Financing Locally-Led Climate

KISUMU COUNTY CLIMATE CHANGE ACTION PLAN 2023-2027

MAY, 2023

COUNTY GOVERNMENT OF KISUMU

Foreword

Climate change has impacted our economy and is a threat to socio-economic strides which Kisumu County has made over time. During my tenure in the first term, my government has developed structures and institutional frameworks to mitigate climate change. In line with the objectives of the Paris Agreement, the National Government's Climate Change Act (2016) and the National Climate Change Action Plan (NCCAP 2018-2022); Kisumu County has developed a County Climate Change Policy (2019), County Climate Change Act, (2020), County Climate Change Finance regulations, conducted a County Risk and Vulnerability Assessment (2020) and Baseline Emission Inventory as well as Energy Access study through the support of various partners. These documents were a foundation to the preparation of the Kisumu County Integrated Climate Change Action Plan (KCICCAP 2022-2027) which has been elaborated comprehensively through a participatory process. The sectoral and participatory methodology used in developing the plan considered inclusivity and dialogue opportunities to the people of Kisumu. Additionally, for the climate change agenda to be effectively understood, a knowledge management and communication strategy document will be developed and implemented. Climate change is now recognized as a crosscutting thematic area in our planning process. In line with Kenya vision 2030 and the County Integrated Development Plan CIDP (2023-2027), the County Government shall mainstream climate change into sectoral planning to guide climate action.

Looking forward (2023-2027) the plan has positioned bold steps to ensure sustainable development is achieved despite adverse climate impacts, including droughts, floods and other extreme climate events that have negatively affected Kisumu County in the recent past. Some of the key actions will include development and Implementation of the County Disaster Management policy, increasing tree and forest cover to 10% and implementation of the County Energy Plan (CEP) which stresses on improvement of renewable energy uptake in the community. To protect and conserve our water towers and the Lake Victoria ecosystem, concerted efforts with relevant agencies, partners and leadership of neighbouring counties has been recommended in the plan. In agriculture, promotion and adoption of Climate Smart Agriculture (CSA) to boost food security and enhance soil fertility as well as increase on farm tree cover. These actions will contribute to the achievement of the Nationally Determined Contribution under the Paris Agreement. The plan provides tools and templates for facilitating effective Monitoring, Reporting, Verification and Evaluation (MRV) for the actions throughout the five-year period. I am confident that our collective contributions as the County Government, private sector, civil society, faith-based organizations, other non-state actors, and individual citizens that this KCICCAP (2022- 2027) will deliver expected sustainable outcomes. Having enacted the commitment of 2% of the development of development budget (County Climate Act, 2020) to support climate change interventions across sectors, we are optimistic of a sustainable mechanism for climate action.

It's my appeal to the local and international development partners, well-wishers and civil society to enormously support the climate actions alluded to in this plan for a prosperous and visionary County. My personal commitment is assured as the chair of the County Climate Change Council as we work towards a low carbon resilient County.

TICH TIRE

Hon. Prof. Peter Anyang' Nyong'o, Governor, Kisumu County

Acknowledgments

Kisumu County Integrated Climate Change Action Plan (KCICCAP) 2022-2027 is a five-year plan to guide Kisumu's climate change adaptation and mitigation actions. The Plan is a requirement by the Climate Change Act, 2016, and the Kisumu County Climate Change Act, 2020 which aims to achieve a low carbon climate resilient development pathway. This Plan is a contribution from the County towards the achievement of Kenya's Nationally Determined Contribution (NDC) under the Paris Agreement. The Country's NDC includes greenhouse gas emission reductions of 32% by 2030 from the "business as usual" scenario, mainstreaming of climate change into the County Integrated Development planning processes, and implementation of adaptation and mitigation actions. The development of the KCCCAP was guided by a technical team appointed for this specific purpose and the elaboration of the report was led by Mr. Evans Gichana Director Climate Change. The drafters of the CCAP included; Mr. Ken K'oyoo, Ms. Judith Wanjallah, Dr. Emmanuel Midheme, Ms. Rosemary Owigah, Dr. Lynet Odida, Mr. Sylvester Ong'udi, Ms. Susan Omwa, Mr. James Nyagol,Ms. Janet Ochiel, Ms. Hezel Alai among others. I want to take this opportunity to thank the technical team for their inputs and efforts reflected in this document. We commend the efforts of the Chief Officer, (Mr. Francis Asuna - Water, Environment, Climate Change and Natural Resources who chaired various technical taskforce committees and ensured teams were given an enabling environment and time to deliver the task. Contributions from members of the technical team and the Thematic Working Groups, both at individual and corporate levels, are greatly appreciated. The Department of Water, Environment, Climate Change and Natural Resources is also grateful to the national and local climate change experts that provided valuable technical inputs to the process. KCCAP 2023-2027 was prepared through an extensive consultation process at the ward level Over 3000 stakeholders countywide, including representatives from the Ward Climate Change Planning Committees, community members and county technical staff, National Government, civil society, the academia, women's groups, youth groups, marginalized and minority groups, and the private sector, were consulted. These are gratefully acknowledged for their candid views that form the basis of this Plan. It is appreciated that effective implementation of KCICCAP 2023-2027 will require continued consultation from these stakeholders, who form a strong community of Kisumu County.

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Abbreviations and Acronyms

AEA Access to Energy Assessment

AF Adaptation Fund

AFD Agence française de développement

AFOLU Agriculture Forestry and Other Land Uses

ASDSP Agriculture Sector Development Support Programme

BAU Business as Usual

BEI Baseline Emissions Inventories

BMU Beach Management Unit

CBOs Community Based Organizations

CCC County Climate Change

CCCF County Climate Change Fund

CCD Climate Change Directorate

CDF Constituency Development Fund

CEP County Energy Plan

CGK County Government of Kisumu

CIDP County Integrated Development Plan

CoM SSA Covenant of Mayors in Sub-Saharan Africa

CREPP Community Rehabilitation and Environmental Protection Programme

CSOs Civil Society Organizations

CV Climate Variability

CVC Climate Variability and Change

EAC East African Community

EE Energy Efficient

EPRA Energy & Petroleum Regulatory Authority

FBOs Faith Based Organizations

GBV Gender Based Violence

GCF Green Climate Fund

GCMs Global Climate Models

GEF Global Environment Facility

GHG Greenhouse Gas

GoK Government of Kenya

HH Household

JRC Joint Research Centre

KALRO Kenya Agriculture and Livestock Research Organization

KCICCAP Kisumu County Integrated Climate Change Action Plan

KCSAS Kenya Climate Smart Agriculture Strategy

KIWASCO Kisumu Water and Sanitation Company

KPLC Kenya Power and Lighting Limited Company

LBDA Lake Basin Development Authority

LVB Lake Victoria Basin

LVBC Lake Victoria Basin Commission

LVEMP Lake Victoria Environmental Management Program

MoALF Ministry of Agriculture, Livestock and Fisheries

MoE Ministry of Energy

MRV+ Measurement,Monitoring Reporting and Verification

NAP National Adaptation Plan

NCCAP National Climate Change Action Plan

NCCRS National Climate Change Response Strategy

NDC Nationally Determined Contribution

NEMA National Environment Management Authority

NGO Non-Governmental Organization

NIB Nordic Investment Bank

NMT Non- Motorized Transport

PCRA Participatory Climate Risk Assessment

PWDs People with Disability

RES Renewable Energy Source

RVA Risk and Vulnerability Assessment

SCCF Special Climate Change Fund

SDG Sustainable Development Goals

SEACAP Sustainable Energy Access and Climate Action Plan

SEforALL Sustainable Energy for All

SMART Specific, Measurable, Achievable, Realistic, and Timely

SUSWATCH Sustainable Environmental Development Watch

TVET Technical and Vocational Education and Training

UNFCCC United Nations Framework Convention on Climate Change

VAT Value-Added Taxes

WRA Water Resource Authority

WRUA Water Resource Users Association

Definition of Terms

Adaptation means adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Adaptive capacity refers to the ability of systems, institutions, humans, and other organisms to adjust to potential damage, take advantage of opportunities, or respond to consequences.

Carbon credit or offset is a financial unit of measurement that represents the removal of one tonne of carbon dioxide equivalent from the atmosphere.

Carbon credits are generated by projects that deliver measurable reductions in greenhouse gas emissions.

Carbon market is a market created from the trading of units of greenhouse gas emissions. Climate change refers to a change in the climate system that is caused by significant changes in the concentration of greenhouse gases due to human activities, and which is in addition to the natural climate change that has been observed during a considerable period.

Energy Efficiency refers to the use of less energy to perform the same task, i.e. eliminating energy waste.

Global Climate Models refers to the mathematical representation of the major climate system components (atmosphere, land surface, ocean and sea ice) and their interactions.

Global warming refers to the observed or projected gradual increase in global surface temperature.

It is one of the consequences of climate change.

Greenhouse gases (GHGs) are gases that absorb and emit radiant energy within the thermal infrared range. The main GHGs measured in a GHG inventory are, carbon dioxide (CO 2), methane (CH4), nitrous oxide (N2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), Sulphur hexafluoride SF6) and nitrogen trifluoride (NF3).

Mitigation refers to human interventions to prevent or slow down atmospheric GHG concentrations by limiting current or future emissions, and/or enhancing potential sinks for greenhouse gases.

MtCO 2 eq or MtCO 2 e is an abbreviation for million tonnes of carbon dioxide equivalent. It is the amount of GHG emissions expressed as an equivalent of concentrations of carbon dioxide.

Nationally Determined Contribution refers to the adaptation and mitigation actions that a country commits to reduce GHG emissions and adapt to climate impacts.

REDD+ is the acronym for 'Reducing Emissions from Deforestation and Forest Degradation'. It is a mitigation mechanism that creates financial value for the carbon stored in forests by avoiding deforestation and increasing the carbon stock in existing forests.

Resilience refers to the capacity of social, economic and environmental systems to cope with a hazardous event, trend, or disturbance. It is manifested through responding or reorganizing in ways that assert the essential function, identity, and structure of the system, while also maintaining the capacity for adaptation, learning and transformation.

Sustainable Development Goals (SDGs) refers to the set of 17 goals put in place in 2015 by the United Nations General Assembly and are an urgent call for action by all countries - developed and developing - in a global partnership to achieve a better and more sustainable future for all.

Vulnerability refers to the propensity or predisposition to be adversely affected. It encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm, and lack of capacity to cope and adapt.

Executive Summary

The Kisumu County Climate Change Action Plan (KCCCAP 2022-2027) is a five-year plan to drive the County's climate change action. The plan is derived from the Kisumu County Climate Change Act, (2020) which requires the county government to develop action plans to guide mainstreaming of climate change into sector functions. It presents detailed actions that the County Government of Kisumu will undertake to address climate change adaptation (risk and vulnerability), mitigation (Baseline Emission Inventory) and access to energy. The Plan sets out the strategies, plans and actions for a sustainable and low greenhouse gas (GHG) emission development while including climate adaptation actions and ensuring access to secure, affordable and sustainable energy, in response to the current and future impacts of climate change in the territory. It is both a strategic and an operational document that uses the results of the Baseline Emission Inventory (BEI) to identify the best fields of action and opportunities for reaching the county's GHG emissions target. It refers to the Participatory climate change Assessment (PCRA), which identifies the most relevant county climate hazards and vulnerabilities as well as the Access to Energy Assessment (AEA), which articulates a plan to improve the access to secure, sustainable, affordable, and reliable energy. The SEACAP defines concrete measures for climate mitigation, adaptation, and access to sustainable energy, with time frames and assigned responsibilities, translating the long-term strategy into action.

Kisumu County already has completed its baseline emission inventory, access to energy assessment and vulnerability assessment. The how to develop a Sustainable Energy Access and Climate Action Plan (SEACAP) in Sub- above have been guided by the Joint Research Centre (JRC) guidebook, which elaborates on how to develop a Sustainable Energy Access and Climate Action Plan (SEACAP) in Sub-Saharan Africa. The above reports have been crucial in the development of the Kisumu County SEACAP and its implementation. In order to translate the political commitment into practical measures, Kisumu County as a CoMSSA signatory since 2016 commits to elaborate and implement a Sustainable Energy Access and Climate Action Plan (SEACAP) also known as the Kisumu County Integrated Climate Change Action Plan (KCCCAP).

Goal of the KCCCAP 2022-2027 KCCCAP 2022-2027 seeks to further Kisumu County's development goals by providing mechanisms and measures to achieve low carbon climate resilient development, in a manner that prioritizes adaptation, mitigation and access to energy

by vulnerable groups, including children, women, youth, persons with disabilities, the elderly, and the marginalized.

Vision of the KCICCAP 2022-2027 "A vibrant, clean and sustainable county where citizens practice voluntary actions to combat climate change and access clean energy towards a low-emission resilient society"

Objectives of the KCICCAP 2022-2027 KCICCAP 2022-2027 seeks to further Kisumu County's development goals by providing mechanisms and measures to achieve low carbon climate resilient development, in a manner that prioritizes adaptation, enhances access to energy and climate resilience.

Thus, the objectives of this Integrated Action Plan include;

(a) To develop action points Kisumu intends to put in place, taking into account the Nationally Determined Contribution (NDC) on climate change adaptation and mitigation beyond for climate change adaptation, mitigation and energy access, which will translate the long- term strategy and goals into real actions.

(b) Align climate change actions in the county with the County government's development agenda, provided for in the county integrated development plan (CIDP)

(c) To align the Action Plan to the national climate change action plan, including reviewing relevant national plans and policies and ensuring that the Kisumu integrated climate action plan is aligned to the national requirements.

(d) Encourage participation of the private sector, civil society, and vulnerable groups within society, including youths, women, older members of society and persons with disabilities. The Plan helps to further county government's development aspirations by seeking to:

▪ Provide the framework to deliver Kenya's NDC for the 2022-2030 period at the county level: and

▪ Provide a framework for mainstreaming climate change into sector functions at the relevant Kisumu County departments.

A mix of systematic desktop review and participatory community workshops methods were deployed in developing the Action Plans. Collaboration between the participants and the technical team was crucial in all steps of the development of the KCICCAP 2022-2027. Refinement of actions was done through stakeholder meetings that brought together county

government officers from different departments, CSOs and representation from the academia, youth and People with Disabilities PWDs). The stakeholder engagements also took place at the seven Sub-Counties bringing together more than 300 representatives from all the wards in Kisumu.

Chapter One: Background and Context

1.1 Introduction

Kisumu County is one of the 47 counties created through into the rest of the African Great Lakes region. It is located on the devolved system of governance by the Constitution of the shores of Lake Victoria and serves as the main commercial Kenya 2010 delineated as county number 42. The population and transport hub for the western part of Kenya and the East is estimated at 1,224,531 persons as at the start of the CIDP African region. The County hosts the third largest city in Kenya, period 2018. The county has a diverse background comprising Kisumu city, which serves as the County's headquarters. of urban and rural set-ups as well as rich ethnic, racial and there are five major urban centres; Ahero, Katito, Muhoroni, cultural diversity with the Luo being the dominant community. Chemilil, and Maseno. Other emerging fast-growing centres The county's strategic position serves as a gateway for Kenyainclude Awasi, Pap-Onditi, Holo, Kombewa and Sondu.

1.1.2 Position and Size

Kisumu County lies between longitudes 33°20'E and 35°20'E 2086km2 land area, representing 0.36% of the total land and latitude 0°20' South and 0°50' South. The county isarea of Kenya's 580,367km2. bordered by Homa Bay County to the South, Nandi County to the North-East, Kericho county to the East, Vihiga county to Kisumu County is made up of seven sub-counties and thirty-the North West, Siaya county to the West and surrounded by five wards. The sub counties include; Kisumu Central, Kisumu the second largest freshwater lake in the World; Lake Victoria. East, Kisumu West, Muhoroni, Nyakach and Nyando. This has Kisumu County covers approximately 567 km2 on water and been illustrated in figure 1 below;

1.2 Context

Climate change has serious effects in socio-economic development of Kenya and East Africa as a region. It is reported that since 1980s, there have been apparent indicators of persistent prolonged drought and unpredictable rainfall patterns which have negatively affected food production in the Lake region. Such consequences have threatened the livelihood of the people in the region and devastated the infrastructure in the community. Common impacts include; water stress and scarcity, food insecurity, diminished hydropower generation potential, loss of biodiversity and ecosystem degradation, increased incidence of disease burden, destruction of

infrastructure, high costs of disaster management as result of increased frequency and intensity of droughts, floods and landslides associated with the El Niño consequences.

Kisumu County as a recipient of most of these effects gets heavy rainfall and pollution in the upper regions washed away into the lake making it highly vulnerable to adverse impacts of climate change. Therefore mainstreaming of climate change into development planning is critical in mitigating the impacts. It is important to appreciate the national government effort in operationalizing the Climate Change Act, 2016 which counties are obliged to domesticate into law and roll it out for implementation. In the Act the County governments are to mainstream climate change in their respective County Integrated Development Plans (CIDP) and report on climate actions through the County Assembly to the National Government. Kisumu County is characterized by a rapidly growing population, high population density, water scarcity, falling food production, and low resilience to climate change. The combined effects of climate change and rapid population growth are increasing food insecurity, environmental degradation, and poverty levels in the county. The Kisumu County Integrated Development Plan (CIDP) 2018-2022 identifies environmental degradation and climate change as key development challenges. Key climate change threats to Kisumu County include: -

• Recent observations have suggested that, just like other towns along Lake Victoria in East Africa, climate change has seriously affected Kisumu County. Deteriorating water quality and quantity, loss of biodiversity and declining agricultural productivity due to climate change, are no already struck and caused regions repeated misery

• These extreme climate changes are already visible in associated climate events such as flooding, droughts, cyclones, tropical storms, pests and diseases all of which are projected to be more intense, frequent and unpredictable.

• Increased siltation of Lake Victoria caused by more frequent and intense floods.

• Increased temperature resulting in enhanced heat and water-stressed conditions, particularly in drier areas, leading to reduced agricultural productivity.

• Further decrease in the already scanty forest cover from rapid change in climatic conditions

• Threat to freshwater ecosystems due to pollution and invasive species.

• Increased stress between upper riparian and lower riparian regions from sharing the water resources.

• Increased health risks and climate change induced migration.

The above threats are the cause of major survival concerns for Kisumu, particularly in terms of the county's water security, food security and energy security considerations. Furthermore, it is important to understand that changes in how we produce and use energy can have significant impacts on human health, climate, water quality and other measures of environmental quality. Energy technologies are changing rapidly, improving efficiency and environmental sustainability since increasing or decreasing one source of energy can affect the other sources and lead to different consequences for the environment. Even so, 700+ million people in sub-Saharan Africa still rely on traditional biomass cooking fuels – wood, charcoal, dung and agricultural residues. However, the stoves used tend to be inefficient thus exacerbating the impact of use of traditional biomass on people's health and on the environment. In Kenya, 76% of the population relies on traditional biomass for cooking. Yet cleaner, safer alternatives are available, and momentum is growing to scale up their use. Cookstove technologies have advanced considerably, and innovations in end-user finance are making stoves more affordable. Kenya is at the forefront of clean cookstove development, marketing and distribution, with more than 30 years of activity in the sector. Many improved cookstove businesses are already operating across the country, and their numbers are growing as entrepreneurs recognize a significant economic opportunity. Additionally, associations

such the Clean Cooking Association Kenya has helped steer policy direction through lobbying to help improve access to clean cooking. The following have been driving the processes;

1.2.1 SDG goal Seven

In the global context, research shows that for every 10 people 1 does not have access to electricity for lighting, cooling or to run appliances and about 2.6 billion people still

primarily relies on dirty and unsustainable energy sources for cooking. In both scenarios, 80% are from Sub-Saharan Africa and Asia. Therefore, objective planning for access to energy is important as it is the starting point for access to clean, modern energy, needed to achieve Sustainable Development Goals (SDGs)- reduce poverty, broaden education and improve public health.

1.2.2 Sustainable Energy for All (SEforALL) and vision 2030

The United Nation Secretary General, in 2011, launched a 20-year period initiative, the Sustainable Energy for All which was aimed at; Ensuring universal access to modern energy

services; doubling the global rate of improvement in energy efficiency; and doubling the share of renewable energy in the global mix. Driven by the vision Kenya national government and the Kisumu County government has introduced major policy, regulatory and institutional changes to enhance energy access and promote investment in renewable energy and energy efficiency. To actualize these regulatory structures and achieve the SE4ALL initiative by 2030, Kisumu County has to elaborate the plans to provide a clear picture on expectations, measurement, verification and reporting by 2030 and beyond.

For Kisumu County to achieve long-term sustainable economic growth up to and beyond Vision 2030 in the face of climate change is a primary concern for the County. The county is already extremely susceptible to climate- related events and such events pose a serious threat to the socioeconomic development of the country. Droughts and floods have devastating consequences on the environment, society and the wider economy. According to the Kisumu County climate change risk and vulnerability assessment (2020), these impacts are likely to continue to affect the county in the future.

Kisumu County's growing population and economy coupled with the changing climate is likely to increase future Green House Gas Emissions (GHG) and result in severe environmental challenges including: poor land use planning, lack of proper liquid and solid waste management; unregulated source and non-source pollution; Dropping Water Levels; Increase in silt loads entering the Lake; Catchment degradation (Land and forests); lack of protection of wetlands; and loss of biodiversity and ecosystems services. However, transitioning to a low carbon resilient development pathway will reduce the county's vulnerability to climate risks and improve the county's efforts to reduce the GHG emissions. Even as the county leaps into a year where there will be universal access to electricity, as a CoM SSA signatory, Kisumu County has made tremendous steps towards achieving sustainable access to clean energy for lighting and cooking.

Kisumu County within the energy department has executed projects with private partners to increase adoption of biogas technologies at household level and addressing gender issues in access to energy for cooking. However, with the constant increase in energy demand and

consumption, the county will continue to face various challenges associated with connection to electricity, access to energy for cooking and challenges to energy efficiency which have been considered during the planning process. longer potential threats but rather threats that have Climate change has serious effects in socio-economic development of Kenya and East Africa as a region. It is reported that since 1980s, there have been apparent indicators of persistent prolonged drought and unpredictable rainfall patterns which have negatively affected food production in the Lake region. Such consequences have threatened the livelihood of the people in the region and devastated the infrastructure in the community. Common impacts include; water stress and scarcity, food insecurity, diminished hydropower generation potential, loss of biodiversity and ecosystem degradation, increased incidence of disease burden, destruction of infrastructure, high costs of disaster management as result of increased frequency and intensity of droughts, floods and landslides associated with the El Niño consequences

1.3 Underlying Climate Resilience Context

1.3.1 Impacts of climate hazards in the County

Kisumu, as most parts of the country, is suffering from the vagaries of climate change. These mostly present as extreme events and a variability in the weather. Unfortunately, the county's main economic driver is agriculture since it contributes to almost half of household incomes and represents a key agent for the population's food security, yet, agriculture is one of the sectors that is greatly impacted by climate change through the unreliable rainfall patterns, emergence of new pests and diseases and intense dry seasons.

Studies conducted place food insecurity, unaffordable health care, poor water and sanitation systems, lack of title deeds, and the impacts of erratic and unreliable rainfall and climate hazards as key magnifiers of the already high poverty incidence in the County. The county urban poverty was indexed at 70%, rural poverty at 63% and a general county wide food poverty index of 61% and those in absolute poverty at 60%. The higher poverty level in urban areas is an indication of low wages and lack of employment while the rural poverty is associated with low productivity of the mainstay agricultural sector.

Besides impacting the agricultural sector, climate change has affected accessibility to clean and reliable water. The geographical location of the county places it in a position where it receives surface run-off from the highlands where a lot of agricultural activities are conducted. The

unfortunate outcome is the pollution of water sources within the county with topical fertilizer, pesticides and other pollutants. This has in turn resulted in the proliferation of water weeds such as the water hyacinth in Lake Victoria. The weed has in turn reduced water quality (in terms of colour color, pH and turbidity (suspended solids). Additionally, the intense dry seasons also contribute to inadequate water supply because of the drying up of water sources which renders the county residents searching residents to searching for the precious commodity in more distant areas. The situation is somewhat mirrored during flooding periods. The water quality reduces from contamination by pollutants and there is a surge in water related diseases such as bilharzia (schistosomiasis), malaria, dysentery, diarrhoea and cholera.

This then suggests into how climatic impacts in the county have affected housing and infrastructure. During flooding episodes, residents of the Kano plains are usually subjected to relocating to higher ground because their houses get flooded from the river Nyando bursting its banks. Although measures have been taken to put up dykes to help with mitigating the flooding episodes, the situation still persists with communities still being displaced. Similarly, roads are usually cut off or rendered impassable during these episodes. According to the Kisumu County Climate Change Risk and Vulnerability Assessment (2020), climate change can also cause significant damage to bridges in the county as an "increase in temperature will increase heat, which reduces the life of asphalt and increase the stress to bridges expansion joints." (RVA, 2020). Flooding can also lead to weakening of the structural support of the bridges.

Energy is another sector that climate change has significantly impacted. Given the obvious destruction that is brought about by extreme weather events such as strong winds and floods, Kisumu residents have been forced to anticipate electricity blackouts during these periods because of damage to energy infrastructure. On the other hand, the county has registered a disturbingly low use of sustainable energy sources such as briquettes and biogas because of lack of technological know-how and the high financial implications that come with the setting up of biogas. Instead, county residents prefer to use charcoal and firewood as their primary energy sources, despite their contribution to Greenhouse Gas emissions which are attributed to the climate change phenomenon (AEA, 2021)

1.3.2 County climate hazards map

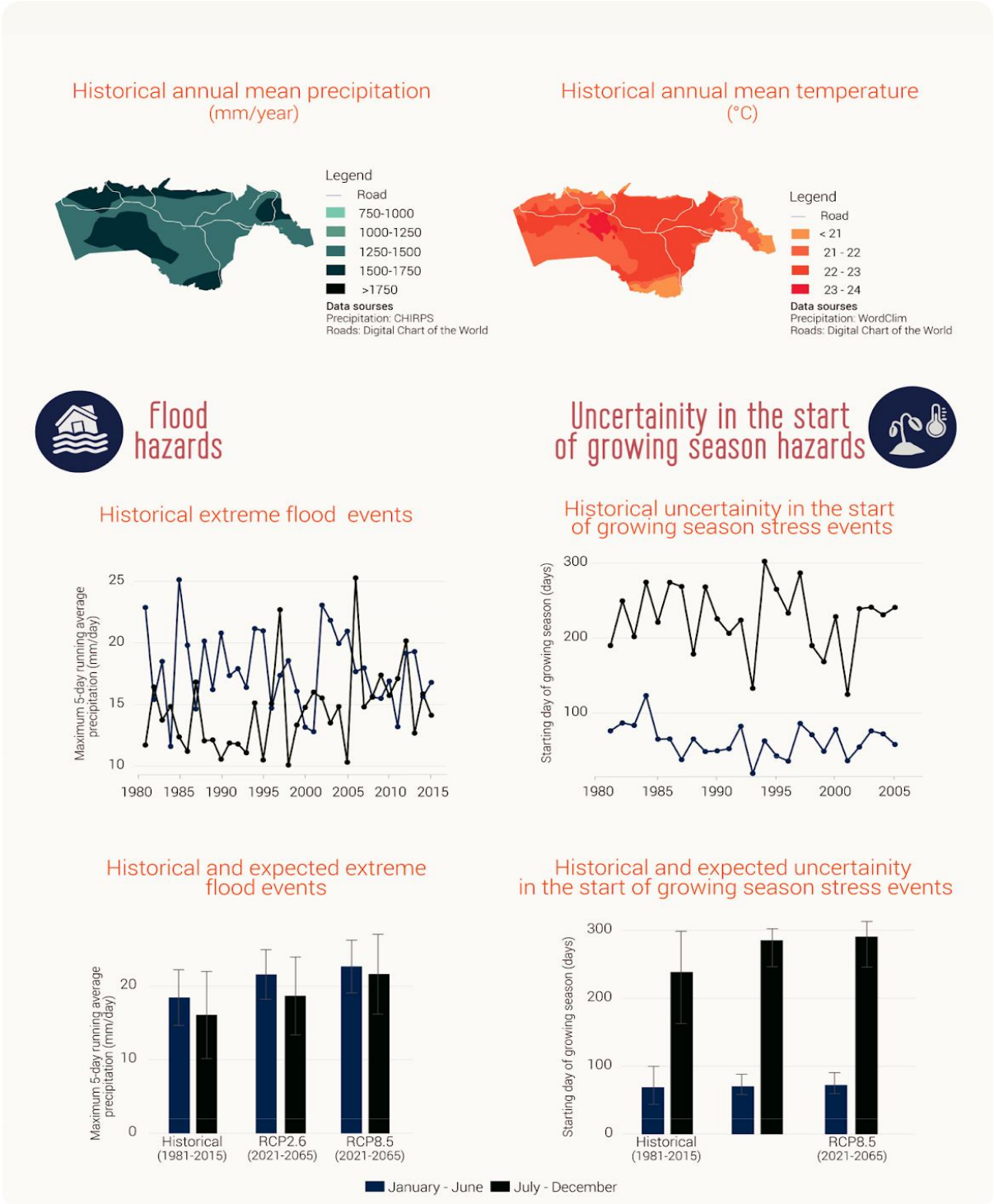

Figure 1.1: Summary of Differentiated Climate Exposure and Vulnerability of key groups and livelihoods in the County

There are different climate-related risks and shocks facing different sectors in Kisumu County. "Risk" refers to the potential of shocks and stresses to affect the state of systems, communities, households, or individuals. Individuals, families, and communities are constantly exposed to

risks that can threaten their well-being including: health, unemployment, violent crime, or a sudden change in market conditions can, in principle, affect anyone. Climate risks are not equally distributed, but they are widely disbursed. Many factors influence how a community or individual households react to such risks. These factors include their socioeconomic situation and environment, which affect their capacity to adapt to climate shocks which are referred to as sensitivity and adaptive capacity.

1.4 Agriculture, Livestock and Food security

Kisumu County's agricultural sector is vulnerable to climate variability (CV) and extreme weather events, such as droughts and floods. These events have led to food shortages, rising food prices, and damage to the County's economy. This sector's vulnerability stems in part from the annual variability in rainfall and dependency on rain-fed agricultural production.

The sector's vulnerability to climate risks could be reduced by increasing land area under irrigation; sustainable land and water use practices; enhancing access to climate resilient and pest/disease tolerant crop and livestock germplasm; and increased adoption of climate smart crop, livestock and fisheries technologies; reducing post-harvest losses; enhancing market access; improving access to crop, livestock and fisheries based risk insurance solutions; developing vibrant monitoring, control and surveillance systems for diseases and fisheries. Intensification of irrigation could lead to an estimated fourfold increase in crop production, not accounting for the implications of climate change.

The sector's vulnerability to climate risks could be reduced by investing in water storage, rainwater harvesting, and irrigation infrastructure, as well as more efficient water use in light of current and projected water shortages. Intensification of irrigation could lead to an estimated fourfold increase in crop production, not accounting for the implications of climate change.

The historical economic impact of drought on Kenya's agricultural sector has been significant. In Kisumu County, increased threats to agro-based livelihoods and encroachment into fragile ecosystems has been observed in areas such as Katuk-Kodeyo valley and Nyamthoe. Because of drought, there is increasing deforestation as people clear forests for agricultural lands, use forested lands for grazing, and produce charcoal for their energy and economic needs. Additionally, wetlands are being encroached on for cropping, grazing and settlement. Floods are also a concern for both crop, livestock and inland fisheries(aquaculture) production, leading to loss of lives, produce and infrastructure. It becomes difficult for farmers to access markets during rainy seasons because of poor road infrastructure and washing away

of roads and bridges. As rainfall is becoming more intense with climate change, land degradation from soil erosion is a big concern. The situation is worse in flood prone areas of Nyando, Nyakach, and Muhoroni areas.

The historical economic impact of drought on Kenya's agricultural sector has been significant deforestation encouraging drought as people increasingly clear forests for agricultural lands, use forested lands for grazing, and produce charcoal for their energy and economic needs. Floods are also a concern for both crop and livestock production, leading to loss of lives and resulting result in damages to the agricultural sector.

1.4.1 Current climate risks on the agricultural sector

Floods, drought, seasonal weather variations, rising temperature, crop/animal pests, and diseases are key risks facing agriculture in Kisumu County. Their occurrence lead to unpredictable timing of farming operations; decline in crop production; total crop failure/destruction and degradation of the environment; enhanced post-harvest losses and increased production costs. During the time of data collection, there was an outbreak of desert locusts, which was observed in the Muhoroni and Koru areas. In the livestock sub-sector, loss of animals; productivity losses due to physiological stress occasioned by temperature increase; alteration in fodder quality and quantity; change in host-pathogen interaction resulting in increased incidences of emerging diseases and disease epidemics; increased resource prices (e.g., feed, water and energy); as well as change in water availability are experienced. In the fisheries sector, climate changes has have effect on water quality, changes in aquatic temperatures and associated ecological changes. These changes affect fish growth, mortality and reproduction thereby lowering productivity and production. The challenges of climate change are compounded by inadequate access to agricultural advisory services and low market access of agricultural produce caused by among other factors weak existing farmers' cooperatives and poor road infrastructure. Extreme weather events are expected to worsen with changing climate effects.

Land tenure and management is another challenge to agricultural production in the county. In the absence of clear title deeds and land de-limitations, open communal grazing is a common practice that has most often caused community conflicts from crop destruction. Population

growth and cultural inheritance norms have contributed to high land fragmentation that threatens the economic efficiency of agricultural production systems. Additionally, to access credit and insurance services, most credit and insurance institutions require title deeds as collateral. Farmers with no title deeds are disenfranchised thus discouraging the use of such financial products and even farmers' engagement in agri-business.

There has been a 55 per cent growth in the number of smallholder farms (0- 5 ha) from 2.22 million in 1994 to 7.63 million in 2015/16, and a 71 percent per cent reduction in the number of farms between 5 and 10 hectares from 93,871 to 15,821. For farm holdings that are more than 10 hectares, there has been a reduction of 86 percent per cent from 92,498 to 6,714. Small parcels of land negate economies of scale, thus increases the cost of production and makes agricultural enterprises less competitive. The size of land and the ability of soil to support plant growth has decreased due to unsustainable soil mining. The decrease has affected grazing land hence forcing livestock in these areas to adapt as browses. The vegetation browsed on mostly failed to recover due to damages and inadequate plant water requirement. As a result, they dry up, collected and sold as fuel-wood while some are used to make charcoal. The result is low forest and tree cover in forests, wetlands and farmlands.

Land tenure and management is another challenge to agricultural production in the county. In the absence of clear title deeds and land de-limitations, open communal grazing is a common practice that has most often caused community conflicts from crop destruction. Population growth and cultural inheritance norms have contributed to high land fragmentation that threatens the economic efficiency of agricultural production systems. Additionally, to access credit and insurance services, most credit and insurance institutions require title deeds as collateral. Farmers with no title deeds are disenfranchised thus discouraging the use of such financial products and even farmers' engagement in agri-business.

It becomes difficult for farmers to access markets during the rainy season because of poor road infrastructure. Moreover, farmers who are not part of cooperatives and group structures are unable to fetch reasonable prices for their products, access credit, and pool resources for value addition. They lose their bargaining power to intermediaries and brokers. Despite the existence

of a wide range of financial institutions (banks, insurance companies, and corporations), most of the credit facilities and insurance services available to farmers require them to use their title deeds as collateral and incur high interest rates, discouraging the use of such financial products and even farmers' engagement in agri-business.

Crop production is affected by a wide range of pests and diseases like stalk borers, smut, and aphids in sorghum. During the time of data collection, there was an outbreak of desert locusts, which was observed in the Muhoroni and Koru areas.On the other hand, Livestock production is affected by a wide range of pests and diseases, such as the East Coast Fever in cattle, Newcastle disease, and Gumboro disease. Others are fowl typhoid and coccidiosis in the chicken value chain, tsetse flies, lung infections (pneumonia), worm load, and parasitic infections of worms in livestock. During the dry spells, there are cases of hand-foot-mouth diseases (HFMD) or even anthrax (in Nyakach Sub County in particular) which led to severe livestock and economic losses. Other challenges identified include low productivity, water scarcity, access to the livestock market, pasture especially during the drought season, and inadequate animal health services.

1.5 Water Sector

1.5.1 Water Sources

Most of the water in Kisumu is obtained from Lake Victoria, with a small percentage extracted from the Kibos River. Other rivers include Nyamasaria, Kisian, Kajulu, Mamboleo, Luanda and Lidango. While the city primarily relies on surface water, ground water is also available.

Table 1.1: Water Sources

Water Sources	%
Safe Water	63.3
Piped into premises	19.2
Improved sources	44.1
Unimproved sources	19.1
Surface water	17.6

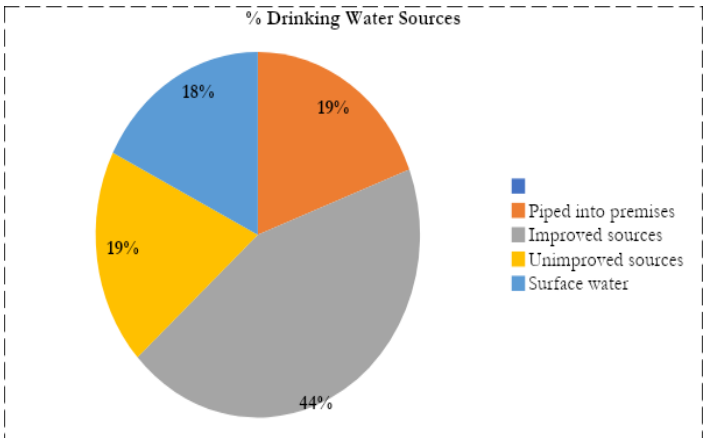

Figure 1.2 Drinking Water Sources

Source: UNICEF Report on Kisumu Water profile

1.5.2 Water sources access per sub-county

Water from sources such as Lake Victoria and the nearby rivers requires treatment before it is piped to consumers. Water from Lake Victoria is treated at the Dunga water treatment plant, while the water from the Kibos River is treated at Kajulu water treatment plant. The water supply within the city coverage was at 83% by the end by end of 2020. The Company has 36,254 connections, 91% of which are domestic customers, 8% is commercial while 1% government. The predominant source of water is Lake Victoria.

Table 1.2: Sources of water at Sub-County Level

% HH/Sub-County	Safe Water	Piped into premises	Improved sources	other unimproved sources	Surface water
KISUMU EAST	78.0	31.6	46.4	15.8	6.2
KISUMU CENTRAL	78.4	43.4	35.0	20.6	1.0
KISUMU WEST	61.2	16.7	44.5	21.0	17.8
SEME	39.9	1.9	38.0	20.5	39.6
MUHORONI	58.1	5.6	52.5	13.1	28.8
NYANDO	62.6	7.6	55.0	18.1	19.3
NYAKACH	43.0	5.5	37.5	27.0	30.0

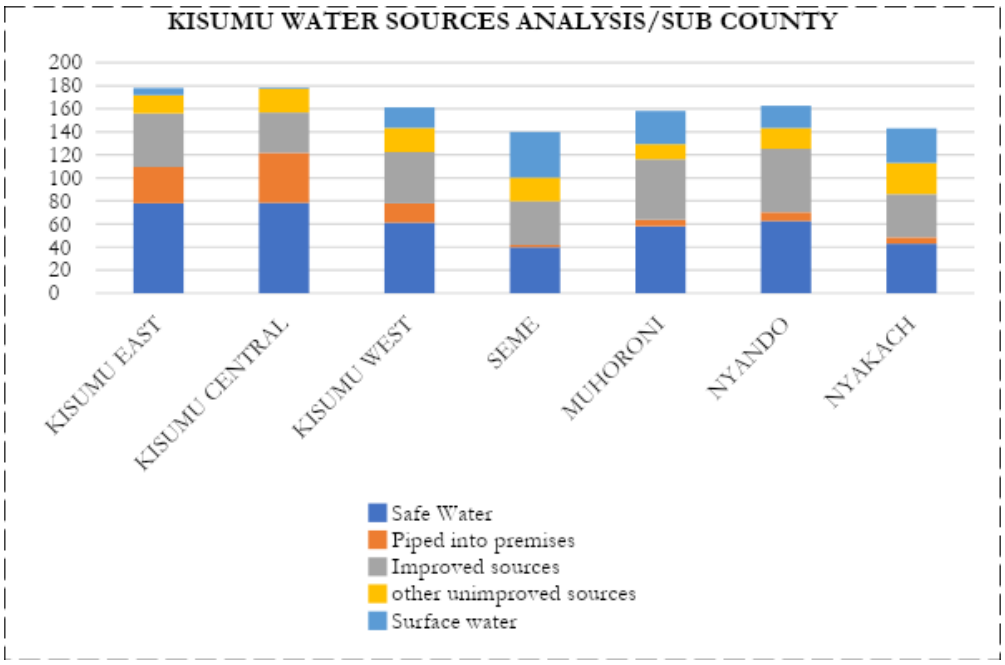

Figure 1.3: Water Source Analysis/ Sub-County

Source: UNICEF Report on Kisumu Water profile

1.5.3 Historical impacts of climate risk on water sector

Kisumu County's water resources are periodically affected by extreme weather events, such as droughts and heavy rains. Between such events, changes have been observed in the length of the rainy and dry seasons. The extreme weather events and season length changes may affect the water resources that provide water to the consumers located in the county.

During periods of drought, springs and rivers dry up, lake levels drop and they experience increased siltation. The consequences are that water needs to be collected from more distant locations and that water quality declines as pollutants become increasingly concentrated in smaller water bodies. Conflicts on the accessibility of water supplied by scarce resources can increase between the different kinds of consumers (agriculture, inhabitants). During the period of heavy rains, floods also adversely affect water quality by bringing more chemical products and other pollutants, fertilizer, pesticide residues into the water bodies, potentially leading to eutrophication. Moreover, floods damage infrastructure, such as roads, railway lines, bridges, water intakes, houses, tourism and other leisure infrastructures on the Lakeshores. This damage can in turn create food shortages, power rationing, and infrastructure damage, which are a heavy burden on society and the economy.

1.5.4 Current climate risk on water sector

Rivers break their banks and cause severe flooding and destruction of property such as crops, livestock, and buildings. This may lead to human displacement and sometimes death. Other consequences of flooding include the spread of waterborne diseases, and soil erosion which causes siltation of rivers and

the lake.Further, there is pollution of water resources through waste and raw sewage disposal, chang'aa (local liquor) brewing, car-washing and over-exploitation of natural resources like papyrus reeds, fish stocks and trees around the water resources. Sand harvesting is another major challenge in the county. Sand harvesting has led to the destruction of underground aquifers; loss of safe water by affecting surface water quality and quantity; and damage to the aquatic ecosystem. Haulage of sand by heavy trucks causes environmental degradation. With the changing rainfall pattern, rising temperature, and prolonged drought, the water problem is bound to worsen.

1.6 Health Sector

1.6.1 Historical and current climatic risks on health

Climatic factors, such as temperature and precipitation patterns, directly and indirectly, affect the health and well-being of people today. These impacts are caused by extreme weather-related events and changes in average climate conditions. Many health–climate links are also influenced by forms of environmental degradation, such as rapid deforestation, loss of biodiversity, and degradation of water resources. While these processes can lead to the emergence of diseases, they can also reduce the capacity to treat health ailments. Vector and water-borne diseases are directly influenced by climatic patterns. Of these diseases, malaria and cholera are of particular concern.

Outbreaks have been found to occur when high-temperature anomalies are followed by substantial rainfall after a month. Historically, malaria has been more prevalent in lowland areas of Kenya (Yanda et al., 2006). However, research conducted in the Lake Victoria basin found out that malaria has become more widespread in the highlands in recent decades. This is due to greater climatic variability coupled with environmental changes (such as deforestation) and changes in cropping patterns, and their influence on mosquito breeding and survival. Cholera also poses a heavy health burden in Kisumu. Along the Lake Victoria Basin, cholera outbreaks have emerged through the consumption of contaminated water and food and poor hygiene practices. Apart from climatic variability, socioeconomic factors also influence the vulnerability of poor households to malaria and cholera. Income- generation capacity is correlated with the ability of households to invest in healthy coping mechanisms, such as food and medicines (Olago et al., 2007; Wandiga, 2006; Wandiga et al., 2010; Yanda et al., 2006). Moreover, poverty coupled with an inadequate health care system handicaps the capacity of poor households to cope with health-related risks. Due to the challenges, Kisumu's capacity to respond to climate-inflicted diseases is low, and most times the response is too late.

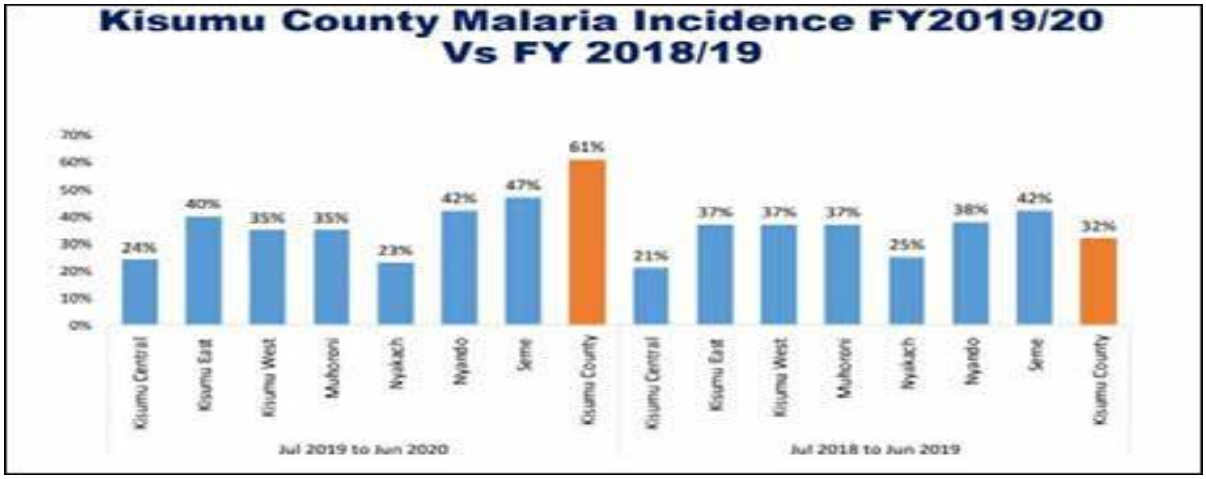

Figure 1.4: Kisumu County Malaria Incidence

Source: Vulnerability Assessment Report (RVA, 2020)

1.7 Infrastructure Sector

Infrastructure is important for the development of the society and economy. In recent years, climate change has been identified as a growing threat to important infrastructure, and many studies have been conducted to assess the vulnerability of critical infrastructures to climate change. Impacts of climate change, such as flooding, drought, heatwaves, wildfires, landslides, rising lake level, etc. could have a severe impact on the infrastructural system, causing changes in air quality, property damage, service disruptions, water quality, and habitat changes among others. Understanding the impacts of climate change on infrastructure is key in designing adaptation measures necessary to climate-proof the infrastructural system.

1.7.1 Historical and current climatic risks on infrastructure

Vital infrastructure for energy supply, water supply, and transportation systems are likely to be affected by climate change. Extreme weather and lake level rise pose new risks to the infrastructure. Extreme weather leads to negative impacts on transportation infrastructure, including on its physical condition and the cost for operation and maintenance. Furthermore, the increase in temperature will increase heat, which reduces the life of asphalt and increases the stress to bridges expansion joints. A transportation system is essential to ensure the efficient distribution of food, energy, and trade, as well as to facilitate workers and consumers in accessing jobs and markets.

In addition, to ensure that there is electricity in a region, energy production and distribution facilities must function appropriately. Climate change causes damage to these infrastructure

systems and disrupts these services, which will cause significant economic and human losses. Extreme weather that leads to flooding will weaken the structural support of bridges, increase sedimentation rate in water infrastructure, and increase the risk of landslides or avalanches. Flooding also causes damage to significant freight routes, deteriorates energy infrastructure, and cuts the electricity off. Further, flooding can lead to the destruction of the water supply network and wastewater system. Public facilities, such as hospitals, schools, shopping malls, and offices, can also be damaged by floods.

1.7.2 Mitigation Pillar (Baseline Emission Inventory Report)

The Baseline Emission Inventory study, conducted in the year of 2021, estimated that the transport sector was the highest Greenhouse Gas emitter at 7,845,864 MtCO2e followed by stationary energy at 1,103,251 MtCO2e, waste 248,345 MtCO2e, and lastly AFOLU at 41,856 MtCO2e.

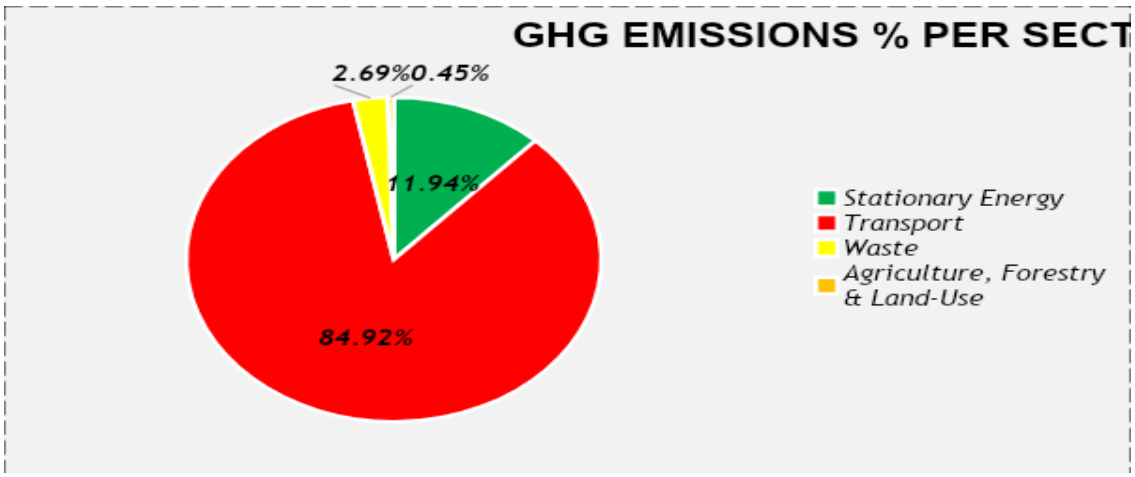

Figure 1.5: GHG Emissions percentage per sector

The transport sector emitted 84.92% of GHG Emissions within Kisumu County, stationary energy 11.94%, waste 2.69%, and lastly AFOLU at 0.45%.

The Business-as-Usual scenarios

Table 1.3: Business-as-Usual Scenario

NO	Baseline year & Target Years	BAU Emission Levels	BAU Scenario Target/Percentage reduction	BAU Scenario Goals Emissions levels
1.	2019	9,236,336	-	-
2.	2025	11,883,397	28%	8,556,045
3.	2030	14,423,520	32%	9,807,993

4.	2050	27,056,641	50%	13,528,321

The Business-as-Usual scenarios targeted the year 2030/50. The 2030 reduction of GHG emission incorporated a Nationally Determined Contribution (NDC) abating/mitigation target with no policies affected on reduction of GHG emissions for Kisumu County. With a 32% reduction, it saw GHG emissions in 2030 fall to 9,807,993tCO2e and a lower reduction target of 28% by 2025 at 8,556,045tCO2e.

1.7.3 Stationary Energy

The sector contributes 11.94% of GHG emissions within the county, with estimated GHG emissions of 1,103,251tCO2e. The sector was categorized into (i) Residential buildings with an estimated GHG Emission 624,758tCO2e, (ii) Commercial buildings, priority given to Micro Small and Medium enterprises, and commercial offices with an estimated GHG Emission 401, 969tCO2e, (iii) Institutional Buildings with an estimated GHG Emission 60, 980tCO2e and lastly Manufacturing industries and construction with an estimated GHG Emission of 15, 542tCO2e.

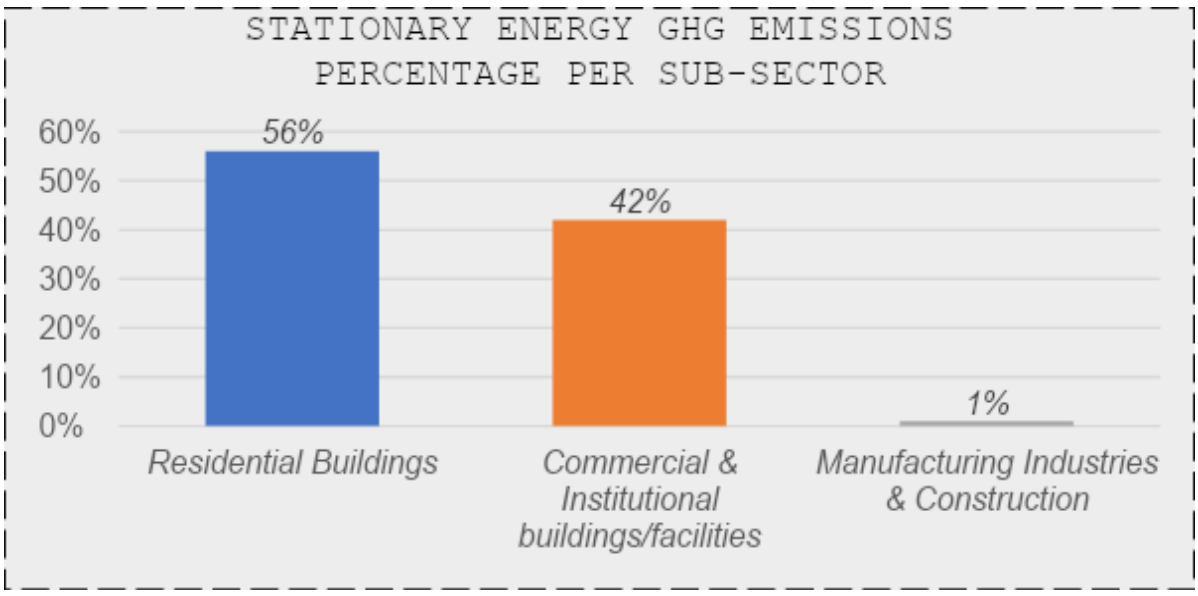

Figure 1.6: Stationary energy GHG Emissions contribution per sub-sectors

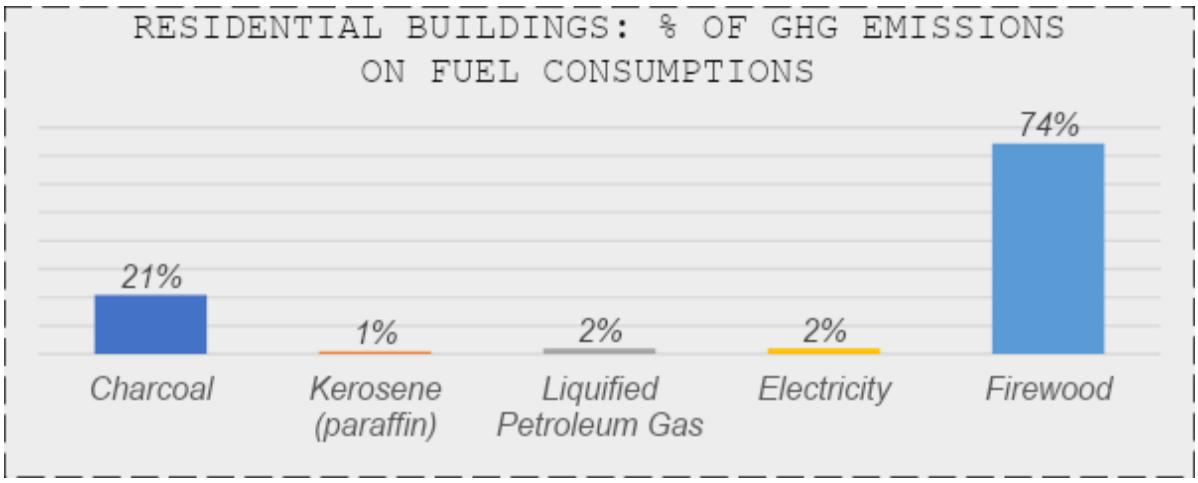

Figure 1.7: Graph on GHG Emissions contribution of residential buildings per fuel

Under residential buildings: firewood was the largest GHG emissions emitter at 74.30%, charcoal 20.9%, electricity 2%, LPG 1.9%, and lastly 0.9% from kerosene (paraffin).

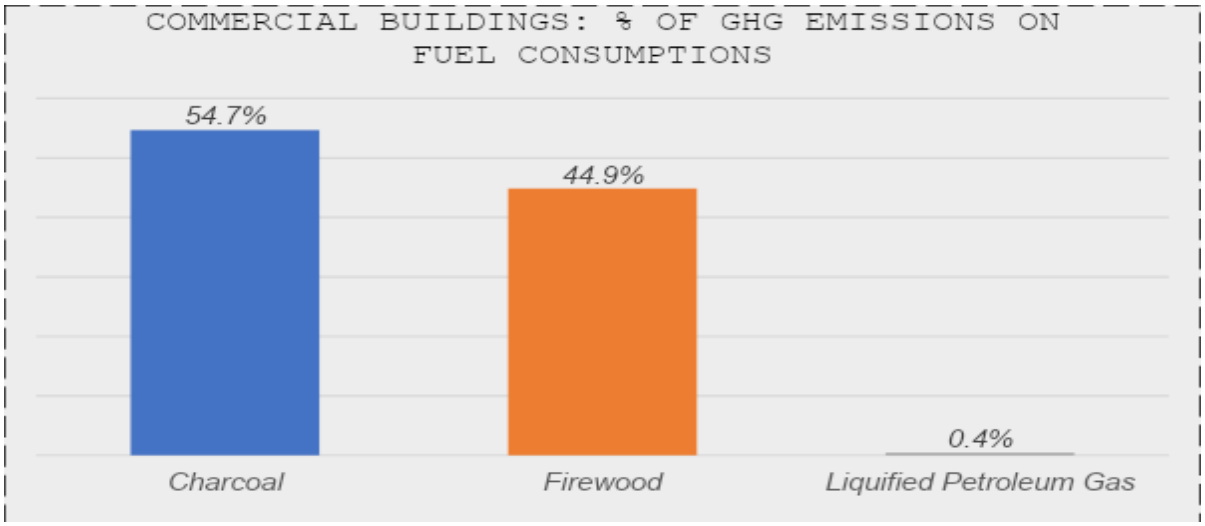

Figure 1.8: Graph on GHG Emissions contribution of commercial buildings per fuel

Under Commercial buildings: charcoal was the largest GHG Emissions emitter at 54.7%, firewood 44.9%, and lastly 0.4% of Liquefied Petroleum Gas (LPG).

Table 1.4: The Stationary Energy Business as Usual Scenarios

NO	Baseline year & Target Years	BAU Emission Levels	BAU Scenario Target/Percentage reduction	BAU Scenario Goals Emissions levels
1.	2019	1,100,270	-	-
2.	2025	1,415,598	28%	792,194

3.	2030	1,718,188	50%	550,135
4.	2050	3,223,097	80%	220,054

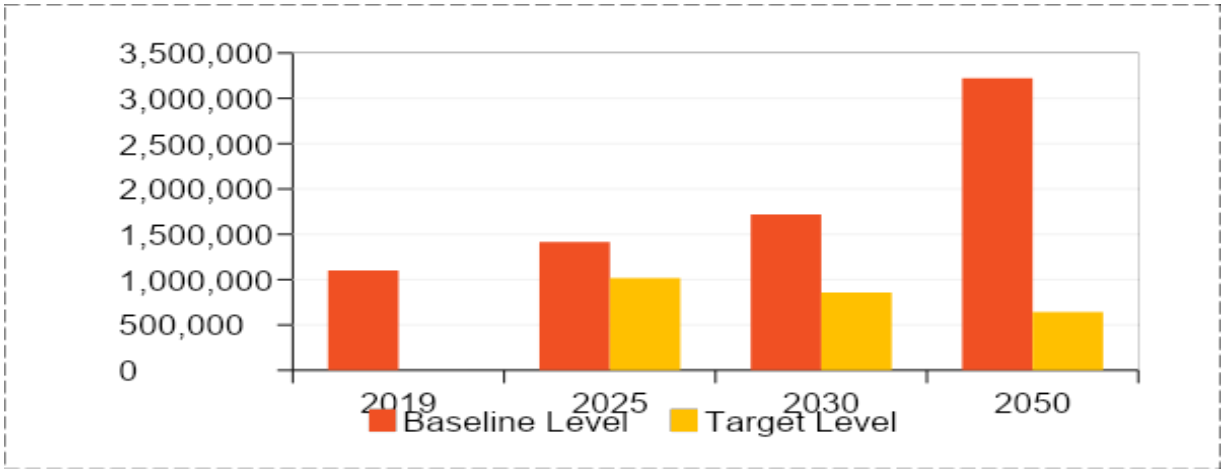

Figure 1.9: Graph on Stationary Energy Emissions BAU Scenario

1.8 Transport

The sector contributes 84.92% of GHG Emissions within the county, with estimated GHG Emissions of 7, 845, 846 tCO2e. The sector was categorized into two GHG emission categories; Public/Government/Institution Fleet on a Fuel sale method of calculation and Private Fleet on a Vehicle Kilometres Travelled on a geographical approach method of calculation

Table 1.5: GHG Emissions of Public/Government/Institution Fleet on a Fuel sale method and GHG Emissions of Private fleet on VKT

NO	SUB-SECTOR	AMOUNT	UNITS	EMISSIONS t/CO2e
FUEL SALE METHOD				
1	County Government Fleet	1030	Mwh	256
2	Public Institution Fleet	1711	Mwh	457
3	Government agencies	5192	Mwh	1386
VEHICLE KILOMETREKILOMETER TRAVELLED				
1	Pick-Ups	1,525,296	Mwh	379799
2	Saloon Cars	4,818,911	Mwh	1199909
3	SUVs	1,573,012	Mwh	391680
4	Canter	2,281,986	Mwh	609290
5	Vans	875,738	Mwh	218059

6	Matatu	6,155,209	Mwh	1532647
7	Truck	5,905,079	Mwh	1576656
8	Trailer	4,282,266	Mwh	1143365
9	Mini Van	974,528	Mwh	242657
10	Buses	1,277,940	Mwh	341210
11	Mini Buses	175,019	Mwh	46730
12	Tractor	410,790	Mwh	109681
13	Tuk Tuk	209,166	Mwh	52082

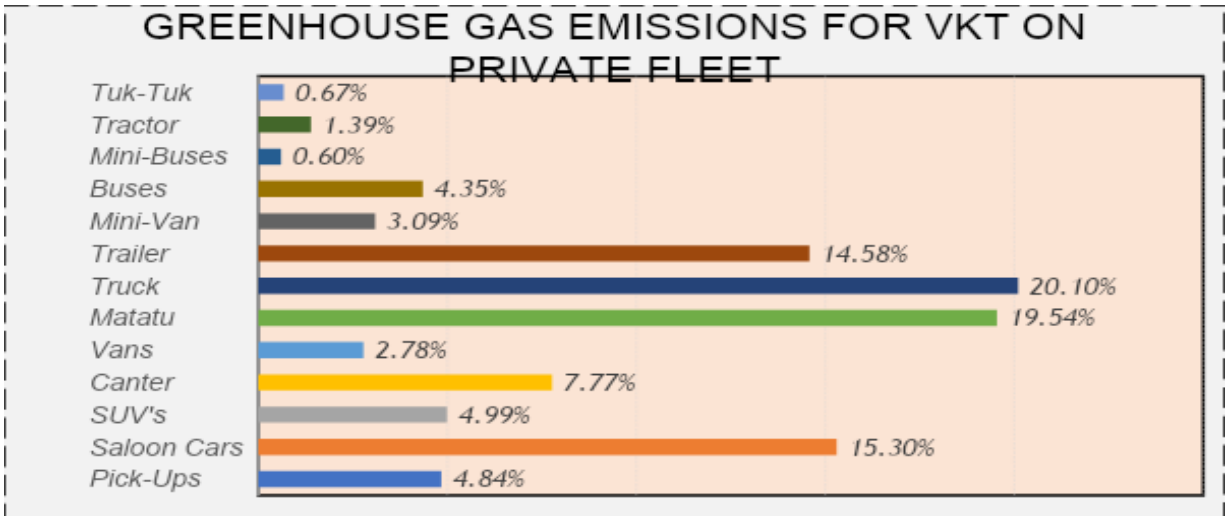

Figure 1.10: Graph on GHG Emissions of Private fleet for VKT method

Trucks were the largest GHG emitters on the Highway transport corridor at 20.10%, with the least being minibuses at 0.60%. The Transport Business as Usual scenarios

Table 1.6: BAU Scenario of transport sector

NO	Baseline year & Target Years	BAU Emission Levels	BAU Scenario Target/Percentage reduction	BAU Scenario Goals Emissions levels
1.	2019	7, 845, 865	-	-
2.	2025	10, 094, 428	28%	5, 649, 023
3.	2030	12, 252, 152	50%	3, 922, 933
4.	2050	22, 983, 439	80%	1, 569, 173

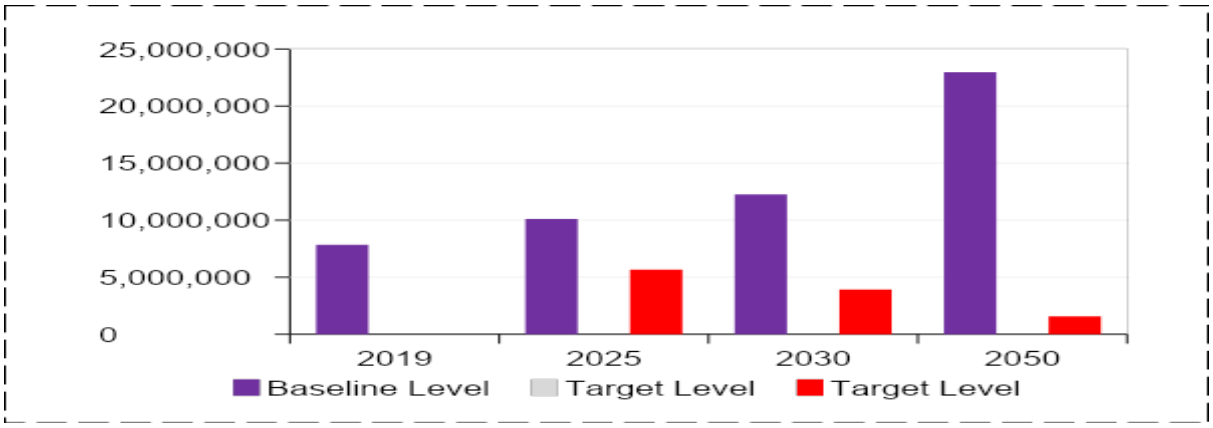

Figure 1.11:Graph on BAU Scenario of transport emissions

1.9 Waste

The sector contributes 2.69% of GHG Emissions within the County, with an estimated GHG Emission of 248,345 tCO2e.

Table 1.7: GHG Emissions contribution of Waste Sector

NO	Sector and Sub-Sectors	Direct emissions in (metric tonnes CO2e)
	WASTE	
1.	Solid waste generated	96,019
2	Wastewater generated	152, 326
	TOTAL	248,345

The Waste Business as Usual scenarios

Table 1.8: BAU Scenario of Waste Sector

NO	Baseline year & Target Years	BAU Emission Levels	BAU Scenario Target/Percentage reduction	BAU Scenario Goals Emissions levels
1.	2019	248, 345	-	-
2.	2025	319, 519	28%	198, 676
3.	2030	387, 817	50%	124, 173
4.	2050	727, 494	85%	37, 252

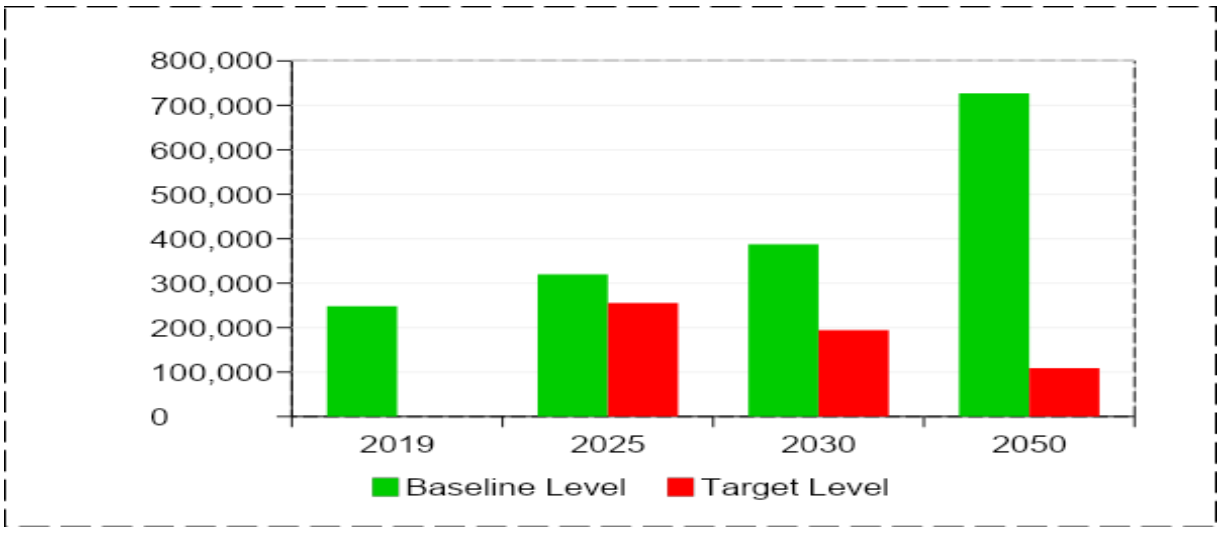

Figure 1.12: Graph on BAU Scenario of waste emissions

1.10 Agriculture, Forestry and Other Land-Uses (AFOLU)

The sector contributes 0.45% of GHG Emissions within the county, with an estimated GHG Emission of 41, 856 tCO2e.

Table 1.9: GHG Emissions for AFOLU

NO	Sector and Sub-Sectors	Direct emissions in (metric tonnes CO2e)
	AFOLU	
1	Livestock	8, 945
2	Land	32, 911
	TOTAL	41, 856

1.11 Energy access pillar (Energy Access Assessment Report)

In 2021, Kisumu County, with the support from Expertise France, conducted a baseline study that gave an in-depth status of access to energy for lighting, and energy for cooking within households, SMEs, and institutions through a gender lens. Using the SEACAP and JRC guidelines the study reported access to energy using various prescribed indicators (General-G; Security-SC; Sustainability-SU and Affordability-AF) which will also be used during the Access to energy planning, measuring, and reporting. The following table shows a summary of the study findings and scenarios developed which will guide the planning exercise.

Table 1.10: summary of study findings for Access to electricity

ACCESS TO ELECTRICITY				
INDICATORS		GRID	OFFGRID	Detailed information
G 1	Share of household with access to electricity (grid/off-grid) [%]	50%	33.2%	* As of 2021, the survey showed that 83% of the HH population accessed electricity, i.e connected and using electricity. Out of which 49.8% got their electricity from the grid (solely KPLC). *85.9% of the grid power is from renewable sources. County CIDP II (2018-2022) target is to increase electrification by both grids and off-grid to 90%. Kenya however has a target to have 100% by 2022 access to electricity and clean cooking under the SE4ALL initiative *Only 1% of the total HH population get electricity from diesel generators
SC2	Number of hours per day of available electricity [h/day]	21 h/day	24 h/day	*The number of hours of available electricity from the survey (21h/day) was slightly lower than the ideal number of grid power availability (23.5h/day) obtained from KPLC 2019 records *No targets traced
SC3	Average number of electricity interruptions (unscheduled outages) per day [n°/day-n°/week]	2 n°/day	0	The survey revealed that cumulatively the power interruption takes 2 days per week However, based on KPLC scheduled blackouts, Kisumu County should ideally experience 4 blackouts a month. There were no targets available.
	If available, please include the duration of interruptions (unscheduled outages) per week	21 h/week	0	From the survey, the majority (68%) experienced intermittent blackouts lasting less than 3hrs. A good number (20%) had blackouts lasting up to 12hrs. 10% of the HH could have continuous blackouts for a whole day or more.
SC4	Number of days without electricity per year [n°/year]	42 n°/year	0	From the survey, HH went for 42days without electricity out of which 14 days were scheduled by KPLC

SU5	Percentage of local electricity from Renewable Energy Sources RES [%]	85.9%	97.5%	*According to EPRA Energy statistics (2020), only 14.1% of the grid power is from thermal. *From the survey 39% of the HH population used solar while 1% used diesel-based generators, i.e, out of those using off-grid electricity only 2.5% used diesel.
SU6	Number of minigrids and stand-alone systems [n°]	0%	39%	*Kisumu County does not have minor systems. *Majority of the standalone systems which ideally are small home solar systems in the County with 0.036KWh capacity mainly used to charge phones and light up to 5 bulbs. Targets not available
SU7	Laws and regulations in place for mini-grids/stands-alone systems [+/-]	yes	Number	1. Energy Act of 2019 2. National Electrification Strategy 2018-2022 3. Kisumu County Draft Sustainable Energy Policy 4. Mini-grid regulation (draft) 5.Draft Kisumu County Energy Plan N/A: part from the draft minored regulation, the above listed documents encompass overall issues on energy with sections/statements on mini grids and stand alone systems
AF8	Percentage of population able to pay for electricity [%] or Willingness to pay	82 %	19.25%	According to KPLC 2019 data HH electricity demand stands at 82%. From the survey 19.25% is the average of the population of population using solar electricity as the main source of off-grid electricity. The average monthly electricity bill for HH is 1000 KES which only the employed can pay comfortably given that the majority earn an average of 30000 KES30000KES. However, for the self-employed the electricity bill is above 5% of their income since the majority earn below 15000 KES15000KES a month.
AF9	Percentage of expenditure of Public Buildings and infrastructures for electricity [%]	0.66%	NA	Target not available
AF10	Financial and regulatory incentives	yes	yes	Under the VAT Act 2013 and VAT (Amendment) Act 2014, Kenya offers an exemption from value added

	for renewable energy in place [+/-]			tax (VAT) and import duties for supplies imported or bought for the construction of a power-generating plant or for geothermal exploration, as well as certain plant and machinery. The Energy Act provides for a Feed-in-Tariff (FiT) System through the FiT Policy of 2008 aimed at diversifying the generation of electricity through renewable energy sources and encouraging local distributed generation. Pursuant to the National Energy Policy of 2018, the Government has committed to the provision of affordable quality energy for all Kenyans to be achieved through the provision of clean, sustainable, affordable, competitive, reliable and secure energy services at the least cost while protecting the environment.

Besides, for trajectory planning purposes, it is important to understand the electricity demand for Kisumu County which the AEA study summarized as in Table 1.11 below. The average amount of energy demand provided in the table provides an insight for what the County will need in relation to the 2.6% annual population growth rates.

Table 1.11: Energy demand for cooking sources of 2019 census and field survey of 2021

NO	ACTIVITY	CENSUS YEAR (2019)	NUMBER OF HOUSEHOLDS	STUDY YEAR (2021)	NUMBER OF HOUSEHOLDS	AVERAGE CONSUMPTIONS (2021)
1.	Electricity	0.9%	2672	1.5%	4,511	6 kwh per day
2.	Paraffin	7.8%	23,154	3.2%	9,624	7 liters per month
3.	LPG	18.7%	55,510	21.3%	64,059	6kg per month
4.	Biogas	0.6%	1,781	0.05%	150	
5.	Firewood	49.6%	147,236	35.8%	107, 667	150kg per month
6.	Charcoal	22.2%	65,900	35.9%	107, 967	50kg per month
7.	Solar	0.2%	-	-	-	
8.	Briquette	-	-	0.05%	150	20kg per month

9.	Agri biomass	-	-	2%	6,015	

As the second sector under the access to energy pillar, Kenya has an ambitious target of achieving universal access to clean modern cooking solutions by 2028. These solutions include LPG, electricity, biogas, bio-ethanol and improved solid fuel cook stoves. The AEA study revealed that, in Kisumu County, charcoal and firewood are the predominant energy sources with 35.9% using charcoal and 35.8% using firewood. Access to LPG has immensely increased especially in rural areas. LPG usage stands at 21.3% in the entire County. A very small percentage use electricity, 1.5%, for cooking the reason given being that cooking with electricity is expensive. Biogas and briquettes adoption and usage is extremely low at 1% due to the required technological skills. The other indicators assessed have the following results as summarized in Table 1.12 below;

Table 1.12: Summary of Study findings for Access to Electricity

ENERGY FOR COOKING ACCESS			
INDICATOR		Value	Detailed information (if available)
G1	Percentage of population or households with clean cooking access [%]	23%	The clean cooking sources considered here are LPG (21.30%), electricity (1.5%), biogas and briquettes. It is important to note that the contribution from biogas and briquette is less than 1% Kenya vision 2030 sets a target of 42% by 2030 for access to clean cooking with LPG at 35% biofuel 7% and electricity 2%
SC2	Percentage of population/households relying on the traditional use of biomass for cooking [%]	77%	The county through its 2022-2027 County Energy Plan targets to substitute 50% use of traditional biomass with briquettes by 2030
SC3	Percentage of population/households relying on LPG [%]	21.3%	The target is set in the Kisumu County Energy Master plan 2021-2030

SC4	Availability of resources: time or distance to gather fuel wood [h or km]	less than 1km	Majority of the population (78%) access their various sources of cooking within less than a km
SU5	Percentage of population using improved cook stoves	63%	From the survey the county has already exceeded its 2022 target which was set based on the 2019 census data.
SU6	Charcoal production in a sustainable way [Y/N]	No	As per the CIDP (2018-2022) charcoal used in Kisumu County is majorly sourced from neighbouringneighboring counties. Small scale production is done for subsistence use. There are no licensed charcoal producers in the county. * The County aims at: 1. Sourcing raw materials from sustainably managed forest 2. Using efficient kilns like Casamance kilns, drum kilns or portable metal kilns during production. There aren't specified targets
SU7	Awareness and/or education programs in place [Y/N]	Yes	Kisumu County RES awareness creation programs including: 1. Partnership with Practical Action in 2019 2. Clean Cooking Association of Kenya, 2020. No specified targets In addition, there are several private programs organized by resident NGOs, radio stations etc.
AF8	Financial and regulatory incentives or subsidy mechanisms in place [Y/N]	Yes	Some of the incentives include flexible payment schemes for acquiring improved cook stoves. The county has also had partnerships with other private organizations to rally up clean cooking with a gender lens to it. Practical Action of 2019 and Clean Cooking Association of Kenya, 2020. there are no specified targets
AF9	Percentage of population able to pay (or willing to) for the transition to clean cooking [%].	70	From the survey, the majority of the population (46%) were comfortable paying between KES 300-600 for the transition. No specified targets

The study showed that charcoal and firewood is and will still remain the primary source of energy for cooking relied on by most households in Kisumu County as reliance on Kerosene remains to be relatively low. The projection indicated steady growth in demand for biomass energy with firewood taking the lead. This signaled the need to upscale sustainable sourcing of firewood and charcoal production alongside mass dissemination and adoption of improved cookstoves in Kisumu County. This should be prioritized alongside increasing the proportion of the population accessing clean cooking and more particularly biogas. Besides, electricity use for cooking remains imperatively low in comparison to LPG because of affordability issues. The Re-imposition of value-added taxes (VATs) on LPG as of July 2021 reduced affordability for many Kenyan households. This plus the expected higher global LPG prices might contribute significantly to a decrease in LPG as a source of energy for cooking, a concern which must be considered during the planning process.

Table 1.13: Business as Usual Scenario for Clean and Unclean Cooking

Energy Demand Final Units Scenario: Business as Usual Cooking, All Fuels Branch: Demand\Kisumu County Units: Thousand Gigajoules						
Branch	2022	2024	2026	2028	2030	2032
Clean Cooking	61.3	66.0	71.1	76.7	82.6	89.0
Biogas	-	-	-	-	-	-
LPG	52.1	56.1	60.5	65.2	70.2	75.6
Briquette	0.1	0.1	0.2	0.2	0.2	0.2
Electricity	9.1	9.8	10.5	11.3	12.2	13.2
Unclean Cooking	3,919.6	4,223.2	4,550.2	4,902.6	5,282.3	5,691.4
Charcoal	1,495.3	1,611.1	1,735.9	1,870.3	2,015.2	2,171.2
Firewood	2,400.9	2,586.8	2,787.2	3,003.0	3,235.6	3,486.2
Kerosene	23.4	25.2	27.2	29.3	31.6	34.0
Total	3,980.9	4,289.2	4,621.4	4,979.3	5,364.9	5,780.4

1.12 Brief Overview of Climate Change Actions in the County

The County Government of Kisumu has mainstreamed climate change actions in the County Integrated Development Plan (2028-2022) and the Annual Development Plan. The sectors were sensitized by the Climate Change Directorate on how to mainstream climate change and they took the matter positively hence proposing projects that are climate proof and considerate to averting climate shocks. In water sector, the department aims at making all water facilities green by solarizing all boreholes . The County has been capacity building technical officers,

legislators and community representatives as an ongoing activity. In promoting use of biogas in institutions and homes the County through the support of SEACAP has provided the technology to one TIVET and 2 Secondary schools. To ensure every ward and village implements climate change actions, Ward Climate Change Planning committees have been formed in every ward to sensitize the public on climate change mitigation and adaptation. The climate change directorate, implements programs based on county climate change policy and county integrated development plan. The Participatory Climate Risk Assessment Report will form the foundation for project identification and implementation in every ward through the Ward climate change planning committees.

Chapter Two: Policy and legal framework

2.1 National Policy Context

2.1.1 Global and National Perspective

Climate change is becoming one of the most severe challenges to Kenya's achievement of its development goals as described under Vision 2030. Kenya is already highly susceptible to climate- related hazards, and in many areas, extreme events and variability of weather are now the norm; rainfall is irregular and unpredictable, while droughts have become more frequent during the long rainy season and severe floods during the short rains. The arid and semi-arid areas are particularly hard hit by these climate hazards, thereby putting the lives and livelihoods of millions of households at risk. Besides, the energy sector accounts for three-quarters of greenhouse gas emissions. The critical challenge, therefore, is how to reduce carbon emissions from the energy sector while ensuring that all people have access to clean energy. New and improved clean energy technologies are urgently needed to meet the energy demand without exacerbating greenhouse gas emissions. During the COP26 held in November 2021 President Uhuru Kenyatta attested to the international community that Kenya is determined and on course to achieve full transition to clean energy by the year 2030. This commitment saw the nation being selected as a pilot country for the Sustainable Energy for All (SE4All) initiative and other initiatives which would lead up to Rio +20 and beyond in 2012.

In 2010, Kenya developed a National Climate Change Response Strategy (NCCRS), which recognized the importance of climate change impacts on the country's development. This was followed by the National Climate Change Action Plan (NCCAP) in 2013, which provided a means for implementation of the NCCRS, highlighting a number of adaptation priorities. The focus of these initiatives has been at the national level, there is a need is need to mainstream climate change into county level policies, programs, and development plans; therefore, ensuring locally relevant, integrated adaptation responses with active involvement of local stakeholders. These documents have also laid the framework for implementing SDG 7 of the sustainable action agenda and they provide a roadmap for ensuring that all Kenyans access clean forms of energy by 2030.

Some of the existing policies, plans and programs on climate change and access to energy include:

Climate Change is a global concern and demands a global solution, Kenya is an active player in the international efforts. The International Response to Climate Change is founded on the United Nations Framework Convention on Climate Change (UNFCCC) that entered into force in 1994.

The Kyoto Protocol which is a GHG emissions reduction treaty to the UNFCCC was adopted in 1997 and Kenya ratified it in 2005. The Kyoto Protocol is an international agreement that commits developed countries, and countries in transition to market economics, to reduce their overall GHG emissions. The Kyoto Protocol created the Clean Development Mechanism (CDM), under which projects of developing countries, which reduced GHG emissions, and contributed to sustainable development, earned credits that could be sold to countries or companies with a commitment to reduce GHG emissions.

The Paris Agreement came into force in November 2016 and Kenya ratified it in December 2016. The Paris Agreement aims at strengthening the global response to the threat of climate change, by keeping the rise keeping rise in global temperature during this century to well below 2°C above pre- industrial levels. Additionally, the Agreement aims at strengthening the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework, and an enhanced capacity building framework will be put in place to support developing countries. Kenya's NDC sets out the country's actions to contribute to achieving the global goal set out in the Paris Agreement.

The Sendai Framework for Disaster Risk Reduction 2015-2030 is a voluntary agreement that recognizes that the State has the primary role to reduce disaster risk, but that responsibility should be shared with other stakeholders, including local governments, the private sector, and other stakeholders. It aims at the following outcome: The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. Kenya adopted the Sendai Framework in 2015.

Kenya is committed to the 2030 Agenda for Sustainable Development that was adopted by world leaders, including the President of the Republic of Kenya, in September 2015 at the United Nations (UN) Sustainable Development Summit. On 1st January 2016, the 17 Sustainable Development Goals (SDGs) officially came into Force. While the SDGs are not

legally binding, governments are expected to take ownership, and establish national frameworks for their achievement. The 2030 Agenda includes dedicated goals for climate change (SDG 13), protecting, restoring, and promoting sustainable use of terrestrial ecosystems (SDG 15), and mainstreaming climate change impacts and climate actions across all the SDGs. The agenda introduces the overriding objective of "leaving no one behind" that has strong implications for the definition, and selection of climate actions. This objective prioritizes the poorest and most marginalized people, so that they progress at a higher rate than those that are better off. To ensure that no one will be left behind, world leaders committed to end extreme poverty, and curb inequalities by 2030 and, underscored that no goal of the 2030 Agenda will be met until it is met for everyone.

2.2 Regional Legal and Policy Frameworks

The African Union's Agenda 2063 commits to climate change action that prioritizes adaptation and calls on member countries to implement the Program on Climate Action in Africa, including a climate resilient agricultural development program. Agenda 2063 commits to building climate resilient economies and communities, and notes that participation in global efforts for climate change mitigation will support & broaden the policy space for sustainable development.

The East African Community (EAC) Secretariat developed EAC Climate Change Policy and Strategy (2010) to guide Partner States and other stakeholders on the preparation and implementation of collective measures to address climate change in the region. The Policy prescribes statements and actions to guide adaptation and mitigation, reduce the vulnerability of the region, enhance adaptive capacity, and build socioeconomic resilience of vulnerable populations and ecosystems. EAC is developing a climate change bill and forest policy and strategy and exploring the establishment of an alliance on carbon markets and climate finance. Furthermore, the EAC Protocol on Environment and Natural Resources Management has been developed to guide the partner states in their cooperation in matters related to environment and natural resource management within their jurisdictions

The Lake Victoria Basin Commission developed a Climate Change Adaptation Strategy and Action Plan (2018-2023) that presents a roadmap for addressing and adapting to climate change impacts.

2.3 National Legal and Policy Frameworks

The Constitution of Kenya (2010): Created the devolved system of government comprising comprised of the National Government and 47 County Governments. The concept of devolution goes beyond mere decentralization of government services, providing a form of self-governance at the local level, and a process of equitable sharing of resources. County Governments have a key delivery role in implementing the Climate Change Act, 2016, having jurisdiction, as set out in the Fourth Schedule (Part 2) of the Constitution, over sectors relevant to climate change action, such as agriculture, soil and water conservation, forestry, water and sanitation, tourism, and health. Article 203(2) of the Constitution requires that County Governments be allocated a minimum of 15% of national revenue received annually, but the allocation often surpasses this minimum, which gives County Governments considerable scope to influence investments in climate change action. At the national level, several ministries and departments have established climate change units and climate change-related plans and policies to guide them in mainstreaming climate actions in their sectors.

Key National and legal Frameworks include;

Table 2.1: Key national & legal frameworks on Climate Change

National Framework	Description
Kenya Vision 2030 (2008) and its Medium-Term Plans	Kenya Vision 2030, the country's development blueprint, recognized climate change as a risk that could slow the country's development. Climate change actions were identified in the Second Medium Term Plan (MTP) (2013-2017). The Third Medium Term Plan (2018-2022) recognized climate change as a crosscutting thematic area, and mainstreamed climate change actions in the sector plan.
National Climate Change Response Strategy (2010)	Kenya's National Climate Change Response Strategy was the first national policy document on climate change. It sought to advance the integration of climate change adaptation and mitigation into all government planning, budgeting, and development objectives.
National Adaptation Plan (2015-2030)	Kenya's National Adaptation Plan 2015-2030 (NAP) was submitted to the UNFCCC in 2017. NAP provides a climate hazard

National Framework	Description
	and vulnerability assessment and sets out priority adaptation actions in the 21 planning sectors in MTP II.
Kenya's Nationally Determined Contribution (NDC) (2016)	Kenya's NDC under the Paris Agreement of the UNFCCC includes mitigation and adaptation contributions. In regard to adaptation, "Kenya will ensure enhanced resilience to climate change towards the attainment of Vision 2030, by mainstreaming climate change into Medium Term Plans (MTPs) and implementing adaptation actions." The mitigation contribution "seeks to abate Kenya's GHG emissions by 30% by 2030, relative to the business-as-usual scenario of 143 MtCO2eq." Achievement of Kenya's NDC is subject to international support in the form of finance, investment, technology development and transfer, and capacity development.
Climate Change Act (2016)	The Climate Change Act of 2016 is the first comprehensive legal framework for climate change governance in Kenya. The objective of the Act is to "Enhance climate change resilience and low carbon development for sustainable development of Kenya." The Act establishes the National Climate Change Council (Section 5), Climate Change Directorate (Section 9), and Climate Change Fund (Section 25). Further, the Act provides for mainstreaming of Climate Change actions into County government functions through, advocating for establishment of Climate Change desks in all the Counties.
Kenya Climate Smart Agriculture Strategy (2017- 2026)	The objective of the Kenya Climate Smart Agriculture Strategy (KCSAS) is to adapt to climate change and build the resilience of agricultural systems, while minimising GHG emissions. Planned actions will lead to enhanced food and nutritional security, and improved livelihoods.

National Framework	Description
Climate Risk Management Framework (2017)	The Climate Risk Management Framework for Kenya integrates disaster risk reduction, climate change adaptation, and sustainable development, so that they are pursued as mutually supportive rather than stand-alone goals. It promotes an integrated climate risk management approach as a central part of policy and planning at National and County levels.
National Climate Change Action Plan (2018-2022)	Kenya's National Climate Change Action Plan, 2017-2022 is a five- year plan that seeks to further Kenya's development goals in a low carbon climate resilient. The plan set out adaptation, mitigation, and enabling actions.
National Climate Change Framework Policy (2018)	The National Climate Change Framework Policy aims at ensuring the integration of climate change considerations into planning, budgeting, implementation, and decision-making at the National and County levels, and across all sectors.
National Climate Finance Policy (2018)	The National Climate Finance Policy promotes the establishment of legal, institutional, and reporting frameworks for access to, and management of climate finance. The goal of the policy is to further Kenya's national development goals through enhanced mobilization of climate finance that contributes to low carbon climate resilient development goals.
National Energy Policy 2018	The overall objective of this Energy Policy is to ensure affordable, competitive, sustainable and reliable supply of energy at the least cost in order to achieve the national and county development needs, while protecting and conserving the environment for inter-generational benefits.

National Framework	Description
Energy Act, 2019	Through the act, the Government is obligated to provide affordable energy services in all areas of Kenya by ensuring all households are connected to electricity by 2030
Kenya National Electrification Strategy (2018-2022)	It is the roadmap to achieving universal access to electricity as a key plank of powering the Country's development agenda. Its principal objective is to achieve electricity access for all households and businesses in Kenya over the shortest timetable and at acceptable quality of service
Energy (Energy Management) Regulations 2012	These Regulations, made under section 110 of the Energy Act, 2006, provide with respect to an energy management policy and energy management and saving issues, such as energy audits
Energy (Appliances' Energy Performance and Labelling) Regulations 2016.	These regulations apply to appliances manufactured, imported, distributed or sold for use in Kenya as listed in the First Schedule
National Policy on Gender and Development	Ensures that gender equality and women's empowerment is integrated into sectoral policies, planning and programs, the policy identifies key thematic areas, namely: labour and employment, education, health, land, housing, agriculture, environment and natural resources, peace and security, governance, power and decision making, information and communications technologies, respect for the human rights, Sexual and Gender Based Violence; the girl child and the boy child, intersectional discrimination, media and access to justice

2.4 County Legal and Policy Frameworks

Kisumu County Governments has begun to mainstream climate change in its CIDP. All County Governments are required by the Climate Change Act, 2016 to develop regulatory frameworks for Climate Change.

(i) The Kisumu County Integrated Development Plan (CIDP)

CIDP identifies environmental degradation and climate change as key development challenges. As a result, further planning needs to actualize tangible projects that can help the vulnerable populations in the County to cope with the effects of Climate Change. There are different provisions for Climate Change in the current CIDP 2018-2022 Some of which Include:

(ii) Kisumu County Climate Change Policy 2019

The Kisumu County Climate Change Policy provides a framework for addressing the issues that Kisumu faces or will face in future due to the changing climate. The main goal of the policy is to ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy and to steer Kisumu County towards a climate towards climate resilient, blue economy and green development pathway.

(iii) Kisumu County Climate Change Act, 2020

The Act provides a regulatory framework for an enhanced response to climate change and provides a legal basis for climate change activities through the County Climate Change Action Plan, and establishes the County's Climate Change Council, Climate Change planning committees, the Climate Change Directorate and the Climate Change Fund.

(iv) Draft Kisumu County Energy Plan (CEP) 2022-2027

This is formulated on the basis of well-defined project selection and prioritization criteria designed to ensure enhanced energy access with equity, sustainable development and optimal use of indigenous and renewable resources and ensure that these are integrated into the national energy plan. The expected outcome is the development of a County Energy Sector Plan to drive the development of the county and the implementation of the CIDPs by providing enhanced affordable, accessible and effective energy services.

(v) Kisumu County Sustainable Energy Policy (Draft)

The draft policy aims to transform the livelihood of the people of Kisumu County through provision of clean, sustainable, affordable and reliable energy services. It emphasizes and presents the county government's actions aimed at emission reduction and targets emissions from the energy sector. The policy key objectives include; Enhance access to sustainable, affordable and reliable electricity; Enhance adoption of clean cooking solutions; Develop and promote the use of renewable energy resources in the County; Promote sustainable management and efficient use of biomass; Promote efficient use of energy; Promote non-motorized and energy-efficient modes of transport; Promote waste to energy technologies; Promote Agriculture-Energy-Water Nexus; and Mainstream gender in the energy sector.

Chapter Three: Ward Community Priority Climate Change Actions

3.1 Adaptation and Mitigation

The adaptation pillar covers the following types of climate hazards that could potentially negatively affect societies, its economies and the environment: Extreme heat, extreme cold, extreme precipitation, floods, lake level rise, droughts, storms, landslides, and forest fires. The output from the Participatory Climate Risk and Assessment (PCRA) conducted in May, 2023, summarizes the current and projected impacts of climate change hazards and impacts in different sectors of Kisumu County.

3.1.1 Identification of strategic climate change action priorities in the PCRA

The identification of Risk and Vulnerabilities happened at the Wards through the PCRA consultations carried out by the technical team. Representation of Women, youths, Persons with disability and the marginalized were invited to the venue where intensive dialogue took place. The PCRA process involved vulnerability mapping, seasonal calendar, historical climate hazards and climatic trends. There was county stakeholder consultations in all the 7 sub-counties of Kisumu County with representatives from all the villages and engagements with county government officers, Civil Society Organizations (CSOs), the private sector and the Academia. The assessment prioritized and ranked impacts with reference to different sectors and are listed under prioritization table.

Adaptation actions will be suitable to the local context and will be based on the local needs of the County. Actions will be framed as strategic actions, related to alert and communicate and as technical measures. Floods, lake level rising and pests & disease are the most frequent types of climate hazards in different sectors of Kisumu County (RVA 2020), followed by droughts, changing rainfall patterns, rising temperatures and invasive species. However, droughts tend to affect a much larger number of people from the wards. Among the problems that will be exacerbated by Climate Change, particular attention should be paid to the most frequent climate hazards.

The KCICCAP (2022-2027) adaptation pillar will consider the four sectors prioritized by the Kisumu County climate change risk and vulnerability assessment (2020) The sectors will include; Agriculture, livestock and food security; water; health and infrastructure. Additional sector (Disaster Risks) will also be prioritized due to it's importance. Other sectors which are also important for the plan and have been mainstreamed in different sectors include

(Environment, Education, Technology, Energy and Housing) Auxiliary questions per sector were asked during sub-county and stakeholder's consultative workshops.

3.1.2 County Priority Climate Change Actions

Proposed Actions to address Climate Change Vulnerability in Kisumu County KCICCAP 2022-2027 provides a framework for Kisumu County to deliver on its Nationally Determined Contribution (NDC) under the Paris Agreement. From the Participatory Climate Risk Assessment (PCRA), 2023) the Climate Change actions were given priority (Table 3.2.1 to 3.2.6) In addition to that the priory per sector is provided overleaf.

3.1.2.1 Sector: Disaster Risk Management

Reduce risks to communities and infrastructure resulting from climate-related disasters such as droughts and floods.

3.1.2.2 Sector: Agriculture, Livestock and Food Security

(i) Promote improved and climate-resilient crop and animal germplasm.

(ii) Enhance productivity and profitability of agricultural enterprises

(iii) Promote/support modern and climate smart agricultural and fishery technologies

(iv) Develop and implement agriculture insurance programmes to manage the financial cost of disasters to farmers and government

(v) Promote initiatives that enhance farmers access to quality farm inputs

(vi) Enhance agricultural advisory services

(vii) Support development irrigation infrastructure for efficient water use

(viii) Enhance market access for agricultural and fisheries produce

(ix) Enhance animal and crop pest and disease surveillance and control

(x) Promote sustainable agricultural land use systems such as organic farming, regenerative agriculture, agro-ecological agricultural management practices etc

(xi) Diversify livelihoods to adjust to changing climate

(xii) Domesticate and implement the Kenya Climate-Smart Agriculture Strategy.

3.1.2.3 Sector: Water and Environment

(i) Develop Kisumu Environment Policy and Act which is essential to minimize further degradation of the ecosystems and ensure their continued protection

(ii) Invest in community-led protection of the forest, wetland, lakeshore, and riverbank areas

(iii) Develop and implement a comprehensive waste management policy and strategy to reduce pressure on the environment and ecosystems

(iv) Promote conservation of proper land-use

(v) Promote development of climate resilient water infrastructure

(vi) Invest in eco-tourism.

(vii) Ensure a conducive policy environment that will facilitate the creation of green jobs.

(viii) Construction of County Knowledge management climate change resource centre

(ix) Strengthen climate change institutions

3.1.2.4 Sector: Health, Sanitation and Social Protection

(i) Establish an effective early warning system and preparedness to save lives and protect assets

(ii) Establish a social protection mechanism including Insurance-based solutions to make the population better able to cope with shocks

(iii) Improve the health care system to improve resilience and build capacity to prepare for climate change-induced health emergencies

(iv) Ensure equity by providing targeted gender interventions and specific measures to protect vulnerable populations in all sectors, including the prevention of gender- based violence (GBV)

(v) Promote proper management of medical waste as per the Stockholm Convention

(vi) Promote implementation of the Kisumu County Environmental Health Act

3.1.2.5 Sector: Infrastructure (Roads, Energy,Transport and Housing)

(i) Develop a comprehensive digitalized spatial plan for the whole county to control and prevent development in unsafe areas and reduce the vulnerability of settlement areas.

(ii) Partner with the private sector to provide safe and affordable housing solutions in the county

(iii) Work with the private sector to strengthen the quality and availability of sustainable & affordable local construction and building materials industry.

(iv) Assess the efficiency of the rental market and work to ensure that it meets the needs of the extremely poor.

(v) Upgrade informal settlements for current and future risks by adopting a passive planning approach for in situ upgrading of the settlements.

3.2 Ward Priority Climate Change Actions

Table 3.2.1 Priority adaptation Action implementation Matrix

Nyando-Kadibo Sub Counties

SECTOR	Priority Action	Expected outputs/ outcomes	Key performance	Responsible Institutions	Targeted Groups	Time frame	Source of funds	Indicative budget (Kes Million)					
								Total (Ksh M)	23/ 24	24/ 25	25/ 26	26/ 27	27/ 28
1. Ahero Ward													
Agriculture	**1.Desilting of Ng'adi, gombe streams in Kochogo and Kakola, nyatini,**	**Reduced effects of floods on farmlands**	**Acreage under production**	**Directorate of Agriculture Department of water**	**Women, PWDs, Youth, Farmers**	**23/28**	**CGK/ FLLoCA**	**15**	**3**	**3**	**4**	**3**	**2**
	2.Expansion of Siso II canal to reach Kochogo and lower Kakola,	Increase in Area under irrigation	Acreage under irrigation	Department of Agriculture and irrigation	Women, PWDs, Farmers	23/28	CGK/ FLLoCA	**20**	5	5	5	5	5
	3.constuction of water pan kochogo central, Tura, Kakola and Ahero	Enhanced water availability	Number of water plans constructed	Department of Agriculture, Public Works, Land and survey	Women, PWDs, Farmers	23/25	CGK/ FLLoCA	**10**	5	5			
Water	1.Distribution of Ombaka Water Project to persons within a radius of 5km2	Improved water access	Number of households with water access	Department of water	Women, PWDs, Youth, Farmers	25/26	CGK/ FLLoCA	**15**			15		
	2.Construction of borehole at the chiefs camp	Improved water access	Number of households served	Department of water	Women, PWDs, Youth, Farmers	24/25	CGK/ FLLoCA	**5**		5			
Environment	1. Construction of proper drainage system within Ahero and its environs	Improved drainage system	Controlled flood within the town	Public works, Environment, Urban and Physical planning	500 Traders	24/25	CGK/ FLLoCA	**20**		20			
	2.Provide seedlings for forest cover to households	Enhanced tree cover	Number of trees grown	Department of Environment	Vulnerable community members (300 HH)	23/28	CGK/ FLLoCA	**9**	1	2	2	2	2
	3.multipurpose trees planting in learning institutions and health centers	Enhanced multi-purpose tree cover	Number of multipurpose trees	Department of Environment	Vulnerable community members(300 HH)	23/28	CGK/ FLLoCA	**12**	1	3	2	3	3

2. East Kano Wawidhi Ward													
Agriculture	1.Empowerment of women and persons with disability through Promotion of poultry value chain (construction of poultry units and feeds supply)	Increase in poultry production	Number of women groups and PWDs practising poultry production	Directorate of livestock, Department of social services	300Women, 200 PWDs, 200 Youth,	23/28	CGK/ FLLoCA	30	5	5	5	5	5
	2. Expansion of irrigation in flood prone areas. Nyachoda, Magina	Increase in area under irrigation	Acreage under irrigation	Directorate of irrigation	Vulnerable community member(300 HH)	23/28	CGK/ FLLoCA	20	4	4	4	4	4
	3.Introduction of finger lings in Mica Atiang', Akich dam, Odego)	Increase in fish production	Number of dams stocked	Directorate of fisheries	V vulnerable community member(150 HH)	23/28	CGK/ FLLoCA	10	2	2	2	2	2
Water	1. Kochiewo borehole improvement and reticulation (solar pump and overhead tank) dug at 25m	Improved water access	Number of households with water access	Department of water	200 households of Women, PWDs, Youth,	24/26	CGK/ FLLoCA	20		10	10		
	2. Desiltation of water pans Holo Orucho	Water pans de-silted	No. of water pans disilted	Department of Agriculture, Department water	1000 Vulnerable community members	24/25	CGK/ FLLoCA	3		3			
	3.Desiltation of katolo water pan	Water pans de-silted	No. of water pans disilted	Department of Agriculture	600 vulnerable community members	24/25	CGK/ FLLoCA	3		3			
Environment	1.Desiltation River Nyando from Nyamunga bridge to Lake Victoria (About 7km)	River Nyando Desilted	Km of de-silted in river Nyando	Department of Environment and Climate Change, Directorate of Water(Survey works)	2000 Vulnerable community members	24/25	CGK/ FLLoCA	6		6			
	2, Planting of indigenous trees along the river banks(awach river)	Embarked river banks	No. of trees planted	Department of Environment, WRA	800 Vulnerable community members	26/28	CGK/ FLLoCA	4				3	3
Infrastructure	Magina-Okoth-Migeni access road 5km	Improved road network	Kilometers of road constructed	Department of roads and public works	Women, PWDs,	24/25	CGK/ FLLoCA	10		10			

					Youth, Farmers								
	Apondo school- Ayweyo center - Kopon 10km	Improved road network	Kilometers of road constructed	Department of roads and public works	Women, PWDs, Youth, Farmers	24/25	CGK/ FLLoCA	10		10			
	Ayweyo center- kodete 7km	Improved road network	Kilometers of road constructed	Department of roads and public works	Women, PWDs, Youth, Farmers	24/25	CGK/ FLLoCA	10		10			
	Kodete- katolo secondary school 7km	Improved road network	Kilometers of road constructed	Department of roads and public works	Women, PWDs, Youth, Farmers	24/25	CGK/ FLLoCA			10			
3. AWASI ONJIKO WARD													
Agriculture	1.Provision of resources that promote food crop farming as cassava, sorghum, legumes	Improved crop and pasture production	No. of farmers practicing crop and pasture production Acreage under pasture and crop	Directorate of agriculture	1200 Vulnerable community members,Farmers	24/25	CGK/ FLLoCA			6			
	2.Capacity build farmers on new technologies that are climate friendly, mechanization(ploughing	Farmers capacity built	No. of farmers capacity built	Dpt of environment and climate change	1200 Women, PWDs, Youth, Farmers	24/25	CGK/ FLLoCA	5		5			
	3.provision of farm inputs in Kobon'go area	Increased production	No of farmers reached	Directorate of agriculture	350 vulnerable community members	23/24	CGK/ FLLoCA	5	5				
Environment	1.Provide resource and awareness of energy saving jikos	Households reached/using energy saving jikos	No of households reached No of households using energy saving Jikos	Directorate of energy	1000 Women,	25/26	CGK/ FLLoCA				5		
	2.Liason with lands department in delineating riparian lands in Nyaidho	Conserved riparian	No of kilometres pegged	Department of lands Directorate of environment	900 Vulnerable community members	23/24	CGK/ FLLoCA	10	10				

	and Agalla Rivers for reclamation (pegging) purposes (bamboo and other water friendly trees), Construction of gabions of Nyaidho and Agalla rivers		No of kilometres under gabions and embankment										
	4. Construction of water pan at Agalla	Improved water access	No. of water pans constructed	Department of agriculture, livestock, fisheries and irrigation	400 households Vulnerable community members	24/25	CGK/ FLLo CA	7		7			
Water	1. DE siltation of existing dams Construction of new ones within the ward area, Kambago, Kagoro, Arue, Kasara, Kodwar, NEW-Along river Nyaidho, Along Agalla	Dams constructed Improved water quality and volume.	No of dams constructed No of dams disilted	Department of water, Pepartment of works Department of environment	2000 Vulnerable community members	25/28	CGK/ FLLo CA	30			10	10	10
	2.Construction of water pans in kamunda kochogo and kanyipola	Improved water access	No of pans constructed	Department of water	3000 Vulnerable community members	25/28	CGK/ FLLo CA	21			7	7	7
	3.Construction of Weir in River Nyando to enhance water supply through Boarder 2, Wang'anga, Boarder 1 to Kakmie	Enhanced water supply	No of farms reached	Department of water, Public works	2000 Vulnerable community members	24/25	CGK/ FLLo CA	15		15			
4. KOBURA WARD													
Environment	Establishment of woodlots in schools and learning institutions across the ward	Woodlots established	No of woodlots established, No of trees	Environment,	2000 Children,	23/26	CGK/ FLLo CA	6	2	2	2		
Planning, Disaster & Special Programs	1.Desilting of River miriu from Hongo Ogosa to the Lake (8-10 km)	Improved water flow	No of kilometres desilted	Disaster & special programs	1500 Vulnerable community members	23/24	CGK/ FLLo CA	7	7				
	2.River Ombeyi from jumbo area to the lake (about 6km)	Improved water flow	No of kilometres desilted	Disaster & special programs	1700 Vulnerable community members	23/24	CGK/ FLLo CA	7	7				

	3. Construction of evacuation centres Hongo Ogosa, Nyamkebe and Nyamware.	Constructed evacuation centres	No of evacuation centres constructed	Disaster & special programs	2000 Vulnerable community members	24/27	CGK/ FLLo CA	24		8	8	8	
Water	1.Digging of bore holes (kayuore Market, Korowe Market, Market)	Enhanced water access	No. of boreholes drilled	Water	600 Vulnerable community members	24/25	CGK/ FLLo CA	5		5			
	2.Extension of piped water from Korowe to Ong'che	Enhanced water access	No. of households reached	Water	200 households Women, PWDs, Youth, Farmers	23/28	CGK/ FLLo CA	12			12		
	3.Supply of water tanks to Hongo ogosa, Lela, Masogo health center	Enhanced water harvesting	No of tanks supplied	Water	200 vulnerable community members	23/28	CGK/ FLLo CA		1				
Agriculture	1.Expansion irrigation schemes South west kano irrigation scheme in Bonde areas, and value addition on rice produce (processing and packaging)	Increased acreage under irrigation Increased value addition	Acreage under irrigation	Directorate of irrigation	700 Vulnerable community members, Farmers	24/25	CGK/ FLLo CA	13		13			
	Promotion of poultry value chain through construction of raised floor poultry units	Increased poultry production/products	No of farmers with raised poultry houses constructed	Directorate of livestock	300 Women, PWDs, Youth,	24/25	CGK/ FLLo CA	10		10			
	Promotion of improved pasture establishment (drought resistant pastures e.g brachariah) and feed conservation through hayban construction and silage making.	Increased pasture production Improved feed conservation	Acreage under improved pastures No. Haybans constructed	Directorate of livestock	400 Farmers	24/26	CGK/ FLLo CA	5		2	3		
Health	Enhanced vaccinations activities (Malaria, bilharzia)	Improved disease control	No. of vaccinations conducted	Department of Health and sanitation	Women, PWDs, Youth,	23/24	CGK/ FLLo CA	5	5				
	Provide mosquito nets	Malaria prevention	No. of nets distributed and	Department of Health and sanitation	Women, PWDs, Youth,	23/24	CGK/ FLLo CA	3	3				

			households reached										
	Awareness creation	Improved health awareness	No. of forums conducted	Department of Health and sanitation	Women, PWDs, Youth,	23/24	CGK/ FLLoCA	5	5				
Infrastructure	Kobura- kaluore road	Improved road network	Length of road constructed	Department of Roads	Women, PWDs, Youth,	24/25	CGK/ FLLoCA	8		8			
	Namba migingo to nyamware beach,	Improved road network	Length of road constructed	Department of Roads	Women, PWDs, Youth,	25/26	CGK/ FLLoCA	8			9		
	Korowe to nduru beach	Improved road network	Length of road constructed	Department of Roads	Women, PWDs, Youth,	23/28	CGK/ FLLoCA	9				9	
5. **KABONYO-KANYAGWAL WARD**													
Water	1.Nyangande Market Water Project Pipeline Repair of Motar and Pipeline Extension (4km)	Access to clean water	No of km of pipeline extension done	WECCNR, Market leaders	200 households of Vulnerable community members	23/28	CGK/ FLLoCA	7		7			
	2. Kanyagwal Water Project Expansion Pipeline Extension (6km)	Access to clean water	No of km of pipeline extension done	WECCNR, Market leaders	200 households of Vulnerable community members	23/28	CGK/ FLLoCA	9			9		
	3. Reru Koduol Water Project Expansion Pipeline Extension (6km)	Access to clean water	No of km of pipeline extension done	WECCNR, Market leaders	200 households of Vulnerable community members	23/28	CGK/ FLLoCA	9				9	
Environment & Natural Resources	1.Desiltation of major streams and canals 1.Aguko Omoro – Nyamrundu Primary school canal (6km), 2. Kandarria-Ogenya beach stream (10km), 3.Orogno – Alwala Canals Starts from DO Odiko – Nyachira-Komwaga- Kapiyo – Kolal Villages (7km)	Controlled flooding, Reduced soil erosion	No of streams and canals desilted	Directorate of Disaster management, WECCNR,	2000 Women, PWDs, Youth,	23/28	CGK/ FLLoCA	15	5	5	5		

	2.Research / Feasibility study on the back flow of Lake Victoria and activities/ riparian vegetation that would protect the shoreline from further erosion.	A report for informed decision making	No of studies done	CCD, University of Nairobi, Directorate of Disaster management,	3000 Women, PWDs, Youth,	23/28	CGK/ FLLoCA	10		10			
	3. Establishment of woodlots in the 28 learning institutions and 8 health facilities and 6 beaches(Obange, Oseth, Nduru,Singinda Kaloleni and Ogenya)	A report for informed decision making	No of studies done	CCD, University of Nairobi, Directorate of Disaster management,	Children, fisher-folk, Women, PWDs, Youth,	23/28	CGK/ FLLoCA	7	2	3			
Agriculture	1. Promotion of agroforestry (Capacity building, promotion of planting of multipurpose trees-fodder trees, medicinal, fruit and conservation trees)	enhanced food security, Livelihood promoted for	No of groups benefiting from value chain development	Department of Agriculture, Irrigation, WECCNR	700 Women, PWDs, Youth, Farmers	23/28	CGK/ FLLoCA	6	6				
	2. Enhance promotion of food value chain through drought resistance crops, fruit trees and horticulture	enhanced food security, Livelihood promoted for	No of groups benefiting from value chain development	Department of Agriculture, Irrigation, WECCNR	700 Women, PWDs, Youth, Farmers	23/28	CGK/ FLLoCA	7	7				
Infrastructure	1. Upgrade to climate proofed road of Amboo complex-Oseth beach- Oseth Primary access road (4km)	Improved road network	No of kilometers of resilient and upgraded road	Department of Roads, WECCNR,	Women, PWDs, Youth,	23/28	CGK/ FLLoCA	8					8
	2.Upgrade to climate proofed road Kadie bridge-Anyuro Chief's camp 4km	Improved road network	No of kilometers of resilient and upgraded road	Department of Roads, WECCNR,	Women, PWDs, Youth,	23/28	CGK/ FLLoCA	7			7		
	2.Upgrade to climate proofed road for Nyang'ande-Kadete access road (4km)	Improved road network	No of kilometers of resilient and upgraded road	Department of Roads, WECCNR,	Women, PWDs, Youth,	23/28	CGK/ FLLoCA	8					8
SUB TOTAL									91				

Table 2.2b Priority Adaptation Action implementation Matrix Muhoroni Sub Counties

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
6. Miwani Ward													
Agriculture	Training on conservation agriculture including provision of Green houses to women and youth groups	Increased food production Empowerment of vulnerable groups	No. of women and youth trained No. operational green houses set up	CGK Directorate of crop production Directorate of irrigation	100 women and 200 youths	24/26	CGK and G-FLLOCA	12		5	4	3	
	Promotion of crop value chain through drought resistant seeds to farmers 300 farmers	Increased food production	No. of farmers issued with seeds Records of produce harvested	CGK Directorate of crop production	300 farmers (100 women, 50 PWDs, 100 youths 50 minority clan	23/24	CGK and G-FLLOCA	4.5	1.5	1.5	1.5	-	
	Promotion solar of solar water pumps to women groups and youth	Reduced crop losses Improved livelihoods Increased acrage under agriculture	No. of women groups and No. of youth groups trained 11 solar pumps issued	CGK Directorate of Renewable Energy	700 women 400 youth	24/27	CGK and G-FLLOCA	4		1.5	2	1.5	
Water and Energy	Promotion of energy saving jikos and biogas installation Jua Kali	Reduced dependency on charcoal and kerosene	No. of traders using biogas No. of subsidized energy saving jikos issued	CGK Directorate of Renewable Energy	200 households	23/27	CGK and G-FLLOCA	20	3	5	8	2	2

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	Establishment of Solar Lighting systems at Juakali, Keda, Karunga, Kaeli	Reduced dependence of paraffin for lighting Reduced respiratory diseases	No. of solar lighting systems installed	CGK Directorate of Renewable Energy	200 traders	23/26	CGK and G-FLLOCA	12	4	4	4	4	
	Spring protection and water reticulation with solar water pumps at Jua Kali, Karunga	Reduced water borne diseases	No. of water Kiosks set up	CGK Directorate of Water	200 households	24/26	CGK and G-FLLOCA	13	5	5	3	-	-
Environment	Growing of indigenous trees seedlings and bamboo along river banks Oroba, Nyakoko,and Hela and Angwecha	Controlled soil erosion Controlled flooding of homesteads	No. of seedlings grown No. of youths engaged in planting No. of bamboo planted	CGK Directorate of Environment	2000 youths	23/27	CGK and G-FLLOCA	10	2	2	2	2	2
	Construction of gabions along river Oroba, Keda area	Controlled flooding of homesteads Reduced flooding of farms	No. of gabions 1.8 km	CGK Directorate of Environment Directorate of irrigation	200 households	24/26	CGK and G-FLLOCA	10		5	5		
	Capacity building of women groups to produce charcoal briquetting	Reduced dependency on charcoal for cooking Livelihood creation	No. of women groups trained No. briquetting projects done by women No. of briquetting machines provided to groups	CGK Directorate of Renewable energy	200 women	23/26	CGK and G-FLLOCA	10	3	3	2	2	
Infrastructure	Building of a spring bridge ay Omayi	Improved access to basic services especially health and education	No. of bridges erected	CGK Directorate of Roads	1000 school children elderly and PWDs	2023-2024	CGK and G-FLLOCA	5	5				

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	7. Ombeyi Ward												
Agriculture	Promotion of Solar irrigation pumps to women youth and PWDs groups	Creation of livelihoods Increased acres under agriculture	No. of women groups No. of PDWs groups No. of youth groups issued with water pumps No. of additional acres under agriculture No. of solar water pumps issued	CGK Directorate of Renewable energy	350 women 100 PDWs and 200 youth	23/25	CGK and FLLOCA	9	3	3	3		
	Training on conservation agriculture including provision of Green houses to women and youth groups	Improved agricultural production	Increased food production	CGK Directorate of crop production Directorate of irrigation	500 women 200 youths	23/27	CGK and G-FLLOCA	12	3	3	3	1	1
	Agroforestry training and initiatives for farmers	Improved biodiversity	Increased biodiversity and resilience on farms Incresed land under agriculture	CGK Directorate of Agriculture	100 farmers	24/ 26	CGK and G-FLLOCA	7		2	3	2	-
Water	Construction of resilient and adaptive water pans at at Kiliti and Achuodho (	Increased food production Increased livestock production	No. of water pans constructed No. of solar water pump connected	CGK Directorate of Water	1000 households	23/27	CGK and G-FLLOCA	23	10	10	1	1	1

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	Water pipeline extension from Ramula Dispensary to Kowuor Village	Reduced water borne diseases	kms of pipeline extension Areas connected to piped water	CGK Directorate of Water	500 households	24/25	CGK and G-FLLOCA	7	3	3.5	-	-	-
	Promotion of energy saving jikos and awareness on renewable energy (300 households)		Reduced dependency on charcoal	CGK Directorate of Renewable energy	400 households	23/26	CGK and G-FLLOCA	6	1.5	1	1	1.5	-
Environment	Training on Briquette production centre for domestic use by women groups	Reduced dependency on charcoal for cooking Reduced respiratory diseases	No. of women groups trained No of briquetting projects done by women No of briquetting machines provided to groups	CGK Directorate of Renewable energy	300 women	23/25	CGK and G-FLLOCA	11	4		2	2	-
	Set up of an Indeginous youth group managed tree nursery at Kasese and Ombeyi	Creation of livelihood	No. of youths engaged in seedling production No. of tree nurseries set up	CGK Directorate of Renewable Energy	200 youths	24/27	CGK and G-FLLOCA	7	2.5	2.5	1	1	
	Disltation of River Angwecha, Aredo, Ombeyi	Environment protection along River Ombeyi and Aredo	Reduced incidences of flooding of farms and homesteads	CGK Directorate of Environment	100 farmers 100 homes	23/27	CGK and G-FLLOCA	9	1.5	2.5	1.5	1.5	1
Infrastructure	Upgrading of road form Kasese to Kasongo	Improved accessibility to	Kms of road upgraded	CGK Directorate of Roads	200 farmers	24/25	CGK and G-FLLOCA	15	8	7			

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
		markets and basic services		and infrustructure									
	Construction of resilient gabions along River Ombeyi	Reduced flooding of farms Reduced soil erosion and siltation	Kms of gabion constructed	Directorate of Public works	300 farmers	24/26	CGK and G-FLLOCA	14	5	5	4		
	Promote Ecosan toilets at ombeyi centre	Reduced incidences of water brone diseases Reduced water contamination Reduced water pollution	No. of Ecosan toilets put up at Ombeyi	Directorate of Public health Directorate of trade Directorate of Renewable energy	150 Traders	24/25	CGK and G-FLLOCA	5		5			
	8. Koru/Muhoroni Ward												
Agriculture	Training on modern husbandry practices and provision, Improved breeds and provision of subsidized AI	Increased livestock farming Improved livestock production	No. of farmers trained No. of AI shots purchased by farmers	Directorate of livestock production	200 farmers	23/25	CGK and G-FLLOCA	5	2	2	1		
	Climate smart agriculture(with priority on soil testing)	Informed use on fertilizer use and application rates Increased crop production	No. of farmers trained on fertilizer use No. of farmers that tested soils	Directorate of agriculture	200 farmers	23/27	CGK and G-FLLOCA	8	3	2		1	1
	Promote pasture production, preservation and conservation (Training on forage	Improved livestock production Improved animal nutrition and product quality	No. of farmers trained No. of acres under forage production	Directorate of livestock production	200 farmers	23/27	CGK and G- FLLOCA	9	3	2	2	1	1

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	production and hay conservation.)		Quantity of hay conserved by farmers per season Quantity of Forage seeds and seedlings provided										
Water and Energy	Equip existing infrastructure for tapped water at Koru and St. John to homesteads and institutions	Reduced water brone diseases	Kms of water pipeline extended No. of households connected to water	CGK Directorate of Water	200 households	23/27	CGK and G- FLLOCA	11	3	2	2	2	2
	Promotion of renewable energy and provision of solar water pumps to women groups and PWDs	Reduced crop losses Increased acrage under agriculture	No. of women and youth groups trained No. of water pumps issued	Directorate of Renewable energy	400 women 300 youths	24/27	CGK and G- FLLOCA	4.5		1.5	1	1	1-
	Bio toilet and biogas at Muhoroni Town Market and Koru Centre.	Reduced incidences of water brone diseases Reduced water contamination Reduced water pollution	No. of Ecosan toilets No. of bio digester	Directorate of Renewable energy Directorate of Trade	500 traders	23/25	CGK and G- FLLOCA	15	4	4	7		
Environment	Aforestation and maintenance on hills and special purpose lands (lands set aside)	Conservation of catchment areas Reduced soil erosion	acres of hills afforestated No. of seedlings planted	CGK Directorate of Environment	400 youths	23/27	CGK and G- FLLOCA	15	3	4	2	3	3

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
		Reduced flooding	No. of youths engaged										
	Bamboo planting and maintenance along Abwombo bridge, Menara Stream by youths	Protection of infrastructure Reduced soil erosion	No. of bamboo planted No. of youth engaged	CGK Directorate of environment	150 youths	23/24	CGK and G- FLLOCA	5	2	3			
	Upgrade of Menatra Tree nursery for indigenous tree species production and knowledge dissemination	Awareness creation on indeginous tree species, medicinal and ornamentals Increased tree seedling production	Length of perimeter fence extended No. tree species tagged No. seedlings produced annually Upgrade and equipping of store	CGK Directorate of Environment	200 youths 250 women	23/25	CGK and G- FLLOCA	7.5	2	3	1.5		
Infrastructure	Upgrading of koru ring road and Mtwala Ngeria to climate proof roads	Improved access to amenities and social services	Kms of road upgraded	CGK Directorate of Roads	150 farmers 700 school children And PWDs	23/24	CGK and G- FLLOCA	14	7	7			
	Repair and upgrade of Bridges – Oyange/ Homalime , Okalo, Ruke Kandege Kowana bridge, Ayoma bridge	Improved access to education and hospitals	No bridges upgraded	CGK Directorate of Roads	2000 School children PWDs	23/27	CGK and G- FLLOCA	18	4	4	5	3	2
9. Masogo Nyang'oma Ward													

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
Agriculture	Promotion of crops value chain (drought resistant seed and seedlings	Increased resilient food crops for household consumption	No. of farmers cultivating drought resistant crops	Directorate of Agriculture KALRO KMD	Women	24/28	CGK & G-Flocca	4		1	1	1	1
	Promotion of solar/biogas fruits and vegetables driers at Kogutu, Kagogo and Nyatao	Reduced post-harvest losses of fruits and vegetable	No. of fruits and vegetables driers Kgs of fruits and vegetable dried	Directorate of Agriculture Directorate of Renewable Energy	Women Youths	23/28	CGK & G-Flocca	10	2	2	2	2	2
	Upgrading livestock breeds through subsidized Artificial insemination (AI) and fodder conservation through hay bans construction	Improved livestock breed Improved fodder availability	No. of accessing the services No. of haybans constructed	Directorate of livestock and Veterinary Services	PWDS Vulnerable groups (2000)	23/28	CGK & G-Flocca	10	2	2	2	2	2
Water and Energy	Construction of resilient and adaptive pans in Masogo, Ogwodo and Ngere Kagoro	Increased water availability for community and livestock during dry seasons	No. of Adaptive Water pans	Directorate of water Directorate of environment and Natural Resources	(20,000 people	23/26	CGK & G-Flocca	10	10	10	10		
	Drilling of boreholes (climate smart reservoir tanks and solar system in Masaki, Ngere Kagoro, Chemelil Market and distribution and tapping for households	Increased access to safe water	No. of households accessing safe water from the drilled and equipped borehole	Directorate of Water Directorate of Renewable Energy	5,000	23/25	CGK & G-Flocca	5	5	5			
	Promotion of community solar units	Reduced dependency of kerosene	No. of solar lighting units promoted	Directorate of	300 households	24/25	CGK & G-Flocca	2		2			

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	for lighting Milenye, Magadi, Kogutu			renewable energy									
Environment	Establishment of a tree Nursery at Ombaka	Increased green jobs Increased tree cover	No. of seedlings produced No. of seedling	Directorate of Environment and Natural Resources Directorate of Water	50 No. Women and youth	24/25	CGK & G-Flocca	1.5		1.5			
	Construction of canals from Masogo, Kogutu, Nyakungru and Nyadundo and Pawteng	Controlled flooding	Length in Km of canals	Directorate of Environment and Natural Resources Directorate of Water	5,000 Women and vulnerable community members	23/24	CGK & G-Flocca	3	2				
	Construction of Onyalo biro simbi water canal	Controlled water canals	Length in Km of canals	Directorate of Environment and Natural Resources Directorate of Water	2000 Women and vulnerable community members	25/26	CGK & G-Flocca	3			3		
Infrastructure	Climate Proofing and Improvement of existing feeder roads through bridges, culverts and drainages at Ngere to Masogo, Masaka to Nyarenda, Ogwodo to River Nyando, Kogutu to Nyando Chemelil Chiro approx	Improved access	Length of Climate proofed road No of adaptive culverts and bridges	Directorate of Infrastructure Directorate of Climate Change	20,000 Vulnerable community members	23/26	CGK & G-Flocca	5	2	2	1		
10. Chemelil Ward													

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
Agriculture	Promotion of fodder preservation technologies e.g hay conservation	Increased livestock production during dry period	No. of farmer practicing fodder preservation and conservation	Directorate of Livestock	500 Women, youth and vulnerable groups	23/24	CGK & G-Flocca	1	1				
	Upgrading livestock breeds through subsidized Artificial insemination (AI)	Improved livestock breed	No. of farmers accessing the A.I services	Directorate of Veterinary Services	1000 Vulnerable families	23/24	CGK & G-Flocca	0.5	0.5				
	Promotion of poultry farming amongst the vulnerable groups	Increased income	No. of vulnerable groups supported with poultry inputs	Directorate of livestock	500 Women and youths	23/25	CGK & G-Flocca	1	1	1			
Water	Construction of adaptive water-pans in Kopere ,Oseng, makindu Mashambani,Vale, Rapogi	Increased access to water by community and livestock during dry period	No. of adaptive water-pans constructed	Directorate of water Directorate of Environment and Natural Resources	400 vulnerable households	23/26	CGK & G-Flocca	10	10	10	10		
	Promotion of solar lanterns	Reduced usage of kerosene	No. of household using lantern	Directorate of Renewable Energy	200 Vulnerable HH	23/24	CGK & G-Flocca	1	1				
	Drilling of climate resilient boreholes at Holo, Guliago, Kibigori, Mashambani	Increased access to safe water	No. of households accessing safe water from the drilled and equipped borehole	Directorate of Water	4000 Women, youth and vulnerable members	23/25	CGK & G-Flocca	7	7	7			
Environment	Improvement of exiting tree nursery at Chemeli Round about through capacity	Increased income Increased forest cover	No. of green jobs created No. of trees planted	Directorate of Environment and	20 Youths and women	23/24	CGK & G-Flocca	0.5	0.5				

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	building, Marketing and provisioning of inputs			Natural Resources Kenya Forest Services									
	Catchment protection through bamboo planting along River Banks Osengeteti, Oroba and Nyando and sensitization on river conservation	Increased Riverine buffer	No. of bamboos planted and maintained	Directorate of Environment and Natural Resources WRA	2000 Vulnerable community members	23/24	CGK & G-Flocca	2	2				
	Promotion of Sustainable Agriculture Land Management through soil erosion control measure like cover crops	Improved soil conservation	No. of farmers practicing soil conservation measures	Directorate of Environment and Natural Resources	1000 Vulnerable farmers	224/25	CGK & G-Flocca	1		1			
Infrastructure	Unclogging of existing drainages and stone pitching section within Chemelil Town	Improved flow in the drains	Length in Km of unclogged drainages	Directorate of Infrastructure Directorate of Environment and natural Resources	Vulnerable community meber	23/24	CGK & G-Flocca	3.5	3.5				
	Construction of adaptive Dykes and gabions in Chemelil, Mashambani, Kibigori and Lwala, Songhor	Reduced flood incidences	Length in Km of Dykes and Gabions constructed	Directorate of infrastructure Directorate of	Vulnerable community members	23/25	CGK & G-Flocca	1.5	1.5	1.5			
	Climate proofing of all-weather roads and bridges including KaDan to Kopere,	Increased accessibility	Length of road upgraded	Directorate of Infrastructure	Vulnerable	23/25	CGK & G-Flocca	2	2	2			

SECTOR	ADAPTATION PRIORITY	EXPECTED RESULTS/ OUTPUT	KEY PERFOMANCE INDICATORS	COORDINATING INST	TARGETED GROUPS	TIME FRAME	SOURCE OF FUNDS	TOTAL ksh M	22/23	23/24	24/25	25/26	26/27
	Rapogi Rd to Miti Tatu to Kochanje												
SUB TOTAL									151				

Table 3.2.2 Priority adaptation Action implementation Matrix Seme Sub Counties

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
11. **CENTRAL SEME WARD**													
Water	Sinking of a solarized borehole with a storage tank at Nyaketa	Increased access to water around Nyaketa area Reduced operational costs	One solarized borehole sank with a storage tank Reduced cost on electricity	Directorates of water, renewable energy, lands, survey	Women, PWD, elderly, children	23/24	CGK/G-FLOCCA	8	8				
	Sinking of a solarized borehole with a storage tank at Oruga Primary	Increased access to water around Oruga area Reduced operational costs	One solarized borehole sank with a storage tank Reduced cost on electricity	Directorates of water, renewable energy, lands, survey	Women, PWD, elderly, children	24/25	CGK/G-FLOCCA	8		8			

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Construction of Awach-Kombewa-Bodi water project	Increased access to water in Kombewa and Bodi	One new water project constructed	Directorates of water, renewable energy, lands, survey	Women, PWD, elderly, children	24/28	CGK/G-FLOCCA	50		20	10	10	10
Agriculture	Small-scale irrigation using solar water pumps for 30 farmer groups along Mboha valley	Increased agricultural production Improved livelihoods	Acreage under irrigation Number of farmer groups supported though irrigation Number of solar water-pumps provided	Directorates of Irrigation, Agriculture, Water, Lands, Physical Planning	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	2	2				
Environment	Tree nursery at Pap Kadundo for agroforestry and conservation of river Awach and streams	• Youth empowerment through green enterprise as an alternative source of livelihood Increased tree cover	• Number of youths engaged • Number of seedlings generated and grown Number of conserved rivers & streams	Directorates of Environment and natural resources Agriculture, Livestock and Fisheries	Farmer groups, women, youth, PWD	23/24	CGK/G-FLOCCA	2	2				
	Desilting and construction of nature-based dykes along river Nyamgun (1km)	Controlled floodwater & erosion	Km of nature-based dykes constructed	Directorates of Irrigation, environment and natural resources, lands, public works	Farmer groups, women, youth, PWD	23/24	CGK/G-FLOCCA	3	3				
12. **EAST SEME WARD**													

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
Water	Promotion of water harvesting through distribution of water tanks (5000 L) for the vulnerable groups in 7 Villages;Magwar, Nanga, Kanga, Kalaga, Karadigo, Ombo and Lungá market	• Increased water harvesting • Enhanced access to water	• Number of vulnerable people harvesting water • Number of water tanks distributed	Directorates of water, social protection, trade, ministry of interior	Farmer groups, women, youth, PWD	23/24	CGK/G-FLOCCA	2	2				
	Construction of 7 climate-resilient water-pans at Simbagero, Pap Kojuki, Dudi, Gul Kobuya, Nyaguda	Increased access to water for livestock & irrigation	• Area in acreage under irrigation • Number of water pans constructed	Directorates of water, environment, lands, public works	Farmer groups, women, youth, PWD	23/28	CGK/G-FLOCCA	70	20	20	10	10	10
	Pipeline extension of Kaloka water project to Nanga and Kanga areas	Increased access to water for domestic use	Length in kilometres of pipeline water extended	Directorates of water, irrigation, lands & physical planning	Farmer groups, women, youth, PWD	23/28	CGK/G-FLOCCA	10	2	2	2	2	2
Agriculture	Small-scale irrigation using solar pumps for farmer groups along Nyamgun, Nyandiwa and along the lake	Increased agricultural production Improved livelihoods	Number of farmer groups supported though irrigation Number of solar water-pumps provided	Directorates of Irrigation, Agriculture, Renewable Energy, Water,	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	5	5				
	Large-scale irrigation scheme from Kaloka to Kamagore	Increased agricultural production Improved livelihoods	Number of farmer groups supported though irrigation	Directorates of Irrigation, Agriculture, Renewable Energy, Water,	Farmer groups, women, youth	24/26	CGK/G-FLOCCA	10		5	5		

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Desilting and construction of nature-based dykes along river Nyamgun	Controlled floodwater and erosion	Number of nature-based dykes built	Directorates of Irrigation, Water, Environment and Natural resources	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	5	5				
Environment	Establishment of tree nurseries at Magwar, Lunga, Siala, Kuja, Kunya	Youth empowerment through green enterprise as an alternative source of livelihood Increased tree cover	Number of youths engaged Number of seedlings produced and grown	Directorates of Environment and natural resources, lands	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	10	10				
	Capacity building of farmers on agro-forestry in Villages (Magwar, Nanga, Kanga, Kalaga, Karadigo, Ombo, Kaloka, Runda)	Enhanced agroforestry practices	Number of farmers capacity built	Directorates of Agriculture, Environment	Farmer groups, women, youth	23/28	CGK/G-FLOCCA	5	1	1	1	1	1
13. North Seme Ward													
Water	Rehabilitation, extension and solarization of Olute water project to Amii	Improved access to water	• Solarized water project at Olute • Pipeline water extension to Amii	Directorates of water, social protection, trade, ministry of interior	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	5	5				
	Construction of Awach water project	Improved access to water	• Constructed water project • Number of people benefiting from the water project	Directorates of water, environment, lands & physical planning	Farmer groups, women, youth	24/25	CGK/G-FLOCCA	5		5			
Agriculture	Promotion of apiculture through	Youth empowerment	Number of farmer groups	Directorates of	Farmer groups,	23/24	CGK/G-FLOCCA	4	2	2			

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
	installation of hives at Chienga Nyodundo and Aora Ondiek	through apiculture as an alternative livelihood	practicing apiculture No. of hives installed	Agriculture, Livestock, Lands, Environment	women, youth								
	Promotion of sunflower production at Chienga Nyodundo	Youth empowerment though sunflower production	Number of farmers engaged in sunflower value chain	Directorates of Agriculture, Environment	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	5	5				
	Small-scale irrigation using solar pumps for farmer groups along R. Awach	Increased agricultural production	• Area in hectares under irrigation • Number of farmer groups supported though irrigation	Directorates of Irrigation, Agriculture, Renewable Energy	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	4	4				
Environment	River-bank protection with bamboo and indigenous trees along rivers Awach, Aora Ondiek, Arude, Arom, Amii, Magada, Owich, Midele	• Improved river-bank protection • Reduced river floods	• Number of rivers protected	Directorates of Environment and natural resources, lands, WRUAs	Farmer groups, women, youth	23/28	CGK/G-FLOCCA	10	2	2	2	2	2
	Development of tree nurseries at Ratta primary school, Korwenje, Harambee chief's camp, Nduru Kadero school, Ndiru primary, Chienga Nyodundo, Bongu Konyango, Pundo Apwoche, Aora Ondiek	• Youth empowerment through green enterprise as an alternative source of livelihood • Increased tree cover	• Number of youths engaged • Number of seedlings produced and grown • Number of tree nurseries established	Directorates of Environment and natural resources, lands	Farmer groups, women, youth	23/25	CGK/G-FLOCCA	10	5	5			
14. West Seme Ward													

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
Water	Construction and solarization of one borehole with a storage tank per sub-location (10)	Improved water access in every sub-location	Number of boreholes constructed	Directorates of water, renewable energy, lands, survey	Farmer groups, women, youth	23/28	CGK/G-FLOCCA	50	10	10	10	10	10
	Rehabilitation and expansion of Kisumu-rural water project (Alder)	• Improved water access • Rehabilitated & expanded water project	• Length in kilometers of pipeline water extended	Directorates of Water, Environment and natural resources, lands	Farmer groups, women, youth	23/25	CGK/G-FLOCCA	20	10	10			
	Construction of a new water plant from the lake to supply the entire ward	• Improved water access for irrigation • Constructed water plant	One newly constructed water plant	Directorates of Water, Environment and natural resources, lands, Irrigation, Agriculture	Farmer groups, women, youth	23/25	CGK/G-FLOCCA	20	10	10			
Agriculture	Provision of solar-powered water pumps and horticultural seeds for small-scale irrigation. One water-pump for each sub-location	Increased agricultural production	Area in hectares under irrigation Number of farmer groups supported though irrigation Number of solar water-pumps provided Amount of seeds in kgs provided	Directorates of Irrigation, Agriculture, Water, Renewable Energy	Farmer groups, women, youth	23/24	CGK/G-FLOCCA	5	5				

Sector	Priority Action	Expected Outcome	Key Performance Indicator	Responsible Institutions	Targeted Groups	Time Frame (Yrs)	Source of Funds	Indicative Budgets (Kes Million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Capacity building of farmers on modern farming techniques/Climate-smart Agriculture	Adoption of modern farming techniques Improved Agricultural production	Number of farmers capacity-built Number of training sessions held	Directorates of Irrigation, Agriculture, Water, Environment	Farmer groups, women, youth	23/28	CGK/G-FLOCCA	5	1	1	1	1	1
Environment	Establishment of a tree nursery in every sub-location (10)	Youth empowerment through green enterprise as an alternative source of livelihood Increased tree cover	Number of youths engaged Number of seedlings produced and grown Number of tree nurseries established	Directorates of Environment and natural resources, lands	Farmer groups, women, youth	23/25	CGK/G-FLOCCA	20	10	10			
	Strengthening of community structures in form of capacity building on tree nursery management	Improved tree nursery management	Number of groups capacity-built Number of training sessions held	Directorates of Environment and natural resources	Farmer groups, women, youth	23/28	CGK/G-FLOCCA	5	1	1	1	1	1
SUB TOTAL									230				

Table 3.2.3 Priority adaptation Action implementation Matrix Kisumu East Sub Counties

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
15. Kajulu Ward													
Agriculture	1. Promotion of farm input accessibility in horticulture value chain (exotic vegetables and fast maturing fruits of avocado, paw paw and mangoes)	Improved food security Increased agricultural production	Number of farmers reached through farmer groups	Department of agriculture and livestock	Women, Youth and PWDs Farmers	23/28	CGK GFLOCCA	**25**	**5**	5	5	5	5
	2. Promotion of dairy value chain (subsidized artificial insemination)	Increase in dairy production	Number of cattle on artificial insemination	Directorate of livestock production	Women, Youth and PWDs Farmers	23/28	CGK GFLOCCA	**10**	**2**	2	2	2	2
Water	1. Extension of pipeline water supply in Bukna and ongadi area	Increased water access and availability	Length of pipeline extended	Department of water, environment and climate chang, WRA, Depart ment of lands and physical planning,	500 Households	23/27	CGK GFLOCCA	**10**		10			
	2. Drilling and equipping of solarised boreholes in Oriang primary school	Increased water access and availability	number of borehole drilled and solarised	Department of water, environment and climate change, WRA,	1000 Pupils 500 households	24/25	CGK GFLOCCA	**8**	**8**				

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
				Depart ment of lands and physical planning,									
	3. Upgrading of Aredo, Angira and Gari water pans (resilient and adaptive)	Increased water access and availability	Number of resilient and adaptive water pans upgraded	Department of water, environment and climate chang, WRA, Department of lands and physical planning,	1000 households	24/27	CGK GFLOCCA	**30**		10	10	10	
Environment	1. Intermittent desiltation of river Awach and Kibos	Reduced flooding and destruction of households	Length of river desilted	Department of water, environment and climate change, WRA, Department of lands and physical planning,	5000 households	23/27	CGK/GFLOCCA	**16**	**4**	4	4	4	
	2. Promotion of livelihoods in Kajulu forest and learning institutions through environmental conservation and forest value chain	Improved living standards	Number of institutions engaged in environmental conservation	Department of water, environment and climate change, WRA, Department of lands and physical planning,	CFAs, 5institutions, 1000	24/25	CGK, GFLOCCA	**10**		2			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	3. Establishment of an integrated waste transfer facility at Mamboleo market	Improved market waste management systems	Number of trees grown Number of waste facilities constructed	Department of water, environment and climate change, WRA, Department of lands and physical planning,	household members 2000 traders and households	23/28	CGK, GFLOCCA	**10**	**2**	10	2	2	2
Infrastructure	1. Installation of solar floodlights at Soweto, Guba and Osiepe markets	Improved security	Number of solar floodlights installed	Directorate of Directorate of renewable energy	Women youths, PWDs,	23/24	CGK, GFLOCCA	9	**9**				
	2. Construction of sanitation facilities within markets (Riat, Obwolo, Onga'di)	Reduced wate r-borne dise ases and infections	Number of sanitation facilities constructed	Directorate of Directorate of renewable energy		24/27		6		2	2	2	
	Construction of a foot bridge at Rae-Riat bridge, Sirigoi-Abururu bridge , Aredo-Komonge)	Enhanced access to social amenities like schools	Number of footbridges done	Directorate of Directorate of renewable energy	Traders households	23/24	CGK, GFLOCCA	1.5	**1.5**				

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
16. Kolwa Central													
Agriculture	1. Promotion of farm input accessibility in horticulture value chain (indeginous vegetables – cow peas, spider plant, black night shade, kales, spinach, clotalaria and passion fruit)	Improved food security	Number of farmers reached through farmer groups	Department of agriculture and livestock	Women, youths, PWDs,	23/28	CGK, GFLOCCA	10	**2**	2	2	2	2
	2. Promotion of poultry value chain (construction structures, provision of one day old improved kienyeji birds and feeds)	Increased agricultural production	Number of cattle on artificial insemination	Directorate of climate change	farmers	23/28		10	**2**	2	2	2	2
	3. Promotion of Agro-forestry	Improved soil fertility	Number of agro-forestry trees grown	Department of environment, KFS, KMFRI			CGK/FLOCCA	10	**2**	2	2	2	2
Water	1. Drilling and equiping of solarised borehole in Nyalunya health centre	Increased water access and availability	Number of borehole drilled and solarised	Department of water,	Households, wome	23/28	CGK/FLOCCA	**8**		8			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	2. Upgrading of water pans (Mowlem ,Nyakiti, Kong'any)	Increased water access and availability	Number of resilient and adaptive water pans upgraded	environment and climate change, WRA, Department of lands and physical planning	n, youth, PWDs	23/26		**30**	**10**	10	10		
Environment	1. Construction of climate proof dykes/gabions at Akado, Otera, Ofunyu, Kamuga, Angenyoni, Bwanda and Oyola areas	Reduced flooding and destruction of households Improved living standards	• Length of river desilted	Department of water, environment and climate change, WR A, Department of lands and physical planning	5000 Households	23/28	CGK/FLOCCA	**21**	**6**	6	6		
	2. Climate proof desiltation of river Mahenya and river Nyamasaria mouths		Number of institutions engaged in Conservation	Department of water, environment and climate change, WR A, Department of lands and physical planning	5000 households,	23/28	CGK/FLOCCA	**10**	**2**	2	2	2	2
	Climate proof gabions along river Kibos at Kibos – Kaloo and Renja	Improved market waste management	Number of trees grown Number of waste facilities constructed	Department of water, environment and climate change, WR A,	farmers , schools	23/27	CGK/FLOCCA	**10**	**5**	10	5	3	

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
				Department of lands and physical planning									
Infrustructure	1. Upgrading of Nyamasaria-Jamilo-Ouko brigde-Chiga road (climate proofed)	Enhanced access to social amenities like schools	Number of solar floodlig hts installed	Department of lands and physical planning	Households, women, youth, PWDs, traders	23/24	CGK/FLOCCA	**8**		8			
	2. Upgrading of Mahenya bridge connecting Angola to Rabuor (concrete	Enhanced access to social amenities like schools	Number of solar floodlights installed	Department of lands and physical planning	Women, youth, PWDs, Traders	24/25	CGK/FLOCCA	**5**			5		
	3. Installation of Flood lights at Ouko bridge, Bwanda, Ragumo, Mowlem, Kunya-Kiwasco	Improved security	Number of footbridges done	Directorate of renewable energy Department of trade	Women, youth, PWDs, Traders	23/26	CGK/FLOCCA	**12**	**3**	6	3		
Energy	1. Promotion of energy saving jikos	Improved clean cooking Reduced carbon emission	Number of clean cooking stoves promoted	Directorate of renewable energy Directorate of environment and climate change	Women, youth, PWDs, Traders	23/28	CGK/FLOCCA	**10**	**2**	2	2	2	2
17. **Kolwa East Ward**													
Water	1. Construction of solarised borehole with reservoir tanks at Baptist church,	Increased water access and availability	Length of pipeline	Department of water	Schools and households,	23/26	CGK/GFLOCCA	**18**	**6**	6	6		

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	Bondo, Nyamonge school and Siany Kokuto 2.												
	2. Extension of water supply from Chiga market to Bungu, Rweya, Aguche and St. Johns,Landi matope market, Okago primary		extended Number of boreholes drilled and solarised	Department of water Department of environment and climate change, WRA, Department of lands and physical planning,	traders, Farmers	23/26	CGK/GFLO CCA	**8**	**4**	2	2		
	Upgrading of existing water pans (corner Buoye, Aloo Gumbi, Kadwar and Onyango Aloyo)	Improved water access	Number of resilient and adaptive water pans upgraded	Department of environment and climate change, WRA, Department of lands and physical planning,		24/28	CGK/FLOCCA	**40**		10	10	10	10
Environment	Climate proof desiltation of river Mahenya, Obuso and Lie lango	Reduced flooding and	Length of river desilte	Department of water,	Households, women	23/26	CGK/FLOCCA	**9**	**3**	3	3		
	1. Promotion of environmental conservation in learning institutions and along river Kibos (bamboo)	Destruction of households Improved	d Number of institutions engaged in	environment and climate change, WRA	youth, PWDs, Traders	23/28	CGK/FLOCCA	**8**	**2**	2	2	2	

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	Establishment of an integrated waste transfer facility at Chiga market and Nyayo market/Orongo	market waste management systems Number of degraded areas reclaimed	environmental conservation Length of river under conservation Number of trees grown Number of waste facilities constructed	Department of lands and physical planning,	youth, PWDs, Traders	25/26	CGK/FLOCCA	**15**		5	15		2
Agriculture	1. Promotion of farm input accessibility in: Dairy value chain (Artificial inseminatio n and introduction of improved dairy goats)	Improved food security Increased agricultural production	Number of farmers reached through farmer groups Number of cattle on artificial insemination	Department of agriculture and livestock Directorate of climate change Department of environment, KFS, KMFRI	Livestock farmers, Women, youths, PWDs	23/38	CGK/FLOCCA	**25**	**5**	5	5	5	5
	Horticulture value chain (watermelon, passion fruits, indigenous vegetables	Improved food security Increased agricultural production	Number of farmers reached through farmer groups	Department of agriculture and livestock	youth, PWDs, Traders	23/28	CGK/FLOCCA	**15**	**3**	3	3	3	3

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	Poultry value chain (distribution of one day old improved kienyeji birds and feeds)	Improved food security Improved poultry production	Number of farmers reached through farmer groups	Department of agriculture and livestock	CGK/FLOCCA	23/28	CGK/FLOCCA	**10**	**2**	2	2	2	2
Infrastructure	Construction of climate proof box culverts at Okuta-Omwom and Kogonyo/Kadongo	Enhanced access to social amenities like schools Reduced flooding effects on health	Number of box culverts done	Department of lands and physical planning	Households, schools,	23/25	CGK/FLOCCA	**10**		5	5		
	Construction of bridges at Siany-Kokuto and Obuso-Kosome streams	Enhanced access to social amenities like schools Reduced flooding effects on health	Number of footbridges done	Department of lands and physical planning Directorate of climate change		23/27		**1**	**1**	1			
	Construction of a climate proof evacuation centers at Nyaimbo and Rweya	Improved security	Number of evacuation centres constructed	Directorate of disaster management		23/27		**70**	**20**	20	15	15	
Energy	Promotion of energy saving jikos	Improved clean cooking Reduced carbon emission	Number of clean cooking stoves promoted	Directorate of renewable energy Directorate of environment and climate change	Women, youths, PWDs, schools	23/28	CGK/FLOCCA	**10**	**2**	2	2	2	2

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
18. Manyatta B Ward													
Water	1. Drilling and equipping of a solarised borehole with raised reservoirs at Kwoyo dispensary	Increased water access and availability	Number of boreholes drilled and solarised	Department of water, environment and climate change, WRA, Department of lands and physical planning,	Households, women, youths, PWDs	24/26	CGK/GFLOCCA	**8**		6	2		
	Installation of a Community water kiosk at Gesoko	Increased water access and availability	Number of water kiosks installed	Department of water, environment and climate change, WRA, Department of lands and physical planning,	Households, women, youths, PWDs	24/25	CGK/GFLOCCA	**2**		2			
Environment	1. Climate proof drainage desiltation for Kaego-Nerea bridge, Baptist church-Paw Remo, Mbeme junction-Auji, Kothoth Judea-Auji, Auji Ndogo (Nyaganda)-Auji, disiltation of river Auji	Reduced flooding and destruction of households Improved market waste management systems	Length of streams desilted Length of streams under conservation Number of waste facilities constructed	Department of water, environment and climate change,WRA Department of lands and physical planning,	2000 households, schools	23/28	CGK/FLOCCA	**20**	**4**	4	4	4	4

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	Promotion of environmental conservation along river Auji (bamboo tree planting)	Improved riparian conservation	Number of trees grown	Department of water, environment and climate change,WRA Department of lands and physical planning,	Farmers Youth PWDs	24/25	CGK/FLOCCA	**4**		2	2		
	2. Establishment of an integrated waste transfer facility at Koyango, Komer and Kasawino market	Improved waste management	No. of waste facilities established	Department of water, environment and climate change,WRA Department of lands and physical planning,	Farmers Youth PWDs	25/26		**15**		10	5		
Agriculture	1. Promotion of farm input accessibility in : Poultry (distribution of improved kienyeji eggs/one day birds, feeds and construction of a raised structure)	Improved food security Increased agricultural production	Number of farmers reached through farmer groups Number of cone gardens developed	Department of agriculture and livestock Directorate of climate change	Farmers, women, youths PWDs	23/28	CGK/GFLOCCA	**10**	**2**	2	2	2	2

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	2. Promotion of conical gardens and seeds	Improved food security	Number of cone gardens developed	Department of agriculture and livestock Directorate of climate change	Farmers, women, youths PWDs	223/28	CGK/GFLO CCA	**10**	**2**	2	2	2	2
	3.Promotion of improved dairy goat breed	Improved food security	Number of farmers reached through farmer groups	Department of agriculture and livestock Directorate of climate change	Farmers, women, youths PWDs	23/28	CGK/GFLO CCA	**15**	**3**	3	3	3	3
Infrustructure	1. Installation of flood lights at Komer, Kuoyo dispensary and Kasawino markets	Improved security	Number of box culverts done	Department of lands and physical planning Directorate of climate change Directorate of disaster management	1000 households, schools, traders	24/26	CGK/GFO CCA	**9**	**6**	3			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	Costruction of a climate proof box culvert on Kaegoo road (Nerea bridge)	Enhanced access to social amenities like school	Number of box culvert done	Department of lands and physical planning Directorate of climate change Directorate of disaster management	Farmers, women, youths PWDs, traders	24/25	CGK/FLLoCA	**10**		10			
	Opening of Koyango transformer to Avilla school road	Enhanced access to social amenities like school	Length of road opened	Department of lands and physical planning Directorate of climate change Directorate of disaster management	Farmers, women, youths PWDs, traders	24/25	CGK/FLLoCA	**5**		5			
19. Nyalenda A													
Water	1. Pipeline Extension to St. Mark Nyabera and Dago pri and Kasagam	Increased water access and availability	Length of pipeline extended	Department of water, environment and climate change, KIWASCO Department of lands and	2000 pupils	24/27	CGK/GFLOCCA	**6**		2	2	2	

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
				physical planning,									
Environment	1. Desiltation of Auji and Ouru stream, unclogging of drainages (Kawater - St.john-samba –Auji, Nyaori-Auji, Pinnochio-Kanyakwar-Catholic centre, Western –Auji)	Reduced flooding and destruction of house olds	Length of streams desilted Length of streams under conservation	Department of water, environment and climate change,WRA Department of lands and physical planning,	2000 households, Farmers, women, youths PWDs, traders	23/28	CGK/GFLO CCA	**15**	**3**	3	3	3	3
	2. Establishment of an integrated waste transfer facility at Kowino market	Improved riparian conservation Improved market waste management systems Number of degraded areas reclaimed	Number of trees grown Number of waste facilities constructed	Department of water, environment and climate change,WRA Department of lands and physical planning,	Farmers, women, youths PWDs, traders			**15**		5	10		
Agriculture	1. Promotion of farm input accessibility in Poultry value chain (distribution of one day old improved kienyeji birds and feeds)	Increased agricultural production	Number of farmers reached through farmer groups	Department of agriculture and livestock	Farmers, women, youths PWDs	23/28	CGK/GFLO CCA	**10**	**2**	2	2	2	2
	2. Promotion of Improved dairy goats	Improved dairy goat production	Number of dairy goats distributed	Directorate of livestock production	Farmers, women, youths PWDs	23/28	CGK/GFLO CCA	**20**	**4**	4	4	4	4

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million	23/24	24/25	25/26	26/27	27/28
	3. Promotion of solar water pumps to formal groups in Namthoi and Samba farms	Improved food security	Number of solar water pumps promoted	Directorate of climate change	women, youths PWDs	23/28	CGK/GFLO CCA	**10**	**2**	2	2	2	2
SUB TOTAL									147.5				

Table 3.2.4 Priority adaptation Action implementation Matrix Kisumu Central Sub County

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
20. Migosi Ward													
Agriculture	1)Promotion of conical gardening and sensitization on management.	Improved food security Increased agricultural production	Number of farmers reached through farmer groups Number of one day old chicks promoted	Department of agriculture and livestock Directorate of climate change	500 house holds Women, Youth and PWDs Farmers	23/28	CGK GFLOCCA	5	**1**	1	1	1	1
Water	1.Extension of pipeline water supply in Sigalagala and Ajejo areas	Increased water access and availability	Length (km) of pipeline extended Number of resilient water tanks installed	Department of water, environment and climate change WRA, Department of lands and physical planning,	600 Households 3000 Pupils 600 households	23/24	CG K FLOCCA	3	**1.5**	1.5			
	Promotion of steel demountable with impermeable liners in public schools (Ezra gumbe, Kondele, ken Obura secondary and Migosi hospital)	Increased water access and availability	Length (km) of pipeline extended Number of resilient water tanks installed	Department of water, environment and climate change WRA, Department of lands and physical planning,	600 Households 3000 Pupils 600 households		KGFLOCCA	3	**3**				

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
Environment	Promotion of Integrated waste management facilities at Migosi Unclogging of drainages at sigalagala, aliwa , Ezra gumbe/cars	Reduced flooding and destruction of households Improved living standards Improved market waste management systems	Number of institutions engaged in environmental conservation Number of waste facilities/skips constructed	Department of water, environment and climate change,WRA, Department of lands and physical planning,	5000 households CFAs, 5institutions, 1000 household members 2000 traders and households	25/27	CGK GFLOCCA	15		5	5	5	
Infrastructure	Construction of sanitation facilities (sigalagla, kibira, Ajejos)	Reduced water-borne diseases and infections	Number of sanitation facilities constructed	Department of lands and physical planning	Women, youths, PWDs	23/25	CGK, GFLOCCA	4.5	**1.5**	1.5	.15		
	Drainage stone pitching along Dona/chakaliko/kings &queens' road, Dona kapenesu-road	Enhanced access to social amenities like schools	Length of drainage channels done	Department of water, environment and climate change,	Traders households			10	**5**	5			
21. Market Milimani Ward													
Water	Promotion of water kiosk at maendeleo market, maasai market and ondiek estate	Increased water access and availability	Number water kiosk constructed	Department of water, environment and climate change, WRA, Department of lands and physical planning	Households, farmers, women, youth, PWDs	23/24	CGK/FLOCCA	**3**	3				

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
Energy	Installation of solar Flood lights and street lights at bus park, Kodhek and Postal flats	Improved security	Number of solar floodlights installed Number of sanitation facilities constructed Number of footbridges done	Directorate of renewable energy Department of trade Department of lands and physical planning	Households, women, youth, PWDs, traders	23/25	CGK/ FLOCCA	9	**3**	3	3		
22. **Railways Ward**													
Water	Promotion of communal water kiosk upper railways (mbita)	• Increased water access and availability	• Length of pipeline extended • Number of water kiosks constructed	• Department of water, environment and climate change, • WRA, • Department of lands and physical planning,	Schools and households, traders.	23/24	CGK/ GFLOCCA	**1**	**1**				
Environment	Promotion of integrated waste collection centre in railways	Reduced flooding and destruction of households Improved market waste management systems Number of degraded areas	Number of institutions engaged in environmental conservation Length of river under conservation	Department of water, environment and climate change, WRA, Department of lands and physical planning,	Households, women, youth, PWDs, Traders	24/26	CGK/ FLLoCA	**15**	**5**	5	5		

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
			Number of waste skips promoted										
	Climate resilient beautification intermittent stone pitching of river Kisat and installation of silt traps	Improved aesthetic value	Number of trees grown	Department of water, environment and climate change, WRA, Department of lands and physical planning,	Households, women, youth, PWDs	26/28	CGK/ FLLoCA	**20**				10	10
Agriculture	1. Promotion of farm input accessibility in: Poultry value chain (distribution of one day old improved kienyeji birds and feeds)	Improved food security Increased agricultural production	Number of farmers reached through farmer groups Number of on day old chicks promoted	Department of agriculture and livestock Directorate of climate change	Livestock farmers, Women, youths, PWDs	23/38	CGK/ FLOCA	10	2	2	2	2	2
23. NYALENDA B													
Water	Promotion of Automated community water kiosk at (UDS, Pand pieri school Nanga and Joel Omino)	Increased water access and availability	Number of water kiosks installed	Department of water, environment and climate change,WRA, Department of lands and physical planning,	Women, youths, PWDs	23/28	CGK/ FLLoCA	4	2	2			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
Environment	Routine desiltation of River Wigwa and installation silt traps and foot bridge	Reduced flooding and destruction of households Improved market waste management systems Improved riparian conservation	Length of streams desilted	Department of water, environment and climate change, WRA, Department of lands and physical planning,	Women, youths, PWDs	23/28	CGK/ FLLoCA	20	4	4	4	4	4
Agriculture	3. Promotion of farm input accessibility in Poultry (distribution of improved kienyeji eggs/one day birds, feeds and construction of a raised structure) 4. Provision of cone garden and seeds introduction of improved dairy goat breed	Improved food security Increased agricultural production	Number of one day old bird, eggs promoted Number of cone gardens developed Number of dairy goats promoted	Department of agriculture and livestock Directorate of climate change	Women, youths, PWDs	23/28 24/25	CGK/ FLLoCA	10 10	2 2	2 2	2 2	2 2	2 2
Energy	Construction of community cooking center at (Pandpieri and UDS)	Improved clean cooking Reduced carbon emission	Number of community cooking centre constructed	Directorate of climate change Directorate of renewable energy	Women, youths, PWDs	25/26	CGK/ FLOCCA	8			4	4	
24. Kondele Ward													
Environment	Establishment of an integrated waste transfer facility next	• Improved market waste management systems • Reduced flooding and	• Length of the drainage channel drained.	• Department of water, environment and climate change,	Women, youths, PWDs	26/28	CGK/ FLOCCA	15				10	5

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
	to Manyatta Peace market Climate smart drainage for Kona legio- Call box-Manyatta primary.	destruction of households	• Number of waste facilities constructed	• WRA • Department of lands and physical planning,		23/25		10	5	5			
Agriculture	4. Promotion of farm input accessibility in • Poultry value chain (distribution of one day old improved kienyeji birds and feeds)	Improved food security • Increased agricultural production	Number of farmers reached through farmer groups • Number one day old chicks promoted	• Department of agriculture and livestock • Directorate of climate change	Women, youths, PWDs	23/26	CGK/ FLOCCA	10	2	2	2	2	
Energy	Provision of briquette modelling machines	Improved clean cooking Reduced carbon emission	Number of briquettes modelling machines constructed		Women, youths, PWDs	23/24	CGK/ FLOCCA	1	1				
25. Kaloleni/Shaurimoyo													
Water	Construction of water kiosks at Nubian, Kaloleni village and Arina	Increased water access and availability	Number of water kiosks constructed Number of roof catchment technologies promoted	Department of water, environment and climate change, KIWASCO Department of lands and physical planning,	Women, youths, PWDs Women, youths, PWDs		CGK/ FLOCCA	2.4	1.2	1.2			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
	Promotion of roof water catchment in public schools (highway primary, Bishop Obiero, Kaloleni and Shaurimoyo)	Increased water access and availability	Number of schools reached	Department of water,	Women, youths, PWDs	24/26		2	1	1			
Environment	Establishment of an integrated waste transfer facility at Arina	Improved market waste management systems	Length (km) of the drainage channel drained.	Department of water, environment and climate change,	Women, youths, PWDs	24/26	CGK/ FLOCCA	15		10	5		
	Climate smart drainage from full gospel church /love bar/, drainage systems from kibuye to kondele market	Reduced flooding and destruction of households	Number of waste facilities constructed	WRA, KEFRI Department of lands and physical planning,	Women, youths, PWDs	24/26	CGK/ FLOCCA	15		10	5		
	Promotion of tree nursery at Arina estate	Increase in tree cover	Number of tree nurseries promoted.	Environment and climate change,									
Agriculture	Promotion of farm input accessibility in Poultry value chain (distribution of one day old improved kienyeji birds and feeds).	Improved food security Increased agricultural production	Number of farmers reached through farmer groups Number one day old chicks promoted	Department of agriculture and livestock Directorate of climate change	CGK/FLOCCA	23/28	CGK/ FLOCCA	10	2	2	2	2	2
Energy	Promotion of community-based bio gas generator plant in kaloleni	Improved clean cooking Reduced carbon emission	Number of biogas generated plant constructed.	Directorate of environment and climate change	CGK/FLOCCA	25/26	CGK/ FLOCCA	5		2	3		

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kes million)	23/24	24/25	25/26	26/27	27/28
				Directorate of renewable energy									
SUB TOTAL									48.2				

Table 3.2.5 Priority adaptation Action implementation Matrix Kisumu West Sub County

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
26. West Kisumu Ward													
Water	Drilling a borehole at South Kapounja (Maembe Kodero Primary)	Pupils and community acess clean and safe water	1no borehole drilled	-Ministry of education, Department of WECCNR, School, BOM, Department of LAND and physical planning NEMA	Children, women, PLWD	23/24	CGK/GFLLOCA	5	**5**				
	Drilling of borehole at Dwele Primary.	Pupils and community acess clean and safe water	no borehole drilled	-Ministry of education, Department of WECCNR -School BOM, Department of LAND NEMA	Pupils and community acess clean and safe water	24/25	CGK/GFLLOCA	5		5			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	Rain water harvesting at (Huma) Arude primary school and Nyaduong school	Pupils and community acess clean and safe water	2 no schools equipped with rain water collection systems.	-Ministry of education, Department of WECCNR School BOM, -Department of LAND and Physical planning	Children, women, PLWD	24/25	CGK/GFLLOCA	4		4			
Environment	Desiltation and dykes of Magada 5km	Children, women, PLWD and youths	Length in KM of Magada river desilted and KM dykes constructed	Water Resource Authority -Department of WECCNR, -Local administration Department of LAND and physical planning, NEMA	Children, women, PLWD and youths		CGK/GFLLOCA	7			7		
	-Desiltation and dykes of 5km Kobonyo river	Controlled flood water during heavy rains	Length in KM of Kobonyo river desilted and KM dykes constructed	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND, -NEMA	Children, women, PLWD and youths	27/28	7.5						7.5
	Massive afforestation of Odhienyo Hills	Trees grown on Odhienyo hills	No of trees grown on Odhienyo hills	Water Resource Authority -Department of WECCNR -Local, administration -Department of LAND	Women and youths	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
Agriculture	-Promotion of dairy value chain (subsidized AI services)	Improved livestock breeds	No of livestock breeds improved	Department of Agriculture, livestock, fisheries and irrigation	Women and youths	23/28	CGK/GFLLOCA	10	**2**	2	2	2	2
	Promotion of horticulture (African leafy vegetables-dek) and Value addition	Improved production of African leafy vegetable	No of farmers practicing horticulture -Kgs of African leafy vegetables produced	Department of Agriculture, livestock, fisheries and irrigation	Women and youths	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1
	Promotion of poultry value chain (improved kienyeji day old chicks) and feeds	Increased poultry production	No of farmers practicing poultry keeping. -No of Eggs produced Kgs of poultry Meat produced	Department of Agriculture, livestock, fisheries and irrigation	Women, youths and PLWD	23/28	CGK/GFLLOCA	10	**2**	2	2	2	2
Transport	Construction of Bridge at Magada river	Community cross river Magada during floods	1no bridge constructed	Water Resource Authority Department of WECCNR, Department of roads and public works, -Local administration -Department of LAND and physical planning	Children, women, PLWD and youths	26/27	CGK/GFLLOCA	10					10

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	2.Construction of Foot bridge at wandega school	Community cross river Wandega during floods	1no bridge constructed	Water Resource Authority Department of WECCNR -Local administration Department of LAND,Department of roads and public works,-NEMA	Children, women, PLWD and youths	27/28	CGK/GFLLOCA	10					10
27. North west Kisumu ward													
Environment	1.Establishment of Maseno institution and Mbalawandu and tree fruit nursery	Fruit tree nurseries established	2 No trees fruit nurseries established	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning,-NEMA	Women and youth	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1
	Protection of Karateng A and B hills (massive afforestation of tree and fruit trees)	Trees grown on Karateng A and B hills	No of trees grown on Karateng A and B hills	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning	Women and youth	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	Protection of Ataro River bank through dyking (10km)	Controlled flood water during heavy rains	Length in KM of dykes constructed along Ataro river.	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND, NEMA -Department of roads and public works	Children, women, PLWD and youths	23/28	CGK/GFLLOCA	15	**3**	3	3	3	3
Water	Expansion of Kuoyo water project	Pupils and community acess clean and safe water	1no water project expanded	-Ministry of education, -Department of WECCNR -School BOM, -Department of LAND and physical planning,-NEMA	Children, women, PLWD, Elderly, youths	25/26	CGK/GFLLOCA	4			4		
	Expansion of Barandingo water project	Pupils and community access clean and safe water	1no water project expanded	-Ministry of education, -Department of WECCNR -School BOM, -Department of LAND and physical planning,-NEMA	Children, women, PLWD, Elderly, youths	23/24	CGK/GFLLOCA	4	**4**				

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	Expansion of Sunga water project.	Pupils and community access clean and safe water	1no water project expanded	-Ministry of education, -Department of WECCNR -School BOM, -Department of LAND and physical planning,-NEMA	25/26		CGK/GFLLOCA	4			4		
Agriculture	Promotion of horticulture (mango, avocado and passion fruits)- at Mbalawandu	Improved production of mangoes, avocados and passion fruits		Department of Agriculture, livestock, fisheries and irrigation	Women and youth		CGK/GFLLOCA	5	**1**	1	1	1	1
	Promotion of poultry value chain (improved kienyeji one day old chicks) and feeds at Eluhobe, Chulaimbo and bar Andingo	Increased poultry production	-No of farmers practicing poultry keeping. -No of Eggs produced -Kgs of poultry Meat produced	Department of Agriculture, livestock, fisheries and irrigation	Women and youth		CGK/GFLLOCA	10	2	2	2	2	2
	Promotion of dairy value chain (Dairy cattle) at Kuoyo, Sunga and Nyabera women groups	Improved dairy cattle livestock	No of dairy cattle distributed	Department of Agriculture, livestock, fisheries and irrigation	Women and youth		CGK/GFLLOCA	10	2	2	2	2	2

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
Roads	Construction of Komoga bridge near Kuoyo Primary school	Community and school pupil's cross river Komoga during floods	1no bridge constructed	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND -Department of roads and public works, NEMA	Children, PLWD, elderly, youth	25/26	CGK/GFLLOCA	10			10		
	Construction of Namesta Primary school Bridge-	Community and school pupil's cross river Nametsa during floods	1no bridge constructed	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND -Department of roads and public works, NEMA	Children, PLWD, elderly, youth	24/25	CGK/GFLLOCA	10		10			
	Climate proofing Sunga-Eluhobe access road 2.5km (Drainage and culverting)	Community access Sunga-Eluhobe Road during flood	KM of drainage and No of culverts along and across Sunga-Eluhobe Road	-Water Resource Authority -Department of WECCNR -Local administration Department of LAND -Department of roads and public works -NEMA	Children, PLWD, elderly, youth	24/25	CGK/GFLLOCA	4		4			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
28. South West Ward													
Environment	1.Desiltation and dykes of Otodo stream Approx. 3km by 8m wide	Controlled flood water during heavy rains	Length in KM of Otodo stream river desilted and KM dykes constructed	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND,-NEMA	Elderly, children, PLWD, youths, women	24/25	CGK/GFLLOCA	4.5	**4.5**				
	2.Desilatation and dykes of Kawasuna-Otodo- Rota stream Approx 3km by 5m wide	Controlled flood water during heavy rains	Length in KM of Kawasuna-Otodo river desilted and KM dykes constructed	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND,-NEMA	Elderly, children, PLWD, youths, women	26/27	CGK/GFLLOCA	4.5				4.5	
	3.Massive afforestation of Ribero hilltop	Trees grown on Ribero hills	No of trees grown on Ribero hills	-Water Resource Authority, Department of WECCNR, Local administration, Department of, LAND and physical planning	Women and youths	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1
Water	Drilling of borehole in Got Kokulo	Pupils and community access clean and safe water	1no borehole drilled	-Ministry of education, -Department of WECCNR -School BOM, -Department of LAND,-NEMA	Elderly, children, PLWD, youths, women	25/26	CGK/GFLLOCA	5			5		

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	Drilling of boreholes at kamwanda	Pupils and community access clean and safe water	1no borehole drilled	Ministry of education, -Department of WECCNR -School BOM, -Department of LAND,-NEMA	Elderly, children, PLWD, youths, women	25/26	CGK/GFLLOCA	5			5		
TRANSPORT	Climate proofing Rota access road (Drainage and culverting)	Community access Rota Road during flood	KM of drainage and no of culverts along and across Rota Road	-Water Resource Authority -Department of WECCN-Local administration Department of LAND -Department of roads and public works, NEMA	Elderly, children, PLWD, youths, women	24/25	CGK/GFLLOCA	4		4			
	Climate proofing Bara access road (Drainage and culverting) 1km	Community access Bara Road during flood	KM of drainage and No of culverts along and across Bara Road	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND,-Department of roads and public works,-NEMA	Elderly,children,PLWD, youths,women	27/28	CGK/GFLLOCA	4					4
Agriculture	Promotion of irrigation at Atemo (infrastructure	Improved irrigation infrastructures at Atemo	No of irrigation infrastructures established	Department of Agriculture,	Women and youths	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1
	Promotion of fishing at Rota beaches (fish banda)	Improved fishing at Rota beaches	No of fish banda constructed	Directorate od irrigation	Women and youths	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	. Promotion of fishing at Paga beaches (fish cages)	Improved fishing at Paga beaches	No of fish cages installed	Directorate od irrigation	Women and youths	23/28	CGK/GFLLOCA	5	**1**	1	1	1	1
	Promotion of fishing at Osiri beaches (fish cages)	Improved fishing at Osiri beaches	No of fish cages installed	Directorate of fisheries	Women and youths	23/28	CGK/GFLLOCA	1	**1**	1	1	1	1
Markets/Trade	1.Climate proofing of Kisian market (Drainage)	Controlled flood water in the market during heavy rains	KM of drainage around Kisian market	-Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning -Department of roads and public works,-NEMA	Women, children, youths and elderly	23/24	CGK/GFLLOCA	4	**4**				
29. North Kisumu Ward													
Environment	Establishment tree nursery at Nyahera	Tree nurseries established	1no tree nursery established	Water Resource Authority, Department of WECCNR, Local administration, Department of LAND and physical planning, NEMA	Youth and women		CGK/GFLLOCA	5	**1**	1	1	1	1
	Establishment of a material recovery center at Dago	Material recovery center established	1no Material recovery center established	Department of WECCNR -Local administration	Youth and women	24/25	CGK/GFLLOCA	5		5			
Water	Rehabilitation and expansion of Nyahera Mkendwa water supply	Pupils and community access clean and safe water	1no water project expanded	Department of WECCNR -Kiwasco-Gulf water company	Kawasho	23/25	CGK/GFLLOCA	10	**5**	5			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
		within Nyahera and Mkendwa areas		-Department of LAND and physical planning NEMA									
	Protection of Kosida springs (Rehabilitation, construction of tank and solar installation)	Pupils and community access clean and safe water within Kosida area	1no water spring protected	Water Resource Authority, Department of WECCNR -Local administration, Department of LAND and physical planning, Department of roads and public works-NEMA	Women, PLWD, children, elderly		CGK/GFLLOCA	10	**10**				
	Completion of Wachara VTC water project	Students and community access clean and safe water within Wachara area	1no water project completed	Ministry of education, Department of WECCNR, School BOM, Department of LAND and physical planning, NEMA	Women, PLWD, children, elderly	24/25	CGK/GFLLOCA	3		3			
Agriculture	Promotion of dairy value chain (Improved Dairy cattle and goats) to	Improved dairy cattle livestock and goats	No of improved dairy cattle livestock and goats distributed	Department of Agriculture, livestock, fisheries and irrigation	Women, PLWD, children, elderly	23/28	CGK/GFLLOCA	10	**2**	2	2	2	2
	Value addition to cheese and butter-high returns. To SEKE women group	Improved cheese and butter returns	Kgs of cheese and butter produced by Seke women group	Department of Agriculture, livestock, fisheries and irrigation	women	23	CGK/GFLLOCA	2	**1**	1			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
	Promotion of irrigation at Seke and Ulalo (infrastructure establishment)	Improved irrigation infrastructures at Seke and Ulalo	No of irrigation infrastructures established	Department of Agriculture, livestock, fisheries and irrigation	Youth and women	23/28	CGK/GFLLOCA	10	**2**	2	2	2	2
Transport	Construction of Seke bridge near Sidika primary school and a foot bridge	Community and school pupils cross river Seke during floods	1no bridge and constructed	Water Resource Authority Department of WECCNR, Local administration, Department of LAND, Department of roads and public works	Women, children, youth and PLWD	25/26	CGK/GFLLOCA	10			10		
Education	School feeding program	Improved nutrition amongst children	Kgs of food distributed	Department of education -School BOM , Department of social services	Children	23/28	CGK/GFLLOCA	100	**20**	20	20	20	20
				30. **Central Kisumu Ward**									
WATER	Desiltation and construction of dykes along Tiengre-Lower kotetni stream (2km)	- Controlled flood water during heavy rains	Length in KM of Tiengre-Lower Kotetni stream desilted and KM of dykes constructed	Water Resource Authority Department of WECCNR Local administration Department of LAND and physical planning NEMA	Women, children, PLWD, youths, Elderly	25/26	CGK and G-FLLOCA	3			3		
	Desiltation of Kemri-ochara pan	Controlled flood water during heavy rains	1No of pan Desilted	Water Resource Authority -Department of WECCNR -Local administration	Women,children,PLWD, youths,Elderly	24/25	CGK and G-FLLOCA	3M		3M			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
				-Department of LAND and physical planning NEMA									
	Lamara culvert rehabilitation and stream desilting to prison gate barrier(1.5km)	Controlled flood water during heavy rains	Length in KM of Kemri-Lambara junction to Kodiaga prison stream. desilted and KM of dykes constructed	Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning NEMA	Women, children, PLWD, youths, Elderly	25/26	CGK and G-FLLOCA	3			3		
Environment	Greening of Otonglo market	Trees grown at Otonglo market	No of trees grown at Otonglo market-	Water Resource Authority -Department of WECCNR -Local administration -Department of LAND NEMA	Women and youths	23/24	CGK and G-FLLOCA	1	1				
Transport	Construction of Kadhiambo Bridge	Community cross river Kadhiambo river during floods	1No bridge constructed-	Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning	Women, children, PLWD, youths, Elderly	24/25	CGK and G-FLLOCA	10		10			

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (kshM)	23/24	24/25	25/26	26/27	27/28
				-Department of roads and public works,-NEMA									
	Construction of Konoka- Kambi bridge	Community cross Konoka- Kambi river during floods-	1no bridge constructed	Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning -Department of roads and public works,-NEMA	Women, children, PLWD, youths, Elderly	27/28	CGK and G-FLLOCA	10					10
	Construction of Tiengre-Rota Bridge	Community cross Tieng're-Rota river during floods	1no bridge constructed-	Water Resource Authority -Department of WECCNR -Local administration -Department of LAND and physical planning -Department of roads and public works,-NEMA	Women, children, PLWD, youths, Elderly	24/25	CGK and G-FLLOCA	10		10			
SUB TOTAL									79.5				

Table 3.2.6 Priority adaptation Action implementation Matrix Nyakache Sub County

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
31. **North Nyakach**													
WATER	Rehabilitation and expansion of Nyakach Water supply (Sigoti Health Centre to Kandaria VTC	Increased access to safe and clean water	No. of 5KMs of pipes laid.	Water Directorate Education Directorate Health Directorate WRA	-300 vulnerable households -4 primary schools (2000students) -1 VTC (200 students) -2 Health centres	23/24	CGK FLLOCA	5M					5M
	Protection of a spring at Soko Komwono in East Nyakach	Increased water supply	Area in M2 protected 5000 trees grown 100 people sensitized	Water Directorate Environment Directorate NEMA KENGEN WRA	-100 vulnerable households	24/25	CGK FLLOCA		2				2M
	Upgrading of water projects; Kowire borehole	Increased to safe and clean water	No. of households connected to the pipeline.	Water Directorate WRA NEMA	-100 vulnerable households	25/26	CGK FLLOCA			4M			4M
Climate Change	De-siltation of Koyombe and Kamula Water pans	Controlled downstream flooding	No of pans desilted	CC, Irrigation, Environment Directorate, NEMA, WRA, Interior and Coordination, Special Programmes, Administration	-100 vulnerable households -300 peasant farmers -4 Primary schools (2000 students)	23-25	CGK FLLOCA	10M	10				20M
	Construction of a dyke along	Reduced downstream	Length in Kms of the river covered	CC Directorate Water Directorate WRA	-50 vulnerable households	24/25	CGK FLLOCA		10				10M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
	River Nyando –5KM stretch at Siany in Wasare	flooding 5Kms covered		NEMA	-100 peasant farmers -2 Primary schools (1000 students)								
Environment	Establishment of an integrated waste transfer facility at Gem Rae	Reduced waste accumulation	1 Waste transfer facility	Environment and Natural Resources Water Directorate WRA, NEMA Health and sanitation	300 vulnerable households -100 peasant traders	23/25	CGK& FLLOCA	10M	10				20M
	Institutional greening project (Katito VTC, 10 Primary schools, 3 health facilities in North Nyakach	Increased forest cover	No. of trees grown	Environment and Natural Resources	-1 VTC (300Students) -10 primary schools (5000 students) -3 health centres	25/26	CGK & FLLOCA			3M			3M
	Beautification project of Katito Town (growing of flowers and ornamental trees along the 2 highways and 2 streets.	Increased aesthetic value	No. of trees grown	Environment and Natural Resources, NEMA, KENHA, physical planning, public works	-1000 small scale traders	26/27	CGK & FLLOCA				5M		5M
Agriculture	Promotion of intermittent irrigation systems to registered farmer groups	5 technologies promoted Increased crop production	No. of technologies promoted	Irrigation Directorate, agriculture, and water	-Women	23/24	CGK FLLOCA	5M					5M
	Promotion of apiculture value chain (Suppy of apiary kits) to farmer groups	Increased honey production	No. of hives installed	Livestock Directorate, administration, directorate of industrialization	-Women -Youths	24/25	CGK FLLOCA		2				2M
	Establishment of a bull scheme for registered dairy farmers in Kandaria	Bull scheme established Improved dairy and beef production	1. No. of bull schemes established.	Livestock and Veterinary Directorates	--Smallholder livestock farmers	25/26	CGK FLLOCA			1M			1M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
32. Nyakach Central Ward													
Water	Rehabilitation and Expansion of Nyakach Water supply (Harambee, Bugo, Kusa and Kusa Beach)	Increased access to safe and clean water	No. of KMs of pipes laid.	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	-300 vulnerable households -10 primary schools (5000students) -3 Health centres	23/24	CGK FLLOCA	10M					10M
	Rain water harvesting in Primary Schools	Increased access to safe and clean water	No. of schools harvesting water	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	15 Primary schools (7500 students)	24/25	CGK FLLOCA		2				2M
	Upgrading of Moro primary Water project	Increased access to safe and clean water	No. of people accessing water	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	200 vulnerable households	25/26	CGK FLLOCA			3M			3M
Climate Change	Upgrading of Harambee water pan	Increased access to safe and clean water	No. of people accessing	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	500 vulnerable households 50 Tree nursery operators	25/26	CGK FLLOCA	10M					10M
	Upgrading of kobambo water pan in West Kandaria	Increased access to safe and clean water	1 No. water pans upgraded	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	10 vulnerable households Small scale irrigation farmers	24/25	CGK FLLOCA		10				10M
Environment	Beautification of road reserves from Asao	Increased tree cover and	No. of trees grown	Environment and Natural	Small scale traders	23/24	CGK	5M					5M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
	Bridge to Kolweny market	improve aesthetic value		Resources, WRA, NEMA, Directorate of environment, KenGen, physical planning, KenHA,	Road users Roadside community		FLLOCA						
	Rehabilitation of old quarry sites and sand harvesting sites in Onywungo and Nyaksure areas	Reduced land degradation and increased tree cover 10 sites rehabilitated	Area in ha. Of land reclaimed	Environment and Natural Resources, WRA, NEMA, Directorate of environment, physical planning, public works	500 Youths Land owners	24/25	CGK FLLOCA		**10**				10M
	Beautification of Kusa and Komwaga Beach	Increased tree cover and improved aesthetic value	No. of trees grown	Environment and Natural Resources, WRA, NEMA, Directorate of fishery, KenGen, physical planning	Fish traders	25/26	CGL FLLOCA			3M			3M
Agriculture	Promotion of apiculture value chain (Suppy of apiary kits) to farmer groups	Increased honey production	No. of hives installed	Livestock Directorate, KFS	-Women -Youths	24/25	CGK FLLOCA	2M					2M
	Promotion of intermittent irrigation to registered farmer groups	Increased crop production	No. of technologies promoted	Irrigation Directorate, water, environment directorate	Smallholder livestock farmers	24/25			5				5M
	Establishment of a bull scheme for registered dairy farmers in Kabodho West	Improved dairy and beef production 1 Bull scheme established	1. No. of bull schemes established.	Livestock and Veterinary Directorates	--Smallholder livestock farmers	25/26	CGK FLLOCA			1M			1M
Infrastructure Roads	Construction of check dams along Bodi-Polopiach-Pap Onditi-Wasare	Reduced erosion of the roads	No. of check dams done	Roads and Infrastructure, WRA, NEMA, Directorate of environment, KenGen, physical	Road users	23/24	CGK FLLOCA	**0.1M**					0.1 M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
				planning, roads and public works									
33.West Nyakach Ward													
Water	Expansion of Right Bankwater project from Apoko to Njogo and Apondo Kasaye	Increased access to safe and water	No. of KMs of pipes laid. No. of people accessing the water	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	200 vulnerable households	23/24	CGK FLLOCA	3M					3M
	Expansion of Sang'oro water project from Sango buru to Nyawalo primary to Nyamanyinga, Nyadina primary to Obange Primary	Increased access to safe and clean water	No. of KMs of pipes laid.	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	-300 vulnerable households -10 primary schools (5000 students)	24/25	CGK FLLOCA		2				2M
	Upgrading of Obanda 'B'Borehole (Solar water pumping and water tank)	Increased access to safe and clean water	No. of KMs of pipes laid	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning, green energy	-100 vulnerable households -	25/26	CGK FLLOCA			2M			2M
	Improvement of Nyaguda springs	Increased water supply	Area in M2 protected	Water Directorate WRA, NEMA, Directorate of environment, KenGen, physical planning	-100 vulnerable households	26/27	CGK FLLOCA				2M		2M
Climate change	Upgrading of Oriang' earth dam	Increased access to safe and clean water	No. of dam done.	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	- 200 vulnerable households -100 peasant farmers	23/24	CGK FLLOCA	4M					4M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
					-Small scale irrigation farmers								
	Construction of a resilient earth dyke along the shore line from kokuta beach to Nyadina	Reduced lake water intrusion/ backflow .	No. of Km done	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	-50 vulnerable households -100 peasant farmers -2 Primary schools (1000 students)	24/25	CGK FLLOCA		7M				7
	De-siltation of Sondu-Miriu River mouth	Reduced downstream flooding	KM Stretch desilted	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	Small scale farmers Downstream communities	25/26	CGK FLLOCA			10M			10M
Environment	Development of a management Plan for Koguta forest	Increased forest cover	No. of plans developed	Environment and Natural Resources	Adjacent forest community	23/24	CGK FLLOCA	2M	2M	2M			6M
	Institutional greening project in VTCs, Primary schools and health facilities	Increased forest cover	No. of trees grown	Environment and Natural Resources, WRA, NEMA, Directorate of education, KenGen, physical planning	-1 VTC (200Students) -10 primary schools (3000 students) -3 health centres	24/25	CGK FLLOCA	3M	3M				6M
Agriculture	Fitting of irrigation water supply pipes for the proposed Sondu-Miriu irrigation project	Increased crop production	1. No. of service lines laid	Irrigation Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	Small scale irrigation farmers	23/24	CGK FLLOCA	5M					5M
	Stocking of fish ponds, dams and pans in West Nyakach ward	Increased fish stocks	No. of fingerlings stocked	Fisheries Directorate, WRA, NEMA, Directorate of	Fish farmers	24/25	CGK FLLOCA		5M				5M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
				environment, KenGen									
	Beautification of Sango Rota beach and biogas installation	Improved aesthetic value of the beach	No. of beneficiaries	Fisheries and Renewable Directorate, WRA, NEMA, Directorate of environment, physical planning	Fisherfolks Shoreline community Small scale traders	25/26	CGK FLLOCA			5M			5M
34. South East Nyakach													
	Rehabilitation of water pan at Ramogi, South East, Koguta	Increased access to safe and clean water	No. of water pans rehabilitated	Water Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	Small scale farm holders, vulnerable households	23/24	CGK FLLOCA	10M	10M	10M		40M	
	Construction of water kiosk at Nyamaroka centre	Increased access to safe and clean water	No. of water kiosks constructed	Water Directorate WRA, NEMA, Directorate of environment, KenGen, physical planning	Small scale farm holders and market traders, vulnerable households	24/25	CGK FLLOCA		1M				1M
Climate change	Establishment of Bamboo Forest in Siany Nyalenda	Increased forest cover	Area in acres grown	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	Small scale farm holders, vulnerable households, conservation groups	23/24	CGK FLLOCA	10M					10M
Environment	Establishment of a park at pap ndege	Improved aesthetic value	Area in acres of land	Environment and Natural Resources WRA, NEMA, Directorate of trade, KenGen, physical planning	Small scale farm holders, vulnerable households, trader	23/24	CGK FLLOCA	10M					10M
	Establishment of a tree nursery in Sondu	Increased tree seedlings and tree cover	No. of nurseries established	Environment and Natural Resources,	Youth Women	24/25	CGK FLLOCA		5M				5M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
				directorate of water,									
	Provision of refuse skip bins in Nyabondo market and Sigoti market	Reduced solid waste accumulation	No. of skip bins installed	Environment and Natural Resources	Market traders	25/26	CGK FLLOCA			3M			3M
Agriculture	Provision of Bulls scheme to Nyabondo dairy farmers	Improved dairy and beef production	1. No. of bull schemes established.	Livestock and Veterinary Directorates	Small holder livestock farmers	23/24	CGK FLLOCA	**1M**					1M
	Provision of poultry to registered CBOs in South East	Improved poultry production	No. of birds provided	Livestock Directorate	Youth Women	24/25	CGK FLLOCA		1M				1M
	Stocking of fish ponds and water pans in South East Nyakach ward	Increased fish stocks	No. of fingerlings stocked	Fisheries Directorate, NEMA, WRA, directorate of environment	Fish farmers	25/26	CGK FLLOCA			5M			5M
Infrastructure	Culverts at Sondu-Akiayi road	Reduced upstream flooding and enhanced accessibility	No. of culverts constructed	Roads and Infrastructure Directorates	Road users	23/24	CGK FLLOCA	2M					2M
	Construction of gabions along the feeder roads (Kaseda, Bamba, Dirubi, Nyamaroka, Bodi, Polo Piach)	Reduced erosion on the feeder roads	No. of gabions constructed	Roads and Infrastructure Directorates, physical planning	Road users	24/25	CGK FLLOCA		7M				7M
Energy	Provision of energy saving jikos to women in south east ward	Increased number of women using the energy saving jikos technology	No. of jikos provided and households adopting the technology	Renewable Energy Directorate	Women	23/24	CGK FLLOCA	**5M**					**5M**
	Establishment of a biogas centre at Sondu for waste management	Increased uptake of renewable energy technology and reduction of organic waste	No. of biogas plant installed	Renewable Energy Directorate, trade and environment	Market traders Women Community adjacent to the market	24/25	CGK FLLOCA		10M				10M
35. South west Nyakach ward													

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
Water	Construction of water kiosk at oboch and othith, kagak, alara, miriu	Increased access to safe and clean wate	No. of water kiosks constructed	Water Directorate	Market traders Vulnerable households	23/24	CGK FLLOCA	5M					5M
	Promotion of rain water harvesting in VTCs, primary schools and health centres	Increased access to safe and clean water	No. of institutions harvesting water	Water Directorate, education, health, and environment	-100 vulnerable households - 10 primary schools (2000 students) -1 VTC (200 students) -2 Health centres	24/25	CGK FLLOCA		5M				5M
Climate change	Upgrading of water pan at siany	Increased access to safe and clean water	Number of people accessing the water resource	CC Directorate, WRA, NEMA, Directorate of environment, KenGen, physical planning	- 200 vulnerable households -100 peasant farmers -Small scale irrigation farmers	23/24	CGK FLLOCA	10M					10M
	Improvement and equipping of Ogoro tree nursery	Increased tree seedlings production and increased forest cover	No. of tree seedlings generated	Environment and Natural Resources WRA, NEMA, Directorate of environment, KenGen, physical planning	Youth Women	24/25	CGK FLLOCA		5M				5M
Environment	Establishment of a community forest at Siany	Increased tree seedlings production and increased forest cover	Area in acres under forest	Environment and Natural Resources, WRA, NEMA, KenGen, physical planning	Youth Women	23/24	CGK FLLOCA	5M					5M
	Establishment of a public recreational center at Achich market in siany	Improved aesthetic value	1 No. recreational center	Environment and Natural Resources, WRA, NEMA, Directorate of environment,	Market traders Adjacent community to the market	24/25	CGK FLLOCA		10M				10M

Sector	Adaptation Priority/Enabling Action	Expected Results (Output)	Key Performance Indicator	Responsible Institutions	Targeted groups	Time Frame	Source of funds	Indicative Budgets (Kes Million)					
								Total (ksh M)	23/24	24/25	25/26	26/27	27/28
				KenGen, physical planning, trade									
Agriculture	Promote soil conservation practices with farmers at ngope, koduong, bar kawadinga, kobongo, apoko, kodul, kamgan locations.	Reduced land degradation and soil erosion .	No. farmers adopting soil conservation practices No. of soil conservation practices promoted	Agriculture Directorate, water and environment	Women Youth Elderly	23/26	CGK FLLOCA	2M	2M	1M			5M
Sub Total									136				
GRAND TOTAL									783.2m				

3.3 Enabling Factors

The County climate change policy and the Climate change Act, 2020 provide clear coordination mechanism and roles of institutions from the ward level to the steering or climate Council level chaired by the Governor. The Ward Climate Change planning Committees (WCCPC) have the role of mobilizing the affected communities as key stakeholders in PCRA. The County climate planning committee trains and capacity build the WCCPC to ensure they have capacity to help communities to identify their needs from the vulnerabilities and risks that affect them. When the needs have been identified they are prioritized and costed in form of projects.

The coordination of climate change activities in Kisumu County is currently spearheaded by the directorate of Climate Change as secretariat under the County department of Water, Environment, Climate Change and Natural resources while the department of Infrastructure and Energy coordinates the energy issues at the County. The departments are the focal points on climate change and energy issues respectively at the county. Collaborating with partners, the county has also developed and passed a Climate Change Policy and legislative framework, as well as formulated Climate Change Fund regulations to guide the climate finance flows within the county.

Under Sector Programs, The Water, Environment, Climate Change and Natural Resource department has a goal to enhance climate Actions to a low carbon resilience pathway. The department is carrying out a program on mainstreaming climate change Adaptation and Mitigation. With the county government developing a county climate change policy and legislation, the department has established ward and village climate committees, domesticated the National Climate Change Action Plan (2018-2022) and also has developed Kisumu County Integrated Climate Change Action Plan. Kisumu County as a recipient of most of these effects gets heavy rainfall and pollution in the upper regions washed away into the lake making it highly vulnerable to adverse impacts of climate change. Therefore mainstreaming of climate change into development planning is critical in mitigating the impacts. It is important to appreciate the national government effort in operationalizing the Climate Change Act, 2016 which Kisumu County is characterized by a rapidly growing population, high population density, water scarcity, falling food production, and low resilience to climate change. The combined effects of climate change and rapid population growth are increasing food insecurity,

environmental degradation, and poverty levels in the county. The Kisumu County Integrated Development Plan (CIDP) 2018-2022 identifies environmental degradation and climate change as key development challenges.

3.4 County Climate Change Fund Mechanism (CCCFM)

A priority action will be to operationalize the County Climate Change Fund to be overseen by the Kisumu County Climate Change Council, which will allocate funding for priority mitigation and adaptation and access to energy initiatives. The action includes the establishment of regulations, and management and oversight functions.

The County through the County Climate Change Council will seek funds from the National Treasury and Planning as the National Designated Authority (NDA) to the Green Climate Fund (GCF). Capacity is needed to track and report on sources, applications, and impacts of climate finance mobilized and received at the county. Climate finance will include all finance that targets low carbon climate resilient development, and consists of domestic budget allocations, public grants and loans from

bilateral and multilateral agencies, and private sector investments. Important sources of international climate finance for Kisumu County include the Green Climate Fund (GCF) and the Global Environment Facility (GEF) which the County government will target; these, these are the entities entrusted with the operation of the Financial Mechanism of the UNFCCC. Other mechanisms of interest to the county government through the national government under the UNFCCC include the Special Climate Change Fund (SCCF), the Adaptation Fund (AF), and the REDD+ mechanism.

The County Government through the County Climate Change Act, 2020 has established a climate change fund through a special purpose Account (SPA) at the Central Bank. This Fund account receives all monies on climate change from different sources including, donor funding(e.g FLLOCA), Other partners willing to work with the county, the National Treasury probably through the National Climate Change Fund etc. The funds are spent according to the guidelines of the Public Finance Management Act, 2015 and related government guidelines.

A fund a administrator is nominated by the CECM Finance to administer the fund and ensure fiduciary and accountability of the resources is met. The expenditures are done according to the County Climate Fund Regulation,2023.

3.5 Climate Information Service (CIS)

3.5.1 Framework For Provision Of Climate Services In Kisumu County

3.5.1.1 Aim of CIS Framework

The aim of this framework is to mainstream climate services for decision- making within Kisumu County and to support climate actions. It is to enable better management of risks of Climate variability and change at the village, ward, Sub County and county levels. It will also support the development and delivery of timely, accessible, relevant information incorporating science based climate information and prediction services into planning and practice for the citizens.

The main objectives of providing climate information in Kisumu County include:

- To provide climate information required for Agricultural services.
- To provide climate information for early warning and disaster risk reduction (DRR) in Kisumu County.
- To provide climate information for County Level Socio-Economic Development including Economic Planning, Food Security, Natural Resource Management and Infrastructure Planning/Development in Kisumu County.
- To enable KMD to work in partnership with the Directorate of Climate Change within the Department of Water, Climate Change, Environment and Natural Resources in dissemination of climate information services.

3.5.1.2 Support Co-Production Of Climate Services

Within the framework of principles of co-production, the County government of Kisumu will work together with KMD to influence the way climate information services are designed, commissioned and delivered to the citizens. This process will build on communities' abilities, and recognize the people's assets in the service delivery including indigenous knowledge and skills. Participants in the co-production of services will work as peers and provide support to one another while facilitating the delivery of Climate information services in the county.

3.5.1.3 Developing User-Relevant Climate Information Service (CIS)

In accord with the above principals, the KCCISP recognizes that the delivery of Climate Information Service which can effectively support decision making requires the engagement

of a wide range of stakeholders. Stakeholders of the KCCISP encompass: County Government Administration at county, sub-county, ward and village levels, County Ministries across sectors together with their respective extension services, decentralized Government agencies, religious leaders across different faith groups and denominations, local, community and livelihood associations, private sector bodies, national and international NGOs, universities and research institutes. As such, the Kisumu County Meteorological Office will develop and deliver the KCCISP through linkage with and supporting the activities of these stakeholder groups and Provide early warning information for flood and drought management (weekly/seasonal timelines), storms, strong winds over the land and the lake.

3.5.1.4 The Mechanisms for dissemination of CIS

Climate Information Services are expected to reach communities from scientific information/data from KMD. The impact of CIS will be achieved through effective and efficient dissemination mechanisms. It is therefore essential that climate information reach the intended audience that will include development practitioners, farmers, county planners, national and county government officials and any other stakeholder who would use the information.

3.5.1.5 Implementation & coordination mechanisms

Measurements/Monitoring, Reporting and Verification (MRV++)

Types of MRV Systems

Type of MRV Systems	What will be measured	What will be reported	What will be verified
MRV of Emissions: Will be conducted at the county, sectoral/department level to understand the county's emissions profile, which will then be	Emissions and emission reductions from sources at county's sectoral levels based on Intergovernmental Panel on Climate	Emissions from emission sources at county's sectoral levels based on UNFCCC intended contributions (e.g. through NCs, BURs, BTRs and GHG Inventory)	Emissions from emission sources at the county's sectoral levels based on the

reported to the national government in the form of an emissions inventory.	Change (IPCC) guidelines.		county's emission targets and indicators compared with baselines set in BEI
MRV of mitigation actions: (e.g. policies and projects) to assess their GHG effects and sustainable development (non-GHG) effects as well as to monitor their implementation. This type of MRV focuses on estimating the change in GHG emissions or other non-GHG variables.	Emission reductions according to emission baseline scenario; progress on achievement of sustainable development goals/ co-benefits.	Data on emission savings and methodologies/sustainability objectives, coverage, institutional arrangements and activities, based on the qualitative and quantitative guidelines for submission of BURs.	All quantitative and qualitative information reported for the mitigation action
MRV of support: To track climate change expenditure, provision and receipt of climate support, to monitor results achieved and to assess impact.	The flow of finance and levels of technology transfer that can be accounted for by interventions related to mitigation actions.	The forms of finance, its purpose, sectoral and geographic distribution, leverage of private funding and disbursement	The scale of support between donors and recipients, the effectiveness of support and cost-

			benefit impacts.

Kisumu County's transparency framework is based on the Measurement, Reporting, and Verification plus (MRV+) system defined in NCCAP 2013-2017 as "an integrated framework for measuring, monitoring, evaluating, verifying and reporting results of mitigation actions, adaptation actions and the synergies between them."

The MRV+ system includes MRV of emissions and removals of GHGs by mitigation actions, and is an enabling action as presented in tables 29, 30 and 31. Kenya reports to the UNFCCC through National Communications and Biennial Update Reports, which include GHG inventories in the agriculture; energy, which includes energy use in the transport sector; land use, land-use change and forestry (LULUCF); industrial processes; and waste sectors, As a result Kisumu County will be able to provide county data as mentioned in paragraph one above.

The MRV+ system generates information for national and international reporting requirements. Reporting to the National Climate Change Council needs to demonstrate that climate change action and spending on climate change leads to real results. For mitigation, this means demonstrating that GHG emissions are lower than the projected baseline, and that Kisumu County is contributing to the delivery of Kenya's NDC.

An appropriate Measurement, Reporting and Verification Plus (MRV+) system that includes adaptation, mitigation and Energy Access actions could be introduced in a phased approach over the lifespans of the Kisumu County Climate Change Integrated Action Plan. The actions should lead to adaptation and mitigation benefits that can be measured, with baseline information and specific, measurable, attainable, realistic and time-bound (SMART) indicators. County Level indicators will be identified to provide a snapshot of progress on climate change.

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Chapter Four: Conclusion

Kisumu County climate change Action plan 2023-2027 provides opportunity to the community which participated in the participatory climate risk assessment (PCRA) to identify areas of climate investments and how they can be implemented and monitored during and after completion. Its also a reference document that can be used by non state actors to invest and support vulnerable groups to come out of poverty. Innovative and sustainable projects have been identified but the task of refining them into project proposals and bankable documents remain to the County climate change planning committees. Having passed the County climate change Act of 2020, the County is obliged to allocate 2% of its development expenditure to implement these investments that cut across all the 35 wards as well as flagship projects for the county through sectors such as agriculture, helath, environment, water and infrastructure

particularly geared towards disaster risk management. Tools for monitoring, reporting and verification have been identified being in line with the NCCAP 2022-2027.

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