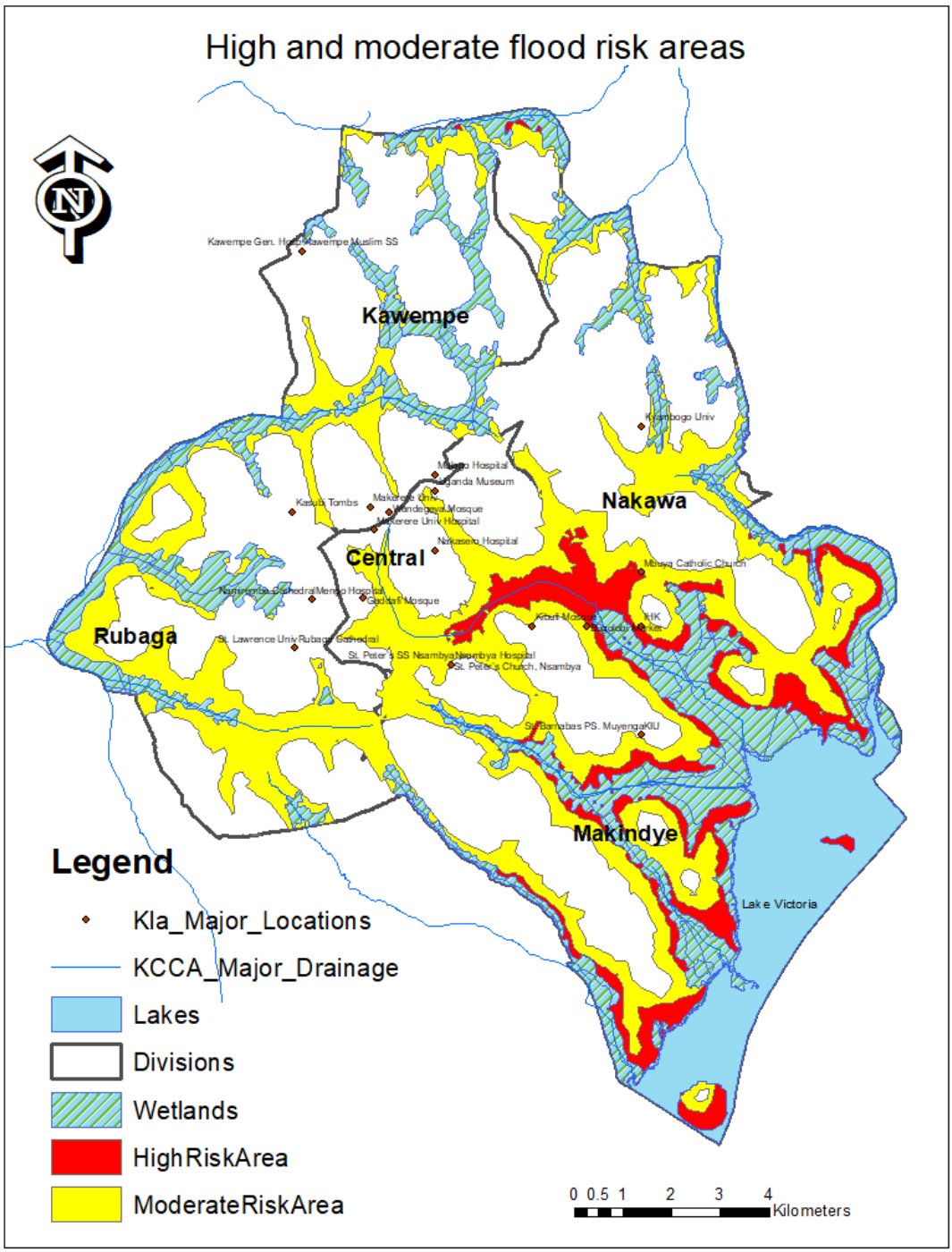


Figure 22. High and moderate flood risk maps of Kampala City

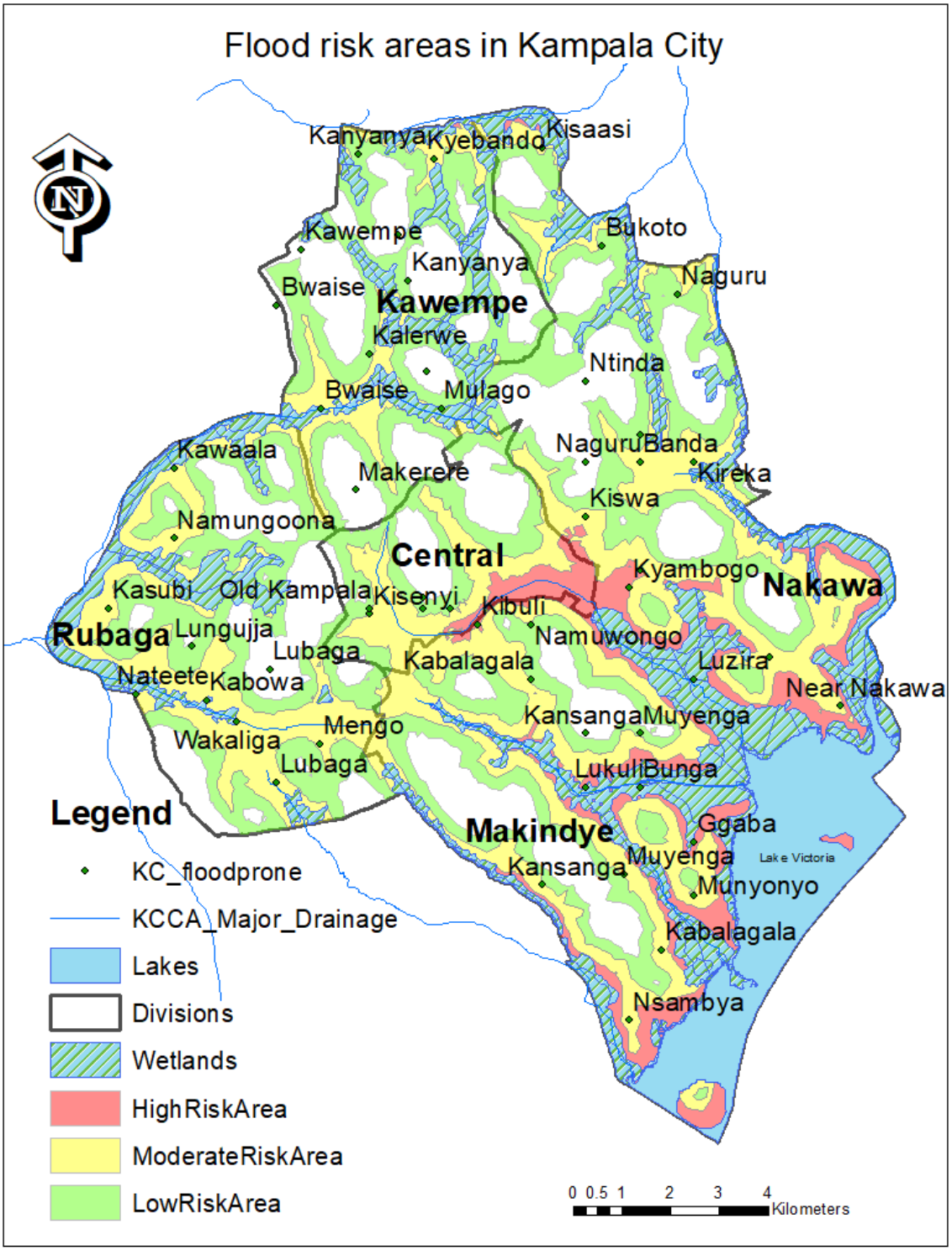


Figure 23. Flood risk areas of Kampala City

Table 5. Flood risk, number of parishes, and number of villages across all five divisions of Kampala City

Division	Flood Extent	No. of Parishes	No. of Villages
Central	High Flood Risk	4	45
	Moderate Flood Risk	6	67
	Low Flood Risk	8	88
Kawempe	High Flood Risk	3	36
	Moderate Flood Risk	5	48
	Low Flood Risk	6	59
Makindye	High Flood Risk	2	20
Makindye	Moderate Flood Risk	4	42
Makindye	Low Flood Risk	6	66
Nakawa	High Flood Risk	3	28
Nakawa	Moderate Flood Risk	3	37
Nakawa	Low Flood Risk	5	65
Lubaga	High Flood Risk	3	24
Lubaga	Moderate Flood Risk	4	35
Lubaga	Low Flood Risk	6	58

The detailed names of affected or implied village is provided in the appendix.

Interpretation of Flood Vulnerability Factors

The variation in flood risk across divisions is influenced by a combination of natural, climatic, and anthropogenic factors, as depicted in the flood risk maps and the matrix showing flood exposure by division.

i. Topography and Drainage Patterns: The most flood-prone areas in Kampala are typically located in low-lying zones such as valleys and floodplains, particularly along the city's major and minor drainage systems. Neighborhoods like *Bwaise in Kawempe*, *Namuwongo in Makindye*, and *parts of Nakivubo in Central Division* sit within basin-like topographies where surface runoff converges, increasing the intensity and frequency of flood events.

ii. Wetland Encroachment: The juxtaposition of the flood risk areas (in red, yellow, and green) with the underlying wetland zones clearly shows that many flood-prone settlements have developed in ecologically sensitive areas. Over the years, unregulated urban expansion has led to severe wetland degradation, particularly in Makindye, Nakawa, and Central divisions, thereby removing natural flood buffers and amplifying exposure to stormwater surges.

iii. Inadequate and Overwhelmed Drainage Infrastructure: The city's drainage systems, much of which are open and unlined, are often blocked by solid waste and construction debris. Informal settlements generally lack structured stormwater management, and this infrastructural gap causes heavy rains to result in flash floods. Streets, homes, and markets in areas like *Kisenyi, Katwe,* and *Kalerwe* become inundated within minutes of downpours.

iv. Erratic Rainfall Patterns Due to Climate Change: Recent years have seen a shift in rainfall characteristics over Kampala, with episodes of unpredictable, high-intensity rains occurring over short durations. This change in rainfall dynamics overwhelms existing drainage systems,

particularly in densely populated and poorly planned areas. Even zones typically categorized under low or moderate flood risk are now increasingly reporting flooding incidents following sudden downpours—an emerging trend observed in both Kawempe and Lubaga divisions.

v. Rapid Urbanization and Land Use Change: The conversion of green spaces into impervious surfaces through informal and formal construction has dramatically reduced infiltration capacity. When rain falls on these hardened surfaces, it accumulates rapidly, increasing runoff volumes. This phenomenon is particularly evident in fast-growing neighborhoods in Nakawa and Makindye, where unchecked construction on wetland fringes has disrupted natural hydrological systems.

Together, these factors illustrate a complex interplay between urban development, environmental mismanagement, and climatic variability. Understanding these dynamics is vital for guiding urban resilience interventions and shaping policies that protect the most vulnerable urban populations from the increasing frequency and intensity of floods.

The patterns derived from the maps and matrix correlate strongly with findings in existing literature. According to *UN-Habitat (2021)* and *KCCA's Strategic Plan for Climate Resilience (2019–2024)*, flood-prone zones in Kampala are primarily concentrated in low-elevation, high-density settlements, especially those on or near wetlands and drainage outlets. The KCCA (2020) study also identifies Namuwongo, Bwaise, Kalerwe, and Kasubi as among the most vulnerable neighborhoods—an observation that aligns with the visual flood risk overlays in the provided maps.

Furthermore, *Mugume et al. (2016)* identified Kampala's flood risk as being exacerbated by "reduced pervious surfaces due to urban development," and emphasized that divisions with the largest wetland degradation—Makindye, Nakawa, and Central—are also the ones with the highest number of parishes and villages at risk. Similarly, *World Bank (2019)* noted that about 10% of Kampala's population lives in flood-prone informal settlements, particularly along the Nakivubo Channel, again corresponding with observed high-risk zones in the Central and Makindye divisions.

These converging findings from spatial data and empirical studies reinforce the urgent need for climate-resilient urban planning, restoration of wetlands, and investment in early warning systems and flood-proof infrastructure.

Drought Risk

Though often associated with rural and arid regions, drought risk in urban environments like Kampala is increasingly relevant due to climate variability, population pressure, and unsustainable water management. In Kampala, drought manifests not only as meteorological drought (rainfall deficits) but also as hydrological (water supply shortages) and socio-economic drought (limited access to water for daily needs, agriculture, and industry). With over 1.5 million residents and a growing reliance on

informal food production and borehole water supply, the city is increasingly vulnerable to short- and long-term drought events.

1. Central Division

Central Division, the administrative and commercial hub of Kampala, presents a unique profile of drought vulnerability. Although it has limited reliance on agriculture, the division experiences significant drought stress due to its high water demand from offices, markets, and densely built-up areas. The frequent surge in water use during dry seasons places immense pressure on piped water systems managed by the National Water and Sewerage Corporation (NWSC). Institutions such as hospitals, government buildings, and high-rise residences struggle with maintaining consistent water supply due to inadequate water storage and backup infrastructure. These limitations become particularly acute during dry spells, leading to periodic water rationing and disruptions in service delivery.

The impacts of drought in Central Division are further intensified by its physical environment. The division's lack of vegetation and extensive impervious surfaces—like roads, pavements, and rooftops—contribute to increased surface temperatures and higher evaporation rates. As a result, there is heightened demand for water for cooling and sanitation. Markets, schools, and public toilets often face hygiene crises during drought periods, while low-income communities experience inflated water costs as they turn to informal vendors for supply. The cumulative effect of these challenges exposes the Central Division to high levels of urban water insecurity during prolonged dry spells (Opiyo et al., 2020).

2. Kawempe Division

Kawempe Division faces a dual drought risk arising from both meteorological and hydrological stress. With a large population dependent on boreholes, spring wells, and backyard urban agriculture, the division is acutely vulnerable to rainfall variability and groundwater depletion. Urban farmers residing in wetlands and peri-urban areas rely on consistent seasonal rainfall to sustain crops such as vegetables and maize. However, prolonged dry spells have become increasingly frequent, undermining these livelihoods. Informal settlements, which dominate much of Kawempe, lack adequate water storage facilities, further exposing residents to chronic water shortages during drought episodes.

The consequences of drought in Kawempe manifest in numerous socio-economic dimensions. Repeated 10-day dry spells, as observed in the past five years, have led to widespread crop failures and increased reliance on unsafe water sources, resulting in a surge in waterborne diseases (UNMA, 2019). Communal water points often witness long queues, which not only waste time but also fuel social tension within communities. As piped water becomes scarce or unavailable, the cost of water increases sharply, disproportionately affecting poorer households. The intersection of environmental vulnerability and socio-economic deprivation positions Kawempe as a high-risk zone for urban drought impacts.

3. Makindye Division

Makindye Division, stretching along the northern shores of Lake Victoria, is a mosaic of residential estates, informal settlements, and urban farms. Its proximity to wetlands and borehole reliance makes it highly vulnerable to drought, particularly in low-income areas like Namuwongo, Salaama, and Bukasa. These neighborhoods are largely excluded from the piped water network and instead depend on shallow wells and seasonal springs, both of which dry up during extended dry periods. As the division continues to urbanize without robust planning controls, informal expansions into water-scarce zones have exacerbated the risks associated with drought.

Drought in Makindye imposes a high burden on households, especially for women and children who must walk longer distances to fetch water. Hygiene conditions deteriorate rapidly in the absence of consistent water access, raising public health concerns. The cost of water during dry seasons can rise by 300–400%, placing strain on already vulnerable households. Studies by KCCA and UN-Habitat highlight that informal settlements in Makindye not only face water scarcity but also extreme heat during dry periods, intensifying drought-related vulnerabilities and health risks (KCCA, 2020; UN-Habitat, 2021). The combination of infrastructural deficits, high exposure, and limited adaptive capacity underscores Makindye's acute sensitivity to drought.

4. Nakawa Division

Nakawa Division, known for its mix of semi-industrial activity and residential neighborhoods, is one of the fastest-developing parts of Kampala. Urban sprawl and rapid infrastructure development have increased water consumption and reduced natural recharge of aquifers. This is particularly problematic for farming communities in areas like Kyambogo, Luzira, and Banda that depend on seasonal rainfall and shallow groundwater. The limited presence of water harvesting facilities in institutions such as schools and small-scale factories makes the division more susceptible to water scarcity during dry spells.

The impacts of drought in Nakawa are wide-ranging. Reduced rainfall and excessive groundwater withdrawal disrupt farming cycles and lead to food shortages in local markets. The expansion of gated estates and paved surfaces reduces soil infiltration, causing water tables to drop and rendering many boreholes ineffective during prolonged drought periods. The Ministry of Water and Environment (MWE, 2020) notes that Nakawa's transition from greenfields to impermeable landscapes significantly reduces the resilience of both natural and human systems to drought. Without interventions in water harvesting, demand management, and land use regulation, drought risk will continue to escalate in this vital urban corridor.

5. Lubaga Division

Lubaga Division, situated on hilly terrain with scattered informal settlements and pockets of urban agriculture, is moderately exposed to drought but highly sensitive to its effects. The division benefits from slightly better green cover than Central or Nakawa, but rainfall variability, especially during the March–May and September–November seasons, poses challenges for urban farmers. Many households rely on rainwater harvesting, spring wells, or communal taps, and these sources become

unreliable during extended dry periods. Areas like Kabowa, Mutundwe, and Kasubi are particularly affected due to limited piped water infrastructure and poor planning.

The socio-economic impacts of drought in Lubaga are significant. Vegetable and maize farming—often undertaken by women for both subsistence and income—is disrupted by intermittent dry spells, reducing household food security. The lack of resilience mechanisms, such as water tanks or regulated storage systems, leaves communities vulnerable to sudden water stress. In peripheral hills, bushfires become more frequent in dry seasons, posing additional risks to life and property. According to the Office of the Prime Minister (2017), unregulated land use and wetland encroachment in Lubaga are contributing to growing water stress and weakening the community's adaptive capacity to climate-induced droughts.

Heat Stress Risk

Heat stress is an increasingly significant urban hazard in Kampala City, driven by the expansion of impervious surfaces, the reduction in green cover, and the intensifying effects of climate change. As a rapidly urbanizing metropolis, Kampala has experienced a steady increase in land surface temperatures over the past two decades, a trend amplified by the urban heat island (UHI) effect. According to Opiyo et al. (2020), densely built-up areas in Kampala record higher ambient temperatures—often exceeding 34°C during dry seasons—compared to peri-urban or vegetated zones. Between 1970 and 2025, temperatures have risen by 1.5°C, with informal settlements experiencing up to 4.2°C higher temperatures than planned neighborhoods due to the urban heat island (UHI) effect (Van de Walle et al., 2022). These elevated temperatures contribute to thermal discomfort, dehydration, cardiovascular strain, and productivity losses, particularly among low-income residents and outdoor laborers such as market vendors, transport operators, and street workers.

Although recent household-level survey data indicate a gap in self-reported heat stress experiences, spatial analysis and satellite observations reveal that heat-related risk is not uniformly distributed across the city. Central and Nakawa Divisions are particularly exposed due to high building density, reflective surfaces, and limited urban forestry. In Central Division, commercial hubs and transport terminals such as Old Taxi Park and downtown markets host large concentrations of people exposed to heat throughout the day with minimal access to shade or cooling. Nakawa, with a mix of industrial parks and unregulated urban settlements, faces both structural heat retention and limited vegetation cover. Makindye and Kawempe Divisions are also at risk, especially in informal settlements such as *Namuwongo* and *Bwaise*, where metal-roofed houses and poor ventilation exacerbate indoor heat exposure (Adelekan et al., 2015). Meanwhile, Lubaga Division—which retains more green cover and sits on higher elevation terrain—experiences relatively lower heat stress, though peripheral neighborhoods still report exposure during peak dry seasons.

The risk of heat stress is further compounded by socio-economic factors. Vulnerable groups such as the elderly, children, persons with disabilities, and informal workers often lack access to adaptive infrastructure such as cooling centers, water points, or heat-resilient housing. Public health systems

are also ill-equipped to monitor or treat heat-related illnesses, particularly in informal urban zones. Additionally, climate projections indicate a continuing rise in average temperatures, with more frequent and prolonged heat waves expected across Kampala (IPCC, 2021). This trend poses long-term challenges for public health, energy demand, and labor productivity, especially in high-exposure environments.

Division-Specific Heat Stress Profiles

Central Division: High-Rise Heat Traps

The central business district's 8–15-story buildings create urban canyons reducing airflow by 35%, with midday street-level temperatures reaching 45°C. Taxi parks and markets report peak heat indices of 52°C, causing 12 daily heat-related collapses among workers. Nighttime temperatures remain above 30°C in 74% of households, disrupting sleep patterns.

Kawempe Division: Industrial and Informal Hotspots

Bwaise III Parish, a low-lying informal settlement, records Humidex values 6°C higher than adjacent areas due to wetland degradation and industrial emissions. Metal workshops in Kanyanya operate at 58°C internal temperatures, leading to 40% worker absenteeism. Kalerwe Market vendors report 68% food spoilage rates during heatwaves, threatening livelihoods.

Lubaga Division: Compact Housing and Health Strains

Ndeeba's dense housing (1,200 persons/hectare) limits cross-ventilation, with 82% households reporting chronic dehydration symptoms (Van de Walle et al., 2022). The Nalukolongo industrial corridor contributes nocturnal heat plumes, maintaining temperatures above 28°C between 22:00–03:00. Health clinics note a 25% surge in heat-related kidney complications during dry seasons.

Nakawa Division: Industrial-Urban Thermal Nexus

Kyambogo University's campus experiences 35% student absenteeism during heatwaves, with classroom temperatures averaging 38°C. The Naguru Industrial Area's asphalt-covered zones reach 62°C surface temperatures, radiating heat into adjacent residential areas. Kinawataka's groundwater-dependent population faces 45% supply deficits during droughts, compounding heat stress.

Makindye Division: Wetland Encroachment and Humidity

Katwe's reclaimed wetlands create humid microclimates, with Humidex values 22% higher than city averages (Van de Walle et al., 2022). Kibuli informal settlements report 45 annual days exceeding 45°C Humidex, causing heat rashes in 78% of children. Nsambya Hospital recorded 14 daily heatstroke cases during March 2025's peak.

Health and Socioeconomic Impacts

Physiological Effects

Prolonged exposure to heat correlates with:

- **Heatstroke**: 32 cases/100,000 population in 2025, doubling 2020 rates
- **Renal stress**: 18% increase in dialysis demand during dry seasons
- **Maternal risks**: 22% higher preterm birth rates in unventilated housing

Economic Losses

- **Labor productivity**: 30–45% output reduction in outdoor sectors
- **Energy costs**: 58% household income spent on cooling in informal settlements
- **Food systems**: $2.3M annual losses from perishable spoilage

Storm Risk

Storms represent an escalating climate hazard in Kampala City, marked by high-intensity rainfall, strong winds, and occasional hailstones, especially during the two annual rainy seasons (March–May and September–November). These storm events are increasingly unpredictable due to climate variability and urban microclimatic changes, and they often result in infrastructure damage, local flooding, and physical injury. The Office of the Prime Minister (2017) identifies Kampala among Uganda's urban areas most prone to storm-related impacts, citing weak urban infrastructure and poorly regulated construction practices as compounding factors.

All five divisions of Kampala are vulnerable to storm impacts, though the nature and severity vary spatially. Kawempe and Lubaga Divisions experience some of the most pronounced effects, particularly in neighborhoods like *Bwaise*, *Kalerwe*, and *Kabowa*, where informal housing structures are poorly constructed and highly susceptible to wind and water damage. Reports of roof blow-offs, fallen trees, and power line disruptions are common during intense storms in these areas. The combination of fragile roofing materials and overcrowded housing increases the probability of displacement, physical injuries, and loss of property (UN-Habitat, 2021).

In Makindye Division, storms frequently interact with topographical depressions and encroached wetlands, leading to rapid surface runoff and localized flash floods. Informal settlements such as *Namuwongo* and *Salaama* often face dual threats—intense winds and excessive rainfall—which overwhelm drainage infrastructure. Nakawa Division, home to rapidly expanding residential and industrial zones, also experiences storm risks, particularly in low-lying or poorly drained areas such as *Luzira* and *Kyambogo*. Stormwater accumulation in these areas leads to road erosion, traffic disruption, and increased contamination of surface water sources. Central Division, though more

developed, remains vulnerable due to aging infrastructure, blocked stormwater channels, and high human density in commercial zones such as *Kisenyi*, *Nakasero*, and *Kamwokya*.

The overall storm risk is heightened by the lack of formal early warning systems, weak enforcement of building codes, and limited investment in climate-resilient infrastructure. Many households and public facilities lack storm-resistant roofing, properly engineered drainage, or storm shelters. The Kampala Capital City Authority (KCCA, 2020) notes that most of the city's drainage infrastructure is over 40 years old and insufficient to handle modern storm intensities. With climate change projected to increase the frequency and intensity of extreme weather events (IPCC, 2021), the threat from storms will likely continue to grow unless integrated urban resilience measures are prioritized. These should include stormwater management systems, reinforcement of building structures, and improved risk communication targeting at-risk communities.

6.5 Future Projections

Future Trends: Floods in Kampala City

In the coming decades, flood risks in Kampala City are expected to intensify, particularly in Makindye, Kawempe, and Nakawa divisions, due to increasing rainfall intensity, further wetland degradation, and ongoing urban expansion into floodplains. Climate models indicate a rise in extreme rainfall events by 10–20% by 2050 in East Africa, with shorter intervals between events (IPCC, 2021). Central Division will continue to experience flash flooding in areas like *Kisenyi* and *Katwe*, where high surface sealing limits water infiltration. Lubaga Division, although slightly elevated, will face increasing risks in low-lying neighborhoods such as *Mutundwe* and *Kabowa*, especially due to blocked and undersized stormwater infrastructure.

The implication of these projections is a growing burden on city infrastructure and public health, particularly in informal settlements where resilience capacity is weakest. Rising flood frequency and severity could overwhelm Kampala's already aging drainage systems and increase the cost of road maintenance, emergency response, and health interventions. Flood damage to homes, schools, and public markets may exacerbate urban poverty and displace vulnerable households. Proactive interventions—such as expansion of sustainable urban drainage systems (SUDS), reinforcement of embankments, and restoration of critical wetlands—will be essential to mitigate future flood impacts.

Future Trends: Droughts in Kampala City

Projected climate trends suggest a rise in seasonal droughts and prolonged dry spells, particularly affecting Nakawa, Lubaga, and Kawempe Divisions, where dependence on groundwater, urban farming, and rainwater harvesting is high. The March–May and September–November seasons are becoming increasingly erratic, with some years exhibiting 2–3 consecutive weeks of rainfall deficits (UNMA, 2019). Makindye will also face mounting water stress in rapidly expanding peri-urban areas like *Salaama* and *Lukuli*. In Central Division, drought effects will manifest more through water supply

disruptions than agricultural impacts, due to heavy reliance on piped infrastructure and low vegetation cover.

The implications of increased drought risk include reduced food security, as urban farmers face crop failures and water-dependent services such as sanitation and healthcare suffer. In poorer areas, the cost of water is projected to rise sharply, intensifying inequities in water access. Lower-income households in Kawempe and Nakawa may increasingly rely on unsafe or informal water vendors, exposing them to waterborne illnesses. Therefore, future planning must prioritize integrated urban water management, investment in municipal water storage systems, and community-level education on water efficiency and drought resilience.

Future Trends: Heat Stress in Kampala City

Heat stress will become one of the most pervasive climate risks in Kampala, with surface temperatures projected to rise by 1.5°C–2.5°C by 2050 under mid-range emission scenarios (IPCC, 2021). Central and Nakawa Divisions will experience the most severe urban heat island effects due to dense commercial activity and limited vegetative cover. Kawempe and Makindye, especially in informal settlements with metal roofing and poor ventilation, will also face severe indoor heat discomfort. Lubaga Division may be less affected due to higher tree cover and hilly terrain, but urban sprawl and unregulated development could gradually erode these protective features.

The implications are far-reaching: increasing heat-related illnesses, reduced labor productivity, and elevated energy demand for cooling in both homes and businesses. Vulnerable groups—including the elderly, children, pregnant women, and outdoor workers—will be disproportionately affected. Projections indicate a growing need for urban greening initiatives, promotion of cool roofing and building design, and health system preparedness for heat-related emergencies. Without proactive adaptation, heat stress could become a silent but devastating hazard, particularly for Kampala's informal settlements and marginalized populations.

Future Trends: Storms in Kampala City

Storm events—including high winds, hail, and intense downpours—are expected to increase in frequency and intensity across all five divisions, but particularly in Kawempe, Lubaga, and Makindye where unplanned structures are prevalent. Forecast models show a projected increase in short-duration, high-intensity rainfall events, often accompanied by localized windstorms (OPM, 2017; IPCC, 2021). In Central Division, the risk lies not in exposure but in infrastructure fragility, especially in aged roofing and unprotected utilities. Nakawa, with a mix of industrial and residential zones, is also at risk due to loose debris and rapidly expanding development.

The future implications of storm risk include infrastructure damage, economic disruption, and increased injuries or fatalities, especially in areas where housing is poorly constructed. Roof blow-offs, tree falls, and collapsed power lines will become more common, impacting schools, hospitals, and businesses. In informal areas, storms could trigger secondary hazards such as flash floods or fire

outbreaks. Therefore, there is an urgent need for strengthening building codes, scaling up emergency preparedness programs, and investing in early warning systems that are locally accessible and trusted by communities.

CHAPTER SEVEN

7. CLIMATE CHANGE MITIGATION STRATEGIES

Based on the above analysis of community perceptions and participation in urban greening initiatives across Kampala's divisions, several climate change mitigation strategies emerge as both relevant and necessary shown in Table 6. The data reveals strong community support for nature-based solutions such as tree planting programs and wetland restoration, which were rated "High" by the majority of respondents across all divisions. These strategies directly contribute to climate mitigation by enhancing carbon sequestration, reducing the urban heat island effect, and improving local microclimates. Investing in the expansion of these programs, while prioritizing areas with lower participation such as Central and Kawempe in specific initiatives, would strengthen Kampala's overall carbon sink capacity.

Another promising mitigation pathway is the promotion of green infrastructure, including the adoption of green roofs and rooftop or vertical gardening initiatives. Although current uptake is modest—especially in divisions like Kawempe and Central—the potential for reducing building-level emissions and promoting food security in urban areas is considerable. Encouraging private sector engagement and offering incentives for greening rooftops, especially in commercial buildings and high-density areas, could greatly enhance this strategy. Moreover, linking rooftop gardening to food waste management and composting practices would generate co-benefits across waste reduction and sustainable agriculture.

Community-driven solutions, particularly agroforestry and tree maintenance on private land, also surfaced as widely recognized strategies. These programs integrate urban livelihoods with ecological preservation, particularly in divisions like Lubaga and Makindye, where "High" participation was noted. Strengthening these efforts through micro-financing options, training, and market access for agroforestry products would further embed climate-smart practices in the informal economy. These interventions not only support mitigation but also build socio-economic resilience, reducing dependence on carbon-intensive livelihoods.

The creation of urban green parks and recreational spaces, although receiving mixed ratings across divisions, remains a valuable mitigation strategy with long-term benefits. These green spaces act as carbon sinks and promote active, low-carbon transportation like walking and cycling, while also contributing to public health and mental well-being. In divisions like Nakawa and Lubaga where these spaces are more developed, efforts should focus on maintenance and community stewardship, while underrepresented areas should be prioritized for new investments in green urban design.

The data highlights a critical opportunity to align policy incentives with community engagement. Respondents in several divisions indicated strong support for government-led initiatives when accompanied by accessible incentives and infrastructure improvements. By formalizing these

community preferences into climate action plans and urban policy, Kampala can foster bottom-up climate governance. Capacity-building programs tailored to the varying levels of engagement and knowledge—especially in low-rated divisions like Central—would ensure that all urban populations contribute meaningfully to climate mitigation efforts. A city-wide coordination of these strategies will be essential to meet Uganda's NDCs (Nationally Determined Contributions) under the Paris Agreement.

Table 6. Combined Urban Greening Initiatives by Division

Initiative	Practice Level	Central Division	Kawempe Division	Makindye Division	Nakawa Division	Lubaga Division	Total
Tree Planting Programs	High	66	85	107	107	112	483
	Medium	24	33	16	19	17	109
	Low	15	18	7	6	5	51
Restoration & Protection of Wetlands	High	62	90	105	103	112	478
	Medium	28	30	14	22	11	105
	Low	15	16	11	7	11	60
Green Parks & Recreation Spaces	High	38	29	49	44	52	213
	Medium	34	32	31	47	41	190
	Low	33	75	50	41	41	240
Rooftop & Vertical Gardening Initiatives	High	8	13	26	30	34	111
	Medium	37	33	49	51	51	226
	Low	60	90	55	51	49	306
Community Agroforestry Programs	High	29	23	41	49	45	192
	Medium	26	28	47	47	45	194
	Low	50	85	42	36	44	257
Private Tree Incentive Programs	High	41	38	55	54	69	259
	Medium	25	31	33	48	25	166

Initiative	Practice Level	Central Division	Kawempe Division	Makindye Division	Nakawa Division	Lubaga Division	Total
	Low	39	67	42	30	40	218
Adoption of Green Roofs (Public/Commercial)	High	21	19	36	40	41	157
	Medium	22	22	42	42	40	173
	Low	62	95	52	50	53	313

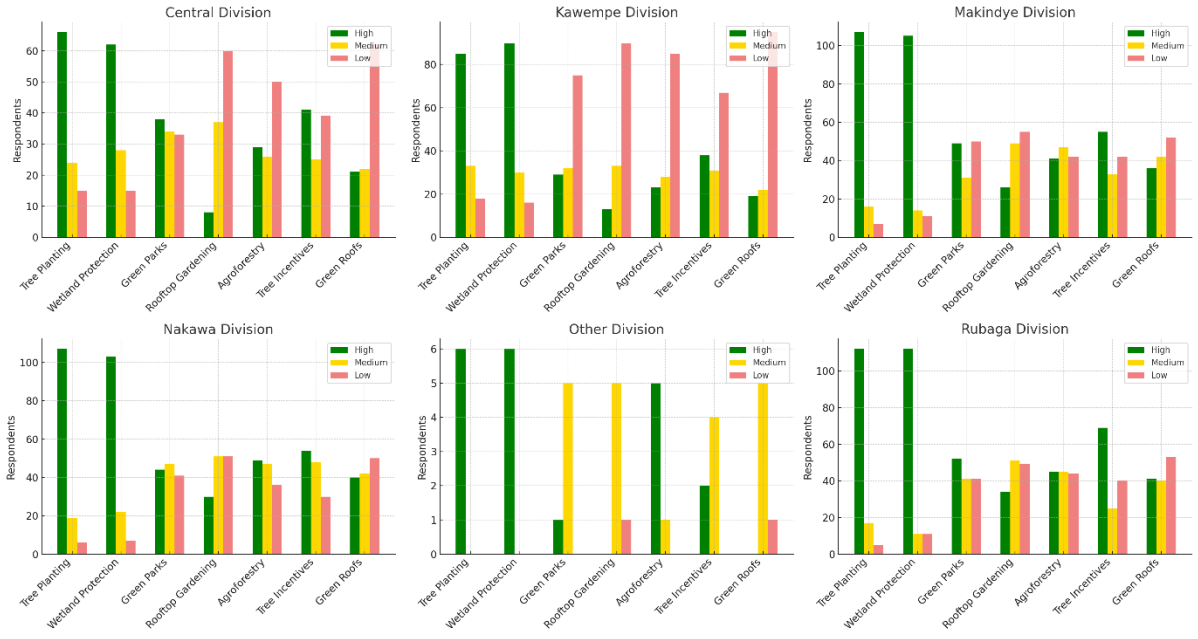


Figure 24. Perception levels of urban greening initiatives in Kampala City Divisions

Urban Greening Initiatives:

The perception matrix of urban greening initiatives across Kampala's divisions reveals that Tree Planting enjoys the highest overall approval, receiving “High” ratings in four out of six divisions, making it the most widely supported intervention. Divisions such as Makindye, Nakawa, and Lubaga showed consistently strong support for multiple initiatives, suggesting higher levels of awareness or existing implementation. In contrast, Kawempe Division displayed predominantly “Low” perceptions across all initiatives, signaling either limited exposure or underperformance in greening efforts. Other initiatives like Green Roofs, Tree Incentives, and Rooftop Gardening were rated mostly “Medium” or “Low,” indicating limited familiarity or accessibility. Overall, the findings suggest a need for tailored

engagement strategies per division, with Tree Planting emerging as a unifying entry point for citywide greening efforts.

The observed variations in perception align with previous studies that emphasize spatial disparities in environmental vulnerability and urban infrastructure provision in Kampala. For example, Mukwaya et al. (2012) highlighted that low-income areas like Kawempe and Central Division face infrastructural deficits that could limit the uptake of green initiatives despite their high exposure to flood risks (Mukwaya et al., 2012). Molina et al. (2015) further pointed out that land-use patterns and unregulated urban expansion in flood-prone zones reduce both ecological and social resilience, undermining community capacity to adopt green strategies (Molina et al., 2015). The lower perceptions in Kawempe may also be a reflection of this dynamic, where socio-economic constraints and informal development hinder environmental planning efforts. These studies support the recommendation to prioritize inclusive, community-driven greening interventions, particularly in underserved divisions, while capitalizing on Tree Planting as a scalable, high-impact solution.

Table 7. Summary of the dominant perception levels (High, Medium, Low) of urban greening initiatives across Kampala's divisions

Division	*Tree Planting*	*Wetland Protection*	*Green Parks*	*Rooftop Gardening*	*Agroforestry*	*Tree Incentives*	*Green Roofs*
Central Division	High	Medium	Medium	Low	Low	Low	Low
Kawempe Division	Low	Low	Low	Low	Low	Low	Low
Makindye Division	High	Medium	Medium	Medium	Medium	Medium	Medium
Nakawa Division	High	Medium	Medium	Medium	Medium	Medium	Medium
Lubaga Division	High	Medium	Medium	Medium	Medium	Medium	Medium
Other Division	Medium	Medium	Medium	Medium	Medium	Medium	Medium

8.2 Reducing Greenhouse gas emissions

The data on emissions reduction strategies across Kampala's divisions provides clear insights into the community's support for a broad suite of climate change mitigation measures (Table 8 and Figure 12). Among the most highly rated strategies were **waste-to-energy projects**, **non-motorized transport infrastructure**, and **recycling and composting programs**, each receiving consistently high responses across nearly all divisions. This suggests strong public recognition of the value of these interventions in reducing greenhouse gas emissions while addressing urban waste and mobility challenges. Waste-to-energy projects, in particular, garnered significant support in Kawempe, Lubaga, and Makindye divisions, where waste accumulation and informal disposal are prevalent.

Closely following in support are strategies related to **promoting public transportation**, **transitioning to electric public transport**, and **awareness campaigns on reducing carbon footprints**. The positive responses, particularly in Nakawa, Lubaga, and Makindye, highlight both a readiness and a need to invest in low-emission mobility systems. The emphasis on public transport promotion also signals a shift away from car dependence, which is critical in reducing urban traffic emissions. Public support for electric transport further underscores the need to expand infrastructure, such as charging stations, and policies that incentivize the shift to electric fleets.

Another significant finding is the community's endorsement of **clean energy adoption in city buildings**, **energy efficiency in households and businesses**, and **incentives for renewable energy on private property**. Respondents in Lubaga, Nakawa, and Kawempe divisions reported high support for these interventions, indicating an opportunity to scale up renewable energy technologies such as solar panels and energy-saving devices. Although current adoption levels may be limited due to upfront costs, the public's favorable perception suggests that well-targeted subsidies or financing programs could unlock wide-scale transitions to cleaner energy sources in Kampala.

Interestingly, regulations aimed at reducing industrial emissions and banning single-use plastics received substantial public support, reflecting a broad willingness among residents to embrace more stringent environmental protection measures. This is especially evident in divisions such as Makindye, Lubaga, and Kawempe, where high response rates suggest that communities recognize the need to address systemic sources of pollution beyond household or transportation-related interventions. Specifically, these sentiments align with national policy instruments such as the **National Environment Act, 2019**, which mandates the Uganda National Environment Management Authority (NEMA) to regulate and enforce emission standards, and the **Statutory Instrument No. 84 of 2020**, which bans the manufacture, importation, and use of plastic carrier bags and single-use plastics below 30 microns in thickness. The public backing for these measures provides a clear mandate for city authorities and regulators such as KCCA and NEMA to not only implement but strengthen enforcement of industrial compliance protocols and plastic waste regulations. Strengthening local ordinances in alignment with these national policies can significantly reduce pollution hotspots and promote a cleaner urban environment in Kampala.

Overall, the data illustrates that residents across Kampala are not only aware of climate change but are also willing to support diverse mitigation strategies. However, the varying levels of support by division indicate the importance of tailoring implementation approaches to local contexts. For example, high support for waste-to-energy in densely populated divisions should be paired with investment in decentralized waste collection and sorting infrastructure. Similarly, strategies like renewable energy promotion and public transport upgrades should be integrated into broader city-wide climate plans, backed by community education and inclusive financing mechanisms. The consistent public endorsement across sectors is a strong foundation upon which the city can build a just and inclusive transition to low-carbon urban development.

Table 8. Combined Emissions Reduction Strategies by Division

Strategy	Level	Central	Kawempe	Makindye	Nakawa	Lubaga	Total
Promoting public transport	High	57	70	72	63	75	340
	Medium	29	25	16	34	20	127
	Low	19	41	42	35	39	176
Transition to electric transport	High	24	54	63	70	67	280
	Medium	36	27	23	26	25	140
	Low	45	55	44	36	42	223
Non-motorized transport infrastructure	High	56	66	87	93	83	390
	Medium	23	36	25	28	36	149
	Low	26	34	18	11	15	104
Clean energy in buildings	High	43	57	61	55	61	280
	Medium	35	33	29	46	32	177
	Low	27	46	40	31	41	186
Regulate industrial emissions	High	43	60	67	71	76	322
	Medium	29	28	34	34	34	160
	Low	33	48	29	27	24	161
Waste-to-energy projects	High	57	99	98	94	108	462
	Medium	29	20	19	34	16	118
	Low	19	17	13	4	10	63
Recycling and composting	High	60	89	87	90	98	428
	Medium	25	30	28	30	22	137
	Low	20	17	15	12	14	78
Energy efficiency (households/business)	High	45	59	60	61	64	294

Strategy	Level	Central	Kawempe	Makindye	Nakawa	Lubaga	Total
	Medium	29	33	33	44	36	176
	Low	31	44	37	27	34	173
Carbon footprint awareness	High	61	79	83	89	90	407
	Medium	22	13	15	17	20	88
	Low	22	44	32	26	24	148
Renewable energy incentives	High	42	39	54	61	57	259
	Medium	26	41	36	39	36	178
	Low	37	56	40	32	41	206
Ban single-use plastics	High	61	84	82	96	98	426
	Medium	24	19	32	30	17	123
	Low	20	33	16	6	19	94

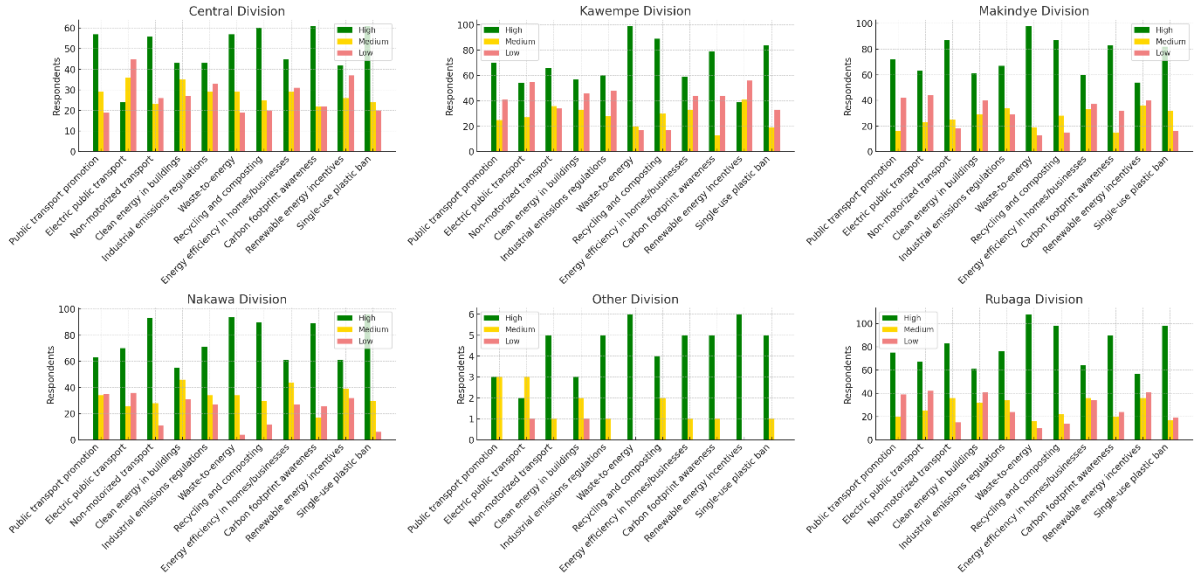


Figure 25. Perception levels of emissions reduction strategies per Division

CHAPTER EIGHT

8. EXISTING COPING AND ADAPTIVE CLIMATE CHANGE STRATEGIES

8.1 Infrastructure-based

The analysis of infrastructure-based adaptation strategies across Kampala's divisions reveals critical trends in how residents are responding to climate risks and which actions are gaining traction on the ground (Table 9 and Figure 23). Improving drainage systems and building flood-resistant houses emerged as the most consistently adopted strategies, particularly in Kawempe, Lubaga, and Nakawa divisions. These practices are crucial for managing the city's frequent flooding events and demonstrate community-level awareness of structural solutions to climate impacts. The relatively high frequency of "Always" and "Sometimes" responses to these actions suggests that households are prioritizing investments that directly protect life and property from flood damage.

Elevating building structures and constructing raised floors also show relatively high adoption, especially in Kawempe and Lubaga. These modifications, while costlier than minor interventions, indicate a growing understanding of long-term adaptation. In contrast, stormwater retention systems, although essential for regulating runoff and reducing flood risk, received the lowest frequency of adoption. The lack of widespread implementation across all divisions—particularly Central and Nakawa—points to financial, technical, or policy barriers that limit uptake of more complex engineering solutions at the household or community level.

Alternative energy adoption, such as the use of solar power, and installation of water harvesting systems also recorded low "Always" responses, though they remain important for enhancing adaptive capacity. The limited use of solar energy, despite high potential in Uganda, reflects barriers like high initial costs, limited technical support, and awareness gaps. Similarly, water harvesting systems—which are vital for resilience during droughts and municipal water shortages—showed low to moderate adoption, especially in Kawempe and Makindye. This indicates the need for targeted subsidies and technical assistance programs to promote low-tech, high-impact resilience solutions.

The data also highlighted significant community deficits in emergency preparedness, particularly in the construction of personal or community-level shelters. The vast majority of respondents in all divisions reported "Rarely" or "Never" having implemented this adaptation measure. This reveals a gap in disaster readiness and planning, with many households likely to be highly vulnerable during extreme climate events such as floods or storms. In urban environments like Kampala, where space and resources are constrained, public investment in shared community shelters and emergency infrastructure becomes even more critical.

Waste management practices such as sorting and recycling received moderate uptake, led by high participation in Lubaga, Makindye, and Kawempe. While not traditionally viewed as infrastructure-based adaptation, waste management contributes to flood reduction (by preventing drain blockages) and improves overall urban resilience. Increasing public awareness and providing logistical support for sorting and collection systems could enhance this effort further. In conclusion, the adoption of adaptation strategies in Kampala is uneven across divisions and strategy types, suggesting a need for localized planning, community engagement, financial incentives, and stronger institutional support to bridge the gaps and scale effective climate resilience actions city-wide.

Table 9. Combined Infrastructure-Based Adaptation Strategies by Division

Adaptation Strategy	Frequency	Central	Kawempe	Makindye	Nakawa	Lubaga	Total
Flood-resistant housing	Always	36	52	48	46	44	226
	Sometimes	21	44	10	25	21	122
	Rarely	48	13	19	24	26	135
	Never	0	27	53	37	43	160
Raised floors / Elevated structures	Always	24	87	56	47	70	284
	Sometimes	40	31	13	21	11	119
	Rarely	40	8	16	31	24	121
	Never	1	10	45	33	29	119
Water harvesting systems	Always	33	23	27	21	38	143
	Sometimes	25	17	13	31	17	103
	Rarely	46	54	26	27	22	180
	Never	1	42	64	53	57	217
Drainage system improvement	Always	52	80	70	69	70	341
	Sometimes	35	26	28	22	36	148
	Rarely	18	25	13	21	14	96
	Never	0	5	19	20	14	58
Alternative energy (solar)	Always	19	13	23	23	15	93
	Sometimes	21	21	7	12	14	77

Adaptation Strategy	Frequency	Central	Kawempe	Makindye	Nakawa	Lubaga	Total
	Rarely	64	53	39	42	49	251
	Never	1	49	61	55	56	222
Stormwater retention systems	Always	14	12	1	1	1	29
	Sometimes	20	11	1	4	5	41
	Rarely	70	53	26	42	38	234
	Never	1	60	102	85	90	339
Emergency shelters	Always	18	11	9	12	14	64
	Sometimes	18	21	13	14	12	79
	Rarely	69	45	30	44	42	235
	Never	0	59	78	62	66	265
Waste management practices	Always	40	58	64	63	62	288
	Sometimes	26	34	14	20	28	123
	Rarely	39	32	33	31	27	166
	Never	0	12	19	18	17	66

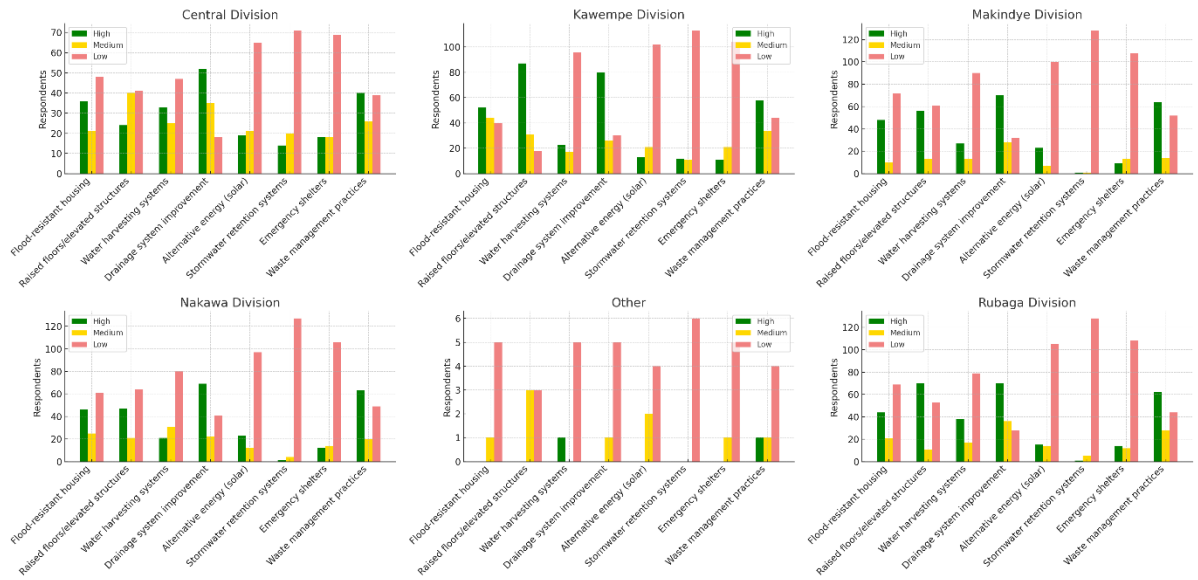


Figure 26. Perception levels of adaptation strategies per Division

8.2 Community based

The analysis of community engagement strategies across Kampala's divisions reveals the critical role of social capital and collective action in climate change mitigation and resilience shown in Table 10 and Figure 24. While infrastructural and policy solutions are essential, these findings underscore that effective climate responses must be grounded in community participation and local knowledge networks. One of the most widely adopted strategies, especially in Lubaga, Kawempe, and Central divisions, is sharing climate-related information and resources with neighbors during climate events. This points to the strong presence of informal support systems and social cohesion, which are crucial for timely response and mutual aid in the face of floods, storms, and other climate hazards.

Another relatively supported strategy is coordinating with local leaders to address climate challenges. High participation was particularly evident in Lubaga, Makindye, and Nakawa, indicating a level of trust and responsiveness in community leadership structures. Local leaders serve as essential intermediaries between government agencies and residents, especially in disseminating adaptation knowledge and mobilizing community-wide actions. These efforts can be leveraged further through formal training of local leaders and establishment of grassroots climate response committees, amplifying the reach and impact of national or city-level climate policies.

In contrast, engagement in formal disaster preparedness programs and community savings or insurance schemes remains notably low across nearly all divisions, with the majority of respondents indicating "Rarely" or "Never" participating. This gap highlights a critical area of vulnerability—financial and institutional unpreparedness for disaster events. Strengthening household-level financial resilience through microinsurance, savings cooperatives, or disaster compensation funds could significantly enhance the city's adaptive capacity. These programs need to be made more accessible, especially in high-risk informal settlements where formal safety nets are absent or weak.

Equally concerning is the low participation in climate adaptation workshops and support from Village Disaster Risk Management (VDRM) committees. Most residents report little to no involvement in such capacity-building efforts. This suggests either a lack of awareness, trust, or availability of these services. Increasing outreach and visibility of such programs—particularly in Kawempe, Nakawa, and Lubaga divisions—could improve community readiness and knowledge of adaptation techniques. Including participatory climate education in schools, religious centers, and local forums may help bridge this gap and create a more climate-aware urban populace.

Developing local early warning systems and engaging in environmental and waste management activities received modest to strong support across divisions. These findings show that residents recognize the importance of proactive and preventive actions, particularly in waste disposal, which directly affects flooding and public health. To scale these efforts, city authorities could adopt neighborhood-based waste sorting incentives, digitized early warning alert systems, and integrate community data into national forecasting platforms. In sum, the data shows that while some forms of community-based climate engagement are strong, significant work remains to ensure that all residents are included, equipped, and empowered to actively contribute to mitigation and adaptation efforts.

Table 10. Community Engagement Strategies by Division

Strategy	Frequency	Central	Kawempe	Makindye	Nakawa	Lubaga	Total
Community savings/insurance schemes	Always	13	9	8	6	10	46
	Sometimes	27	22	18	8	26	103
	Rarely	65	52	37	42	39	239
	Never	0	53	67	76	59	255
Disaster preparedness programs	Always	16	17	10	7	12	62
	Sometimes	24	17	7	7	19	74
	Rarely	65	47	41	45	42	246
	Never	0	55	72	73	61	261
Sharing info/resources during climate events	Always	25	39	45	32	41	183
	Sometimes	27	21	14	27	24	113
	Rarely	53	35	34	37	35	199
	Never	0	41	37	36	34	148
Early warning system development	Always	28	34	28	27	27	144
	Sometimes	20	14	6	12	17	69

Strategy	Frequency	Central	Kawempe	Makindye	Nakawa	Lubaga	Total
	Rarely	57	35	41	43	37	218
	Never	0	53	55	50	53	212
Coordination with local leaders	Always	39	38	38	37	38	190
	Sometimes	27	22	26	23	23	122
	Rarely	39	36	19	31	29	159
	Never	0	40	47	41	44	172
Attending climate adaptation workshops	Always	22	13	16	7	10	68
	Sometimes	21	8	5	13	6	53
	Rarely	61	62	30	39	35	233
	Never	1	53	79	73	83	289
Support from VDRM committees	Always	17	17	15	12	15	76
	Sometimes	20	14	6	4	4	48
	Rarely	68	51	29	39	41	233
	Never	0	54	80	77	74	286
Community-wide environment & waste mgmt.	Always	35	45	43	40	47	211
	Sometimes	22	22	10	19	16	89
	Rarely	47	31	34	43	36	196
	Never	1	38	43	30	35	147

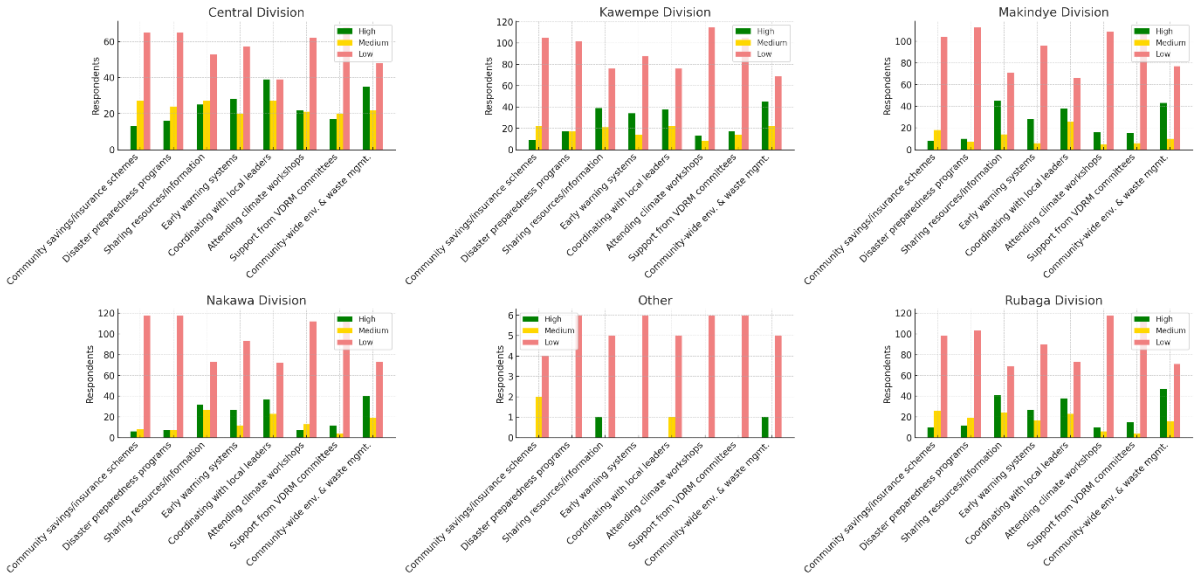


Figure 27. Perception levels of community engagement strategies per Division

8.3 Ecosystem-based

The data on environmental adaptation strategies across Kampala's divisions reveals both encouraging practices and critical gaps in climate change readiness at the community level (Table 11 and Figure 25). A small but notable proportion of residents reported **"Always" engaging in actions like planting drought-resistant crops**, using **traditional knowledge to predict weather**, and **protecting wetlands and catchment areas**—highlighting some awareness and use of climate-smart approaches. Traditional knowledge, in particular, showed strong uptake in Lubaga, Kawempe, and Makindye, indicating the continued relevance of indigenous and localized weather forecasting in climate adaptation. However, the overall frequency of "Always" responses remains low across most divisions, suggesting that these practices are not yet mainstreamed.

On the other hand, **"Rarely" and "Never"** responses dominated for many key actions, particularly in agroforestry, reforestation of degraded lands, and rethinking harmful activities like brick-making. For example, reforestation—a vital strategy for restoring ecosystems, improving carbon sequestration, and reducing heat stress—saw especially low levels of uptake in all divisions. This trend suggests that while awareness might be growing, community-level capacity, land availability, or enabling policy frameworks for land restoration remain insufficient. Similarly, the practice of agroforestry, despite its known benefits for resilience and food security, had extremely low "Always" responses, indicating a missed opportunity in building long-term adaptive landscapes.

Wetland protection, though slightly better supported, still exhibited high "Never" and "Rarely" responses, especially in divisions like Kawempe and Nakawa. This is concerning given Kampala's dependency on wetlands for flood regulation and urban cooling. The data suggests a need to ramp up

public education on the ecosystem services provided by wetlands, as well as the enforcement of land use regulations that discourage encroachment and degradation. Urban agriculture and informal settlements are likely drivers of wetland loss, calling for innovative co-management approaches that balance livelihood needs with ecosystem integrity.

Interestingly, one of the more accepted practices across divisions was **avoiding environmentally degrading activities** such as brick-making. This practice showed moderate to high "Always" and "Sometimes" responses, especially in Lubaga and Kawempe, indicating some community understanding of the consequences of unsustainable land use. This can be leveraged through targeted public campaigns and the provision of alternative livelihood options that are both low-carbon and low-impact. If such practices are incentivized and scaled up, they could form the backbone of a community-driven environmental protection strategy.

Overall, the data illustrates that while the foundation for environmental adaptation exists in some divisions, the widespread adoption of strategies is still limited by systemic constraints, including access to knowledge, incentives, tools, and coordinated support. Climate change adaptation in Kampala must therefore move beyond isolated interventions to integrated programs that combine ecological restoration, traditional knowledge, sustainable agriculture, and livelihood diversification. Policy makers and development actors should prioritize enabling conditions—such as financing mechanisms, technical training, and local governance engagement—to enhance community uptake of these vital strategies.

Table 11. Environmental Adaptation Strategies by Division

Strategy	*Frequency*	*Central*	*Kawempe*	*Makindye*	*Nakawa*	*Other*	*Lubaga*	*Total*
Drought-resistant crops / Ag practices	Always	12	12	9	4	1	8	46
	Sometimes	17	12	7	2	0	16	54
	Rarely	75	48	25	30	5	30	213
	Never	1	64	89	96	0	80	330
Wetland and catchment protection	Always	25	36	30	29	1	40	161
	Sometimes	32	21	6	10	0	8	77
	Rarely	48	33	30	34	5	31	181
	Never	0	46	64	59	0	55	224
Agroforestry / Mixed farming	Always	12	4	9	1	0	3	29
	Sometimes	25	18	6	5	1	10	65
	Rarely	67	49	24	32	5	39	216

Using traditional knowledge for weather	Never	1	65	91	94	0	82	333
	Always	24	44	42	41	0	45	196
	Sometimes	26	19	9	9	2	19	84
	Rarely	53	31	36	40	4	41	205
Reforestation of degraded/community areas	Never	2	42	43	42	0	29	158
	Always	20	4	6	4	1	5	40
	Sometimes	23	14	4	2	0	5	48
	Rarely	62	52	30	42	5	41	232
Avoiding environmental degradation (e.g. bricks)	Never	0	66	90	84	0	83	323
	Always	31	38	37	30	1	43	180
	Sometimes	35	41	32	14	0	23	145
	Rarely	39	20	37	36	5	40	177
	Never	0	37	24	52	0	28	141

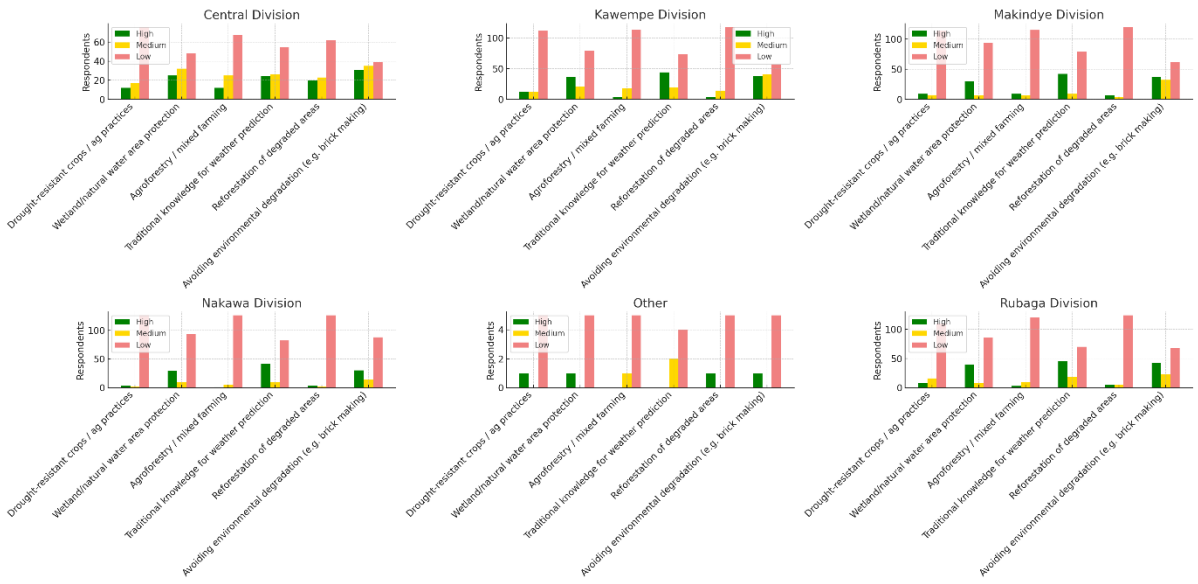


Figure 28. Perception levels of environmental adaptation strategies per Division

8.4 Effectveness of Adaptaton Strategies

All listed adaptation strategies demonstrate statistically significant differences (**p < .001 for most, and p = .001 for drainage improvement**) in perceived effectiveness across the divisions of Kampala as shown in Table 12. The consistently low p-values indicate robust division-specific differences, implying a need for geographically tailored communication, education, and intervention strategies. Measures rated "High" indicate broader acceptance and may require scaled implementation across Kampala, whereas those rated "Low" reveal significant skepticism or unfamiliarity, requiring extensive community engagement and sensitization.

1. Building Flood-Resistant Housing:
Responses significantly differ across divisions ($\chi^2 = 64.182$, $p < .001$). Nakawa (56%), Kawempe (51%), Makindye (53%), Lubaga (51%), and particularly the "Other" division (83%) largely rated this measure as "very effective," indicating broad acceptance. In contrast, Central Division shows notable skepticism (30% "not effective"). This implies that strategies promoting flood-resistant housing should focus on strengthening awareness in Central Division while building on the existing positive perceptions elsewhere.

2. Elevating Homes or Constructing Raised Floors:
Significant differences exist among divisions ($\chi^2 = 81.851$, $p < .001$). Most divisions (Kawempe 51%, Makindye 54%, Nakawa 52%, Lubaga 52%, and "Other" division 83%) recognize high effectiveness, whereas Central Division shows mixed opinions (35% "very effective," 30% "not effective"). This suggests the need for targeted educational campaigns in Central Division, showcasing practical benefits.

3. Installing Water Harvesting Systems for Domestic Use:
Divisional perceptions significantly vary ($\chi^2 = 94.187$, $p < .001$). High support is evident in Lubaga (40%) and Central (44%), moderate in Nakawa (33%), and lower in Kawempe and Makindye. High uncertainty ("N/A") in Kawempe (38%) and Makindye (38%) implies the need for division-specific awareness initiatives to enhance adoption.

4. Improving Drainage Systems in Households or Communities:
Significant variation exists ($\chi^2 = 39.039$, $p = .001$), yet there is general consensus on effectiveness (Makindye 70%, Nakawa 66%, Lubaga 60%, Kawempe 54%, Central 56%, and "Other" 67%). This strong agreement implies community-wide support for prioritizing drainage improvements across Kampala.

5. Using Alternative Energy Sources Like Solar Power:
Responses differ significantly ($\chi^2 = 72.213$, $p < .001$). While Nakawa (29%) and Central (35%) moderately support its effectiveness, skepticism ("not effective") is high in Central (49%) and Kawempe (36%). High uncertainty ("N/A") in Makindye (37%), Lubaga (34%), and Nakawa (33%) suggests the need for enhanced information dissemination and affordability initiatives.

6. Constructing Stormwater Retention Systems:
Significant divisional skepticism is evident ($\chi^2 = 105.675$, $p < .001$), with high "not effective" or "N/A" responses across all divisions, especially Central (56%) and Makindye (54%). Practical implications include significant efforts required in community sensitization and demonstration projects to enhance acceptance.

7. Developing Personal or Community-Level Emergency Shelters:
Significant variation ($\chi^2 = 88.202$, $p < .001$) highlights widespread skepticism ("not effective" and "N/A") in all divisions, particularly Kawempe (71%), Nakawa (73%), and Lubaga (71%). The practical implication is a need to increase community education, relevance, and participation in shelter strategies.

8. Proper Waste Management (Recycling, Sorting):
Highly significant divisional disparities exist ($\chi^2 = 448.285$, $p < .001$). Makindye (54%), Nakawa (55%), and Lubaga (51%) strongly support this strategy's effectiveness, while Central Division responses indicate operational gaps or limited implementation (97% separate categorization). Implications involve bridging infrastructural gaps and clarifying waste management benefits in skeptical divisions.

9. Participating in Community Savings or Insurance Schemes:
Responses significantly differ ($\chi^2 = 108.793$, $p < .001$), with moderate to low support (10%-23%) and high skepticism in all divisions, notably Kawempe (70%) and Nakawa (67%). Practical implications include enhancing community trust, financial literacy, and accessibility of such schemes.

10. Joining Community Disaster Preparedness Programs:
Divisions significantly differ ($\chi^2 = 112.583$, $p < .001$). Low perceived effectiveness (20%-23%) and significant skepticism (up to 71%) across all divisions suggest limited current engagement. Enhanced community involvement, education, and visibility of these programs are essential.

11. Sharing Resources with Neighbors During Climate Events:
Significant differences appear ($\chi^2 = 50.541$, $p < .001$), with moderate perceived effectiveness across divisions (30%-41%). Given skepticism levels, especially in Central (37%) and Nakawa (30%), practical implications include fostering community solidarity and trust-building measures to increase resource sharing during emergencies.

12. Developing Local Early Warning Systems:
Significant variation exists ($\chi^2 = 64.932$, $p < .001$). While perceived effectiveness is moderate across divisions (35%-44%), substantial skepticism persists, particularly in Nakawa (33%) and Central (33%). The practical implication is investing in locally tailored warning systems and communication mechanisms to improve trust and effectiveness.

13. Coordinating with Local Leaders:
Responses significantly vary ($\chi^2 = 43.855$, $p < .001$). All divisions show moderate support (35%-45%), yet skepticism remains notable, especially in Kawempe (51%) and Lubaga (46%). Implications highlight the need to strengthen accountability and transparency of local leadership to enhance community trust.

14. Attending Climate Change Adaptation Workshops:
Significant division-wise differences ($\chi^2 = 78.289$, $p < .001$) indicate limited perceived effectiveness (20%-35%) across all divisions, with high skepticism or uncertainty. This implies the need for workshops that are locally relevant, accessible, practical, and responsive to community-specific needs.

15. Planting Drought-Resistant Crops or Shifting Agricultural Practices:
Significant variations ($\chi^2 = 119.804$, $p < .001$) indicate uniformly low effectiveness ratings (12%-21%) and high skepticism (up to 74%). Implications include the need for targeted agricultural extension services, demonstration plots, and farmer training to boost adoption rates.

16. Protecting Wetlands and Natural Water Catchments:
Responses significantly differ ($\chi^2 = 55.131$, $p < .001$). Moderate to high effectiveness ratings (39%-49%) across divisions indicate support, though significant skepticism remains, particularly in Makindye and Nakawa. Practical implications include improving community understanding of ecological benefits and stricter enforcement of environmental regulations.

17. Practicing Agroforestry or Mixed Farming:
Significant divisional skepticism ($\chi^2 = 119.350$, $p < .001$) dominates responses, with uniformly low effectiveness (13%-18%) across all divisions. This highlights substantial knowledge gaps or resource limitations, implying the need for targeted educational campaigns and practical demonstration initiatives.

18. Using Traditional Knowledge to Predict Climate Patterns:
Significant differences ($\chi^2 = 76.421$, $p < .001$) indicate moderate perceived effectiveness (26%-39%), but notable skepticism persists in all divisions, particularly Central and Nakawa. Practical implications include better integration of traditional knowledge with scientific forecasts for wider acceptance.

19. Reforesting Degraded Lands or Community Areas:
Divisional responses significantly differ ($\chi^2 = 99.561$, $p < .001$), reflecting low perceived effectiveness (15%-26%) and substantial skepticism. This suggests the need for targeted reforestation campaigns, land-use planning, and incentives for communities to participate.

20. Avoiding Activities That Degrade the Local Environment:
Significant variations ($\chi^2 = 49.077$, $p < .001$) exist, with high perceived effectiveness (47%-52%) across most divisions, although skepticism remains, particularly in Central. Implications involve reinforcing environmental education, clear communication of benefits, and active enforcement to enhance positive practices across divisions.

Table 12. Effectiveness of adaptation strategies according to the respondents in the Divisions

Adaptation Measure	Central (%)	Kawempe (%)	Makindye (%)	Nakawa (%)	Lubaga (%)	Overall Effectiveness	Chi-square Results
Building Flood-Resistant Housing	43	51	53	56	51	High	$\chi^2 = 64.182$, df=15, $p < .001$
Elevating Homes or Raised Floors	35	51	54	52	52	High	$\chi^2 = 81.851$, df=15, $p < .001$
Installing Water Harvesting Systems	44	21	30	33	40	Moderate	$\chi^2 = 94.187$, df=15, $p < .001$

Improving Drainage Systems	56	54	70	66	60	High	χ^2 = 39.039, df=15, p = .001
Alternative Energy Sources (Solar)	35	18	26	29	20	Moderate	χ^2 = 72.213, df=15, p < .001
Stormwater Retention Systems	25	12	13	14	17	Low	χ^2 = 105.675, df=15, p < .001
Community Emergency Shelters	28	19	22	19	20	Low	χ^2 = 88.202, df=15, p < .001
Proper Waste Management (Recycling, Sorting)	2	24	54	55	51	Moderate to High	χ^2 = 448.285, df=20, p < .001
Community Savings/Insurance Schemes	22	10	23	18	21	Low	χ^2 = 108.793, df=15, p < .001
Community Disaster Preparedness Programs	20	21	22	23	21	Low	χ^2 = 112.583, df=15, p < .001
Sharing Resources During Climate Events	41	30	35	37	35	Moderate	χ^2 = 50.541, df=15, p < .001
Local Early Warning Systems	44	35	37	37	37	Moderate	χ^2 = 64.932, df=15, p < .001
Coordination with Local Leaders	45	35	42	40	37	Moderate	χ^2 = 43.855, df=15, p < .001

Attending Adaptation Workshops	35	20	22	22	24	Low to Moderate	χ^2 = 78.289, df=15, p < .001
Drought-Resistant Crops/Agriculture Practices	12	21	18	18	16	Low	χ^2 = 119.804, df=15, p < .001
Protecting Wetlands/Natural Catchments	45	45	39	47	49	Moderate to High	χ^2 = 55.131, df=15, p < .001
Agroforestry/Mixed Farming	18	13	18	17	14	Low	χ^2 = 119.350, df=15, p < .001
Traditional Knowledge for Climate Patterns	26	39	38	39	37	Moderate	χ^2 = 76.421, df=15, p < .001
Reforesting Degraded Lands	26	15	20	17	17	Low	χ^2 = 99.561, df=15, p < .001
Avoiding Activities Degrading Environment	47	46	53	50	52	Moderate to High	χ^2 = 49.077, df=15, p < .001

Interpretation of Chi-square Test Results:

High	Moderate to High	Moderate	Low to Moderate	Low

CHAPTER NINE

9. CLIMATE RISK MANAGEMENT, ADAPTATION AND MITIGATION RECOMMENDATIONS

9.1 Recommended Adaptation and Mitigation strategies for reducing climate risk

Mitigation Strategy Recommendation:
To reduce greenhouse gas emissions and enhance ecological resilience, Kampala's divisions should prioritize wetland protection, tree planting, and waste management improvements as foundational short-term actions (Table 13). In the medium term, scaling up climate education workshops, biodiversity restoration, and community-led resilience programs will support behavior change and ecosystem regeneration. Long-term strategies such as renewable energy adoption (especially solar), reforestation, and climate-smart agriculture (including agroforestry and drought-resistant crops) will be critical for sustaining urban mitigation efforts citywide.

Adaptation Strategy Recommendation:
Given Kampala's recurring flood risks and vulnerable infrastructure, all divisions should implement drainage system upgrades and flood-resistant housing as immediate priorities (Table 13). Over the medium term, introducing early warning systems, domestic water harvesting, and community coordination mechanisms can enhance preparedness. In the long run, investments in emergency shelters, stormwater retention infrastructure, and community adaptation programs will be vital to protecting at-risk populations and building resilience to increasingly frequent climate shocks.

Table 13. Prioritized Adaptation and Mitigation Recommendations Matrix for KCCA Divisions

Division	**Recommendations**	**Short-term Strategies (immediate implementation)**	**Medium-term Strategies (3–5 years)**	**Long-term Strategies (over 5 years)**
Central	**Adaptation**	- Drainage improvements - Flood-resistant housing	- Elevated homes - Domestic water harvesting systems - Early warning systems and coordination with leaders	- Emergency shelters - Community disaster preparedness programs

Division	Recommendations	Short-term Strategies (immediate implementation)	Medium-term Strategies (3–5 years)	Long-term Strategies (over 5 years)
			- Community adaptation workshops	
	Mitigation	- Wetland protection - Health interventions	- Reforestation programs - Sustainable land-use management	- Renewable/solar energy adoption - Agroforestry and drought-resistant farming practices - Effective waste management
Kawempe	**Adaptation**	- Improved drainage systems - Flood-resistant housing and elevated homes	- Early warning systems - Coordination with local leaders - Traditional knowledge for climate prediction	- Emergency shelters - Stormwater retention systems
	Mitigation	- Wetland protection	- Biodiversity enhancement - Climate resilience workshops and training - Tree planting	- Renewable/solar energy - Agroforestry/mixed farming practices - Waste recycling and sorting - Community savings schemes
Makindye	**Adaptation**	- Drainage and sanitation improvements - Flood-resistant and elevated homes	- Local early warning systems - Coordination with local leaders - Resource-sharing strategies	- Emergency shelters - Stormwater retention systems
	Mitigation	- Proper waste management (recycling/sorting) - Wetland protection	- Climate awareness and education workshops - Health interventions addressing climate impacts - Community savings and insurance schemes	- Renewable energy solutions (solar) - Agroforestry and drought-resistant agriculture

Division	Recommendations	Short-term Strategies (immediate implementation)	Medium-term Strategies (3–5 years)	Long-term Strategies (over 5 years)
			- Tree planting	
Nakawa	**Adaptation**	- Improved drainage systems - Flood-resistant housing and elevated homes	- Water harvesting systems - Local early warning systems - Resource-sharing during emergencies - Leadership coordination	- Emergency shelters - Stormwater retention infrastructure
	Mitigation	- Effective waste management (recycling/sorting) - Wetland conservation	- Biodiversity restoration - Climate awareness workshops - Socio-economic savings/insurance programs - Tree planting	- Renewable energy sources (solar) - Reforestation initiatives - Drought-resistant agriculture practices
Lubaga	**Adaptation**	- Drainage infrastructure improvements - Flood-resistant and elevated housing	- Domestic water harvesting systems - Early warning systems - Coordination with local leadership	- Community emergency shelters - Stormwater retention infrastructure
	Mitigation	- Waste management improvements (recycling, sorting) - Wetland and ecosystem protection	- Climate adaptation training workshops - Community savings and insurance schemes - Health sector resilience programs - Tree planting	- Alternative energy (solar) - Agroforestry, mixed farming and drought-resistant agriculture practices

9.2 Sector-specifc Adaptaton and mitgaton strategies

The sectors identified as critical for climate adaptation and mitigation in Kampala Capital City Authority (KCCA) represent core systems essential to the city's socio-economic stability and environmental sustainability (Table 14). These include **Transport and Infrastructure**, which encompasses roads, bridges, drainage systems, and public utilities that are highly vulnerable to climate-induced hazards such as flooding and heat stress. **Housing and Human Settlements** focus on promoting resilient

construction, such as flood-resistant housing and emergency shelters, to safeguard populations in high-risk areas. **Water Resources and Management** addresses the need for sustainable practices such as rainwater harvesting and stormwater retention to manage increasing water scarcity and flood risks. The **Energy** sector highlights the urgency to shift toward renewable and alternative energy sources to reduce greenhouse gas emissions. **Peri-urban Agriculture and Food Security** emphasize adaptive farming practices like agroforestry, drought-resistant crops, and mixed farming to enhance food system resilience. The **Health** sector is integral to protecting communities from the adverse effects of climate extremes through responsive healthcare infrastructure and services. **Natural Resources and Ecosystems**, including wetlands and forests, serve as natural buffers and require restoration and protection to maintain ecological stability. **Education and Awareness** play a pivotal role in building adaptive capacity through training, knowledge sharing, and community empowerment initiatives.

Cross-cutting themes are foundational elements that influence and interlink all priority sectors, ensuring inclusivity, sustainability, and long-term effectiveness of climate action. **Waste Management** addresses the growing challenge of pollution and resource inefficiency through strategies like recycling, sorting, and waste-to-energy innovations. **Socio-Economic Systems** focus on enhancing financial resilience by strengthening community savings groups, introducing climate insurance schemes, and expanding employment opportunities, particularly for vulnerable populations. **Community and Social Resilience** involves fostering local collaboration through resource-sharing mechanisms, early warning systems, and coordination with local leadership, all of which are vital for effective response to climate impacts. **Disaster Risk Management and Preparedness** ensures that communities are equipped with the knowledge and infrastructure to prevent, respond to, and recover from disasters. **Urban Planning and Land Use** integrates climate risk considerations into development processes, promoting sustainable urban expansion and minimizing exposure to hazards. **Gender and Social Inclusion** ensures that climate interventions are equitable and responsive to the specific needs of women, youth, persons with disabilities, and other marginalized groups, recognizing their critical roles in building resilient communities.

Central Division

In Central Division, climate adaptation efforts should be prioritized through immediate interventions in drainage system upgrades, flood-resistant housing, and community-based water harvesting to reduce vulnerability to urban flooding. Medium-term actions should emphasize infrastructure resilience, elevated housing, and expanded domestic water harvesting, complemented by public health improvements and ecosystem restoration initiatives. Long-term strategies should focus on developing a climate-resilient infrastructure masterplan, constructing community emergency shelters, and implementing stormwater retention systems. Mitigation efforts should span from promoting alternative energy and waste recycling to institutionalizing climate education, employment-linked resilience programs, and integrated gender and youth strategies to ensure inclusive, sustainable urban development.

Kawempe Division

Kawempe Division should focus on immediate drainage improvements, dual-purpose flood-resistant and elevated housing, and community sensitization on renewable energy and water harvesting as

critical short-term adaptation measures. In the medium term, infrastructure upgrades, elevated housing programs, and biodiversity enhancement initiatives should support broader resilience goals. Long-term priorities should include city-wide solar implementation, stormwater solutions, and emergency shelter infrastructure. Mitigation strategies should incorporate institutionalized climate education, waste-to-energy development, sustainable farming systems, and socially inclusive resilience planning. The division also champions traditional knowledge, disaster preparedness, and inclusive planning as key to building a future-proof urban environment.

Makindye Division

Adaptation in Makindye Division should begin with drainage enhancements, housing upgrades, water harvesting awareness, and climate-health risk communication. Medium-term strategies should include infrastructure flood-proofing, agroforestry training, and health infrastructure upgrades. Long-term goals center on sustainable farming systems, resilient transport, stormwater retention, and community emergency shelters. Mitigation interventions should span from renewable energy adoption to biodiversity conservation and waste-to-energy projects. Institutional support includes formal climate adaptation education, strengthened socio-economic systems, disaster preparedness, and inclusive policies targeting gender, youth, and persons with disabilities—ensuring that both the physical and social infrastructure is climate-resilient.

Nakawa Division

Nakawa Division's adaptation priorities should focus on immediate drainage and housing interventions, coupled with water harvesting promotion and climate-health risk awareness. Medium-term resilience efforts should include elevation of housing structures, adaptation training, and strengthened public utilities. Long-term goals should aim to deliver infrastructure resilience, expanded stormwater retention, climate-adaptive healthcare, and sustainable food systems. Mitigation strategies should focus on renewable energy promotion, biodiversity restoration, and structured educational programs. Through sectoral integration, Nakawa should also strengthen disaster preparedness, land use planning, and inclusive socio-economic development that considers the specific vulnerabilities of marginalized groups.

Lubaga Division

Lubaga Division should initiate adaptation through drainage system upgrades, resilient housing, and water harvesting awareness. Medium-term efforts advance through infrastructure hardening, health facility adaptation, and ecosystem restoration. Long-term strategies should aim for comprehensive urban resilience via emergency shelters, stormwater infrastructure, and sustained biodiversity management. Mitigation pathways should include renewable energy uptake, structured waste management, climate education, and sustainable agriculture. Additionally, Lubaga should promote inclusive urban planning, early warning systems, and gender-responsive climate adaptation, reinforcing both institutional and community-level capacities to respond to and mitigate climate impacts.

Table 14. Adaptation and Mitigation Strategies Matrix by Division and Sector

Sector	Short-term (Immediate)	Medium-term (3–5 yrs)	Long-term (5+ yrs)
Central Division			
Transport & Infrastructure	Drainage system upgrades	Flood-proof roads & bridges, resilient public utilities	Climate-resilient infrastructure masterplan
Housing & Human Settlements	Flood-resistant housing	Elevated homes and structures	Community emergency shelters
Water Resources & Management	Community-based water harvesting	Expanded domestic water harvesting initiatives	Stormwater retention systems
Energy	Promote awareness of alternative energy sources	Pilot solar energy projects	Large-scale renewable energy adoption
Peri-urban Agriculture & Food Security	Community sensitization on drought-resistant crops	Training in agroforestry & mixed farming	Wide adoption of climate-resilient agriculture
Health	Public health awareness campaigns	Climate-responsive health service improvements	Health sector climate adaptation strategy
Natural Resources & Ecosystems	Immediate wetland protection measures	Biodiversity restoration & afforestation	Comprehensive ecosystem restoration plans
Education & Awareness	Awareness campaigns on climate adaptation, School Debates	Adaptation-focused training workshops	Established climate education programs
Waste Management	Basic recycling initiatives	Community-based sorting and recycling facilities	Waste-to-energy projects
Socio-Economic Systems	Initial community consultations on savings schemes	Implementation of insurance & savings groups	Sustainable employment & resilience-building programs
Community & Social Resilience	Early warning systems, resource sharing	Strengthened coordination with local leaders	Institutionalized community resilience programs
Disaster Risk Management	Basic community awareness programs	Formal disaster preparedness training	Comprehensive disaster risk infrastructure

Sector	Short-term (Immediate)	Medium-term (3–5 yrs)	Long-term (5+ yrs)
Urban Planning & Land Use	Climate-resilient zoning awareness	Land-use policies integrated with climate risks	Sustainable urban expansion policies
Gender & Social Inclusion	Initial inclusion assessments	Gender-sensitive community workshops	Integrated gender & youth resilience strategy
Kawempe Division			
Transport & Infrastructure	Immediate drainage improvements	Road network resilience upgrades	Flood-resilient public utilities infrastructure
Housing & Human Settlements	Flood-resistant housing & elevated homes	Expanded elevated housing programs	Emergency shelter infrastructure
Water Resources & Management	Awareness on water harvesting benefits	Household water harvesting projects	Stormwater retention solutions
Energy	Community sensitization on renewable energy	Small-scale renewable energy projects	City-wide solar & alternative energy initiatives
Peri-urban Agriculture & Food Security	Training on drought-resistant farming	Agroforestry and mixed farming expansion	Established sustainable farming systems
Health	Health awareness campaigns addressing floods	Climate-responsive health infrastructure	Established climate-sensitive healthcare services
Natural Resources & Ecosystems	Wetland protection enforcement	Biodiversity enhancement projects	Reforestation and land restoration
Education & Awareness	Community climate awareness campaigns, School Debates	Local adaptation training workshops	Institutionalized climate education
Waste Management	Community recycling initiatives	Local recycling centers establishment	Waste-to-energy infrastructure
Socio-Economic Systems	Sensitization on community savings groups	Implementation of local savings schemes	Comprehensive socio-economic resilience programs
Community & Social Resilience	Promote traditional knowledge usage	Early warning systems & leader coordination	Institutionalized community networks
Disaster Risk Management	Community preparedness awareness	Established preparedness programs	Disaster response infrastructure

Sector	Short-term (Immediate)	Medium-term (3–5 yrs)	Long-term (5+ yrs)
Urban Planning & Land Use	Community consultation on resilient planning	Climate risk integrated urban planning	Sustainable land use management
Gender & Social Inclusion	Vulnerability assessments	Gender-responsive adaptation workshops	Inclusive climate resilience strategies
Makindye Division			
Transport & Infrastructure	Drainage system enhancements	Infrastructure flood resilience projects	Long-term resilient transport systems
Housing & Human Settlements	Flood-resistant housing solutions	Elevated structures and homes	Community emergency shelters
Water Resources & Management	Domestic water harvesting awareness	Local water harvesting infrastructure	Stormwater retention development
Energy	Renewable energy sensitization	Pilot renewable energy projects	Widespread renewable energy use
Peri-urban Agriculture & Food Security	Community outreach on drought-resistant crops	Agroforestry training initiatives	Sustainable farming adoption
Health	Climate-health risk awareness programs	Health infrastructure adaptation	Long-term climate health strategy
Natural Resources & Ecosystems	Wetland conservation enforcement	Afforestation and biodiversity enhancement	Ecosystem management strategy
Education & Awareness	Adaptation and resilience awareness campaigns, School Debates	Community-based adaptation workshops	Formalized climate adaptation curriculum
Waste Management	Basic recycling awareness and practices	Local waste sorting initiatives	Waste-to-energy projects implementation
Socio-Economic Systems	Community savings and insurance programs initiation	Strengthened socio-economic resilience initiatives	Employment generation linked to climate adaptation
Community & Social Resilience	Local resource-sharing initiatives	Early warning systems and coordination frameworks	Institutionalized community resilience systems
Disaster Risk Management	Disaster preparedness awareness campaigns	Community disaster response training	Long-term disaster infrastructure investments

Sector	Short-term (Immediate)	Medium-term (3–5 yrs)	Long-term (5+ yrs)
Urban Planning & Land Use	Public engagement on climate-smart planning	Land-use plans integrated with climate projections	Sustainable urban growth strategies
Gender & Social Inclusion	Inclusive climate adaptation dialogue	Gender-sensitive adaptation workshops	Comprehensive inclusive adaptation policies
Nakawa Division			
Transport & Infrastructure	Immediate drainage improvements	Public utilities resilience	Infrastructure resilience masterplan
Housing & Human Settlements	Flood-resistant housing development	Elevated and climate-proof homes	Community shelters and safe zones
Water Resources & Management	Water harvesting awareness programs	Household water harvesting systems	Long-term stormwater retention solutions
Energy	Alternative energy promotion	Small-scale renewable energy projects	Extensive solar energy implementation
Peri-urban Agriculture & Food Security	Drought-resistant agriculture awareness	Mixed farming and agroforestry training	Sustainable farming and food security programs
Health	Climate-induced health risk awareness	Strengthened health infrastructure	Climate-adaptive healthcare systems
Natural Resources & Ecosystems	Immediate wetland protection	Biodiversity projects and reforestation	Long-term natural resource management
Education & Awareness	Adaptation awareness campaigns, School Debates	Adaptation workshops and training	Formal adaptation education programs
Lubaga Division			
Transport & Infrastructure	Drainage system upgrades	Road and public utility resilience	Resilient infrastructure development
Housing & Human Settlements	Elevated and flood-resistant housing	Expansion of elevated homes	Community emergency shelters
Water Resources & Management	Awareness on water harvesting benefits	Domestic water harvesting initiatives	Stormwater infrastructure development
Energy	Awareness on renewable energy sources	Pilot solar installations	Renewable energy projects

Sector	Short-term (Immediate)	Medium-term (3–5 yrs)	Long-term (5+ yrs)
Peri-urban Agriculture & Food Security	Community sensitization on resilient farming	Agroforestry and mixed farming programs	Sustainable agricultural practices
Health	Public health resilience awareness	Climate-responsive health facilities	Comprehensive climate health adaptation
Natural Resources & Ecosystems	Wetland protection measures	Biodiversity enhancement programs	Long-term reforestation initiatives
Education & Awareness	Climate resilience awareness	Community-based adaptation workshops	Institutionalized climate adaptation education

9.3 Mainstreaming Climate Risk Management

Integration into the KCCA Development Plan and the Kampala Disaster Risk Climate Change Resilience Strategy

To ensure effective and sustainable climate resilience, all ongoing and planned development initiatives under the Kampala Capital City Authority (KCCA) must be deliberately aligned with the KCCA Development Plan and the Kampala Disaster Risk Climate Change Resilience Strategy. This requires that every infrastructure project, urban housing development, water management initiative, energy program, or social service investment incorporates climate risk considerations from design to implementation. Climate adaptation and mitigation measures—such as drainage system upgrades, flood-resistant housing, solar energy adoption, and wetland protection—must not function as standalone interventions but rather be fully mainstreamed into broader development programming. The integration process should include embedding climate risk indicators, performance targets, and climate-sensitive budgeting into the KCCA Development Plan, while ensuring that the Kampala Resilience Strategy provides a framework for prioritizing risk-reducing infrastructure, nature-based solutions, and community-based preparedness systems. Mainstreaming climate risk in this way will reinforce a development pathway that is risk-informed, inclusive, and adaptive, positioning Kampala as a climate-resilient city.

Enhancing Policy Alignment and Coherence

In order to avoid fragmented approaches and policy contradictions, KCCA must ensure that all its development work—both current and planned—adheres to a coherent policy framework that aligns with national and local climate strategies. All climate-resilient initiatives, whether under urban planning, housing, transport, or health, should be harmonized with Uganda's National Climate Change Policy (NCCP), the National Development Plan (NDP III), the National Adaptation Plan (NAP), and the Kampala Climate Action Plan. This alignment calls for a coordinated and institutionalized approach where KCCA directorates work collaboratively, applying consistent climate risk assessment tools, planning standards, and zoning regulations that account for climate hazards. Strengthening this policy coherence also involves ensuring that development partners, civil society, and the private sector are

guided by the same principles, metrics, and frameworks when engaging in Kampala's urban resilience efforts. Ultimately, aligning all of KCCA's development work with established climate risk management frameworks will optimize resource use, improve accountability, and amplify the collective impact of Kampala's transition toward a climate-resilient, inclusive, and sustainable urban future.

9.4 Cost-Effectiveness and Feasibility Analysis

Economic and Feasibility Assessment of Proposed Adaptation Strategies

A robust cost-effectiveness and feasibility analysis of Kampala's proposed adaptation strategies is essential to guide decision-making, prioritize interventions, and ensure that limited resources are directed toward actions with the highest return on investment in terms of risk reduction, economic stability, and long-term sustainability. This section provides a detailed assessment of the economic viability and practical feasibility of key adaptation measures across sectors, based on initial implementation experiences, stakeholder inputs, and lessons from comparable urban settings.

Transport and Infrastructure

- **Short-term (e.g., drainage upgrades)**

  These are relatively low-cost interventions with high effectiveness in mitigating urban flooding. The unit cost of drainage cleaning and improvement per kilometer is modest, and implementation feasibility is high, given existing local capacities.

- **Medium to long-term (e.g., flood-proof roads, resilient bridges)**

  While requiring higher capital investment, these are cost-effective in the long run due to reduced annual flood damages, fewer service disruptions, and extended infrastructure life spans. Incorporating climate resilience into design standards (e.g., raised roadbeds, permeable pavements) can yield benefit-cost ratios of 2:1 or higher, as evidenced by World Bank urban resilience case studies.

Housing and Human Settlements

- **Short-term (flood-resistant housing upgrades)**

  Community-based flood-proofing measures such as raised foundations and waterproofing materials are relatively low-cost and feasible when community-driven.

- **Medium and long-term (emergency shelters, climate-smart housing)**

  These require significant investment but offer high co-benefits, including protection of vulnerable groups, reduced displacement costs, and improved public safety. Partnerships with developers and NGOs can improve feasibility through cost-sharing models.

Water Resources and Management

- **Short-term (rainwater harvesting)**

Low-cost and highly feasible at household and institutional levels. Unit costs per household system range from UGX 300,000–700,000, offering a quick return through reduced water bills and improved access during dry periods.

- **Long-term (stormwater retention systems)**

  Capital-intensive but cost-effective when designed to reduce urban runoff, recharge groundwater, and prevent flooding. Integration into green infrastructure plans enhances feasibility.

Energy (Renewable Energy Adoption)

- **Short-term (awareness and pilot projects)**

  Campaigns and pilot solar installations are affordable and have high uptake potential. Feasibility is high with donor support and private sector incentives.

- **Long-term (city-wide solar energy adoption)**

  Upfront costs are high but declining due to global solar market trends. Cost-effectiveness is enhanced when integrated into public buildings and incentivized for residential use. Public-private partnerships are key to feasibility.

Peri-Urban Agriculture and Food Security

- **Short-term (drought-resistant crops promotion)**

  Low-cost, easily implemented through agricultural extension services. Highly feasible in peri-urban zones with existing farming practices.

- **Medium to long-term (agroforestry, climate-smart agriculture)**

  These require initial training and input support but have high long-term returns through improved food security, soil fertility, and ecosystem restoration. Economic viability is strengthened by linking to markets and value chains.

Health

- **Short-term (public awareness campaigns)**

  Highly feasible and cost-efficient, especially when integrated into existing health outreach programs.

- **Medium to long-term (climate-resilient health infrastructure)**

  High upfront investment but critical to reducing health costs from climate-sensitive diseases. Co-benefits include improved service delivery, emergency response, and resilience to heat and flood-related health threats.

Natural Resources and Ecosystems

- **Short-term (wetland protection)**

  While wetland protection through enforcement and awareness is low-cost, its success is hindered by governance challenges such as political interference, corruption, and fragmented policies. Weak coordination among institutions like KCCA and NEMA further undermines effective implementation.

- **Long-term (reforestation, biodiversity restoration)**

  Moderate to high cost but with strong ecosystem service benefits—flood mitigation, air quality improvement, and carbon sequestration. Feasibility depends on land availability, community engagement, and long-term funding.

Education and Awareness

- **Short to medium-term (training, workshops)**

  Low-cost, high-return interventions that increase adaptive capacity and local ownership. Feasible with existing training institutions and support from civil society.

- **Long-term (climate curriculum integration)**

  Requires national curriculum reform but ensures sustainability of knowledge and behavior change.

Cross-Cutting Interventions

Waste Management

Effective waste management is a vital cross-cutting theme in climate resilience planning, with approaches like recycling and sorting offering moderate investment requirements and tangible environmental and economic returns. When implemented through decentralized, community-based systems, such as in Kampala's Kiteezi informal plastic collection networks, local actors play a key role in transforming waste into resources. Community-managed material recovery facilities (MRFs) can create jobs while reducing landfill pressure. Waste-to-energy (WTE) initiatives, though capital intensive and technologically demanding, offer long-term benefits by converting municipal solid waste into electricity or heat. For example, Uganda's ongoing feasibility studies into WTE projects in Kampala demonstrate the potential to reduce landfill dependence while contributing to energy security and greenhouse gas mitigation.

Socio-Economic Systems

Strengthening socio-economic systems through community savings and climate insurance schemes is a highly feasible and impactful strategy for improving household-level resilience. Microfinance institutions and village savings and loan associations (VSLAs), such as those operating in Makindye and Kawempe, have proven successful in supporting informal workers and vulnerable communities in managing shocks like flooding or illness. Introducing parametric micro-insurance products, tailored to

urban risks like rainfall variability, can offer rapid financial relief in the aftermath of climate events. These systems enhance long-term adaptive capacity by reducing dependence on external aid and encouraging proactive risk management.

Community and Social Resilience

Building community and social resilience involves establishing early warning systems and resource-sharing mechanisms that empower local actors to respond swiftly to climate hazards. ICT-based tools such as mobile SMS alerts, community radios, and weather apps have been effectively deployed in Uganda to disseminate real-time flood and storm alerts. Additionally, neighborhood-level initiatives—like shared rainwater tanks or community tool banks—have improved mutual aid and preparedness. Beyond tools, the development of institutional frameworks for resilience, including Kampala's Divisional Disaster Risk Management Committees (DDRMCs), is essential for fostering coordination among local leaders, technical officers, and civil society, thereby ensuring timely and effective responses to emergencies.

Disaster Risk Management

Comprehensive disaster risk management starts with community preparedness training, which is low-cost, highly feasible, and crucial for saving lives. Programs such as the Uganda Red Cross's community-based disaster risk reduction initiatives in urban slums have equipped residents with first aid, evacuation planning, and risk mapping skills. In the long term, investment in disaster-resilient infrastructure, such as flood-proof schools, elevated roads, and reinforced drainage channels, is critical. While financially demanding, these structures offer significant cost savings by preventing damage and enabling continuity of essential services during extreme weather events. Integrating such infrastructure into broader urban development ensures sustainability and minimizes future risks.

Urban Planning and Land Use

Climate resilience is deeply intertwined with urban planning and land use, particularly through risk-sensitive land-use planning. While the technical input and data requirements are high—such as generating flood risk maps or conducting environmental impact assessments—the long-term returns are substantial. Strategic zoning to prevent settlement in wetlands or floodplains, as attempted in Kampala's Lubigi catchment, significantly reduces exposure to hazards. Furthermore, integrating climate risk considerations into urban expansion strategies allows for infrastructure, housing, and transport systems to be built with future climate scenarios in mind, reducing vulnerability and enhancing adaptive capacity across the city.

Gender and Social Inclusion

Ensuring gender and social inclusion is not only a matter of equity but also effectiveness in climate adaptation. Gender-sensitive programming—which recognizes the differentiated impacts of climate risks on women, youth, the elderly, and persons with disabilities—is essential for fair and impactful interventions. For example, women-led VSLAs in Lubaga and Nakawa have played a significant role in managing community adaptation funds and emergency response. Incorporating inclusive approaches

into all sectoral plans—such as ensuring accessible emergency shelters, involving youth in urban farming initiatives, and prioritizing women in water and sanitation projects—makes resilience planning more representative and responsive. Leveraging existing community structures and leadership further enhances feasibility and acceptance.

The proposed adaptation strategies present varied levels of cost and feasibility but share a common advantage: they offer high long-term benefits in relation to their investment when properly integrated and scaled. Priority should be given to **low-cost, high-impact interventions** for immediate action—such as drainage upgrades, awareness campaigns, and water harvesting—while systematically planning for **high-return, long-term investments** such as resilient infrastructure, renewable energy systems, and disaster risk reduction frameworks. Leveraging public-private partnerships, donor support, and community participation will be vital to improving economic viability and implementation feasibility across all sectors.

CHAPTER TEN

10. IMPLEMENTATION PLAN

10.1 Timeline and Milestones

The implementation of the KCCA Climate Change Vulnerability Assessment (CCVA) Framework will follow a five-phase strategy over a 10-year horizon. Each phase includes operational milestones and assigns specific roles to institutions at the national, city, divisional, parish, and village levels. It ensures harmonized and localized action through full integration of Uganda's DRM architecture, including OPM, NECOC, KCCA, and the Disaster Risk Management Committees (DDRMCs, CDRMCs, DDRMCs, and VDRMCs).

Phase 1: Institutional Mobilization and Coordination Setup (Months 1–6)

Objective: Establish foundational systems for implementation, activate DRM structures, and secure political and technical leadership.

Key Activities	**Responsible Institutions**
Activation and orientation of CDRMCs, DDRMCs, and VDRMCs across the 5 Divisions and parishes	KCCA Directorate of Public Health, OPM/NECOC
Mapping of high-risk urban zones to prioritize implementation focus	KCCA GIS and Planning Units
Hosting of citywide multi-stakeholder inception forums	DDRMCs, CDRMCs & KCCA Strategy Directorate
Education & Awareness, adaptation and resilience awareness campaigns, School Debates, Communities	KCCA, DRM

Phase 2: Capacity Building and Risk Communication (Months 7–18)

Objective: Strengthen capacity of DRM committees and institutionalize climate risk communication at community and institutional levels.

Key Activities	**Responsible Institutions**	**Supporting Stakeholders**
DRM and climate resilience training for KCCA staff, CDRMCs, DDRMCs, VDRMCs	OPM – NECOC, Uganda Police Fire & Rescue, KCCA Training Unit	Makerere University, Uganda Management Institute
Public awareness campaigns on flood, heat, and landslide risks (via radio, SMS, community dialogues)	NECOC, VDRMCs, KCCA Communications Unit	MTN, Airtel, media houses
Production and dissemination of community climate risk maps and guidelines	KCCA GIS Unit, DDRMCs	A Consulting firm such as NACOPART

Development of divisional and parish-level action plans incorporating community knowledge	DDRMCs and VDRMCs	ACTogether Uganda, Resilience Academies
Launch of early warning system protocols and communication channels	NECOC, UNMA, KCCA Risk Unit	LC1s, Village committees

Phase 3: Pilot Demonstration and Early Action Interventions (Years 2–3)

Objective: Test, refine, and showcase practical adaptation and DRM strategies through high-visibility, low-cost interventions.

Key Activities	**Responsible Institutions**	**Supporting Stakeholders**
Implement demonstration projects (e.g., raised roads in flood hotspots, rainwater systems in schools, early warning boards)	KCCA Engineering, Public Health, and Risk Management Units	NECOC, DDRMCs, school management committees
Activate VDRMCs to lead community clean-up, waste sorting, and basic first-aid awareness	VDRMCs, DDRMCs	Parish Development Committees, FBOs
Roll out ICT-based community early warning systems and feedback platforms	NECOC, KCCA IT Unit	UCC, local ICT startups
Monitor and evaluate pilot projects, drawing lessons for upscaling	KCCA M&E Unit, OPM Climate Desk	GIZ, World Bank Urban Resilience Program

Phase 4: Scaling and Institutional Mainstreaming (Years 4–6)

Objective: Integrate CCVA into KCCA systems and expand proven interventions across all divisions and vulnerable parishes.

Key Activities	**Responsible Institutions**	**Supporting Stakeholders**
Mainstream climate risk screening into KCCA development planning, budgeting, and permitting	KCCA Physical Planning & Treasury Departments	Ministry of Finance, Architects' Association
Citywide rollout of proven adaptation strategies (e.g., solar kiosks, stormwater parks, green corridors)	KCCA Engineering and Environment Directorate	Uganda Solar Energy Association, Rotary Clubs
Institutionalize CCVA monitoring across CDRMCs, DDRMCs, and VDRMCs	KCCA Risk Management Unit, NECOC	OPM DRR Department
Introduce local financing mechanisms (e.g., resilience bonds, community adaptation funds)	KCCA Treasury & Legal Units	Local banks, CSBAG
Ensure gender and disability mainstreaming in all programs and reports	KCCA Gender and Community Development Directorate	FOWODE, National Union of Disabled Persons of Uganda (NUDIPU)

Phase 5: Evaluation, Policy Refinement, and Innovation (Years 7–10)

Objective: Assess impact, revise policy frameworks, and catalyze innovation for sustained resilience building.

Key Activities	Responsible Institutions	Supporting Stakeholders
Conduct a mid-term impact review and a terminal evaluation of the CCVA implementation	Independent Evaluators, OPM, KCCA M&E Unit	World Bank, UN-Habitat
Institutionalize DRM-focused policy reforms and climate-resilient urban planning ordinances	KCCA Legal Directorate, NECOC, Ministry of Kampala	Uganda Law Reform Commission
Support youth-led innovation in climate resilience (e.g., apps for risk alerts, upcycled construction)	KCCA Smart Cities Program, CDRMCs	Innovation Village, Outbox Hub
Document and share lessons learned across other urban authorities in Uganda	KCCA, OPM, NECOC	Urban Authorities Association of Uganda (UAAU), AMICAALL
Sustain resilience through adaptive learning forums and peer-to-peer exchanges	CDRMCs, DDRMCs, VDRMCs	Cities Alliance, ICLEI Africa

Summary of Key Milestones by Year

Year	Milestone
1	CCVA framework officially launched; DRM committees activated; coordination platform operationalized
2	Capacity building completed; risk maps, awareness tools, and parish action plans deployed
3	Pilot adaptation/DRM interventions implemented and monitored in target parishes
4–6	CCVA fully mainstreamed into city development systems; proven strategies scaled citywide
7–10	Policy, legal, and financing reforms institutionalized; innovative solutions sustained

This roadmap ensures that the CCVA Framework is embedded across KCCA's planning and operational machinery, from national-level agencies like OPM and NECOC, to divisional and village DRM committees. Anchoring resilience building at the community level while supporting it with robust institutional coordination can enable Kampala to model a proactive, inclusive, and scalable approach to urban climate risk management for other national cities and in the rest of East Africa.

10.2 Roles and Responsibilities

Multi-level Coordination and Implementation Framework for Climate Risk Management in Kampala

The successful implementation of the CCVA Framework hinges on a well-defined and coordinated structure involving institutions and stakeholders across national, city, division, parish, and community levels. Clear delineation of roles enhances ownership, efficiency, accountability, and sustainability. The

roles and responsibilities detailed below support the phased implementation plan and ensure that climate risk management is embedded within both policy and practice.

A. National Level Actors and their roles

1. Office of the Prime Minister (OPM) – Department of Disaster Preparedness and Management

- Provide national oversight and strategic guidance for disaster and climate risk management across urban areas.
- Coordinate inter-ministerial support for CCVA-aligned initiatives, especially those requiring cross-sectoral collaboration (e.g., health, infrastructure, energy, and water).
- Endorse the CCVA as part of national resilience frameworks such as the National Adaptation Plan (NAP) and Disaster Risk Reduction (DRR) Strategy.
- Facilitate national resource mobilization and budgetary allocations to KCCA through the Ministry of Finance.

2. National Emergency Coordination and Operations Centre (NECOC)

- Operate as the national technical hub for early warning dissemination, emergency response coordination, and real-time data sharing.
- Support KCCA in establishing and operationalizing the city-wide early warning system, linked to community-level alerts.
- Provide training and simulation exercises for CDRMCs, DDRMCs, and VDRMCs on incident command systems and emergency protocols.

B. City Level Actors

3. Kampala Capital City Authority (KCCA)

- Lead institution for the operationalization of the CCVA framework within the city.
- Coordinate city-wide planning, budgeting, policy mainstreaming, and implementation of adaptation and mitigation actions.
- Through its Risk Management Unit, oversee:
    - Integration of climate risk assessments into sectoral development plans, zoning ordinances, and infrastructure investments.
    - Deployment and scaling of resilience-building projects.
    - Monitoring, evaluation, and learning (MEL) reporting to OPM, NECOC, and development partners.
- Provide technical support and guidance to divisional and parish DRM structures and facilitate cross-division learning.

4. City Disaster Risk Management Committee (CDRMC)

- Provide city-wide leadership and coordination of disaster and climate risk management.
- Monitor and consolidate data from all DDRMCs and report to KCCA and NECOC.
- Serve as the central node for city-level coordination across directorates (e.g., Engineering, Public Health, Environment, Planning).
- Lead the planning and rollout of city-wide interventions such as ICT-based early warning systems, stormwater retention programs, and policy advocacy.

C. Division Level Actors

5. Division Disaster Risk Management Committees (DDRMCs)

- Translate city-wide CCVA strategies into division-specific action plans.
- Lead community mobilization and awareness campaigns on climate hazards and local solutions.
- Coordinate pilot and scale-up projects such as flood-proof roads, waste sorting centers, or community gardens.
- Supervise and support PDRMCs and VDRMCs and serve as intermediaries between KCCA technical departments and local implementation teams.
- Track implementation progress and report to the CDRMC quarterly.

D. Parish and Village Level Actors

6. Parish Disaster Risk Management Committees (PDRMCs)

- Serve as the primary interface with communities on risk awareness, preparedness, and participatory planning.
- Mobilize residents to co-develop and implement Parish Climate Adaptation Action Plans (PCAAPs) aligned with CCVA priorities.
- Facilitate parish-level early warning communication, resource sharing mechanisms, and local knowledge documentation.
- Engage women's groups, youth, religious leaders, and marginalized communities in decision-making and program delivery.
- Report monthly to DDRMCs on adaptation actions, climate incidents, and feedback from communities.

7. Village Disaster Risk Management Committees (VDRMCs)

- Coordinate household-level risk reduction practices, such as rainwater harvesting, tree planting, flood mitigation, and evacuation drills.

- Maintain community risk registers and ensure participation in training, emergency response simulations, and monitoring.
- Support VSLAs, farmer groups, and savings schemes to enhance social and economic resilience.
- Liaise with PDRMCs to raise alarms, relay local impacts, and document community success stories.

E. Additional Stakeholders and Their Roles

Stakeholder	Roles and Contributions
Ministries (e.g., MWE, MoH, MoLHUD, MEMD)	Provide sectoral guidance, technical resources, and policy support aligned with national climate and DRM frameworks.
Development Partners (e.g., UNDP, GIZ, World Bank)	Offer financial support, technical expertise, and innovation pilots for resilience infrastructure, MEL systems, and inclusive planning.
Civil Society Organizations (e.g., ACTogether, Red Cross, FOWODE)	Facilitate community training, gender inclusion, documentation, and feedback loops. Implement localized adaptation measures.
Private Sector (e.g., solar firms, construction companies, waste recyclers)	Invest in green infrastructure, energy solutions, and provide resilience services under PPP arrangements.
Academia & Research Institutions (e.g., Makerere University, UMI)	Conduct research, impact assessments, and training for KCCA staff and DRM committees. Generate data for MEL systems.

Coordination and Oversight Mechanism

- A City Disaster Risk Management Committee (CDRMC) will oversee overall implementation.
- Regular coordination meetings (quarterly at city and division levels; biannual at national level) will ensure harmonization of actions, resource alignment, and accountability.
- A resilience coordination platform (digital dashboard) should be established for data sharing, progress tracking, and collaborative learning among actors.

This roles and responsibilities framework ensures a decentralized yet coordinated structure, enabling citywide and community-owned delivery of the CCVA. By embedding implementation within existing institutional mandates—from OPM to VDRMCs—and ensuring vertical integration across planning levels, Kampala can achieve inclusive, efficient, and sustainable climate resilience outcomes.

10.3 Financing and Resource Mobilizat on Strategy

Enabling Resilience through Coordinated, Inclusive, and Multi-Sourced Financing

The successful implementation of the KCCA Climate Change Vulnerability Assessment (CCVA) Framework demands a **sustainable, diversified, and inclusive financing strategy** that reflects the framework's multi-tiered governance structure and phased implementation plan. Given the scope of the CCVA—which spans infrastructure upgrades, social resilience interventions, innovation systems, and disaster preparedness—mobilizing adequate resources across all levels (national, city, division, parish, and village) is essential.

The financing strategy is designed around three core principles:

1. **Blended Financing** – Combining domestic public resources, international climate finance, and private sector investment.
2. **Devolved and Equitable Allocation** – Ensuring funds reach and empower Division Disaster Risk Management Committees (DDRMCs), Parish Disaster Risk Management Committees (PDRMCs), and Village Disaster Risk Management Committees (VDRMCs).
3. **Performance-Linked and Scalable Models** – Leveraging pilot success to scale through performance-based grants and adaptive funding mechanisms.

A. Key Sources of Financing

1. Domestic Public Finance

i. **KCCA Budget Allocations**

Core funding for coordination, staffing (Risk Management Unit), and city-level infrastructure projects will be allocated through annual KCCA budgets under the Development Planning and Environment sectors.

ii. **National Transfers via OPM and NECOC**

Resources from the Disaster Preparedness Fund under the Office of the Prime Minister will support DRM functions at the CDRMC, DDRMC, and VDRMC levels.

iii. **Sector Budgeting from Line Ministries**:

Effective implementation of the KCCA Climate Change Vulnerability Assessment (CCVA) Framework will rely on strong alignment between national-level sector budgeting and KCCA's urban resilience priorities. In this regard, the Ministry for Kampala Capital City and Metropolitan Affairs (commonly referred to as the Ministry of Kampala) and KCCA will take central responsibility for planning, financing, and oversight, while other line ministries will provide technical and sector-specific support to ensure comprehensive and coordinated implementation.

Ministry for Kampala Capital City and Metropolitan Affairs

As the central government ministry mandated to oversee the governance, development, and coordination of service delivery in Kampala, the Ministry of Kampala will:

- Provide policy and financial oversight for CCVA-aligned initiatives under KCCA's jurisdiction.
- Champion integration of CCVA priorities into national budgets and Public Investment Plans (PIPs).
- Serve as a liaison between KCCA and sector line ministries, ensuring that Kampala's climate resilience needs are adequately captured in national resource allocations.
- Coordinate high-level inter-ministerial dialogue to ensure coherence between climate adaptation measures in Kampala and national climate targets (e.g., Uganda's NDC and NAP).

Kampala Capital City Authority (KCCA)

As the lead implementing agency for the CCVA Framework, KCCA will:

- Directly budget and plan for core resilience activities through its internal departments (e.g., Engineering, Public Health, Physical Planning, Environment).
- Ensure climate change is mainstreamed into all KCCA sector budgets and annual work plans, with dedicated budget codes for adaptation and mitigation activities.
- Mobilize and channel external funding and co-financing from development partners to supplement government allocations.
- Coordinate Divisional and Parish implementation via CDRMCs, DDRMCs, and PDRMCs, ensuring community-level financing flows are tracked and monitored.
- Report annually to the Ministry of Kampala and Ministry of Finance on progress, budget utilization, and impact metrics.

Supporting Line Ministries and Sectoral Budgeting Contributions

While the Ministry of Kampala and KCCA will be at the core of implementation, the following line ministries will play key supportive roles:

- **Ministry of Water and Environment (MWE)**:
    - Provide targeted technical assistance and capital investments for green infrastructure projects such as urban wetlands restoration, buffer zones, and nature-based flood control.
    - Support KCCA in developing catchment-based stormwater management plans.
- **Ministry of Health (MoH)**:
    - Co-finance climate-responsive upgrades in public health facilities within Kampala, including heat-resilient infrastructure, ventilation, and water supply systems.

- Collaborate with KCCA's Health Department on vector control and climate-related disease surveillance.

- **Ministry of Energy and Mineral Development (MEMD)**:
  - Facilitate citywide adoption of renewable energy solutions through subsidy programs and public-private investment frameworks.
  - Support KCCA with technical standards and policy instruments for solar energy deployment in public buildings, markets, and informal settlements.

- **Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)**:
  - Provide input subsidies and extension services to peri-urban farmers within Kampala's municipal boundaries, promoting adoption of climate-smart agriculture.
  - Coordinate with KCCA on urban food system resilience through grants and innovation platforms.

2. International Climate and Development Finance

- **Multilateral Funds**:
  - Green Climate Fund (GCF) – for city-wide adaptation infrastructure and early warning systems
  - Adaptation Fund – for water harvesting, flood risk mitigation, and nature-based solutions
  - Global Environment Facility (GEF) – for ecosystem-based adaptation and resilience innovation

- **Bilateral Donors and Development Agencies**:
  - The World Bank, UNDP, GIZ, JICA, DFID, and USAID will be approached for technical assistance, capacity building, and pilot project support
  - Cities Alliance and ICLEI Africa for knowledge exchange, innovation funding, and technical backstopping

3. Private Sector and Market-Based Instruments

- **Public-Private Partnerships (PPPs)**
  - Infrastructure (e.g., stormwater retention, waste-to-energy) through performance-based PPP contracts
  - Energy (e.g., community solar kiosks, microgrids) through investment incentives and risk-sharing frameworks

- **Green Bonds and Resilience Bonds**
  - Issued by KCCA in partnership with MoFPED to finance long-term climate-resilient infrastructure with defined return profiles

- **Corporate Social Responsibility (CSR) Funds**
    - Directed towards community-based initiatives implemented by PDRMCs and VDRMCs (e.g., Coca-Cola Foundation supporting recycling cooperatives)

B. Resource Mobilization Mechanisms

Mechanism	Description
Resilience Investment Facility (RIF)	A centralized fund within KCCA to pool, coordinate, and disburse climate resilience funds to CDRMCs, DDRMCs, and PDRMCs based on project readiness and performance.
Climate Adaptation Grants for Divisions (CAGD)	Performance-linked mini-grants allocated annually to divisions to support local action plans, incentivizing innovation and participation.
Community Adaptation Challenge Funds (CACF)	Small-scale competitive grants managed at parish level to support VDRMC-driven initiatives (e.g., tool banks, localized early warning signs, evacuation plans).
Co-financing Agreements	Partnerships with CSOs, private sector, and academic institutions to share implementation costs and technical delivery of sector-specific projects.
Climate Finance Readiness Support	Technical assistance from development partners to strengthen KCCA and OPM's capacity to access GCF and other climate finance channels.

C. Institutional Roles in Financing Coordination

Actor	Key Role
KCCA Treasury Services and Risk Management Unit	Lead coordination of financial planning, budgeting, disbursement, and financial tracking for CCVA implementation.
OPM / NECOC	Coordinate national-level resource flows and ensure CCVA actions are integrated into national DRR and NAP financing frameworks.
CDRMCs / DDRMCs / PDRMCs / VDRMCs	Develop and submit local investment proposals, track use of allocated funds, and report on outcomes.
Private Sector Partners	Provide investment capital and technical expertise through PPP frameworks and innovation hubs.
Donor Coordination Forum (DCF)	Support alignment of external resources with CCVA priorities and prevent duplication.

D. Financing for MEL (Monitoring, Evaluation, and Learning)

A dedicated budget (5–8% of total program funds) should be allocated to MEL activities, covering baseline data collection, field verification, audits, impact assessments, and community feedback loops.

The financing and resource mobilization strategy offers a inclusive, and scalable framework to operationalize the KCCA CCVA. By blending local, national, and international financial sources, and leveraging both public and private sector strengths, Kampala will be positioned to unlock and sustain investments that deliver measurable climate resilience and inclusive development outcomes for its citizens—especially the most vulnerable.

10.4 Monitoring, Evaluation, and Learning (MEL) Framework

Strengthening Evidence-Based Decision-Making, Learning, and Accountability

The Monitoring, Evaluation, and Learning (MEL) framework is a critical pillar of the CCVA implementation strategy. It ensures that all climate adaptation and resilience-building activities are guided by data, informed by lessons learned, and continually improved through feedback from stakeholders across all levels from national institutions to village communities. The MEL framework will facilitate real-time tracking of progress, impact assessment, and adaptive learning, while ensuring compliance with national and international climate reporting requirements.

A. Objectives of the MEL Framework

- To track the implementation progress of CCVA strategies at all administrative levels.
- To measure the outcomes and long-term impact of adaptation and mitigation interventions.
- To enhance institutional accountability and resource efficiency.
- To promote continuous learning and adaptation through community feedback and evidence-based adjustments.
- To align with national (NAP, DRR Strategy) and international frameworks (SDGs, Paris Agreement, UN-Habitat Resilience Framework).

B. MEL Governance Structure

Level	Institution/Body	Role
National	OPM (DRR Dept.), NECOC	Oversight, integration with national MEL frameworks, and donor reporting
City	KCCA MEL Unit, Risk Management Unit	Coordination of MEL activities, reporting, and consolidation of divisional data
Division	DDRMCs	Collection of data, local tracking, and submission of reports to city level
Parish	PDRMCs	Community-level feedback, participation monitoring, and indicator tracking
Village	VDRMCs	Household and community data gathering and reporting on activities

C. Thematic Areas, Indicators, and Metrics

Each thematic area under the CCVA Framework will have a set of core indicators tracked quarterly, annually, and during mid- and end-term evaluations.

Thematic Area	Indicators
1. Transport and Infrastructure	1. % of drainage infrastructure rehabilitated or upgraded in climate hotspots
	2. Number of kilometers of roads constructed or retrofitted to flood-resilient standards
	3. % of bridges and culverts integrated with climate-resilient design features
	4. Frequency of climate-related service disruptions in urban transport
	5. Average cost savings due to reduced infrastructure repairs from climate damages
2. Housing and Human Settlements	1. Number of households benefitting from flood-resistant housing interventions
	2. % increase in elevated or structurally improved homes in flood-prone zones
	3. Number of community emergency shelters constructed or operationalized

	4. % of informal settlements covered by risk reduction plans
	5. Number of households with climate risk information displayed or disseminated
3. Water Resources and Management	1. % of urban households with functional rainwater harvesting systems
	2. Volume of stormwater retained through green and grey infrastructure
	3. Number of water-stressed zones covered by adaptation actions
	4. % increase in water use efficiency among targeted facilities
	5. Number of water management committees formed or trained
4. Energy	1. % increase in households or institutions using solar or alternative energy
	2. Number of public facilities transitioned to renewable energy sources
	3. % reduction in fossil fuel usage by KCCA-supported services
	4. Number of solar micro-grid projects established in underserved communities
	5. Level of private sector investment leveraged in renewable energy initiatives
5. Peri-Urban Agriculture and Food Security	1. % of urban and peri-urban farmers adopting drought-resistant crop varieties
	2. Number of agroforestry demonstration plots established
	3. Area (in hectares) of land under sustainable farming practices
	4. % increase in household food self-sufficiency in targeted parishes
	5. Number of farmer groups supported with climate-smart agriculture inputs
6. Health	1. % of health centers with climate-responsive infrastructure upgrades
	2. Number of climate-related public health campaigns conducted
	3. Incidence rate of climate-sensitive diseases (e.g., cholera, malaria)
	4. % of health workers trained in climate-health resilience
	5. Number of health facilities with emergency contingency plans

7. Natural Resources and Ecosystems	1. Area (in hectares) of wetlands protected or restored
	2. Number of trees planted and surviving in reforestation zones
	3. % reduction in wetland encroachment in priority ecosystems
	4. Number of biodiversity awareness campaigns held in local communities
	5. Area of green space per capita in urban zones
8. Education and Awareness	1. Number of residents trained on climate risk management
	2. % of schools incorporating climate adaptation topics in curricula
	3. Number of community-based adaptation learning events held
	4. % of PDRMCs and VDRMCs completing at least two annual trainings
	5. Level of public knowledge on local climate hazards (measured via surveys)
	6. Number of Schools participating in activities and school debates on climate change risks, adaptation and mitigation

D. Data Collection, Tools, and Reporting Mechanisms

- **Digital Monitoring Tools** - KCCA will establish a centralized **Climate Resilience MEL Dashboard** to track and visualize progress across sectors and divisions.
- **Community Feedback Mechanisms** - Suggestion boxes, SMS polls, and radio call-in shows facilitated by PDRMCs and VDRMCs will capture community feedback.
- **Quarterly and Annual Reports -** Each DDRMC will submit quarterly updates, while the KCCA MEL Unit will compile and publish an annual "State of Climate Resilience" report.
- **Mid-Term and End-Term Evaluations -** Conducted in Years 5 and 10, respectively, with support from independent evaluators and aligned with national DRR/CC monitoring systems.

E. Learning and Adaptive Management

- Annual Learning Forums will be organized by the CDRMC to reflect on lessons learned, share best practices across divisions, and adjust strategies accordingly.
- Knowledge Products such as case studies, policy briefs, and resilience handbooks will be produced and shared with stakeholders.
- Flexible Planning: Action plans at division and parish levels will be revised every two years based on MEL findings and emerging climate risks.

Conclusion

The MEL Framework serves as the foundation for ensuring **accountability, continuous improvement, and impact-oriented implementation** of the CCVA. By embedding community participation, robust metrics, and adaptive learning across the resilience system—from the city to the village—Kampala will be better equipped to measure its progress, justify investments, and replicate success at scale.

CHAPTER ELEVEN

11. CONCLUSION

Summary of Key Findings and Recommendations

The CCVA identifies floods, droughts, heat stress, and storms as Kampala's most pressing climate hazards. Informal settlements—particularly in Kawempe, Makindye, and Nakawa divisions—are disproportionately affected due to their location in flood-prone areas, substandard housing, and lack of infrastructure. The District Vulnerability Index (DVI) revealed significant spatial disparities, with Nakawa, Kawempe, and Makindye being the most vulnerable divisions. Contributing factors include low-income levels, limited access to basic services, insecure tenure, and high dependence on climate-sensitive livelihoods.

The report recommends a set of interventions including: upgrading and expanding drainage systems, restoring wetlands, enforcing land-use regulations, promoting green infrastructure, enhancing early warning systems, and integrating climate risks into all development plans. Additionally, it underscores the need to build adaptive capacity through education, financial inclusion, and inclusive urban planning—with a strong emphasis on the needs of vulnerable groups such as women, persons with disabilities, and informal workers.

Immediate Actionable Steps

The following actions are both feasible and aligned with the city's existing policy frameworks, including the KCCA Strategic Plan and Uganda's National Development Plan IV.

1. Infrastructure Investment - KCCA should prioritize the rehabilitation of key drainage channels (e.g., Nakamiro, Nakivubo) and flood-prone hotspots identified in the report.
2. Community Sensitization and Training - Scale up awareness campaigns and targeted training in schools and in informal settlements to improve household-level adaptation, including heat health measures and flood safety.
3. Policy Localization - Operationalize the Kampala Disaster Risk and Climate Resilience Strategy (2022) at the division level and at parish level through the full activation of Divisional Disaster Risk Management Committees (DDRMCs) and the Village Disaster Risk Management Committees (VDRMCs).
4. Green Urban Planning - Initiate urban greening programs in high heat stress zones like Central and Nakawa, while integrating stormwater harvesting and tree planting into school and community spaces.
5. Climate-Smart Livelihoods - Provide targeted support for urban agriculture, waste recyclers, and boda-boda operators through microfinance schemes and technical support for resilient enterprise development.

Building climate resilience in Kampala requires a coordinated, multi-level, and multi-actor approach. The Kampala Capital City Authority (KCCA) must enhance its collaboration with Divisional Disaster Risk Management Committees (DDRMCs) to address localized vulnerabilities through tailored preparedness and risk reduction plans. Community-Based Organizations (CBOs) and civil society actors should be actively engaged to ensure grassroots perspectives and indigenous knowledge inform planning and implementation. Strategic partnerships with national institutions such as the Ministry of Water and Environment (MWE), Uganda National Meteorological Authority (UNMA), and National Environment Management Authority (NEMA) are also critical for integrating technical guidance, policy coherence, and climate data into resilience-building efforts.

In addition, collaboration with development partners, the private sector, and academic institutions—such as UN-Habitat, the World Bank, and Makerere University—will be essential for mobilizing financial resources, co-developing innovative adaptation strategies, and establishing robust monitoring systems. Ultimately, effective climate adaptation in Kampala hinges on shared accountability, inclusive planning, and local ownership. The CCVA Framework serves as a vital platform to align these efforts and catalyze collective action toward a more climate-resilient urban future.

REFERENCES

Adelekan, I. O., Johnson, C., & Mberu, B. (2015). *City profiles: Risk, resilience and climate change in African cities*. Urban Africa Risk Knowledge (Urban ARK) Programme.

Beck, H. E., Zimmermann, N. E., McVicar, T. R., Vergopolan, N., Berg, A., & Wood, E. F. (2018). Present and future Köppen–Geiger climate classification maps at 1-km resolution. *Scientific Data*, 5, 180214.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.

Brooks, N., Adger, W. N., & Kelly, P. M. (2005). *The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation*. Global Environmental Change, 15(2), 151–163.

Clarke, K., et al. (2022). A Social Vulnerability Index for Air Pollution and Its Spatially Varying Relationship to PM2.5 in Uganda. *Atmosphere*.

Climate Change Knowledge Portal – Uganda (World Bank, accessed 2021): *Country Profile – Uganda*. climateknowledgeportal.worldbank.org

Climate Watch. (2023). *Uganda GHG Emissions Data* – World Resources Institute.

Codjoe, S. N. A., Owusu, G., & Burkett, V. (2016). *Perceptions of climate change, environmental variability and the role of indigenous knowledge in building adaptive capacity in Ghana*. Climate and Development, 8(1), 72–87.

Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). *Social vulnerability to environmental hazards*. Social Science Quarterly, 84(2), 242–261.

Emission Index, 2023. **Uganda Greenhouse Gas Emissions Profile.** Link: https://www.emission-index.com/countries/uganda

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). London: Sage Publications.

Gall, T. (2021). Urban Gestalt and Social Vulnerability: A Case Study of Kampala, Uganda.

GIZ & KCCA. (2022). *Kampala Climate Change and Air Quality Action Plan (KCCA-CAP)*. Kampala Capital City Authority & Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

GZ, 2021. **Climate Risk Profile: Uganda (2021).** Link: https://www.adaptationcommunity.net/wp-content/uploads/2021/02/GIZ_Climate-risk-profile-Uganda_EN_final.pdf

Intergovernmental Panel on Climate Change (IPCC) (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability – Africa*. In: IPCC Sixth Assessment Report (Chap. 9). Cambridge Univ. Press. ipcc.ch

Intergovernmental Panel on Climate Change (IPCC). (2021). *Sixth Assessment Report – Working Group II: Impacts, Adaptation and Vulnerability*. Geneva: IPCC.

IPCC, 2022: Annex II: Glossary [Möller, V., R. van Diemen, J.B.R. Matthews, C. Méndez, S. Semenov, J.S. Fuglestvedt, A. Reisinger (eds.)]. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2897–2930, doi:10.1017/9781009325844.029.

IPCC. (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Fifth Assessment Report of the IPCC.

IPCC. (2021). *Sixth Assessment Report: Climate Change 2021 – The Physical Science Basis*. Intergovernmental Panel on Climate Change.

Kabiru, C. W., Beguy, D., Undie, C. C., Zulu, E. M., & Ezeh, A. C. (2018). *Vulnerability and resilience of slum dwellers in Nairobi*. African Population Studies, 32(1).

Kampala Capital City Authority (KCCA) (2015). *Kampala Climate Change Action Strategy: Energy and Climate Profile*. Kampala: KCCA. kcca.go.ug kcca.go.ug

Kampala Capital City Authority (KCCA). (2020). *Kampala Climate Change Action Strategy (KCCAS)*. Kampala: KCCA.

Kampala Capital City Authority (KCCA). (2020). *Kampala Drainage and Sanitation Improvement Strategy*. Kampala: KCCA.

Kampala Capital City Authority (KCCA). (2020). *Kampala Drainage and Water Management Framework*.

Kampala Capital City Authority (KCCA). (2020). *Kampala drainage and water management framework*. Kampala Capital City Authority.

Kampala Capital City Authority (KCCA). (2020). *Kampala drainage and water management framework*. Kampala Capital City Authority.

KCCA (2023). *About KCCA – Administrative Divisions*. (Online) Kampala Capital City Authority website. kcca.go.ug

Li, X., Stringer, L. C., Chapman, S., & Dallimer, M. (2021). How urbanisation alters the intensity of the urban heat island in a tropical African city. *PLoS One*, *16*(7), e0254371.

Lwasa, S. (2010). *Adapting urban areas in Africa to climate change: The case of Kampala*. Current Opinion in Environmental Sustainability, 2(3), 166–171. pure.eur.nl pure.eur.nl

Ministry of Water and Environment (MWE) (2015). *Uganda National Climate Change Policy*. Kampala: Government of Uganda.

Ministry of Water and Environment (MWE) (2021). *Uganda's Third National Communication to the UNFCCC*. Kampala: Government of Uganda.

Ministry of Water and Environment (MWE). (2015). *Uganda National Climate Change Policy*. Kampala: Government of Uganda.

Ministry of Water and Environment (MWE). (2020). *Urban water supply vulnerability assessment*. Ministry of Water and Environment, Uganda.

Molina, E., Sliuzas, R., Jetten, V., & Maarseveen, M. (2015). Simulating Flood Impacts in Kampala: When Do Land Patterns Matter?. *Conference Proceedings*.

Mukwaya, P., Sengendo, H., & Lwasa, S. (2012). Enhancing Security and Resilience of Low-Income Communities to Climate Change in Growing Cities. *Springer*.

Mukwaya, P., Sengendo, H., & Lwasa, S. (2012). Enhancing security and resilience of low-income communities to climate change in growing cities. *Springer*.

National Forestry Authority (NFA). (2022). *Land Cover Mapping for Uganda*. Kampala: Government of Uganda.

NRDC (2019). *Guide to Community Climate Vulnerability Assessments*. New York: Natural Resources Defense Council. nrdc.org

Office of the Prime Minister (OPM). (2017). *Uganda risk and vulnerability atlas*. Office of the Prime Minister, Government of Uganda.

Office of the Prime Minister (OPM). (2017). *Uganda risk and vulnerability atlas*. Office of the Prime Minister, Government of Uganda.

Opiyo, P., Tumwesige, V., & Nsubuga, F. (2020). Urban heat and climate trends in Kampala. *Journal of Urban Environmental Studies*, 12(3), 45–58.

Otieno, V. O., & Anyah, R. O. (2013). Multi-model ensemble simulations of precipitation and temperature over East Africa. *Journal of Hydrology, 507*, 49–66.

Polgár, A. M., & Carton, L. J. (2024). A Quick-Scan Methodology Incorporating Local Knowledge for Climate Risk and Vulnerability Assessments Applied in Kampala. *Urban Forum*.

Polgár, A. M., & Carton, L. J. (2024). A Quick-Scan Methodology Incorporating Local Knowledge for Climate Risk and Vulnerability Assessments Applied in Kampala. *Urban Forum*.

Richmond, A., Myers, I., & Namuli, H. (2018). Urban Informality and Vulnerability: A Case Study in Kampala, Uganda. *UrbanSci*.

Rockefeller Foundation (2024). *Invests in Uganda's Climate Change Health National Adaptation Plan (H-NAP)* (Press release, 22 Aug 2024). rockefellerfoundation.org.

Tate, E. (2012). *Social vulnerability indices: A comparative assessment using uncertainty and sensitivity analysis*. Risk Analysis, 32(4), 728–746.

The World Bank, 2023. Kampala Institutional and Infrastructure Assessment. Link: https://documents1.worldbank.org/curated/en/099335105132230574/pdf/P154339098e7840b309a500c9b29a6200d1.pdf

The World Bank. (2020). *Kampala Institutional and Infrastructure Development Project Phase 2 (KIIDP2) – Audit Opinion FY 2019/2020*.

Twinomuhangi, R., et al. (2021). Perceptions and vulnerability to climate change among the urban poor in Kampala City, Uganda. *Regional Environmental Change*.

Twinomuhangi, R., Sseviiri, H., Mulinde, C., Mukwaya, P., Nimusiima, A., & Kato, A. M. (2021). Perceptions and vulnerability to climate change among the urban poor in Kampala City, Uganda. *Regional Environmental Change*, 21.

Uganda Bureau of Statistics (UBOS). (2023). *Statistical Abstract*. Kampala: Government of Uganda.

Uganda Bureau of Statistics (UBOS). (2024). *National Population and Housing Census 2024 – Final Report - Volume 1 (Main)*. Kampala, Uganda. https://www.ubos.org/wp-content/uploads/publications/10_2024Census_Results_UBOS2024.pdf

Uganda Meteorological Authority (UNMA). (2021). *Uganda State of the Climate Report 2021*. Entebbe: UNMA.

Uganda National Meteorological Authority (UNMA). (2019). *Seasonal Rainfall Outlook for Uganda*.

Uganda Red Cross Society. (2023). *Community-Based Disease Surveillance and Health Resilience in Urban Informal Settlements*. Kampala: URCS.

Umer, Y., Jetten, V., & Ettema, J. (2019). Applying WRF-openLISEM model coupling system to simulate flash flood hazard in Kampala, Uganda. *EGU General Assembly*.

Umer, Y., Jetten, V., & Ettema, J. (2019). Applying WRF-openLISEM model coupling system to simulate flash flood hazard in Kampala, Uganda. *EGU General Assembly*.

UNFCC, 2022. Uganda Nationally Determined Contributions (Updated 2022). Link: https://unfccc.int/sites/default/files/NDC/2022-09/Updated%20NDC%20_Uganda_2022%20Final.pdf

UNFCCC, 2015. Paris Agreement.

UN-Habitat (2010). *Kampala Climate Change Assessment: A Summary*. Nairobi: United Nations Human Settlements Programme. unfccc.int unfccc.int

UN-Habitat. (2014). *The State of African Cities 2014: Re-imagining sustainable urban transitions*. United Nations Human Settlements Programme.

UN-Habitat. (2021). *Climate Change and Cities in Africa*.

UN-Habitat. (2021). *Kampala Climate Risk and Vulnerability Assessment Report*. United Nations Human Settlements Programme.

United Nations Capital Development Fund (UNCDF) (2022). *Uganda prioritises adaptation to climate change with launch of the LoCAL Facility* (Press release, 7 April 2022). uncdf.org uncdf.org

United Nations Framework Convention on Climate Change (UNFCCC). (2021). *Climate Change Adaptation Planning Tool*. Bonn: UNFCCC Secretariat.

United Nations Human Settlements Programme (UN-Habitat). (2009). *Climate change assessment for Kampala, Uganda: A summary*. Cities and Climate Change Initiative. Nairobi, Kenya: UN-Habitat. ISBN: 978-92-1-132264-4. HS Number: HS/150/10E.

Waters, J., & Adger, W. N. (2017). Spatial, network and temporal dimensions of the determinants of adaptive capacity in poor urban areas. *Global Environmental Change*, 46, 42–49.

White, R., et al. (2015). Promoting green urban development in African cities: Kampala, Uganda - urban environmental profile. *World Bank*.

World Bank (2021). *Enhancing Urban Resilience in Kampala: Disaster Risk and Climate Change* (Report). Washington, DC: The World Bank. documents1.worldbank.org cdkn.org

World Bank. (2019). *The Cost of Air Pollution in Africa*.

World Health Organization (WHO). (2022). *Urban Health Risks in African Cities: Assessing Disease Vulnerabilities in Kampala*. WHO Regional Office for Africa.

APPENDICES

Appendix 1: Grocery

All concepts used in this report are based on the IPCC's Sifth Assessment Report (IPCC, 2022)*, unless otherwise indicated. For further explanations of technical concepts, please see the* IPCC Glossary*.*

Adaptation options

The array of strategies and measures that are available and appropriate for addressing adaptation. They include a wide range of actions that can be categorised as structural, institutional, ecological or behavioural.

Community-based adaptation

Local, community-driven adaptation. Community-based adaptation focuses attention on empowering and promoting the adaptive capacity of communities. It is an approach that takes context, culture, knowledge, agency and preferences of communities as strengths.

Ecosystem-based adaptation (EBA)

The use of ecosystem management activities to increase the resilience and reduce the vulnerability of people and ecosystems to climate change (Campbell et al., 2009). See also Nature-based solution (NBS).

Agroforestry

Collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. In agroforestry systems, there are both ecological and economical interactions between the different components. Agroforestry can also be defined as a dynamic, ecologically based, natural resource management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels (FAO, 2015a).

Business-As-Usual (BAU)

The term Business-As-Usual scenario has been used to describe a scenario that assumes no additional policies beyond those currently in place and that patterns of socio-economic development are consistent with recent trends. The term is now used less frequently than in the past.

Capacity building

The practice of enhancing the strengths and attributes of, and resources available to, an individual, community, society or organisation to respond to change.

Climate

In a narrow sense, climate is usually defined as the average weather -or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities- over a period of time ranging from months to thousands or millions of years. The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization (WMO). The relevant quantities are most often surface variables such as temperature, precipitation and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.

Climate finance

There is no agreed definition of climate finance. The term climate finance is applied to the financial resources devoted to addressing climate change by all public and private actors from global to local scales, including international financial flows to developing countries to assist them in addressing climate change. Climate finance aims to reduce net greenhouse gas emissions and/or to enhance adaptation and increase resilience to the impacts of current and projected climate change. Finance can come from private and public sources, channeled by various intermediaries, and is delivered by a range of instruments, including grants, concessional and non-concessional debt, and internal budget reallocations.

Climate change

A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural causes. See also Climate variability, Detection, Attribution and Ocean acidification (OA).

Climate extreme (extreme weather or climate event)

The occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variable. By definition, the characteristics of what is called extreme weather may vary from place to place in an absolute sense. When a pattern of extreme weather persists for some time, such as a season, it may be classified as an extreme climate event, especially if it yields an average or total that is itself extreme (e.g., high temperature, drought

or heavy rainfall over a season). For simplicity, both extreme weather events and extreme climate events are referred to collectively as climate extremes.

Climate model

A qualitative or quantitative representation of the climate system based on the physical, chemical and biological properties of its components, their interactions and feedback processes and accounting for some of its known properties. The climate system can be represented by models of varying complexity; that is, for any one component or combination of components, a spectrum or hierarchy of models can be identified, differing in such aspects as the number of spatial dimensions, the extent to which physical, chemical or biological processes are explicitly represented, or the level at which empirical parameterizations are involved. There is an evolution towards more complex models with interactive chemistry and biology. Climate models are applied as a research tool to study and simulate the climate and for operational purposes, including monthly, seasonal and interannual climate predictions.

Climate prediction

A climate prediction or climate forecast is the result of an attempt to produce (starting from a particular state of the climate system) an estimate of the actual evolution of the climate in the future, for example, at seasonal, interannual or decadal time scales. Because the future evolution of the climate system may be highly sensitive to initial conditions, such predictions are usually probabilistic in nature.

Climate projection

Simulated response of the climate system to a scenario of future emissions or concentrations of greenhouse gases (GHGs) and aerosols and changes in land use, generally derived using climate models. Climate projections depend on an emission/concentration/radiative forcing scenario, which is in turn based on assumptions concerning, for example, future socioeconomic and technological developments that may or may not be realised.

Climate variability

Deviations of some climate variables from a given mean state (including the occurrence of extremes, etc.) at all spatial and temporal scales beyond that of individual weather events. Variability may be intrinsic, due to fluctuations of processes internal to the climate system (internal variability), or extrinsic, due to variations in natural or anthropogenic external forcing (forced variability).

Climate-smart agriculture (CSA)

An approach to agriculture that aims to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate by sustainably increasing agricultural productivity and incomes, adapting and building resilience to climate change, and reducing and/or removing greenhouse gas emissions, where possible (FAO, 2018).

Coping

The use of available skills, resources and opportunities to address, manage and overcome adverse conditions, with the aim of achieving basic functioning of people, institutions, organisations and systems in the short to medium term (UNISDR, 2009; IPCC, 2012a).

Coping capacity

The ability of people, institutions, organisations and systems, using available skills, values, beliefs, resources and opportunities, to address, manage and overcome adverse conditions in the short to medium term.

Disaster

A 'serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts'.

Disaster management

Social processes for designing, implementing and evaluating strategies, policies and measures that promote and improve disaster preparedness, response and recovery practices at different organisational and societal levels.

Disaster risk

The likelihood over a specified time period of severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery.

Disaster risk management (DRM)

Processes for designing, implementing and evaluating strategies, policies and measures to improve the understanding of current and future disaster risk, foster disaster risk reduction and transfer, and promote continuous improvement in disaster preparedness, prevention and protection, response and recovery practices, with the explicit purpose of increasing human security, well-being, quality of life and sustainable development (SD).

Disaster risk reduction (DRR)

Denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard or vulnerability; and improving resilience.

Drought

An exceptional period of water shortage for existing ecosystems and the human population (due to low rainfall, high temperature and/or wind).

Ecosystem

A functional unit consisting of living organisms, their non-living environment and the interactions within and between them. The components included in a given ecosystem and its spatial boundaries depend on the purpose for which the ecosystem is defined: in some cases, they are relatively sharp, while in others they are diffuse. Ecosystem boundaries can change over time. Ecosystems are nested within other ecosystems, and their scale can range from very small to the entire biosphere. In the current era, most ecosystems either contain people as key organisms or are influenced by the effects of human activities in their environment. See also Ecosystem services and Ecosystem health.

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.

Extreme weather event

An event that is rare at a particular place and time of year. Definitions of 'rare' vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile of a probability density function estimated from observations. By definition, the characteristics of what is called extreme weather may vary from place to place in an absolute sense.

Flood

The overflowing of the normal confines of a stream or other water body, or the accumulation of water over areas that are not normally submerged. Floods can be caused by unusually heavy rain, for example during storms and cyclones. Floods include river (fluvial) floods, flash floods, urban floods, rain (pluvial) floods, sewer floods, coastal floods, and glacial lake outburst floods (GLOF)

Hazard

The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources. See also Impacts and Risk.

Heat stress

A range of conditions in, for example, terrestrial or aquatic organisms when the body absorbs excess heat during overexposure to high air or water temperatures or thermal radiation. In aquatic water-breathing animals, hypoxia and acidification can exacerbate vulnerability to heat. Heat stress in mammals (including humans) and birds, both in air, is exacerbated by a detrimental combination of ambient heat, high humidity and low wind speed, causing the regulation of body temperature to fail.

Impacts

The consequences of realised risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather/climate events), exposure, and vulnerability. Impacts generally refer to effects on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services) and infrastructure. Impacts may be referred to as consequences or outcomes, and can be adverse or beneficial.

Loss and Damage, and losses and damages

Research has taken Loss and Damage (capitalised letters) to refer to political debate under the United Nations Framework Convention on Climate Change (UNFCCC) following the establishment of the Warsaw Mechanism on Loss and Damage in 2013, which is to 'address loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change.' Lowercase letters (losses and damages) have been taken to refer broadly to harm from (observed) impacts and (projected) risks and can be economic or non-economic (Mechler et al., 2018).

Maladaptive actions (Maladaptation)

Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence.

Mitigation (of climate change)

A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Mitigation measures

In climate policy, mitigation measures are technologies, processes or practices that contribute to mitigation, for example renewable energy technologies, waste minimisation processes and public transport commuting practices.

Shared socio-economic pathways (SSPs)

Shared socio-economic pathways (SSPs) have been developed to complement the Representative Concentration Pathways (RCPs). By design, the RCP emission and concentration pathways were stripped of their association with a certain socio-economic development. Different levels of emissions and climate change along the dimension of the RCPs can hence be explored against the backdrop of different socio-economic development pathways (SSPs) on the other dimension in a matrix. This integrative SSP-RCP framework is now widely used in the climate impact and policy analysis literature (see, e.g., http://iconics-ssp.org), where climate projections obtained under the RCP scenarios are analysed against the backdrop of various SSPs. As several emission updates were due, a new set of emission scenarios was developed in conjunction with the SSPs. Hence, the abbreviation SSP is now used for two things: On the one hand SSP1, SSP2, …, SSP5 is used to denote the five socio-economic scenario families. On the other hand, the abbreviations SSP1-1.9, SSP1-2.6, …, SSP5-8.5 are used to denote the newly developed emission scenarios that are the result of an SSP implementation within an integrated assessment model. Those SSP scenarios are bare of climate policy assumption, but in combination with so-called shared policy assumptions (SPAs), various approximate radiative forcing levels of 1.9, 2.6, …, or 8.5 W m−2 are reached by the end of the century, respectively.

Resilience

The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (Arctic Council, 2016). See also Hazard, Risk and Vulnerability.

Sustainability

Involves ensuring the persistence of natural and human systems, implying the continuous functioning of ecosystems, the conservation of high biodiversity, the recycling of natural resources and, in the human sector, successful application of justice and equity.

Vulnerability

The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. See also Exposure, Hazard and Risk.

Vulnerability index

A metric characterising the vulnerability of a system. A climate vulnerability index is typically derived by combining, with or without weighting, several indicators assumed to represent vulnerability.

Appendix 2: Names of Villages which are food hotspots

High Flood Risk	Moderate Flood Risk	Low Flood Risk

No.	Division	Parish	Village Name
1	CENTRAL	CIVIC CENTER	Nkurumah Zone
2	CENTRAL	CIVIC CENTER	Radio Uganda Zone
3	CENTRAL	CIVIC CENTER	Shimoni Zone
4	CENTRAL	INDUSTRIAL AREA	Pepsi Cola Zone
5	CENTRAL	INDUSTRIAL AREA	Seventh Street Zone
6	CENTRAL	INDUSTRIAL AREA	Sixth Street Zone
7	CENTRAL	KOLOLO IV	Community Flats Zone
8	CENTRAL	KOLOLO IV	Golf Course Zone
9	CENTRAL	KOLOLO IV	Lugogo Zone
10	CENTRAL	BUKESA	Kakajo I Zone
11	CENTRAL	BUKESA	Kakajo II Zone
12	CENTRAL	BUKESA	Nsalo Zone
13	CENTRAL	CIVIC CENTER	Christ The King Zone
14	CENTRAL	CIVIC CENTER	Nkurumah Zone
15	CENTRAL	CIVIC CENTER	Radio Uganda Zone
16	CENTRAL	CIVIC CENTER	Shimoni Zone
17	CENTRAL	INDUSTRIAL AREA	Pepsi Cola Zone
18	CENTRAL	INDUSTRIAL AREA	Seventh Street Zone
19	CENTRAL	KAGUGUBE	Industrial Zone
20	CENTRAL	KAGUGUBE	Kitamanyangamba Zone
21	CENTRAL	KAGUGUBE	Kivulu I Zone
22	CENTRAL	KAGUGUBE	Kivulu II Zone
23	CENTRAL	KAGUGUBE	LDC Zone
24	CENTRAL	KAGUGUBE	National Housing Flats Zone
25	CENTRAL	KAMWOKYA I	Village A Zone
26	CENTRAL	KAMWOKYA I	Village B Zone
27	CENTRAL	KAMWOKYA II	Church Zone
28	CENTRAL	KAMWOKYA II	Contafrica Zone
29	CENTRAL	KAMWOKYA II	Green Valley Zone
30	CENTRAL	KAMWOKYA II	Kisenyi I Zone
31	CENTRAL	KAMWOKYA II	Kisenyi II Zone

32	CENTRAL	KISENYI III	Kawempe Zone
33	CENTRAL	KISENYI III	Kiguli Zone
34	CENTRAL	KISENYI III	Kiti Zone
35	CENTRAL	KISENYI III	Luzige Zone
36	CENTRAL	KISENYI III	Nook Zone
37	CENTRAL	KISENYI III	Sapoba Zone
38	CENTRAL	KISENYI I	Blue Room Zone
39	CENTRAL	KISENYI I	Buwanika Zone
40	CENTRAL	KISENYI I	Central Zone
41	CENTRAL	KISENYI I	Muzaana Zone
42	CENTRAL	KISENYI II	Church Zone
43	CENTRAL	KISENYI II	Kasaato Zone
44	CENTRAL	KISENYI II	Kibwa Zone
45	CENTRAL	KISENYI II	Kiganda Zone
46	CENTRAL	KISENYI II	Kikajjo Zone
47	CENTRAL	KISENYI II	Market View Zone
48	CENTRAL	KISENYI II	Mbiro Zone
49	CENTRAL	KISENYI II	Mengo Hill Zone
50	CENTRAL	KISENYI II	School View Zone
51	CENTRAL	KOLOLO I	Baskerville Zone
52	CENTRAL	KOLOLO I	Makenzi Zone
53	CENTRAL	KOLOLO III	Kitante Courts Zone
54	CENTRAL	KOLOLO III	Kitante Hill Zone
55	CENTRAL	KOLOLO III	Windsor Crescent Zone
56	CENTRAL	KOLOLO IV	Community Flats Zone
57	CENTRAL	KOLOLO IV	Coral Creasent Zone
58	CENTRAL	KOLOLO IV	Golf Course Zone
59	CENTRAL	KOLOLO IV	Lugogo Zone
60	CENTRAL	KOLOLO IV	Ngabo Zone
61	CENTRAL	MENGO	Budonian Zone
62	CENTRAL	MENGO	Flat Zone
63	CENTRAL	MENGO	Musajja Alumbwa Zone

64	CENTRAL	MENGO	Nanozi Zone
65	CENTRAL	MENGO	Lubaga A Zone
66	CENTRAL	MENGO	Lubaga B Zone
67	CENTRAL	MENGO	Sebalijja Zone
68	CENTRAL	MENGO	Sserwanga B Zone
69	CENTRAL	MENGO	Yowana Maria Zone
70	CENTRAL	NAKASERO I	Crested Tower Zone
71	CENTRAL	NAKASERO I	Fairway Zone
72	CENTRAL	NAKASERO I	Katonga Road Zone
73	CENTRAL	NAKASERO I	Kitante Road Zone
74	CENTRAL	NAKASERO I	Shimon Zone
75	CENTRAL	NAKASERO III	Bombo Road I Zone
76	CENTRAL	NAKASERO III	Nakivubo Road Zone
77	CENTRAL	NAKASERO IV	City House Zone
78	CENTRAL	NAKASERO IV	Draper Zone
79	CENTRAL	NAKASERO IV	Hussein Zone
80	CENTRAL	NAKASERO IV	Kiyembe Zone
81	CENTRAL	NAKASERO IV	Nakasero Market Zone
82	CENTRAL	NAKASERO IV	Owino View Zone
83	CENTRAL	NAKASERO IV	Sultan Zone
84	CENTRAL	NAKASERO IV	Temple Zone
85	CENTRAL	NAKASERO IV	Universal Zone
86	CENTRAL	NAKASERO IV	UTC Zone
87	CENTRAL	NAKIVUBO-SHAURIYAKO	Munno A Zone
88	CENTRAL	NAKIVUBO-SHAURIYAKO	Munno B Zone
89	CENTRAL	NAKIVUBO-SHAURIYAKO	Remand A Zone
90	CENTRAL	NAKIVUBO-SHAURIYAKO	Remand B Zone
91	CENTRAL	NAKIVUBO-SHAURIYAKO	Salompasi A Zone
92	CENTRAL	NAKIVUBO-SHAURIYAKO	Salompasi B Zone
93	CENTRAL	NAKIVUBO-SHAURIYAKO	Shauriyako A Zone
94	CENTRAL	NAKIVUBO-SHAURIYAKO	Shauriyako B Zone
95	CENTRAL	OLD KAMPALA	Old Kampala I Zone
96	CENTRAL	OLD KAMPALA	Old Kampala II Zone

97	CENTRAL	NAKASERO IV	William Street Zone
98	CENTRAL	NAKASERO III	William Street Zone
99	CENTRAL	BUKESA	Kakajo II Zone
100	CENTRAL	BUKESA	Nsalo Zone
101	CENTRAL	CIVIC CENTER	Christ The King Zone
102	CENTRAL	CIVIC CENTER	Nkurumah Zone
103	CENTRAL	CIVIC CENTER	Radio Uganda Zone
104	CENTRAL	CIVIC CENTER	Shimoni Zone
105	CENTRAL	INDUSTRIAL AREA	Pepsi Cola Zone
106	CENTRAL	INDUSTRIAL AREA	Seventh Street Zone
107	CENTRAL	KAGUGUBE	Industrial Zone
108	CENTRAL	KAGUGUBE	Kitamanyangamba Zone
109	CENTRAL	KAGUGUBE	Kivulu I Zone
110	CENTRAL	KAGUGUBE	Kivulu II Zone
111	CENTRAL	KAGUGUBE	LDC Zone
112	CENTRAL	KAGUGUBE	National Housing Flats Zone
113	CENTRAL	KAMWOKYA I	Village A Zone
114	CENTRAL	KAMWOKYA I	Village B Zone
115	CENTRAL	KAMWOKYA II	Church Zone
116	CENTRAL	KAMWOKYA II	Contafrica Zone
117	CENTRAL	KAMWOKYA II	Green Valley Zone
118	CENTRAL	KAMWOKYA II	Kisenyi I Zone
119	CENTRAL	KAMWOKYA II	Kisenyi II Zone
120	CENTRAL	KISENYI III	Kawempe Zone
121	CENTRAL	KISENYI III	Kiguli Zone
122	CENTRAL	KISENYI III	Kiti Zone
123	CENTRAL	KISENYI III	Luzige Zone
124	CENTRAL	KISENYI III	Nook Zone
125	CENTRAL	KISENYI III	Sapoba Zone
126	CENTRAL	KISENYI I	Blue Room Zone
127	CENTRAL	KISENYI I	Buwanika Zone
128	CENTRAL	KISENYI I	Central Zone

129	CENTRAL	KISENYI I	Muzaana Zone
130	CENTRAL	KISENYI II	Church Zone
131	CENTRAL	KISENYI II	Kasaato Zone
132	CENTRAL	KISENYI II	Kibwa Zone
133	CENTRAL	KISENYI II	Kiganda Zone
134	CENTRAL	KISENYI II	Kikajjo Zone
135	CENTRAL	KISENYI II	Market View Zone
136	CENTRAL	KISENYI II	Mbiro Zone
137	CENTRAL	KISENYI II	Mengo Hill Zone
138	CENTRAL	KISENYI II	School View Zone
139	CENTRAL	KOLOLO I	Baskerville Zone
140	CENTRAL	KOLOLO I	Makenzi Zone
141	CENTRAL	KOLOLO III	Kitante Courts Zone
142	CENTRAL	KOLOLO III	Kitante Hill Zone
143	CENTRAL	KOLOLO III	Windsor Crescent Zone
144	CENTRAL	KOLOLO IV	Community Flats Zone
145	CENTRAL	KOLOLO IV	Coral Creasent Zone
146	CENTRAL	KOLOLO IV	Golf Course Zone
147	CENTRAL	KOLOLO IV	Lugogo Zone
148	CENTRAL	KOLOLO IV	Ngabo Zone
149	CENTRAL	MENGO	Budonian Zone
150	CENTRAL	MENGO	Flat Zone
151	CENTRAL	MENGO	Musajja Alumbwa Zone
152	CENTRAL	MENGO	Nanozi Zone
153	CENTRAL	MENGO	Lubaga A Zone
154	CENTRAL	MENGO	Lubaga B Zone
155	CENTRAL	MENGO	Sebalijja Zone
156	CENTRAL	MENGO	Sserwanga B Zone
157	CENTRAL	MENGO	Yowana Maria Zone
158	CENTRAL	NAKASERO I	Crested Tower Zone
159	CENTRAL	NAKASERO I	Fairway Zone

160	CENTRAL	NAKASERO I	Katonga Road Zone
161	CENTRAL	NAKASERO I	Kitante Road Zone
162	CENTRAL	NAKASERO I	Shimon Zone
163	CENTRAL	NAKASERO III	Bombo Road I Zone
164	CENTRAL	NAKASERO III	Nakivubo Road Zone
165	CENTRAL	NAKASERO IV	City House Zone
166	CENTRAL	NAKASERO IV	Draper Zone
167	CENTRAL	NAKASERO IV	Hussein Zone
168	CENTRAL	NAKASERO IV	Kiyembe Zone
169	CENTRAL	NAKASERO IV	Nakasero Market Zone
170	CENTRAL	NAKASERO IV	Owino View Zone
171	CENTRAL	NAKASERO IV	Sultan Zone
172	CENTRAL	NAKASERO IV	Temple Zone
173	CENTRAL	NAKASERO IV	Universal Zone
174	CENTRAL	NAKASERO IV	UTC Zone
175	CENTRAL	NAKIVUBO-SHAURIYAKO	Munno A Zone
176	CENTRAL	NAKIVUBO-SHAURIYAKO	Munno B Zone
177	CENTRAL	NAKIVUBO-SHAURIYAKO	Remand A Zone
178	CENTRAL	NAKIVUBO-SHAURIYAKO	Remand B Zone
179	CENTRAL	NAKIVUBO-SHAURIYAKO	Salompasi A Zone
180	CENTRAL	NAKIVUBO-SHAURIYAKO	Salompasi B Zone
181	CENTRAL	NAKIVUBO-SHAURIYAKO	Shauriyako A Zone
182	CENTRAL	NAKIVUBO-SHAURIYAKO	Shauriyako B Zone
183	CENTRAL	OLD KAMPALA	Old Kampala I Zone
184	CENTRAL	OLD KAMPALA	Old Kampala II Zone
185	CENTRAL	NAKASERO IV	William Street Zone
186	CENTRAL	NAKASERO III	William Street Zone

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- Kawempe Division

No.	Division	Parish	Village Name
1	KAWEMPE	BWAISE I	Bishop-Mukwaya Zone

2	KAWEMPE	BWAISE I	Bubajjwe Zone
3	KAWEMPE	BWAISE I	Industrial Area Zone
4	KAWEMPE	BWAISE I	Kisenyi Zone
5	KAWEMPE	BWAISE I	Kiyindi Zone
6	KAWEMPE	BWAISE II	Jambula Zone
7	KAWEMPE	BWAISE II	Katale Zone
8	KAWEMPE	BWAISE II	Lufula Zone
9	KAWEMPE	BWAISE II	Nabukalu Zone
10	KAWEMPE	BWAISE II	Nakamilo Zone
11	KAWEMPE	BWAISE II	Tebuyoleka Zone
12	KAWEMPE	BWAISE III	Bugalani Zone
13	KAWEMPE	BWAISE III	Bukasa Zone
14	KAWEMPE	BWAISE III	Kalimali Zone
15	KAWEMPE	BWAISE III	Katoogo Zone
16	KAWEMPE	BWAISE III	Kawaala Zone
17	KAWEMPE	BWAISE III	St. Francis Zone
18	KAWEMPE	KANYANYA	Kiyanja Zone
19	KAWEMPE	KANYANYA	Lutunda Zone
20	KAWEMPE	KANYANYA	Wampamba Zone
21	KAWEMPE	KAWEMPE I	Kakungulu Zone
22	KAWEMPE	KAWEMPE I	Kirokole Zone
23	KAWEMPE	KAWEMPE II	Kiganda Zone
24	KAWEMPE	KAWEMPE II	Nammere Zone
25	KAWEMPE	KAWEMPE II	Ttula Zone
26	KAWEMPE	KAZO	Kazo Angola Central Zone
27	KAWEMPE	KIKAAYA	Kikaaya B Zone
28	KAWEMPE	KIKAAYA	Kikulu Zone
29	KAWEMPE	KOMAMBOGA	Central Zone
30	KAWEMPE	KOMAMBOGA	Kanyanya-Komamboga Zone
31	KAWEMPE	KOMAMBOGA	Katalemwa Zone
32	KAWEMPE	KOMAMBOGA	Kwata Zone
33	KAWEMPE	KYEBANDO	Central Zone
34	KAWEMPE	KYEBANDO	Erisa Zone

35	KAWEMPE	KYEBANDO	Kanyanya Quaters Zone
36	KAWEMPE	KYEBANDO	Katale Zone
37	KAWEMPE	KYEBANDO	Kisalosalo Zone
38	KAWEMPE	KYEBANDO	Nsooba Zone
39	KAWEMPE	MAKERERE I	Banda Zone
40	KAWEMPE	MAKERERE I	Bataka Zone
41	KAWEMPE	MAKERERE I	Mini-Triangle Zone
42	KAWEMPE	MAKERERE I	Mukwenda Zone
43	KAWEMPE	MAKERERE II	Zone C Zone
44	KAWEMPE	MAKERERE II	Zone D Zone
45	KAWEMPE	MAKERERE III	Dobbi Zone
46	KAWEMPE	MAKERERE III	Good Hope Zone
47	KAWEMPE	MAKERERE III	Kibbe Zone
48	KAWEMPE	MAKERERE III	Kigunddu Zone
49	KAWEMPE	MAKERERE III	Mayinja Zone
50	KAWEMPE	MAKERERE III	Sebina Zone
51	KAWEMPE	MAKERERE UNIVERSITY	Zone A Zone
52	KAWEMPE	MAKERERE UNIVERSITY	Zone B Zone
53	KAWEMPE	MPERERWE	Sekanyonyi Zone
54	KAWEMPE	MPERERWE	Sekati Zone
55	KAWEMPE	MULAGO II	Kiwonvu Zone
56	KAWEMPE	MULAGO II	UEB Zone
57	KAWEMPE	MULAGO III	East Nsooba Zone
58	KAWEMPE	MULAGO III	Kalerwe Zone
59	KAWEMPE	MULAGO III	Kifumbira Zone
60	KAWEMPE	MULAGO III	Lower Nsooba Zone
61	KAWEMPE	MULAGO III	Upper Nsooba Zone
62	KAWEMPE	WANDEGEYA	Busia Zone
63	KAWEMPE	WANDEGEYA	Kimwanyi Zone
64	KAWEMPE	BWAISE I	Bishop-Mukwaya Zone
65	KAWEMPE	BWAISE I	Bubajjwe Zone
66	KAWEMPE	BWAISE I	Industrial Area Zone

67	KAWEMPE	BWAISE I	Kisenyi Zone
68	KAWEMPE	BWAISE I	Kiyindi Zone
69	KAWEMPE	BWAISE II	Jambula Zone
70	KAWEMPE	BWAISE II	Katale Zone
71	KAWEMPE	BWAISE II	Lufula Zone
72	KAWEMPE	BWAISE II	Nabukalu Zone
73	KAWEMPE	BWAISE II	Nakamilo Zone
74	KAWEMPE	BWAISE II	Tebuyoleka Zone
75	KAWEMPE	BWAISE III	Bugalani Zone
76	KAWEMPE	BWAISE III	Bukasa Zone
77	KAWEMPE	BWAISE III	Kalimali Zone
78	KAWEMPE	BWAISE III	Katoogo Zone
79	KAWEMPE	BWAISE III	Kawaala Zone
80	KAWEMPE	BWAISE III	St. Francis Zone
81	KAWEMPE	KANYANYA	Kiyanja Zone
82	KAWEMPE	KANYANYA	Lutunda Zone
83	KAWEMPE	KANYANYA	Wampamba Zone
84	KAWEMPE	KAWEMPE I	Kakungulu Zone
85	KAWEMPE	KAWEMPE I	Kirokole Zone
86	KAWEMPE	KAWEMPE II	Kiganda Zone
87	KAWEMPE	KAWEMPE II	Nammere Zone
88	KAWEMPE	KAWEMPE II	Ttula Zone
89	KAWEMPE	KAZO	Kazo Angola Central Zone
90	KAWEMPE	KIKAAYA	Kikaaya B Zone
91	KAWEMPE	KIKAAYA	Kikulu Zone
92	KAWEMPE	KOMAMBOGA	Central Zone
93	KAWEMPE	KOMAMBOGA	Kanyanya-Komamboga Zone
94	KAWEMPE	KOMAMBOGA	Katalemwa Zone
95	KAWEMPE	KOMAMBOGA	Kwata Zone
96	KAWEMPE	KYEBANDO	Central Zone
97	KAWEMPE	KYEBANDO	Erisa Zone
98	KAWEMPE	KYEBANDO	Kanyanya Quaters Zone
99	KAWEMPE	KYEBANDO	Katale Zone
100	KAWEMPE	KYEBANDO	Kisalosalo Zone
101	KAWEMPE	KYEBANDO	Nsooba Zone

102	KAWEMPE	MAKERERE I	Banda Zone
103	KAWEMPE	MAKERERE I	Bataka Zone
104	KAWEMPE	MAKERERE I	Mini-Triangle Zone
105	KAWEMPE	MAKERERE I	Mukwenda Zone
106	KAWEMPE	MAKERERE II	Zone C Zone
107	KAWEMPE	MAKERERE II	Zone D Zone
108	KAWEMPE	MAKERERE III	Dobbi Zone
109	KAWEMPE	MAKERERE III	Good Hope Zone
110	KAWEMPE	MAKERERE III	Kibbe Zone
111	KAWEMPE	MAKERERE III	Kigunddu Zone
112	KAWEMPE	MAKERERE III	Mayinja Zone
113	KAWEMPE	MAKERERE III	Sebina Zone
114	KAWEMPE	MAKERERE UNIVERSITY	Zone A Zone
115	KAWEMPE	MAKERERE UNIVERSITY	Zone B Zone
116	KAWEMPE	MPERERWE	Sekanyonyi Zone
117	KAWEMPE	MPERERWE	Sekati Zone
118	KAWEMPE	MULAGO II	Kiwonvu Zone
119	KAWEMPE	MULAGO II	UEB Zone
120	KAWEMPE	MULAGO III	East Nsooba Zone
121	KAWEMPE	MULAGO III	Kalerwe Zone
122	KAWEMPE	MULAGO III	Kifumbira Zone
123	KAWEMPE	MULAGO III	Lower Nsooba Zone
124	KAWEMPE	MULAGO III	Upper Nsooba Zone
125	KAWEMPE	WANDEGEYA	Busia Zone
126	KAWEMPE	WANDEGEYA	Kimwanyi Zone

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- Makindye Division

No.	Division	Parish	Village Name
1	MAKINDYE	BUKASA	Kanyogoga Zone
2	MAKINDYE	BUKASA	Katongole Zone
3	MAKINDYE	BUKASA	Kijjwa Zone
4	MAKINDYE	BUKASA	Kyeitabya Zone
5	MAKINDYE	BUKASA	Mugalu Zone

6	MAKINDYE	BUKASA	Namuwongo A Zone
7	MAKINDYE	BUKASA	Namuwongo B Zone
8	MAKINDYE	BUKASA	Sekindi Zone
9	MAKINDYE	BUKASA	Tibaleka Zone
10	MAKINDYE	BUKASA	Yoka Zone
11	MAKINDYE	BUZIGA	Kakande Zone
12	MAKINDYE	BUZIGA	Katuuso Zone
13	MAKINDYE	BUZIGA	Kiruddu Zone
14	MAKINDYE	BUZIGA	Lower Mawanga Zone
15	MAKINDYE	BUZIGA	Lower Mawanga Zone
16	MAKINDYE	BUZIGA	Serwadda Zone
17	MAKINDYE	BUZIGA	Upper Mawanga Zone
18	MAKINDYE	GGABA	Bunga Hill Zone
19	MAKINDYE	GGABA	Bunga Trading Area Zone
20	MAKINDYE	GGABA	Ggaba Mission Zone
21	MAKINDYE	GGABA	Ggaba Trading Centre Zone
22	MAKINDYE	GGABA	Ggaba Water Zone
23	MAKINDYE	GGABA	Kalungu Zone
24	MAKINDYE	GGABA	Katoogo Zone
25	MAKINDYE	GGABA	Kawuku Zone
26	MAKINDYE	GGABA	Nsubuga Gondiozi Zone
27	MAKINDYE	GGABA	St. Mbaaga Zone
28	MAKINDYE	KANSANGA-MUYENGA	Church Zone
29	MAKINDYE	KANSANGA-MUYENGA	Heritage Zone
30	MAKINDYE	KANSANGA-MUYENGA	Mutesasira Zone
31	MAKINDYE	KANSANGA-MUYENGA	Kiwafu B Zone
32	MAKINDYE	KANSANGA-MUYENGA	Nabutiti Zone
33	MAKINDYE	KANSANGA-MUYENGA	Sebagala Zone
34	MAKINDYE	KANSANGA-MUYENGA	Sebuliba Zone
35	MAKINDYE	KANSANGA-MUYENGA	Simbwa Zone
36	MAKINDYE	KANSANGA-MUYENGA	Tebandeke Zone

37	MAKINDYE	KANSANGA-MUYENGA	Wheeling Zone
38	MAKINDYE	KIBULI	Agip Zone
39	MAKINDYE	KIBULI	Green Hill Zone
40	MAKINDYE	KIBULI	Kibuli Central Zone
41	MAKINDYE	KIBULI	Kitooro Zone
42	MAKINDYE	KISUGU	Godown Zone
43	MAKINDYE	KISUGU	Hospital Zone
44	MAKINDYE	KISUGU	Kasanvu Zone
45	MAKINDYE	KISUGU	Lakeside Zone
46	MAKINDYE	KISUGU	Market Zone
47	MAKINDYE	LUKULI	Bruno Zone
48	MAKINDYE	LUKULI	Kalule Zone
49	MAKINDYE	LUKULI	Kasule Zone
50	MAKINDYE	LUKULI	Kiwempe Zone
51	MAKINDYE	LUKULI	Lower Konge Zone
52	MAKINDYE	LUKULI	Mpondye Zone
53	MAKINDYE	LUKULI	Nsereko Zone
54	MAKINDYE	LUKULI	Sankara Zone
55	MAKINDYE	LUKULI	Seruwajji 'D' Zone
56	MAKINDYE	LUKULI	Seruwajji Zone
57	MAKINDYE	LUKULI	Yolum Zone
58	MAKINDYE	LUWAFU	Nakinyuguzi Lower Zone
59	MAKINDYE	MAKINDYE I	Isreal-Matovu Zone
60	MAKINDYE	MAKINDYE I	Kirombe Zone
61	MAKINDYE	NSAMBYA CENTRAL	Gogonya II Zone
62	MAKINDYE	NSAMBYA CENTRAL	Good Will Zone
63	MAKINDYE	NSAMBYA CENTRAL	Police Barracks Zone
64	MAKINDYE	NSAMBYA CENTRAL	Special Area Zone
65	MAKINDYE	NSAMBYA CENTRAL	St. Augustine Zone
66	MAKINDYE	NSAMBYA RAILWAY	Railways A Zone
67	MAKINDYE	NSAMBYA RAILWAY	Railways B Zone

68	MAKINDYE	NSAMBYA RAILWAY	Railways C Zone
69	MAKINDYE	SALAAMA	Badongo Zone
70	MAKINDYE	SALAAMA	Buziga Zone
71	MAKINDYE	SALAAMA	Central Zone
72	MAKINDYE	SALAAMA	Kigaaga Zone
73	MAKINDYE	SALAAMA	Kosovo Zone
74	MAKINDYE	SALAAMA	Kyamula Zone
75	MAKINDYE	SALAAMA	Mulungu Zone
76	MAKINDYE	SALAAMA	Munyonyo Zone
77	MAKINDYE	SALAAMA	Takajjunge Zone
78	MAKINDYE	SALAAMA	Valley Zone
79	MAKINDYE	SALAAMA	Zikusooka Zone
80	MAKINDYE	WABIGALO	Industrial Zone
81	MAKINDYE	WABIGALO	Lower Zone
82	MAKINDYE	WABIGALO	Project Zone
83	MAKINDYE	WABIGALO	Railway Zone
84	MAKINDYE	BUKASA	Bukasa Zone
85	MAKINDYE	BUKASA	Kanyogoga Zone
86	MAKINDYE	BUKASA	Katongole Zone
87	MAKINDYE	BUKASA	Kayongo Zone
88	MAKINDYE	BUKASA	Kijjwa Zone
89	MAKINDYE	BUKASA	Kyeitabya Zone
90	MAKINDYE	BUKASA	Mugalu Zone
91	MAKINDYE	BUKASA	Muyenga A Zone
92	MAKINDYE	BUKASA	Muyenga B Zone
93	MAKINDYE	BUKASA	Namuwongo A Zone
94	MAKINDYE	BUKASA	Namuwongo B Zone
95	MAKINDYE	BUKASA	Sekindi Zone
96	MAKINDYE	BUKASA	Tibaleka Zone
97	MAKINDYE	BUKASA	Yoka Zone
98	MAKINDYE	BUZIGA	Kakande Zone
99	MAKINDYE	BUZIGA	Katuuso Zone
100	MAKINDYE	BUZIGA	Kiruddu Zone
101	MAKINDYE	BUZIGA	Lower Mawanga Zone
102	MAKINDYE	BUZIGA	Lower Mawanga Zone
103	MAKINDYE	BUZIGA	Mawanga Zone

104	MAKINDYE	BUZIGA	Mudde Zone
105	MAKINDYE	BUZIGA	Serwadda Zone
106	MAKINDYE	BUZIGA	Upper Mawanga Zone
107	MAKINDYE	GGABA	Bunga Hill Zone
108	MAKINDYE	GGABA	Bunga Trading Area Zone
109	MAKINDYE	GGABA	Ggaba Mission Zone
110	MAKINDYE	GGABA	Ggaba Trading Centre Zone
111	MAKINDYE	GGABA	Kalungu Zone
112	MAKINDYE	GGABA	Kawuku Zone
113	MAKINDYE	GGABA	Nsubuga Gondiozi Zone
114	MAKINDYE	GGABA	St. Mbaaga Zone
115	MAKINDYE	KABALAGALA	Buyinja Zone
116	MAKINDYE	KABALAGALA	Kalanzi Zone
117	MAKINDYE	KABALAGALA	Kisasizi Zone
118	MAKINDYE	KABALAGALA	Kyeyune Zone
119	MAKINDYE	KABALAGALA	Meya Zone
120	MAKINDYE	KANSANGA-MUYENGA	Central Zone
121	MAKINDYE	KANSANGA-MUYENGA	Church Zone
122	MAKINDYE	KANSANGA-MUYENGA	Heritage Zone
123	MAKINDYE	KANSANGA-MUYENGA	Katabu Zone
124	MAKINDYE	KANSANGA-MUYENGA	Mutesasira Zone
125	MAKINDYE	KANSANGA-MUYENGA	Kiwafu-Estates Zone
126	MAKINDYE	KANSANGA-MUYENGA	Kiwafu B Zone
127	MAKINDYE	KANSANGA-MUYENGA	Male Zone
128	MAKINDYE	KANSANGA-MUYENGA	Masaana Zone
129	MAKINDYE	KANSANGA-MUYENGA	Sebagala Zone
130	MAKINDYE	KANSANGA-MUYENGA	Sebuliba Zone
131	MAKINDYE	KANSANGA-MUYENGA	Simbwa Zone

132	MAKINDYE	KANSANGA-MUYENGA	Tebandeke Zone
133	MAKINDYE	KANSANGA-MUYENGA	Wheeling Zone
134	MAKINDYE	KATWE I	Bagirinya Zone
135	MAKINDYE	KATWE I	Buligwanya Zone
136	MAKINDYE	KATWE I	Kasule Zone
137	MAKINDYE	KATWE I	Lufula Zone
138	MAKINDYE	KATWE I	Musoke Zone
139	MAKINDYE	KATWE I	Muwanga Zone
140	MAKINDYE	KATWE I	Muwonge Zone
141	MAKINDYE	KATWE I	Nawanku Zone
142	MAKINDYE	KATWE I	Ring Road Zone
143	MAKINDYE	KATWE I	White Nile Zone
144	MAKINDYE	KATWE II	Base Zone
145	MAKINDYE	KATWE II	Byuma Zone
146	MAKINDYE	KATWE II	Central Zone
147	MAKINDYE	KATWE II	Katenda Zone
148	MAKINDYE	KATWE II	Kevina Zone
149	MAKINDYE	KATWE II	Kiganda Zone
150	MAKINDYE	KATWE II	Taawo Zone
151	MAKINDYE	KATWE II	West Zone
152	MAKINDYE	KIBULI	Agip Zone
153	MAKINDYE	KIBULI	Green Hill Zone
154	MAKINDYE	KIBULI	Institution Zone
155	MAKINDYE	KIBULI	Kakungulu Zone
156	MAKINDYE	KIBULI	Kibuli Central Zone
157	MAKINDYE	KIBULI	Kigumba Zone
158	MAKINDYE	KIBULI	Kimbugwe Zone
159	MAKINDYE	KIBULI	Kitooro Zone
160	MAKINDYE	KIBULI	Lubowa Zone
161	MAKINDYE	KIBULI	Lubuga Zone
162	MAKINDYE	KIBULI	Market B Zone
163	MAKINDYE	KIBULI	Market Zone
164	MAKINDYE	KIBULI	Mosque Zone

165	MAKINDYE	KIBULI	Nakibinge Zone
166	MAKINDYE	KIBULI	Rajab Kyeyune Zone
167	MAKINDYE	KIBUYE I	Barracks Zone
168	MAKINDYE	KIBUYE I	Juuko Zone
169	MAKINDYE	KIBUYE I	Kapeke Zone
170	MAKINDYE	KIBUYE I	Masaku Zone
171	MAKINDYE	KIBUYE I	Nabisaalu Zone
172	MAKINDYE	KIBUYE I	Nkere Zone
173	MAKINDYE	KIBUYE I	Nsuwa Zone
174	MAKINDYE	KIBUYE I	St. Bendicto Zone
175	MAKINDYE	KIBUYE II	Kategula Zone
176	MAKINDYE	KIBUYE II	Kavule Zone
177	MAKINDYE	KIBUYE II	Kirundu Zone
178	MAKINDYE	KIBUYE II	Kiyembe Zone
179	MAKINDYE	KIBUYE II	Lwanga Zone
180	MAKINDYE	KIBUYE II	Nyago Zone
181	MAKINDYE	KIBUYE II	Wansanso Zone
182	MAKINDYE	KISUGU	Banana Zone
183	MAKINDYE	KISUGU	Godown Zone
184	MAKINDYE	KISUGU	Hospital Zone
185	MAKINDYE	KISUGU	Kasanvu Zone
186	MAKINDYE	KISUGU	Kisugu Central Zone
187	MAKINDYE	KISUGU	Kisugu South A Zone
188	MAKINDYE	KISUGU	Kisugu South C Zone
189	MAKINDYE	KISUGU	Lakeside Zone
190	MAKINDYE	KISUGU	Market Zone
191	MAKINDYE	KISUGU	Mugalaasi Zone
192	MAKINDYE	KISUGU	Upper Lakeside Zone
193	MAKINDYE	LUKULI	Bruno Zone
194	MAKINDYE	LUKULI	Kalule Zone
195	MAKINDYE	LUKULI	Kanisa Zone
196	MAKINDYE	LUKULI	Kasule Zone

197	MAKINDYE	LUKULI	Katimbo Zone
198	MAKINDYE	LUKULI	Kibalama Zone
199	MAKINDYE	LUKULI	Kiwempe Zone
200	MAKINDYE	LUKULI	Kizungu Zone
201	MAKINDYE	LUKULI	Lower Konge Zone
202	MAKINDYE	LUKULI	Mpondye Zone
203	MAKINDYE	LUKULI	Nsereko Zone
204	MAKINDYE	LUKULI	Sankara Zone
205	MAKINDYE	LUKULI	Seruwajji 'D' Zone
206	MAKINDYE	LUKULI	Seruwajji Zone
207	MAKINDYE	LUKULI	Tyaba Zone
208	MAKINDYE	LUKULI	Upper Konge I Zone
209	MAKINDYE	LUKULI	Upper Konge II Zone
210	MAKINDYE	LUKULI	Yolum Zone
211	MAKINDYE	LUKULI	Zone 5 Zone
212	MAKINDYE	LUWAFU	Abbas Zone
213	MAKINDYE	LUWAFU	Amazon Zone
214	MAKINDYE	LUWAFU	Bukejje Zone
215	MAKINDYE	LUWAFU	Kirundu Zone
216	MAKINDYE	LUWAFU	Luwafu-Kizungu Zone
217	MAKINDYE	LUWAFU	Nakinyuguzi Lower Zone
218	MAKINDYE	LUWAFU	Sendagala Zone
219	MAKINDYE	MAKINDYE I	Isreal-Matovu Zone
220	MAKINDYE	MAKINDYE I	Katale Zone
221	MAKINDYE	MAKINDYE I	Kazinga Zone
222	MAKINDYE	MAKINDYE I	Kirombe Zone
223	MAKINDYE	MAKINDYE I	Water Pump Zone
224	MAKINDYE	MAKINDYE II	Dubai Zone
225	MAKINDYE	MAKINDYE II	Kipamba Zone
226	MAKINDYE	MAKINDYE II	Muswangali Zone
227	MAKINDYE	NSAMBYA CENTRAL	Buyondo Zone
228	MAKINDYE	NSAMBYA CENTRAL	Convent Zone
229	MAKINDYE	NSAMBYA CENTRAL	Embassy Zone
230	MAKINDYE	NSAMBYA CENTRAL	Gogonya II Zone
231	MAKINDYE	NSAMBYA CENTRAL	Good Will Zone
232	MAKINDYE	NSAMBYA CENTRAL	Institution Zone
233	MAKINDYE	NSAMBYA CENTRAL	Kamwanyi Zone
234	MAKINDYE	NSAMBYA CENTRAL	Katabira Zone

235	MAKINDYE	NSAMBYA CENTRAL	Kitawuluzi Zone
236	MAKINDYE	NSAMBYA CENTRAL	Mubiru Zone
237	MAKINDYE	NSAMBYA CENTRAL	Mugwanya Zone
238	MAKINDYE	NSAMBYA CENTRAL	Nsambya Central Zone
239	MAKINDYE	NSAMBYA CENTRAL	Nsambya West Zone
240	MAKINDYE	NSAMBYA CENTRAL	Nsubuga Zone
241	MAKINDYE	NSAMBYA CENTRAL	Ntuuse Zone
242	MAKINDYE	NSAMBYA CENTRAL	Police Barracks Zone
243	MAKINDYE	NSAMBYA CENTRAL	Special Area Zone
244	MAKINDYE	NSAMBYA CENTRAL	St. Augustine Zone
245	MAKINDYE	NSAMBYA RAILWAY	Railway D Zone
246	MAKINDYE	NSAMBYA RAILWAY	Railways A Zone
247	MAKINDYE	NSAMBYA RAILWAY	Railways B Zone
248	MAKINDYE	NSAMBYA RAILWAY	Railways C Zone
249	MAKINDYE	SALAAMA	Badongo Zone
250	MAKINDYE	SALAAMA	Boston Zone
251	MAKINDYE	SALAAMA	Buziga Zone
252	MAKINDYE	SALAAMA	Central Zone
253	MAKINDYE	SALAAMA	Kalani Zone
254	MAKINDYE	SALAAMA	Kigaaga Zone
255	MAKINDYE	SALAAMA	Kosovo Zone
256	MAKINDYE	SALAAMA	Kyamula Zone
257	MAKINDYE	SALAAMA	Mulungu Zone
258	MAKINDYE	SALAAMA	Munyonyo Zone
259	MAKINDYE	SALAAMA	Takajjunge Zone
260	MAKINDYE	SALAAMA	Valley Zone
261	MAKINDYE	SALAAMA	Zikusooka Zone
262	MAKINDYE	WABIGALO	Central Zone
263	MAKINDYE	WABIGALO	Church Zone
264	MAKINDYE	WABIGALO	Kitooro Zone
265	MAKINDYE	WABIGALO	Lower Zone
266	MAKINDYE	WABIGALO	Mazigidi Zone
267	MAKINDYE	WABIGALO	Mivule Zone
268	MAKINDYE	WABIGALO	Project Zone

269	MAKINDYE	WABIGALO	Railway Zone
270	MAKINDYE	WABIGALO	Upper Zone
271	MAKINDYE	KIBUYE I	Kanakulya Zone
272	MAKINDYE	KIBULI	Kanakulya Zone
273	MAKINDYE	BUKASA	Bukasa Zone
274	MAKINDYE	BUKASA	Kanyogoga Zone
275	MAKINDYE	BUKASA	Katongole Zone
276	MAKINDYE	BUKASA	Kayongo Zone
277	MAKINDYE	BUKASA	Kijjwa Zone
278	MAKINDYE	BUKASA	Kyeitabya Zone
279	MAKINDYE	BUKASA	Mugalu Zone
280	MAKINDYE	BUKASA	Muyenga A Zone
281	MAKINDYE	BUKASA	Muyenga B Zone
282	MAKINDYE	BUKASA	Namuwongo A Zone
283	MAKINDYE	BUKASA	Namuwongo B Zone
284	MAKINDYE	BUKASA	Sekindi Zone
285	MAKINDYE	BUKASA	Tibaleka Zone
286	MAKINDYE	BUKASA	Yoka Zone
287	MAKINDYE	BUZIGA	Kakande Zone
288	MAKINDYE	BUZIGA	Katuuso Zone
289	MAKINDYE	BUZIGA	Kiruddu Zone
290	MAKINDYE	BUZIGA	Lower Mawanga Zone
291	MAKINDYE	BUZIGA	Lower Mawanga Zone
292	MAKINDYE	BUZIGA	Mawanga Zone
293	MAKINDYE	BUZIGA	Mudde Zone
294	MAKINDYE	BUZIGA	Serwadda Zone
295	MAKINDYE	BUZIGA	Upper Mawanga Zone
296	MAKINDYE	GGABA	Bunga Hill Zone
297	MAKINDYE	GGABA	Bunga Trading Area Zone
298	MAKINDYE	GGABA	Ggaba Mission Zone
299	MAKINDYE	GGABA	Ggaba Trading Centre Zone
300	MAKINDYE	GGABA	Kalungu Zone
301	MAKINDYE	GGABA	Kawuku Zone
302	MAKINDYE	GGABA	Nsubuga Gondiozi Zone
303	MAKINDYE	GGABA	St. Mbaaga Zone
304	MAKINDYE	KABALAGALA	Buyinja Zone
305	MAKINDYE	KABALAGALA	Kalanzi Zone
306	MAKINDYE	KABALAGALA	Kisasizi Zone
307	MAKINDYE	KABALAGALA	Kyeyune Zone
308	MAKINDYE	KABALAGALA	Meya Zone
309	MAKINDYE	KANSANGA-MUYENGA	Central Zone

310	MAKINDYE	KANSANGA-MUYENGA	Church Zone
311	MAKINDYE	KANSANGA-MUYENGA	Heritage Zone
312	MAKINDYE	KANSANGA-MUYENGA	Katabu Zone
313	MAKINDYE	KANSANGA-MUYENGA	Mutesasira Zone
314	MAKINDYE	KANSANGA-MUYENGA	Kiwafu-Estates Zone
315	MAKINDYE	KANSANGA-MUYENGA	Kiwafu B Zone
316	MAKINDYE	KANSANGA-MUYENGA	Male Zone
317	MAKINDYE	KANSANGA-MUYENGA	Masaana Zone
318	MAKINDYE	KANSANGA-MUYENGA	Sebagala Zone
319	MAKINDYE	KANSANGA-MUYENGA	Sebuliba Zone
320	MAKINDYE	KANSANGA-MUYENGA	Simbwa Zone
321	MAKINDYE	KANSANGA-MUYENGA	Tebandeke Zone
322	MAKINDYE	KANSANGA-MUYENGA	Wheeling Zone
323	MAKINDYE	KATWE I	Bagirinya Zone
324	MAKINDYE	KATWE I	Buligwanya Zone
325	MAKINDYE	KATWE I	Kasule Zone
326	MAKINDYE	KATWE I	Lufula Zone
327	MAKINDYE	KATWE I	Musoke Zone
328	MAKINDYE	KATWE I	Muwanga Zone
329	MAKINDYE	KATWE I	Muwonge Zone
330	MAKINDYE	KATWE I	Nawanku Zone
331	MAKINDYE	KATWE I	Ring Road Zone
332	MAKINDYE	KATWE I	White Nile Zone
333	MAKINDYE	KATWE II	Base Zone
334	MAKINDYE	KATWE II	Byuma Zone
335	MAKINDYE	KATWE II	Central Zone
336	MAKINDYE	KATWE II	Katenda Zone
337	MAKINDYE	KATWE II	Kevina Zone

338	MAKINDYE	KATWE II	Kiganda Zone
339	MAKINDYE	KATWE II	Taawo Zone
340	MAKINDYE	KATWE II	West Zone
341	MAKINDYE	KIBULI	Agip Zone
342	MAKINDYE	KIBULI	Green Hill Zone
343	MAKINDYE	KIBULI	Institution Zone
344	MAKINDYE	KIBULI	Kakungulu Zone
345	MAKINDYE	KIBULI	Kibuli Central Zone
346	MAKINDYE	KIBULI	Kigumba Zone
347	MAKINDYE	KIBULI	Kimbugwe Zone
348	MAKINDYE	KIBULI	Kitooro Zone
349	MAKINDYE	KIBULI	Lubowa Zone
350	MAKINDYE	KIBULI	Lubuga Zone
351	MAKINDYE	KIBULI	Market B Zone
352	MAKINDYE	KIBULI	Market Zone
353	MAKINDYE	KIBULI	Mosque Zone
354	MAKINDYE	KIBULI	Nakibinge Zone
355	MAKINDYE	KIBULI	Rajab Kyeyune Zone
356	MAKINDYE	KIBUYE I	Barracks Zone
357	MAKINDYE	KIBUYE I	Juuko Zone
358	MAKINDYE	KIBUYE I	Kapeke Zone
359	MAKINDYE	KIBUYE I	Masaku Zone
360	MAKINDYE	KIBUYE I	Nabisaalu Zone
361	MAKINDYE	KIBUYE I	Nkere Zone
362	MAKINDYE	KIBUYE I	Nsuwa Zone
363	MAKINDYE	KIBUYE I	St. Bendicto Zone
364	MAKINDYE	KIBUYE II	Kategula Zone
365	MAKINDYE	KIBUYE II	Kavule Zone
366	MAKINDYE	KIBUYE II	Kirundu Zone
367	MAKINDYE	KIBUYE II	Kiyembe Zone
368	MAKINDYE	KIBUYE II	Lwanga Zone
369	MAKINDYE	KIBUYE II	Nyago Zone
370	MAKINDYE	KIBUYE II	Wansanso Zone
371	MAKINDYE	KISUGU	Banana Zone
372	MAKINDYE	KISUGU	Godown Zone
373	MAKINDYE	KISUGU	Hospital Zone
374	MAKINDYE	KISUGU	Kasanvu Zone
375	MAKINDYE	KISUGU	Kisugu Central Zone
376	MAKINDYE	KISUGU	Kisugu South A Zone
377	MAKINDYE	KISUGU	Kisugu South C Zone
378	MAKINDYE	KISUGU	Lakeside Zone
379	MAKINDYE	KISUGU	Market Zone
380	MAKINDYE	KISUGU	Mugalaasi Zone
381	MAKINDYE	KISUGU	Upper Lakeside Zone

382	MAKINDYE	LUKULI	Bruno Zone
383	MAKINDYE	LUKULI	Kalule Zone
384	MAKINDYE	LUKULI	Kanisa Zone
385	MAKINDYE	LUKULI	Kasule Zone
386	MAKINDYE	LUKULI	Katimbo Zone
387	MAKINDYE	LUKULI	Kibalama Zone
388	MAKINDYE	LUKULI	Kiwempe Zone
389	MAKINDYE	LUKULI	Kizungu Zone
390	MAKINDYE	LUKULI	Lower Konge Zone
391	MAKINDYE	LUKULI	Mpondye Zone
392	MAKINDYE	LUKULI	Nsereko Zone
393	MAKINDYE	LUKULI	Sankara Zone
394	MAKINDYE	LUKULI	Seruwajji 'D' Zone
395	MAKINDYE	LUKULI	Seruwajji Zone
396	MAKINDYE	LUKULI	Tyaba Zone
397	MAKINDYE	LUKULI	Upper Konge I Zone
398	MAKINDYE	LUKULI	Upper Konge II Zone
399	MAKINDYE	LUKULI	Yolum Zone
400	MAKINDYE	LUKULI	Zone 5 Zone
401	MAKINDYE	LUWAFU	Abbas Zone
402	MAKINDYE	LUWAFU	Amazon Zone
403	MAKINDYE	LUWAFU	Bukejje Zone
404	MAKINDYE	LUWAFU	Kirundu Zone
405	MAKINDYE	LUWAFU	Luwafu-Kizungu Zone
406	MAKINDYE	LUWAFU	Nakinyuguzi Lower Zone
407	MAKINDYE	LUWAFU	Sendagala Zone
408	MAKINDYE	MAKINDYE I	Isreal-Matovu Zone
409	MAKINDYE	MAKINDYE I	Katale Zone
410	MAKINDYE	MAKINDYE I	Kazinga Zone
411	MAKINDYE	MAKINDYE I	Kirombe Zone
412	MAKINDYE	MAKINDYE I	Water Pump Zone
413	MAKINDYE	MAKINDYE II	Dubai Zone
414	MAKINDYE	MAKINDYE II	Kipamba Zone
415	MAKINDYE	MAKINDYE II	Muswangali Zone
416	MAKINDYE	NSAMBYA CENTRAL	Buyondo Zone
417	MAKINDYE	NSAMBYA CENTRAL	Convent Zone
418	MAKINDYE	NSAMBYA CENTRAL	Embassy Zone
419	MAKINDYE	NSAMBYA CENTRAL	Gogonya II Zone
420	MAKINDYE	NSAMBYA CENTRAL	Good Will Zone
421	MAKINDYE	NSAMBYA CENTRAL	Institution Zone

422	MAKINDYE	NSAMBYA CENTRAL	Kamwanyi Zone
423	MAKINDYE	NSAMBYA CENTRAL	Katabira Zone
424	MAKINDYE	NSAMBYA CENTRAL	Kitawuluzi Zone
425	MAKINDYE	NSAMBYA CENTRAL	Mubiru Zone
426	MAKINDYE	NSAMBYA CENTRAL	Mugwanya Zone
427	MAKINDYE	NSAMBYA CENTRAL	Nsambya Central Zone
428	MAKINDYE	NSAMBYA CENTRAL	Nsambya West Zone
429	MAKINDYE	NSAMBYA CENTRAL	Nsubuga Zone
430	MAKINDYE	NSAMBYA CENTRAL	Ntuuse Zone
431	MAKINDYE	NSAMBYA CENTRAL	Police Barracks Zone
432	MAKINDYE	NSAMBYA CENTRAL	Special Area Zone
433	MAKINDYE	NSAMBYA CENTRAL	St. Augustine Zone
434	MAKINDYE	NSAMBYA RAILWAY	Railway D Zone
435	MAKINDYE	NSAMBYA RAILWAY	Railways A Zone
436	MAKINDYE	NSAMBYA RAILWAY	Railways B Zone
437	MAKINDYE	NSAMBYA RAILWAY	Railways C Zone
438	MAKINDYE	SALAAMA	Badongo Zone
439	MAKINDYE	SALAAMA	Boston Zone
440	MAKINDYE	SALAAMA	Buziga Zone
441	MAKINDYE	SALAAMA	Central Zone
442	MAKINDYE	SALAAMA	Kalani Zone
443	MAKINDYE	SALAAMA	Kigaaga Zone
444	MAKINDYE	SALAAMA	Kosovo Zone
445	MAKINDYE	SALAAMA	Kyamula Zone
446	MAKINDYE	SALAAMA	Mulungu Zone
447	MAKINDYE	SALAAMA	Munyonyo Zone
448	MAKINDYE	SALAAMA	Takajjunge Zone
449	MAKINDYE	SALAAMA	Valley Zone
450	MAKINDYE	SALAAMA	Zikusooka Zone
451	MAKINDYE	WABIGALO	Central Zone
452	MAKINDYE	WABIGALO	Church Zone
453	MAKINDYE	WABIGALO	Kitooro Zone

454	MAKINDYE	WABIGALO	Lower Zone
455	MAKINDYE	WABIGALO	Mazigidi Zone
456	MAKINDYE	WABIGALO	Mivule Zone
457	MAKINDYE	WABIGALO	Project Zone
458	MAKINDYE	WABIGALO	Railway Zone
459	MAKINDYE	WABIGALO	Upper Zone
460	MAKINDYE	KIBUYE I	Kanakulya Zone
461	MAKINDYE	KIBULI	Kanakulya Zone

Nakawa Division

No.	Division	Parish	Village Name
1	NAKAWA	BANDA	B 1 Zone
2	NAKAWA	BUGOLOBI	Block 1-8 Zone
3	NAKAWA	BUGOLOBI	Block 25-33 Zone
4	NAKAWA	BUGOLOBI	Bugolows III Zone
5	NAKAWA	BUGOLOBI	Bungalows I Zone
6	NAKAWA	BUGOLOBI	Bungalows II Zone
7	NAKAWA	BUGOLOBI	Kiyembe Zone
8	NAKAWA	BUGOLOBI	Prison Zone
9	NAKAWA	BUTABIKA	Bbiina A Zone
10	NAKAWA	BUTABIKA	Bbiina C Zone
11	NAKAWA	BUTABIKA	Butabika Zone
12	NAKAWA	BUTABIKA	Kirombe A Zone
13	NAKAWA	BUTABIKA	Kirombe B Zone
14	NAKAWA	LUZIRA	Kamwanyi Zone
15	NAKAWA	LUZIRA	Kasasiro Zone
16	NAKAWA	LUZIRA	Kisenyi III Zone
17	NAKAWA	LUZIRA	Kisenyi IV Zone
18	NAKAWA	LUZIRA	Lake Drive Zone
19	NAKAWA	LUZIRA	Mambi Bbado Zone
20	NAKAWA	LUZIRA	Mambo Baddo Zone
21	NAKAWA	LUZIRA	Mambobado Zone
22	NAKAWA	LUZIRA	Mpanda Pier Zone
23	NAKAWA	LUZIRA	Railway Quater Zone
24	NAKAWA	LUZIRA	Safina Zone
25	NAKAWA	LUZIRA	Stage VI Zone
26	NAKAWA	LUZIRA	Water/Marine Zone
27	NAKAWA	LUZIRA PRISONS	Luzira Prisons Zone
28	NAKAWA	MBUYA I	Kinawataka Zone

29	NAKAWA	MBUYA II	Zone 7 Zone
30	NAKAWA	MBUYA II	Zone I Zone
31	NAKAWA	MUTUNGO	Zone IX Zone
32	NAKAWA	MUTUNGO	Zone X Zone
33	NAKAWA	MUTUNGO	Zone XI Zone
34	NAKAWA	MUTUNGO	Zone XII Zone
35	NAKAWA	MUTUNGO	Zone XIII Zone
36	NAKAWA	NAGURU I	Zone
37	NAKAWA	NAGURU I	Hospital Zone
38	NAKAWA	NAKAWA	Vtrs/Uwxy/F Zone
39	NAKAWA	MUTUNGO	Zone III Zone
40	NAKAWA	MUTUNGO	Zone IV Zone
41	NAKAWA	MUTUNGO	Zone V Zone
42	NAKAWA	KISWA	Zone II Zone
43	NAKAWA	KISWA	Zone V Zone
44	NAKAWA	KISWA	Zone VI Zone
45	NAKAWA	KISWA	Zone VII Zone
46	NAKAWA	KISWA	Zone VIII Zone
47	NAKAWA	BANDA	B 1 Zone
48	NAKAWA	BANDA	B 10 Zone
49	NAKAWA	BANDA	B 11 Zone
50	NAKAWA	BANDA	B 2 Zone
51	NAKAWA	BANDA	B 3 Zone
52	NAKAWA	BANDA	B 4 Zone
53	NAKAWA	BANDA	B 5 Zone
54	NAKAWA	BANDA	B 6 Zone
55	NAKAWA	BANDA	B 9 Zone
56	NAKAWA	BUGOLOBI	Block 1-8 Zone
57	NAKAWA	BUGOLOBI	Block 17-24 Zone
58	NAKAWA	BUGOLOBI	Block 25-33 Zone

59	NAKAWA	BUGOLOBI	Block 9-16 Zone
60	NAKAWA	BUGOLOBI	Bugolows III Zone
61	NAKAWA	BUGOLOBI	Bungalows I Zone
62	NAKAWA	BUGOLOBI	Bungalows II Zone
63	NAKAWA	BUGOLOBI	Jambula Zone
64	NAKAWA	BUGOLOBI	Kiyembe Zone
65	NAKAWA	BUGOLOBI	Prison Zone
66	NAKAWA	BUKOTO I	Mulimira Zone
67	NAKAWA	BUKOTO I	Old Kira Road Zone
68	NAKAWA	BUKOTO I	Semwogerere Zone
69	NAKAWA	BUKOTO II	Kalinabiri I Zone
70	NAKAWA	BUKOTO II	Kigoowa I Zone
71	NAKAWA	BUKOTO II	Kigoowa II Zone
72	NAKAWA	BUKOTO II	Kinawataka Zone
73	NAKAWA	BUTABIKA	Bbiina A Zone
74	NAKAWA	BUTABIKA	Bbiina B Zone
75	NAKAWA	BUTABIKA	Bbiina C Zone
76	NAKAWA	BUTABIKA	Bbiina D Zone
77	NAKAWA	BUTABIKA	Butabika Zone
78	NAKAWA	BUTABIKA	Kirombe A Zone
79	NAKAWA	BUTABIKA	Kirombe B Zone
80	NAKAWA	ITEK	Fisher Zone
81	NAKAWA	KIWATULE	Balintuma Zone
82	NAKAWA	KIWATULE	Central Zone
83	NAKAWA	KIWATULE	Kazinga Zone
84	NAKAWA	KIWATULE	Ssebowa Zone
85	NAKAWA	KYAMBOGO	K 10 Zone
86	NAKAWA	KYAMBOGO	K 11 Zone
87	NAKAWA	KYAMBOGO	K 12 Zone
88	NAKAWA	KYAMBOGO	K 2 Zone
89	NAKAWA	KYAMBOGO	K 3 Zone
90	NAKAWA	KYAMBOGO	K 4 Zone
91	NAKAWA	KYAMBOGO	K 5 Zone
92	NAKAWA	KYAMBOGO	K 6 Zone

93	NAKAWA	KYAMBOGO	K 7 Zone
94	NAKAWA	KYAMBOGO	K 8 Zone
95	NAKAWA	KYAMBOGO	K 9 Zone
96	NAKAWA	KYANJA	Kasaana Zone
97	NAKAWA	KYANJA	Katumba Zone
98	NAKAWA	KYANJA	Kisaasi Central Zone
99	NAKAWA	KYANJA	Kulambiro Zone
100	NAKAWA	KYANJA	Nazareth Zone
101	NAKAWA	KYANJA	Tuba Zone
102	NAKAWA	KYANJA	Walufumbe Zone
103	NAKAWA	LUZIRA	Agatti Zone
104	NAKAWA	LUZIRA	Central Zone Zone
105	NAKAWA	LUZIRA	Kamwanyi Zone
106	NAKAWA	LUZIRA	Kasasiro Zone
107	NAKAWA	LUZIRA	Kasumba Zone
108	NAKAWA	LUZIRA	Kisenyi I Zone
109	NAKAWA	LUZIRA	Kisenyi II Zone
110	NAKAWA	LUZIRA	Kisenyi III Zone
111	NAKAWA	LUZIRA	Kisenyi IV Zone
112	NAKAWA	LUZIRA	Lake Drive Zone
113	NAKAWA	LUZIRA	Lake Side Zone
114	NAKAWA	LUZIRA	Mambo Baddo Zone
115	NAKAWA	LUZIRA	Mambobado Zone
116	NAKAWA	LUZIRA	Mawejje Zone
117	NAKAWA	LUZIRA	Mpanda Pier Zone
118	NAKAWA	LUZIRA	Safina Zone
119	NAKAWA	LUZIRA	Stage IV Zone
120	NAKAWA	LUZIRA	Stage V Zone
121	NAKAWA	LUZIRA	Stage VI Zone
122	NAKAWA	LUZIRA	Upper Bbiina Zone
123	NAKAWA	LUZIRA	Water/Marine Zone
124	NAKAWA	LUZIRA PRISONS	Luzira Prisons Zone
125	NAKAWA	MBUYA I	Buyinja Zone

126	NAKAWA	MBUYA I	Central Zone
127	NAKAWA	MBUYA I	Kaggo Zone
128	NAKAWA	MBUYA I	Kalerwe Zone
129	NAKAWA	MBUYA I	Kinawataka Zone
130	NAKAWA	MBUYA II	Zone 2 Zone
131	NAKAWA	MBUYA II	Zone 3 Zone
132	NAKAWA	MBUYA II	Zone 4 Zone
133	NAKAWA	MBUYA II	Zone 6 Zone
134	NAKAWA	MBUYA II	Zone 7 Zone
135	NAKAWA	MBUYA II	Zone 8 Zone
136	NAKAWA	MBUYA II	Zone I Zone
137	NAKAWA	MUTUNGO	Zone I Zone
138	NAKAWA	MUTUNGO	Zone IX Zone
139	NAKAWA	MUTUNGO	Zone X Zone
140	NAKAWA	MUTUNGO	Zone XI Zone
141	NAKAWA	MUTUNGO	Zone XII Zone
142	NAKAWA	MUTUNGO	Zone XIII Zone
143	NAKAWA	NABISUNSA	K 20 Zone
144	NAKAWA	NAGURU I	Zone
145	NAKAWA	NAGURU I	Hospital Zone
146	NAKAWA	NAGURU I	Naguru I Zone
147	NAKAWA	NAGURU II	Bank Zone
148	NAKAWA	NAGURU II	Bunyonyi Zone
149	NAKAWA	NAGURU II	EAC Flats Zone
150	NAKAWA	NAGURU II	Go Down I Zone
151	NAKAWA	NAGURU II	Go Down II Zone
152	NAKAWA	NAGURU II	Go Down III Zone
153	NAKAWA	NAGURU II	Kasenke I Zone
154	NAKAWA	NAGURU II	Kasenke II Zone
155	NAKAWA	NAGURU II	Katale I Zone
156	NAKAWA	NAGURU II	Katale II Zone

157	NAKAWA	NAGURU II	Katale III Zone
158	NAKAWA	NAGURU II	Kiwalimu Zone
159	NAKAWA	NAGURU II	Naguru Hill Zone
160	NAKAWA	NAGURU II	Remand Home I Zone
161	NAKAWA	NAGURU II	Remand Home II Zone
162	NAKAWA	NAGURU II	Valley Zone
163	NAKAWA	NAKAWA	Bia Zone
164	NAKAWA	NAKAWA	C/Er Zone
165	NAKAWA	NAKAWA	Enc 19-76/D Zone
166	NAKAWA	NAKAWA	Kr/Nr 39-72Nr 23-38/Nr 1- Zone
167	NAKAWA	NAKAWA	Mnopq/Ijkl/Ps Zone
168	NAKAWA	NAKAWA	Nsimbwe-Kasi Zone
169	NAKAWA	NAKAWA	Vtrs/Uwxy/F Zone
170	NAKAWA	NAKAWA	Z/H/Railway Quaters Zone
171	NAKAWA	NAKAWA INSTITUTION	Mubs Zone
172	NAKAWA	NAKAWA INSTITUTION	Nakawa Vocation Institute Zone
173	NAKAWA	NTINDA	Village 14 Zone
174	NAKAWA	NTINDA	Village 15 Zone
175	NAKAWA	NTINDA	Village 16 Zone
176	NAKAWA	NTINDA	Village 17 Zone
177	NAKAWA	NTINDA	Village 19 Zone
178	NAKAWA	NTINDA	Village 3 Zone
179	NAKAWA	NTINDA	Village 4 Zone
180	NAKAWA	NAGURU I	Ntinda Police Barracks Zone
181	NAKAWA	UPK	K2 Zone
182	NAKAWA	UPK	K5 Zone
183	NAKAWA	UPK	K7 Zone
184	NAKAWA	UPK	Ki Zone
185	NAKAWA	UPK	Unise Zone

186	NAKAWA	UPPER ESTATE	K 21 Zone
187	NAKAWA	MUTUNGO	Zone II Zone
188	NAKAWA	MUTUNGO	Zone III Zone
189	NAKAWA	MUTUNGO	Zone IV Zone
190	NAKAWA	MUTUNGO	Zone V Zone
191	NAKAWA	MUTUNGO	Zone VI Zone
192	NAKAWA	MUTUNGO	Zone VII Zone
193	NAKAWA	MUTUNGO	Zone VIII Zone
194	NAKAWA	KISWA	Zone II Zone
195	NAKAWA	KISWA	Zone III Zone
196	NAKAWA	KISWA	Zone IV Zone
197	NAKAWA	KISWA	Zone V Zone
198	NAKAWA	KISWA	Zone VI Zone
199	NAKAWA	KISWA	Zone VII Zone
200	NAKAWA	KISWA	Zone VIII Zone
201	NAKAWA	BANDA	B 1 Zone
202	NAKAWA	BANDA	B 10 Zone
203	NAKAWA	BANDA	B 11 Zone
204	NAKAWA	BANDA	B 2 Zone
205	NAKAWA	BANDA	B 3 Zone
206	NAKAWA	BANDA	B 4 Zone
207	NAKAWA	BANDA	B 5 Zone
208	NAKAWA	BANDA	B 6 Zone
209	NAKAWA	BANDA	B 9 Zone
210	NAKAWA	BUGOLOBI	Block 1-8 Zone
211	NAKAWA	BUGOLOBI	Block 17-24 Zone
212	NAKAWA	BUGOLOBI	Block 25-33 Zone
213	NAKAWA	BUGOLOBI	Block 9-16 Zone
214	NAKAWA	BUGOLOBI	Bugolows III Zone
215	NAKAWA	BUGOLOBI	Bungalows I Zone
216	NAKAWA	BUGOLOBI	Bungalows II Zone
217	NAKAWA	BUGOLOBI	Jambula Zone
218	NAKAWA	BUGOLOBI	Kiyembe Zone
219	NAKAWA	BUGOLOBI	Prison Zone
220	NAKAWA	BUKOTO I	Mulimira Zone
221	NAKAWA	BUKOTO I	Old Kira Road Zone
222	NAKAWA	BUKOTO I	Semwogerere Zone
223	NAKAWA	BUKOTO II	Kalinabiri I Zone
224	NAKAWA	BUKOTO II	Kigoowa I Zone
225	NAKAWA	BUKOTO II	Kigoowa II Zone
226	NAKAWA	BUKOTO II	Kinawataka Zone
227	NAKAWA	BUTABIKA	Bbiina A Zone
228	NAKAWA	BUTABIKA	Bbiina B Zone

229	NAKAWA	BUTABIKA	Bbiina C Zone
230	NAKAWA	BUTABIKA	Bbiina D Zone
231	NAKAWA	BUTABIKA	Butabika Zone
232	NAKAWA	BUTABIKA	Kirombe A Zone
233	NAKAWA	BUTABIKA	Kirombe B Zone
234	NAKAWA	ITEK	Fisher Zone
235	NAKAWA	KIWATULE	Balintuma Zone
236	NAKAWA	KIWATULE	Central Zone
237	NAKAWA	KIWATULE	Kazinga Zone
238	NAKAWA	KIWATULE	Ssebowa Zone
239	NAKAWA	KYAMBOGO	K 10 Zone
240	NAKAWA	KYAMBOGO	K 11 Zone
241	NAKAWA	KYAMBOGO	K 12 Zone
242	NAKAWA	KYAMBOGO	K 2 Zone
243	NAKAWA	KYAMBOGO	K 3 Zone
244	NAKAWA	KYAMBOGO	K 4 Zone
245	NAKAWA	KYAMBOGO	K 5 Zone
246	NAKAWA	KYAMBOGO	K 6 Zone
247	NAKAWA	KYAMBOGO	K 7 Zone
248	NAKAWA	KYAMBOGO	K 8 Zone
249	NAKAWA	KYAMBOGO	K 9 Zone
250	NAKAWA	KYANJA	Kasaana Zone
251	NAKAWA	KYANJA	Katumba Zone
252	NAKAWA	KYANJA	Kisaasi Central Zone
253	NAKAWA	KYANJA	Kulambiro Zone
254	NAKAWA	KYANJA	Nazareth Zone
255	NAKAWA	KYANJA	Tuba Zone
256	NAKAWA	KYANJA	Walufumbe Zone
257	NAKAWA	LUZIRA	Agatti Zone
258	NAKAWA	LUZIRA	Central Zone Zone
259	NAKAWA	LUZIRA	Kamwanyi Zone
260	NAKAWA	LUZIRA	Kasasiro Zone
261	NAKAWA	LUZIRA	Kasumba Zone
262	NAKAWA	LUZIRA	Kisenyi I Zone
263	NAKAWA	LUZIRA	Kisenyi II Zone
264	NAKAWA	LUZIRA	Kisenyi III Zone
265	NAKAWA	LUZIRA	Kisenyi IV Zone
266	NAKAWA	LUZIRA	Lake Drive Zone
267	NAKAWA	LUZIRA	Lake Side Zone
268	NAKAWA	LUZIRA	Mambo Baddo Zone
269	NAKAWA	LUZIRA	Mambobado Zone
270	NAKAWA	LUZIRA	Mawejje Zone
271	NAKAWA	LUZIRA	Mpanda Pier Zone
272	NAKAWA	LUZIRA	Safina Zone
273	NAKAWA	LUZIRA	Stage IV Zone

274	NAKAWA	LUZIRA	Stage V Zone
275	NAKAWA	LUZIRA	Stage VI Zone
276	NAKAWA	LUZIRA	Upper Bbiina Zone
277	NAKAWA	LUZIRA	Water/Marine Zone
278	NAKAWA	LUZIRA PRISONS	Luzira Prisons Zone
279	NAKAWA	MBUYA I	Buyinja Zone
280	NAKAWA	MBUYA I	Central Zone
281	NAKAWA	MBUYA I	Kaggo Zone
282	NAKAWA	MBUYA I	Kalerwe Zone
283	NAKAWA	MBUYA I	Kinawataka Zone
284	NAKAWA	MBUYA II	Zone 2 Zone
285	NAKAWA	MBUYA II	Zone 3 Zone
286	NAKAWA	MBUYA II	Zone 4 Zone
287	NAKAWA	MBUYA II	Zone 6 Zone
288	NAKAWA	MBUYA II	Zone 7 Zone
289	NAKAWA	MBUYA II	Zone 8 Zone
290	NAKAWA	MBUYA II	Zone I Zone
291	NAKAWA	MUTUNGO	Zone I Zone
292	NAKAWA	MUTUNGO	Zone IX Zone
293	NAKAWA	MUTUNGO	Zone X Zone
294	NAKAWA	MUTUNGO	Zone XI Zone
295	NAKAWA	MUTUNGO	Zone XII Zone
296	NAKAWA	MUTUNGO	Zone XIII Zone
297	NAKAWA	NABISUNSA	K 20 Zone
298	NAKAWA	NAGURU I	Zone
299	NAKAWA	NAGURU I	Hospital Zone
300	NAKAWA	NAGURU I	Naguru I Zone
301	NAKAWA	NAGURU II	Bank Zone
302	NAKAWA	NAGURU II	Bunyonyi Zone
303	NAKAWA	NAGURU II	EAC Flats Zone
304	NAKAWA	NAGURU II	Go Down I Zone
305	NAKAWA	NAGURU II	Go Down II Zone
306	NAKAWA	NAGURU II	Go Down III Zone
307	NAKAWA	NAGURU II	Kasenke I Zone
308	NAKAWA	NAGURU II	Kasenke II Zone
309	NAKAWA	NAGURU II	Katale I Zone
310	NAKAWA	NAGURU II	Katale II Zone
311	NAKAWA	NAGURU II	Katale III Zone
312	NAKAWA	NAGURU II	Kiwalimu Zone

313	NAKAWA	NAGURU II	Naguru Hill Zone
314	NAKAWA	NAGURU II	Remand Home I Zone
315	NAKAWA	NAGURU II	Remand Home II Zone
316	NAKAWA	NAGURU II	Valley Zone
317	NAKAWA	NAKAWA	Bia Zone
318	NAKAWA	NAKAWA	C/Er Zone
319	NAKAWA	NAKAWA	Enc 19-76/D Zone
320	NAKAWA	NAKAWA	Kr/Nr 39-72Nr 23-38/Nr 1- Zone
321	NAKAWA	NAKAWA	Mnopq/Ijkl/Ps Zone
322	NAKAWA	NAKAWA	Nsimbwe-Kasi Zone
323	NAKAWA	NAKAWA	Vtrs/Uwxy/F Zone
324	NAKAWA	NAKAWA	Z/H/Railway Quaters Zone
325	NAKAWA	NAKAWA INSTITUTION	Mubs Zone
326	NAKAWA	NAKAWA INSTITUTION	Nakawa Vocation Institute Zone
327	NAKAWA	NTINDA	Village 14 Zone
328	NAKAWA	NTINDA	Village 15 Zone
329	NAKAWA	NTINDA	Village 16 Zone
330	NAKAWA	NTINDA	Village 17 Zone
331	NAKAWA	NTINDA	Village 19 Zone
332	NAKAWA	NTINDA	Village 3 Zone
333	NAKAWA	NTINDA	Village 4 Zone
334	NAKAWA	NAGURU I	Ntinda Police Barracks Zone
335	NAKAWA	UPK	K2 Zone
336	NAKAWA	UPK	K5 Zone
337	NAKAWA	UPK	K7 Zone
338	NAKAWA	UPK	Ki Zone
339	NAKAWA	UPK	Unise Zone
340	NAKAWA	UPPER ESTATE	K 21 Zone
341	NAKAWA	MUTUNGO	Zone II Zone
342	NAKAWA	MUTUNGO	Zone III Zone

343	NAKAWA	MUTUNGO	Zone IV Zone
344	NAKAWA	MUTUNGO	Zone V Zone
345	NAKAWA	MUTUNGO	Zone VI Zone
346	NAKAWA	MUTUNGO	Zone VII Zone
347	NAKAWA	MUTUNGO	Zone VIII Zone
348	NAKAWA	KISWA	Zone II Zone
349	NAKAWA	KISWA	Zone III Zone
350	NAKAWA	KISWA	Zone IV Zone
351	NAKAWA	KISWA	Zone V Zone
352	NAKAWA	KISWA	Zone VI Zone
353	NAKAWA	KISWA	Zone VII Zone
354	NAKAWA	KISWA	Zone VIII Zone

5. Lubaga Division

No.	Division	Parish	Village Name
1	Lubaga	BUSEGA	Central A Zone Zone
2	Lubaga	BUSEGA	Central C Zone Zone
3	Lubaga	BUSEGA	Kabaale Zone
4	Lubaga	BUSEGA	Kibumbiro A Zone
5	Lubaga	BUSEGA	Kibumbiro B Zone
6	Lubaga	BUSEGA	Kigwanya Zone
7	Lubaga	BUSEGA	Kitaka Zone Zone
8	Lubaga	BUSEGA	Nabisasiro Zone
9	Lubaga	KABOWA	Church Zone
10	Lubaga	KABOWA	Kironde Zone
11	Lubaga	KABOWA	Sembule Zone
12	Lubaga	KABOWA	Serwada Zone
13	Lubaga	KABOWA	Simbwa Zone
14	Lubaga	KABOWA	St. Anne Zone
15	Lubaga	KABOWA	Suna Zone
16	Lubaga	KABOWA	Wankulukuku Zone
17	Lubaga	KASUBI	Kasubi I Zone
18	Lubaga	KASUBI	Kasubi II Zone
19	Lubaga	KASUBI	Kasubi III Zone
20	Lubaga	KASUBI	Kawaala I Zone
21	Lubaga	KASUBI	Kawala II Zone
22	Lubaga	KASUBI	Mugema Zone
23	Lubaga	KASUBI	Namungoona Zone
24	Lubaga	LUBYA	Lubya Zone
25	Lubaga	LUBYA	Lugala Zone
26	Lubaga	LUBYA	Lusaze Zone

27	Lubaga	LUBYA	Masanafu Bukuluki Zone
28	Lubaga	LUBYA	Masanafu Kinoonya Zone
29	Lubaga	LUBYA	Nabulagala Zone
30	Lubaga	LUBYA	Namungona I Zone
31	Lubaga	LUBYA	Namungona II Zone
32	Lubaga	LUNGUJJA	Bulange A Zone
33	Lubaga	LUNGUJJA	Bulange B Zone
34	Lubaga	LUNGUJJA	Kikandwa Zone
35	Lubaga	LUNGUJJA	Kitunzi Zone
36	Lubaga	LUNGUJJA	Sendaula Zone
37	Lubaga	LUNGUJJA	Wakaliga Zone
38	Lubaga	LUNGUJJA	Zone 8 Zone
39	Lubaga	MUTUNDWE	Kabaawo Zone
40	Lubaga	MUTUNDWE	Kigagga Zone
41	Lubaga	MUTUNDWE	Kitawulizi Zone
42	Lubaga	MUTUNDWE	Kitebi Zone
43	Lubaga	MUTUNDWE	Kweba Zone
44	Lubaga	MUTUNDWE	Mbawo Zone
45	Lubaga	MUTUNDWE	Mutundwe II Zone
46	Lubaga	MUTUNDWE	Nyanama Zone
47	Lubaga	NAJJANANKUMBI I	Busabala Road Zone
48	Lubaga	NAJJANANKUMBI I	Church (Najjanankubi I) Zone
49	Lubaga	NAJJANANKUBI II	Kizito Zone
50	Lubaga	NAJJANANKUBI II	Masanyalaze Zone
51	Lubaga	NAJJANANKUBI II	Quarter Zone
52	Lubaga	NAJJANANKUBI II	Stella Zone
53	Lubaga	NAKULABYE	Zone IX Zone
54	Lubaga	NAKULABYE	Zone VII Zone

55	Lubaga	NATEETE	Church (Natete) Zone
56	Lubaga	NATEETE	Kajumbi Zone Zone
57	Lubaga	NATEETE	Kigaga Zone
58	Lubaga	NATEETE	Kigaga Zone Zone
59	Lubaga	NATEETE	Kitoro Zone
60	Lubaga	NATEETE	Kivumbi Zone
61	Lubaga	NATEETE	Musoke Zone Zone
62	Lubaga	NATEETE	Nanfuka Zone
63	Lubaga	NATEETE	Nanfuka Zone Zone
64	Lubaga	NATEETE	Nateete Central D Zone Zone
65	Lubaga	NATEETE	Natete Central A Zone Zone
66	Lubaga	NATEETE	Natete Central B Zone Zone
67	Lubaga	NATEETE	Natete Central C Zone Zone
68	Lubaga	NDEEBA	Aggrey Zone
69	Lubaga	NDEEBA	Betania Zone Zone
70	Lubaga	NDEEBA	Central Zone Zone
71	Lubaga	NDEEBA	Kajubi Zone
72	Lubaga	NDEEBA	Kasumba Zone
73	Lubaga	NDEEBA	Kayanja Zone Zone
74	Lubaga	NDEEBA	Kidoomole Zone
75	Lubaga	NDEEBA	Lubiri Palace Zone
76	Lubaga	NDEEBA	Mpomba Zone Zone
77	Lubaga	NDEEBA	Mutaawe Zone Zone
78	Lubaga	NDEEBA	Mutebi Zone Zone
79	Lubaga	NDEEBA	Nsiike I Zone Zone
80	Lubaga	NDEEBA	Nsiike II Zone Zone
81	Lubaga	NDEEBA	Spier Zone Zone
82	Lubaga	NDEEBA	Tomusange Zone
83	Lubaga	NDEEBA	Tomusange Zone Zone
84	Lubaga	NDEEBA	Wilson Zone Zone
85	Lubaga	Lubaga	Ben Kiwanuka Zone
86	Lubaga	Lubaga	Kabusu Zone
87	Lubaga	Lubaga	Kayanja Zone
88	Lubaga	Lubaga	Nabunya Zone
89	Lubaga	Lubaga	Nalukolongo Zone
90	Lubaga	Lubaga	Pope Paul Zone

91	Lubaga	Lubaga	Wagaba Zone
92	Lubaga	Lubaga	Wakaliga A Zone
93	Lubaga	Lubaga	Wakaliga B Zone
94	Lubaga	BUSEGA	Central A Zone Zone
95	Lubaga	BUSEGA	Central C Zone Zone
96	Lubaga	BUSEGA	Kabaale Zone
97	Lubaga	BUSEGA	Kibumbiro A Zone
98	Lubaga	BUSEGA	Kibumbiro B Zone
99	Lubaga	BUSEGA	Kigwanya Zone
100	Lubaga	BUSEGA	Kitaka Zone Zone
101	Lubaga	BUSEGA	Nabisasiro Zone
102	Lubaga	KABOWA	Church Zone
103	Lubaga	KABOWA	Kironde Zone
104	Lubaga	KABOWA	Sembule Zone
105	Lubaga	KABOWA	Serwada Zone
106	Lubaga	KABOWA	Simbwa Zone
107	Lubaga	KABOWA	St. Anne Zone
108	Lubaga	KABOWA	Suna Zone
109	Lubaga	KABOWA	Wankulukuku Zone
110	Lubaga	KASUBI	Kasubi I Zone
111	Lubaga	KASUBI	Kasubi II Zone
112	Lubaga	KASUBI	Kasubi III Zone
113	Lubaga	KASUBI	Kawaala I Zone
114	Lubaga	KASUBI	Kawala II Zone
115	Lubaga	KASUBI	Mugema Zone
116	Lubaga	KASUBI	Namungoona Zone
117	Lubaga	LUBYA	Lubya Zone
118	Lubaga	LUBYA	Lugala Zone
119	Lubaga	LUBYA	Lusaze Zone
120	Lubaga	LUBYA	Masanafu Bukuluki Zone
121	Lubaga	LUBYA	Masanafu Kinoonya Zone
122	Lubaga	LUBYA	Nabulagala Zone
123	Lubaga	LUBYA	Namungona I Zone

124	Lubaga	LUBYA	Namungona II Zone
125	Lubaga	LUNGUJJA	Bulange A Zone
126	Lubaga	LUNGUJJA	Bulange B Zone
127	Lubaga	LUNGUJJA	Kikandwa Zone
128	Lubaga	LUNGUJJA	Kitunzi Zone
129	Lubaga	LUNGUJJA	Sendaula Zone
130	Lubaga	LUNGUJJA	Wakaliga Zone
131	Lubaga	LUNGUJJA	Zone 8 Zone
132	Lubaga	MUTUNDWE	Kabaawo Zone
133	Lubaga	MUTUNDWE	Kigagga Zone
134	Lubaga	MUTUNDWE	Kitawulizi Zone
135	Lubaga	MUTUNDWE	Kitebi Zone
136	Lubaga	MUTUNDWE	Kweba Zone
137	Lubaga	MUTUNDWE	Mbawo Zone
138	Lubaga	MUTUNDWE	Mutundwe II Zone
139	Lubaga	MUTUNDWE	Nyanama Zone
140	Lubaga	NAJJANANKUMBI I	Busabala Road Zone
141	Lubaga	NAJJANANKUMBI I	Church (Najjanankubi I) Zone
142	Lubaga	NAJJANANKUBI II	Kizito Zone
143	Lubaga	NAJJANANKUBI II	Masanyalaze Zone
144	Lubaga	NAJJANANKUBI II	Quarter Zone
145	Lubaga	NAJJANANKUBI II	Stella Zone
146	Lubaga	NAKULABYE	Zone IX Zone
147	Lubaga	NAKULABYE	Zone VII Zone
148	Lubaga	NATEETE	Church (Natete) Zone
149	Lubaga	NATEETE	Kajumbi Zone Zone
150	Lubaga	NATEETE	Kigaga Zone
151	Lubaga	NATEETE	Kigaga Zone Zone
152	Lubaga	NATEETE	Kitoro Zone

153	Lubaga	NATEETE	Kivumbi Zone
154	Lubaga	NATEETE	Musoke Zone Zone
155	Lubaga	NATEETE	Nanfuka Zone
156	Lubaga	NATEETE	Nanfuka Zone Zone
157	Lubaga	NATEETE	Nateete Central D Zone Zone
158	Lubaga	NATEETE	Natete Central A Zone Zone
159	Lubaga	NATEETE	Natete Central B Zone Zone
160	Lubaga	NATEETE	Natete Central C Zone Zone
161	Lubaga	NDEEBA	Aggrey Zone
162	Lubaga	NDEEBA	Betania Zone Zone
163	Lubaga	NDEEBA	Central Zone Zone
164	Lubaga	NDEEBA	Kajubi Zone
165	Lubaga	NDEEBA	Kasumba Zone
166	Lubaga	NDEEBA	Kayanja Zone Zone
167	Lubaga	NDEEBA	Kidoomole Zone
168	Lubaga	NDEEBA	Lubiri Palace Zone
169	Lubaga	NDEEBA	Mpomba Zone Zone
170	Lubaga	NDEEBA	Mutaawe Zone Zone
171	Lubaga	NDEEBA	Mutebi Zone Zone
172	Lubaga	NDEEBA	Nsiike I Zone Zone
173	Lubaga	NDEEBA	Nsiike II Zone Zone
174	Lubaga	NDEEBA	Spier Zone Zone
175	Lubaga	NDEEBA	Tomusange Zone
176	Lubaga	NDEEBA	Tomusange Zone Zone
177	Lubaga	NDEEBA	Wilson Zone Zone
178	Lubaga	Lubaga	Ben Kiwanuka Zone
179	Lubaga	Lubaga	Kabusu Zone
180	Lubaga	Lubaga	Kayanja Zone
181	Lubaga	Lubaga	Nabunya Zone
182	Lubaga	Lubaga	Nalukolongo Zone
183	Lubaga	Lubaga	Pope Paul Zone
184	Lubaga	Lubaga	Wagaba Zone
185	Lubaga	Lubaga	Wakaliga A Zone

186	Lubaga	Lubaga	Wakaliga B Zone

Appendix 3: Team Composi t on and Task Assgnments

Table 4 shows the key experts and their main allotted tasks to be carried out by each key personnel earmarked for this CCVA. The organogram (Figure 1) shows the team headachy and reporting lines that will be followed during the assignment.

Table 15: Team composition and main tasks assigned

1. TECHNICSL KEY EXPERTS		
Name	**Position**	**Task(s)**
Mr. Antony Tumwesigye	Contract Manager/ Supervisor	The Contract Manager will oversee the contractual and administrative aspects of an assignment, ensuring compliance, accountability, and coordination with stakeholders
Saul Daniel Ddumba, PhD	Team Leader & Climate Change Specialist	The Lead Consultant will oversee the entire assessment process, coordinating the efforts of the support consultants and ensuring that the project objectives are met within the specified timeline and budget. He will also be responsible for stakeholder engagement, synthesizing findings, and compiling the final report.
Julius Mabirizi	Natural Resource Economist/ Social-Economic Specialist & Climate Change expert.	This specialist will analyze socio-economic indicators and trends, identifying vulnerable populations and assessing the social drivers of vulnerability. He will also evaluate existing coping strategies and community resilience.
Joseph Ssemambo	Land Use Planning Specialist	This consultant will examine land use patterns in Kampala, assessing how they contribute to vulnerability and identifying opportunities for sustainable land management practices that can enhance resilience to climate impacts.
Assoc. Prof Gerald Eilu	Environmental and Natural Resources Specialist	This role will involve analyzing the impacts of climate change on natural resources in Kampala, including water, land, and biodiversity. He will assess the current state of these resources and their role in community resilience.
Daniel Waiswa, PhD	GIS, Remote sensing and Geospatial analyst	The GIS Specialist will employ geographic information systems to map climate-related hazards and vulnerability hotspots, populations, and infrastructure across the city. They will visualize data to support decision-making and enhance stakeholder understanding of spatial risks.

2. TECHNICAL SUPPORT STAFF		
Ms. Agrippinah Namara	Gender and development expert	• Gender assessment and inclusion criterion to the framework. • Develop tools to guide the inclusion of gender and vulnerable groups into the assessment process and the CCVA framework and training materials. • Conduct field surveys and interviews with key stakeholders and vulnerable communities. • Conduct final training sessions for the project team on CCVA related skills.
Lawrence JB. Orikiriza, PhD	Ecosystem conservation and restoration expert	• Assessing impacts of climate change on the ecosystems and developing appropriate mitigation strategies for inclusion into the CCVA framework and the training tools • Conduct field surveys and interviews with key stakeholders and vulnerable communities. • Conduct final training sessions for the project team on CCVA related skills.

Team organogram

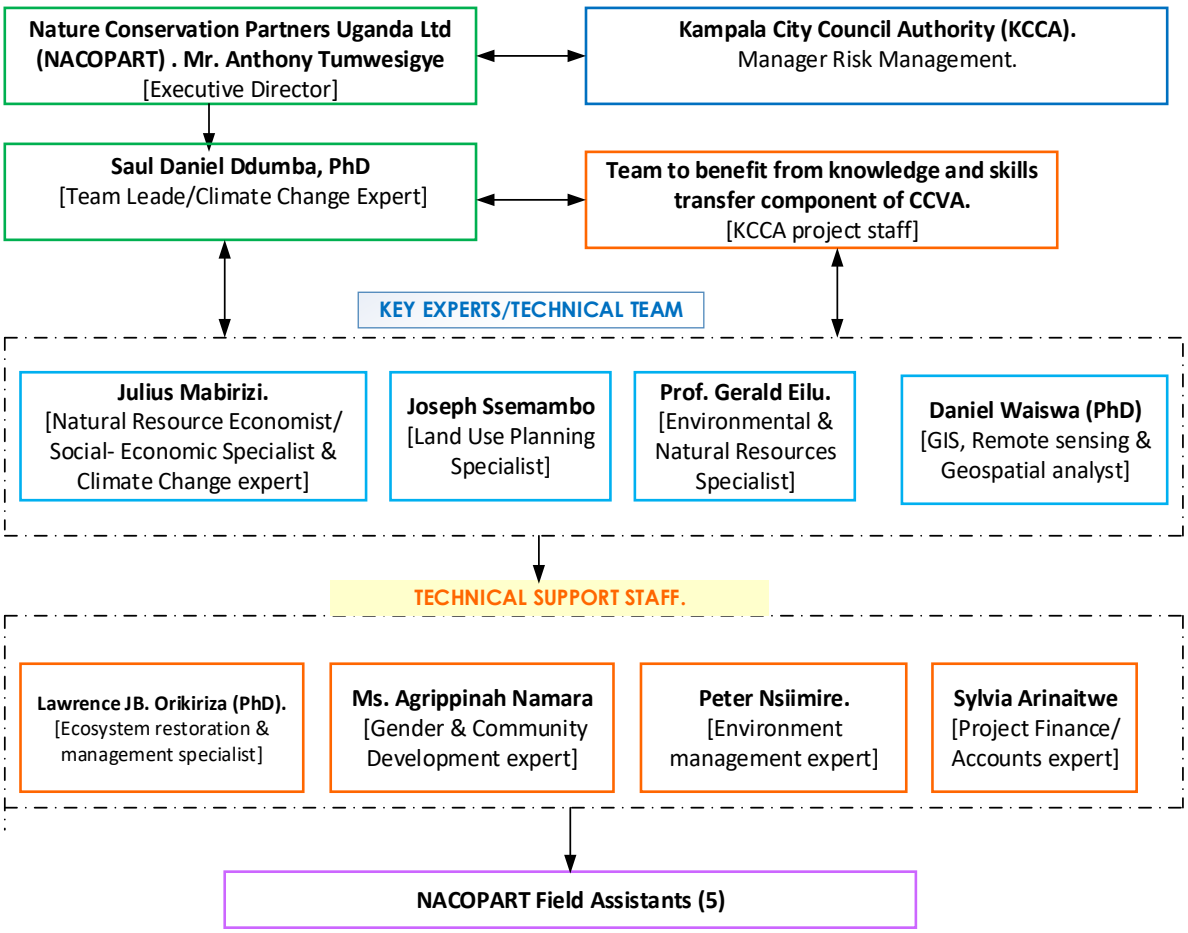

Figure 29: Team Organogram (Key experts and Support staff)