



## Wetlands and Riverbanks Restoration and Sustainable Management Action Plan for Kasese Municipality (2023 to 2028)

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July 2023

## **FOREWORD**

Kasese Municipality has a sizable area of its land surface (7%) covered by wetland ecosystem. About 8.3% of the population in the Municipality lives along the fringes of the wetlands and riverbanks systems of the Nyamwamba valley where livelihoods are natural resource-based including agriculture, mining of sand and clay as well as harvesting of wetland vegetation. Other non-natural resource-based livelihoods include, associated trade (merchandise), Wage labor, salaried jobs, skill non-farm jobs, and remittance involves temporary out-migration by the members of the households,

The degradation of the Wetlands and Riverbanks and associated natural environment in Kasese Municipality has partially contributed to the decline in the quality of life of these resources and their capacity to offer the related ecosystem service's as well as, the the quality of life for the residents of Kasese Municipality. In Kasese Municipality, Wetlands and Riverbanks represent an area of interaction between land – and aquatic – based natural systems on which the community depends. For instance, in Kasese municipality, it's the wetlands that “remove pollutants from surface water (e.g., through sediment trapping, nutrient removal) and thus improving the quality of water for human consumption”. This natural process also reduces water treatment costs. Fluctuations in water quantity are reduced through the increased capacity of wetlands to reduce peak flows during rainy seasons and hold water for longer during dryer seasons (like a sponge). Therefore, restoring and protecting the Wetlands and Riverbanks in this municipality presents an opportunity of improving and safeguarding the quality of the water on which community livelihoods depend. This “Wetlands and Riverbanks Restoration and Sustainable Management Action Plan for Kasese Municipality (2023–2028)” seeks to balance the ecological integrity of the Wetlands and Riverbanks with the livelihood related needs of the community.

I therefore urge all stakeholders, including government agencies, development partners, civil society organizations, community-based organizations, the private sector, and others to support the implementation of the Action Plan by mainstreaming the recommended interventions into their planning and budgeting processes.

.....

Name: Chance Kahindo

Mayor, Kasese Municipality Local Government

## **ACKNOWLEDGEMENT**

The Wetlands and Riverbanks restoration and Sustainable Management Action Plan for Kasese Municipality (2023 – 2028) was developed by Kasese Municipal Council and Kasese District Local Government, through a community-driven process. Technical and financial support was provided by expertise France under the Covenant of Mayors in Sub-Saharan Africa (CoM SSA) initiative.

The stakeholders of Kasese District Local Government and Kasese Municipal Council as well as communities made valuable contributions throughout the entire process of preparing the plan.

Name: Kayiri Zedekia

Sgn. -----

Kasese Municipality Local Government

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## **ABBREVIATIONS AND ACRONYMS**

BMZ	Federal Ministry for Economic Cooperation and Development
COVID	Corona Virus Disease
DLG	District Local Government
EU	European Union
FGD	Focused Group Discussion
FPU	Fisheries Protection Unit
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
IEC	Information, Education, and Communication
LC	Local Council
LEC	Wetlands and Riverbanks Environment Committee
LMC	Landing site Management Committee
M&E	Monitoring and Evaluation
MWE	Ministry of Water and Environment
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
UGX	Uganda Shillings
VSLA	Village Savings and Loan Association

## **CHAPTER ONE: INTRODUCTION & BACKGROUND**

### **1. INTRODUCTION**

This document outlines a five-year (2023 – 2028) Wetlands and Riverbanks Restoration and Sustainable Management Action Plan for Kasese Municipality in Kasese District. It seeks to balance the ecological integrity of the Wetlands and Riverbanks with the livelihood related needs of the community. The document was prepared through a participatory stakeholder driven process. It is based largely on insights from Wetlands and Riverbanks stakeholders during group and individual meetings and field observations. Kasese District and Municipal Local Government officials provided higher level insights during the stakeholder consultative meetings. Annex 1 highlights the stakeholder meetings held during the preparation of the wetland inventory and Action Plan. Stakeholder insights and view are infused with lessons and experiences from other parts of the country and in the East African region.

This Action Plan is organized in six sections: **Section One** presents the contextual background of Kasese District and Kasese Municipal Council, explaining the rationale for Wetlands and Riverbanks management, and highlighting the relevant legal and institutional framework for Wetlands and Riverbanks management (and generally, environment management) in Uganda. **Section Two** presents the methodology through which this inventory and Action Plan was prepared. **Section Three** describes the status of the Wetlands and Riverbanks in Kasese Municipality focusing on population, socioeconomic status, sanitation, on-going activities and their consequences, and environmental related issues affecting the Wetlands and Riverbanks. **Section Four** introduces the vision and objectives for Wetlands and Riverbanks management in Kasese Municipality according to the stakeholders. **Section Five** describes the selected (agreed upon) Wetlands and Riverbanks sustainable management and restoration interventions for wetlands and riverbanks in this municipality and their implementation modalities. Lastly, **Section Six** provides the financing and implementation plan, including the cost implications, anticipated funding sources, and main actors and their envisaged roles and responsibilities.

## 1.1 Location and size of Kasese Municipality

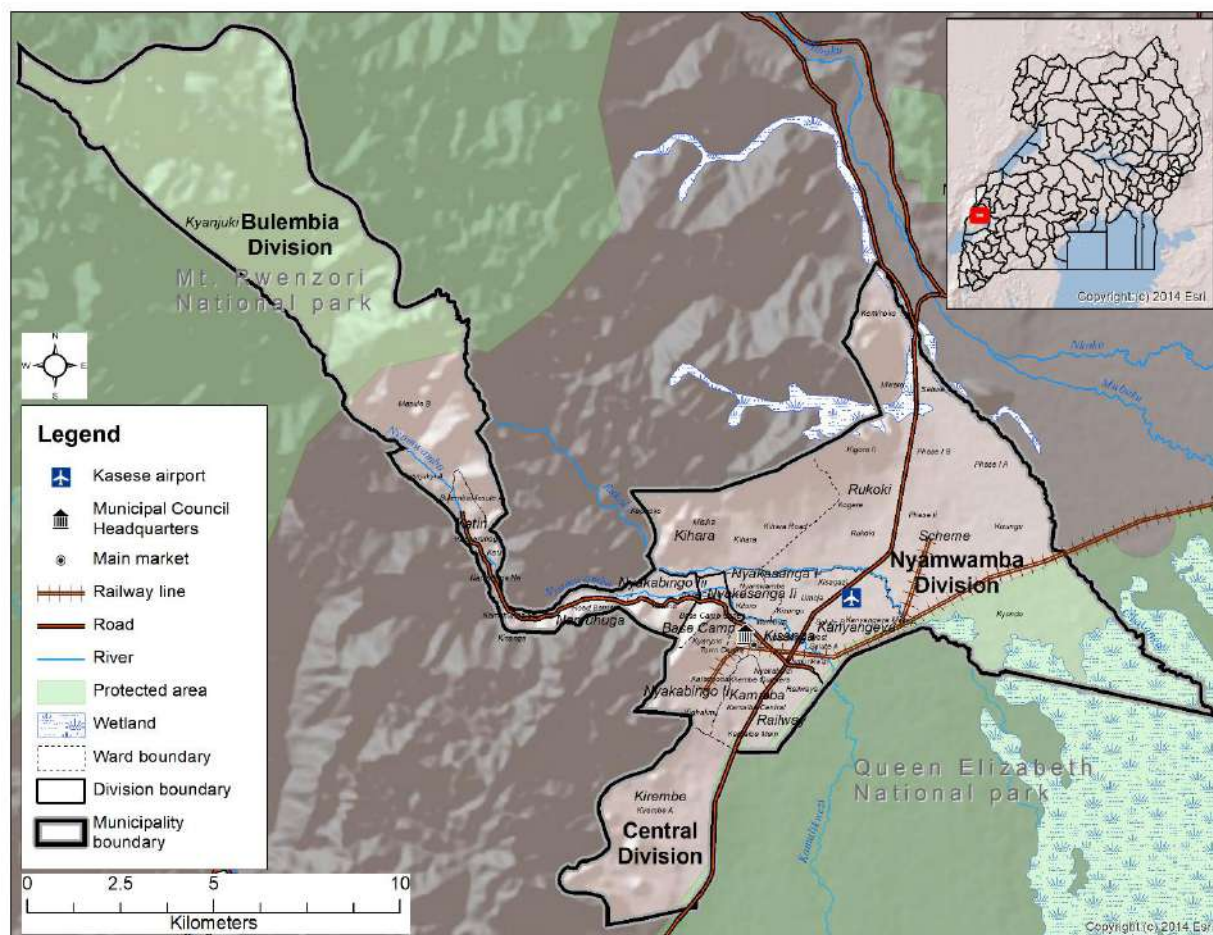


Figure 1: Map of Kasese Municipality showing the different divisions.

Kasese is a town north of Lake George in the Western Region of Uganda. It originally grew around the copper mine at Kilembe, while attention later turned to cobalt mining. It is the chief town of Kasese District, and it hosts the district headquarters. Kasese is also the largest town in the Rwenzururu region. Kasese Municipality covers a total area of approximately 3,500.22 Sq. km. The city is near the Rwenzori Mountains and Queen Elizabeth National Park. Kasese is located approximately 370 kilometers, by road, west of Kampala, Uganda's capital, and largest city. This is about 60 kilometers by road, north-east of Mpondwe, the border town at the international border between Uganda and the Democratic Republic of the Congo (DRC). The Municipality lies between latitudes  $0^{\circ}11'12.0''N$ ,  $30^{\circ}05'17.0''E$  (Latitude:0.186667; Longitude:30.088050).

The Municipality comprises of 03 divisions including Nyamwamba Division, Central Division, and Bulembia Division. Kasese Municipality has a total population of 188,879 according to the 2014 UBOS population census report with an annual population growth rate of 5.3%, mostly attributed to immigration (UBOS,2014). There are more females (52.2%) than males (47.8%).

## 1.2 CONTEXTUAL BACKGROUND

Wetlands, commonly known as swamps in Uganda, have traditionally been utilized by the people as water sources, grazing lands, crop production, source of materials for construction, crafts, furniture, and as hunting and fishing areas. In addition, they are a major habitat for wildlife resources. Despite these values, wetlands have hitherto been regarded as “wastelands” and many have been reclaimed and degraded. The major causes of this degradation are the unquenched thirst from the communities to derive livelihood from these wetlands. In most of the divisions within Kasese Municipality wetlands



have been reclaimed to grow vegetables, and production of other crops like cereals and oil crops other activities include rice farming and cattle grazing, brick making and sand mining - reclaiming of a big chunk of the wetland area in this municipality.

Meanwhile, Kasese district has most recently been affected by climate change. In this district, most rivers and wetland resources as well as their catchments once famous or known to support livelihoods are continuously being bruised by human induced climate change shocks and it is feared that soon or later their life will end. In Kasese municipality rivers and wetlands are a major source of livelihood for neighboring farming communities as they provide water for livestock and crops. However, some of these water resources, especially rivers, have controversially been referred to among the same communities as the “rivers which eat our land”. The gradual loss of land due to the collapsing riverbanks as well as the flooding of the farmers’ fields downstream of the catchment areas in Kasese Municipality accounts for such sentiments. The continued melting of glaciers from Mountain Rwenzori due to high temperatures, the heavy rains in the mountain side of the rivers’ catchment area coupled with the unregulated and detrimental (to the environment) human activities related rapid loss of forest /vegetation cover, due to trees being cut down for charcoal and settlement, uncontrolled sandmining and farming along Wetland and River banks, in the catchment area is causing the rivers to carry more water and soils down the stream as it dehydrates up. The other effects related to this scenario are mud slides, landslides, loss of lives, displacement of communities and conflict over Natural resources use between the government authorities and communities as the later resort to encroachment on to the wetlands for agriculture land because of submergence/ occupation of their farms by flooding water. Also, the increased demand for land for settlement and environmental products (such as poles, timber, fuelwood, and sand), resulting from population pressure, increase the extractive pressure on the natural environment. The Wetlands and Riverbanks in Nyamwamba and Bulembya divisions, in Kasese Municipal Council, are the most affected. Against this background and as part of implementation of the SEACAP, that Expertise France in partnership with Kasese Municipality has developed this wetland sustainable wetland and riverbanks restoration and management action plan for Kasese municipality.

### **1.3 Kasese Municipality Sub Catchment Description**

Kasese Municipality with all the wetlands and rivers there in, fall within the Nyamwamba river catchment area. River Nyamwamba Catchment covers an approximate total area of 257.2 km<sup>2</sup> (7 % of Kasese District). The catchment is located within the Greater Semliki catchment which is approximately 33,487 km<sup>2</sup>. The Greater Semliki catchment is shared between Uganda and the Democratic Republic of Congo and lies within the Albertine Rift Montane Eco-region of African Rift Lakes Priority Place. It lies in the Albert Water Management Zone under the deconcentrated water resources management in Uganda. Kasese Municipality Sub catchment area consists of the following administrative units: Bulembia Division, Nyamwamba Division and Central Division.

#### **1.3.1 Geology and Soils**

The Kasese Municipality Sub catchment is characterized by Precambrian metamorphic rock of gneisses, quartzites, schists and varying amounts of mafic igneous rocks. Kilembe copper mineralization occurs within an amphibolite unit of the Kilembe Series rocks that are part of the Ruwenzori fold belt. Dominant soils are clay loams, sand loams and Murram. The Municipality is mainly of the western rift valley geology comprising of inter bedded sands and clays. The area is generally thinly covered with loamy topsoil, sand and then clay. These soils almost represent the final stage in tropical weathering. They are deep with little differentiations into clearly defined horizons and possess a fine granular structure often molded largely with weakly coherent porous clods. The soils generally rich in plant

nutrients and contain high reserve of minerals on alluvial deposits. Productivity is medium to high and supports tree growing.

However, the geomorphology of Kasese Municipality gives the impression that there is a separation line running diagonally southwest to northeast roughly dividing the Municipality into two parts. The western half is mountainous terrain while the eastern half comprises the plains lying roughly between 900m and 1600m above sea level. On the slopes are remnants of lowland surface. Soil erosion is evident in the upstream and midstream sections of the municipality while the downstream communities experience severe flooding during periods of heavy rains.

### 1.3.2 Rainfall

The area experiences bimodal rainfall pattern with the first rains occurring during March-May and the longer rains from August-November. Annual rainfall ranges from 800 mm-1600 mm and is greatly influenced by altitude. Likewise, there exists wide temperature variations influenced by altitude from rather high temperatures at the plains (8 to 30oC) to lower temperatures at the summit (0 to 25oC). The stations of necessary significance for use in the Sub catchment were Kilembe and Kasese stations.

Meanwhile, in terms of daily precipitation, the chance of wet days in Kasese varies very significantly throughout the year. The wetter season lasts 8.6 months, from September 4 to May 24, with a greater than 50% chance of a given day being a wet day. The month with the most wet days in Kasese is November, with an average of 22.0 days with at least 0.04 inches of precipitation.

The drier season lasts 3.3 months, from May 24 to September 4. The month with the fewest wet days in Kasese is July, with an average of 8.2 days with at least 0.04 inches of precipitation. The month with the most days of rain alone in Kasese is November, with an average of 22.0 days. Based on this categorization, the most common form of precipitation throughout the year is rain alone, with a peak probability of 78% on November 5.

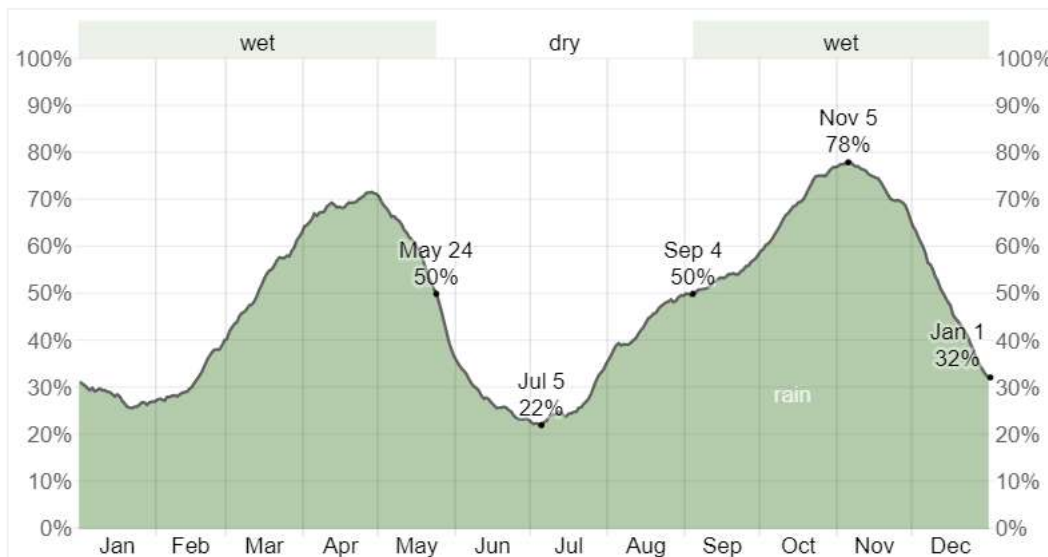


Figure 2: Daily Chance of Precipitation in Kasese Municipality

### 1.3.3 Hydrology and drainage

The upper part of this Sub-catchment is well drained with a dendritic drainage system of a dense network of meandering rivers and streams. Riverbeds are filled with boulders, sand and silt and characterized with large variations in low and peak flows, with a very quick response to

deluge events. The main streams in the Sub-catchment are the Kamusongi, Muhambuli, Njuranja, Nganji, Nyamwamba, Nyalusegi, Chanjojo, Rukoki Kigoro, and Kamulikwezi, which are associated with frequent flooding. The lower part of the Sub-catchment is characterized by river meandering sections and wetlands. The seasonal wetlands and swamps continue all the way to the south of the Sub-catchment. Downstream, the river continuously meanders due to extreme siltation and random deposition of boulders of different sizes, which reduces the river conveyance capacity (GOU, 2012). Consequently, flash floods are a common occurrence in the catchment. Previous studies have also attributed these floods to climate and land use changes. The most recent catastrophic floods occurred on May 1, 2013, and July 2015. They led to loss of lives, destruction of infrastructure like bridges, roads, schools, houses, etc. and displacement of people.

### 1.3.4 Climate

The climate in Kasese municipality is warm and overcast. Over the course of the year, the temperature typically varies from 66°F to 88°F and is rarely below 63°F or above 93°F. Based on the [tourism score](#), the best time of year to visit Kasese for warm-weather activities is from early June to mid-September.

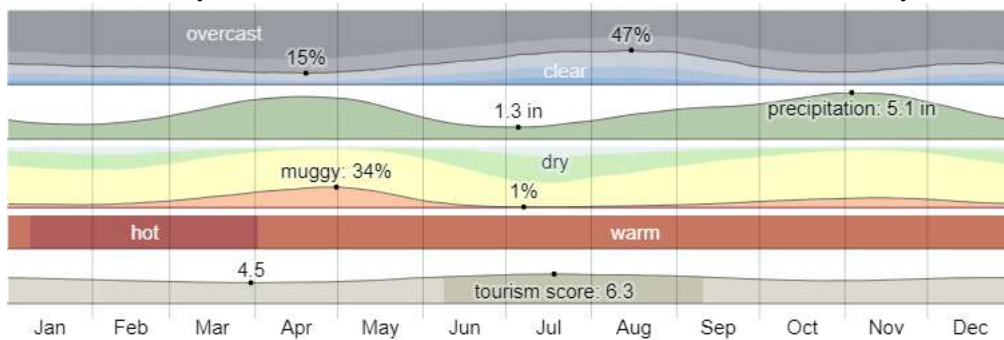


Figure 3: Climate of Kasese municipality

The temperature in Kasese municipality varies so little throughout the year that it is not entirely meaningful to discuss hot and cold seasons.

#### 1.3.4.1. Weather

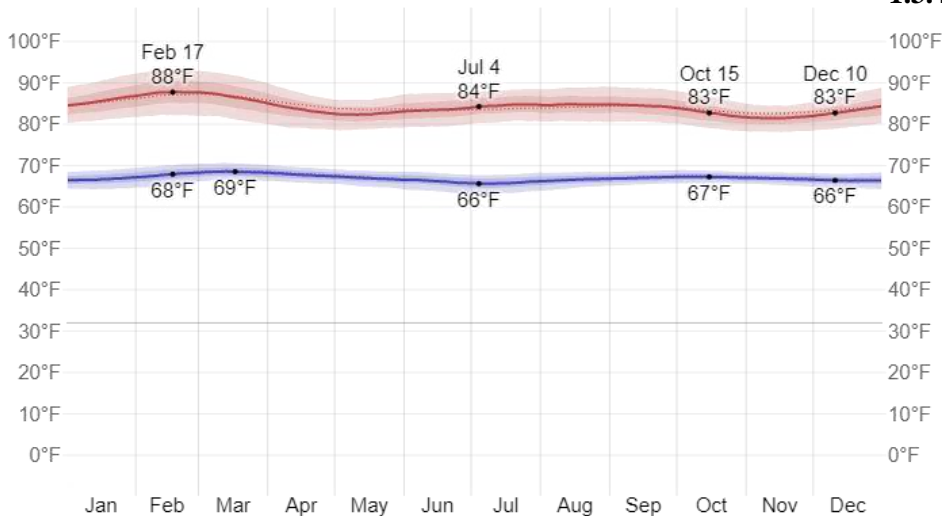


Figure 4. Weather of Kasese municipality

The figure below shows a compact characterization of the entire year of hourly average temperatures. The horizontal axis is the day of the year, the vertical axis is the hour of the day, and the color is the average temperature for that hour and day.

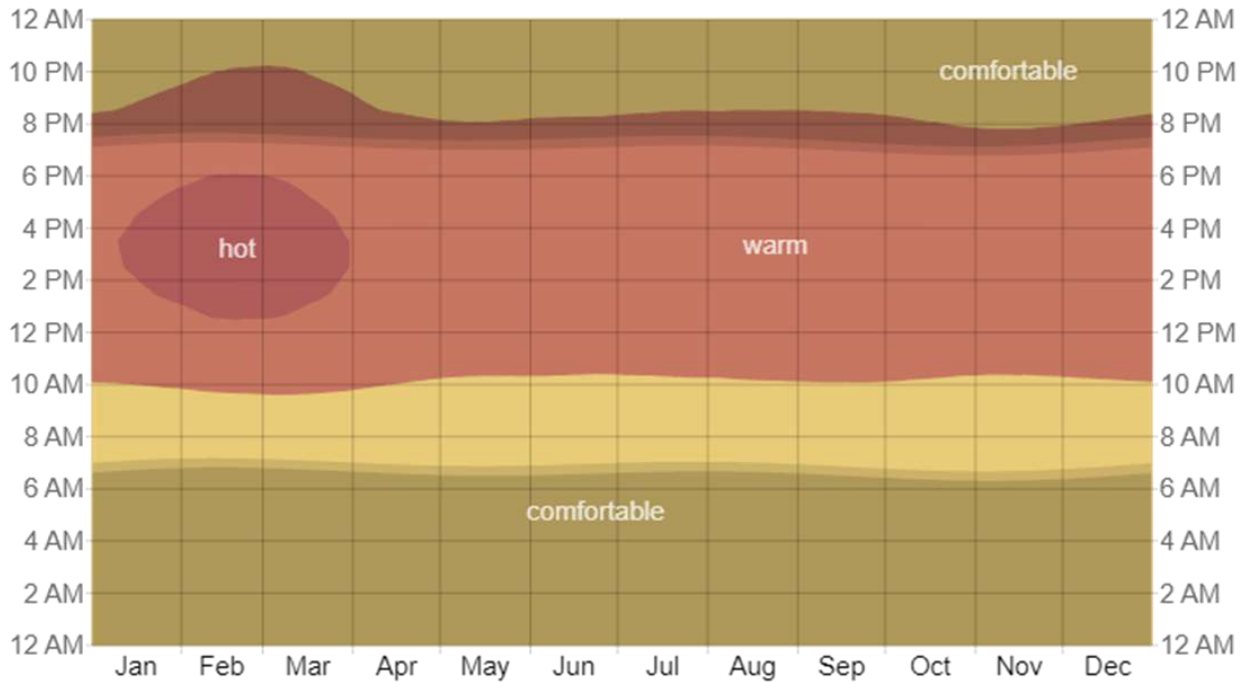


Figure 5. Kasese Climate, Weather By Month, Average Temperature

**1.3.4.2. Could cover.**

The spring in Kasese experiences gradually decreasing cloud cover, with the percentage of time that the sky is overcast or mostly cloudy decreasing from 77% to 73%. The highest chance of overcast or mostly cloudy conditions is 85% on April 19. The clearest day of the spring is May 31, with clear, mostly clear, or partly cloudy conditions 27% of the time. For reference, on April 19, the cloudiest day of the year, the chance of overcast or mostly cloudy conditions is 85%, while on August 15, the clearest day of the year, the chance of clear, mostly clear, or partly cloudy skies is 47%.

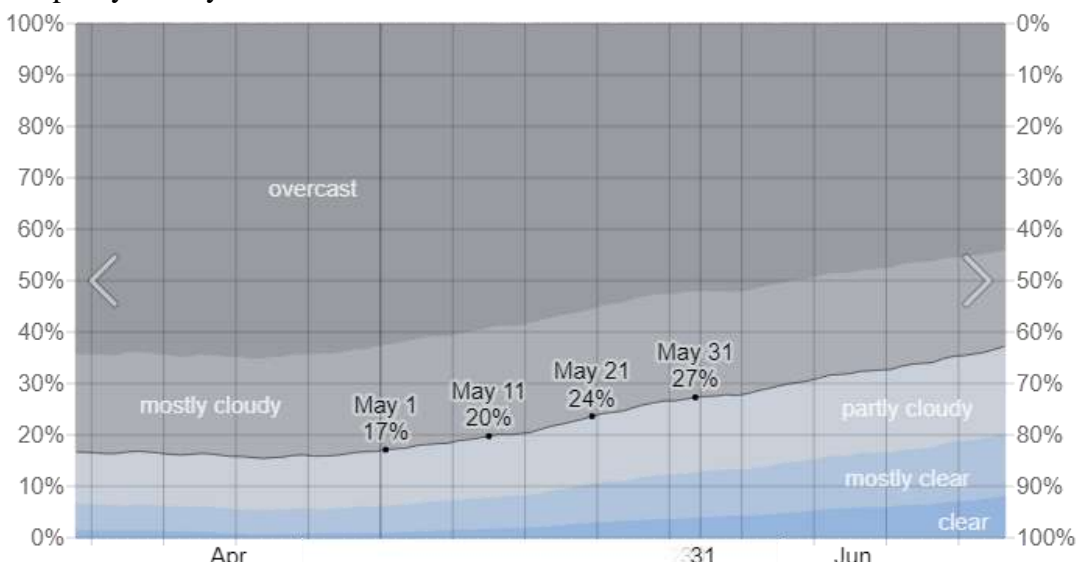


Figure 6. The percentage of time spent in each cloud cover band, categorized by the percentage of the sky covered by clouds.

### **1.3.5 Water quality**

No water quality analysis was carried out. However, the physical observations shows that Water quality in the rivers was not suitable for human uses unless it's subjected to treatment and or purification methods. The water was not clear as observed during the flow at one place in Nyakasanga 11 as well as at the bridge that links the town council to Rukoki district headquarters. It is likely that the PH and BO values are high in most rivers here. This water (especially for Nyamwamba river) could be tested for heavy metals and other dangerous components given that it flows through the copper tailings near the road barrier in Basecamp.

### **1.3.6 Water availability, droughts, and floods**

A SWAT hydrological model was run previously before this assignment by MWE for the period (1963 - 1979). The results indicate that on average 265.42 Mm<sup>3</sup> leaves the catchment as outflow. About 38% of the average annual rainfall is stored in groundwater as base flow (31%) and deep groundwater aquifer as deep percolation (7%). Model results show varying catchment responses per location. The upper parts have stable flows due enhanced infiltrations due to the natural forest cover; the middle part is very flashy due to degraded landcover with high catchment peaks, and further downstream, flow is more regulated – due to the stable land cover towards lake George. The occurrence of floods especially in the middle sections of this sub catchment is attributed to the high percentage of bare rock cover and increased rainfall intensity. Five hot spots were identified: Road Barrier P/S, Nyamwamba II, Katiri Bridge, Bulembia P/S and Kasese Town. Highest and destructive velocities of up to 8.77 m/s were observed. Inundation depths ranged from 0 – 27.34 m for a 50-year flood, 0-28.12 for 500 years and 0 – 28.22 m for 1000 years. The catchment experiences mild to moderate droughts with severe droughts being very rare (GOU, 2012).

### **1.3.7 Water demand**

According to a study conducted by the Ministry of Water and Environment – MWE, water use in the Sub-catchment included domestic water use and especially the population of Central and Bulembya divisions, institutional water use (schools, hospitals, government institutions and markets), Nyamwamba HPP1 and HPP2, irrigation for Mubuku scheme through a diversion downstream of Kilembe mines, and wildlife especially downstream near Lake George (GOU, 2012).

### **1.3.8 Socio-economic status.**

Kasese municipality is multi-ethnic with many people of different ethnic backgrounds. The main languages and ethnic groups that dominate the area are Rutooro and Rukonzo, the languages of the Batooro and the Bakonzo people respectively. However, there are other ethnic groups in the district who include the Banyankole, the Basongora the Bakiga, Bnyabindi and the Baganda. There is also common usage of English and Swahili. Subsistence farming, animal husbandry and commercial fishing are some of the main economic activities in the district. Other languages spoken include Lusongora, Runyankole, Rukiga and Swahili, among others. Marriage is a highly respected social institution in the area. 81.0% of the population were

married. The population is predominantly Protestant (46.5%) followed by Catholic (32%) and Moslems. There are a few Village saving and credit groups and self-help groups. About 71.1% belonged to a community self-help group. Land in this Sub-catchment is used for agricultural purposes (79.7%), followed by Urban/Built up areas (10.4%) that house residential and commercial set ups. The Sub-catchment straddles two conservation areas i.e., Rwenzori NP and Queen Elizabeth NP,

Most of the people in the area depend on agriculture for their livelihood. Hence, there is a high need for water for production for crop irrigation as well as for livestock. An irrigation scheme exists in the downstream of the sub-catchment, Mubuku II. The majority (42.8%) of the people depend on River Nyamwamba followed by Yard taps/Public stand posts for water for domestic use. Most people depend on Pit latrines for human waste disposal at 94.4%. Latrine coverage is low in areas close to river Nyamwamba increasing the risk of water borne diseases such as cholera, typhoid, dysentery, diarrhea etc. Parts of the central division and Nyamwamba Division were accessing flush toilets at 5.1% partly because these are urban settings served by NWSC facilities (Environment, 2020).

### 1.3.9. Land use and Land Cover

The wetlands and riverbanks in Kasese municipality are dominated by shrubs and dense vegetation (65%), followed by cropland and built-up areas at 19% and 15% respectively.

However, for the past 10years, (2010-2022) there has been a tremendous increase (68%) in the vegetation cover along the wetlands. Similarly, built up areas has increased by 48%, shrubs have increased by 38%, whereas cropland reduced by 37%.

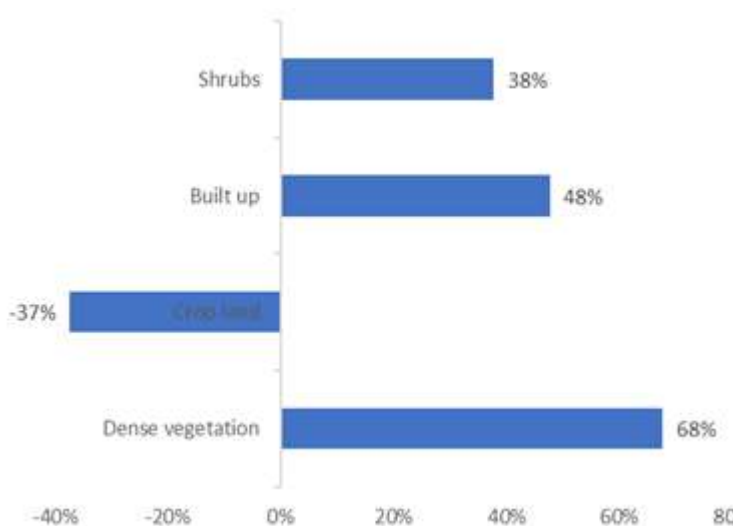


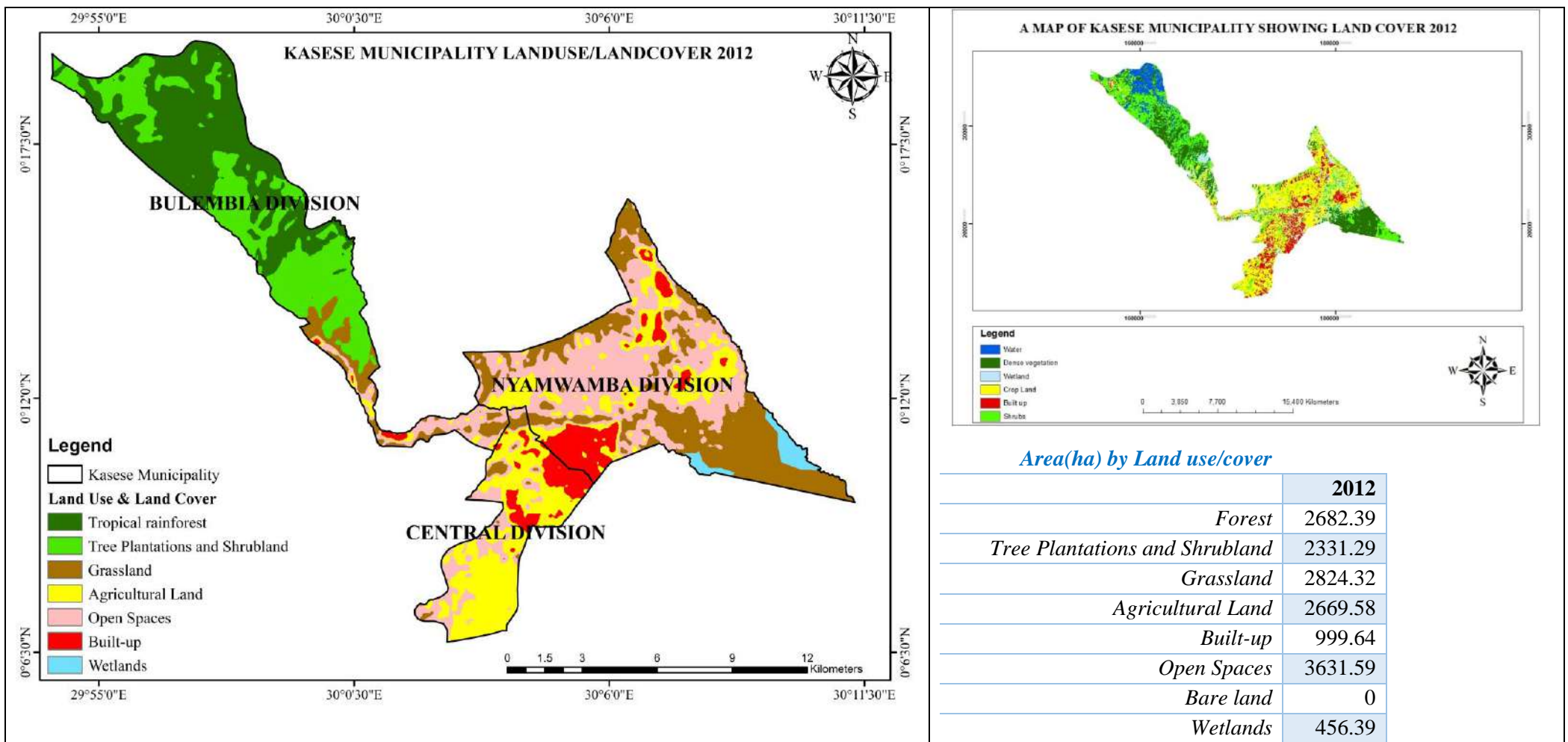
Figure 7: Trend in LULC along wetlands in Kasese Municipality

The increase in the vegetation cover from 2017-2022 is mainly attributed to the abandoning of cultivation along the wetlands due to massive sensitization and flooding of River Nyamwamba which destroyed gardens. However, the increasing reduction of land for settlement due to population pressure in the Municipality has also resulted in the settlement of communities along wetlands. Human settlement along wetlands is one of the several causes of flooding of River Nyamwamba as the soils are destabilized.

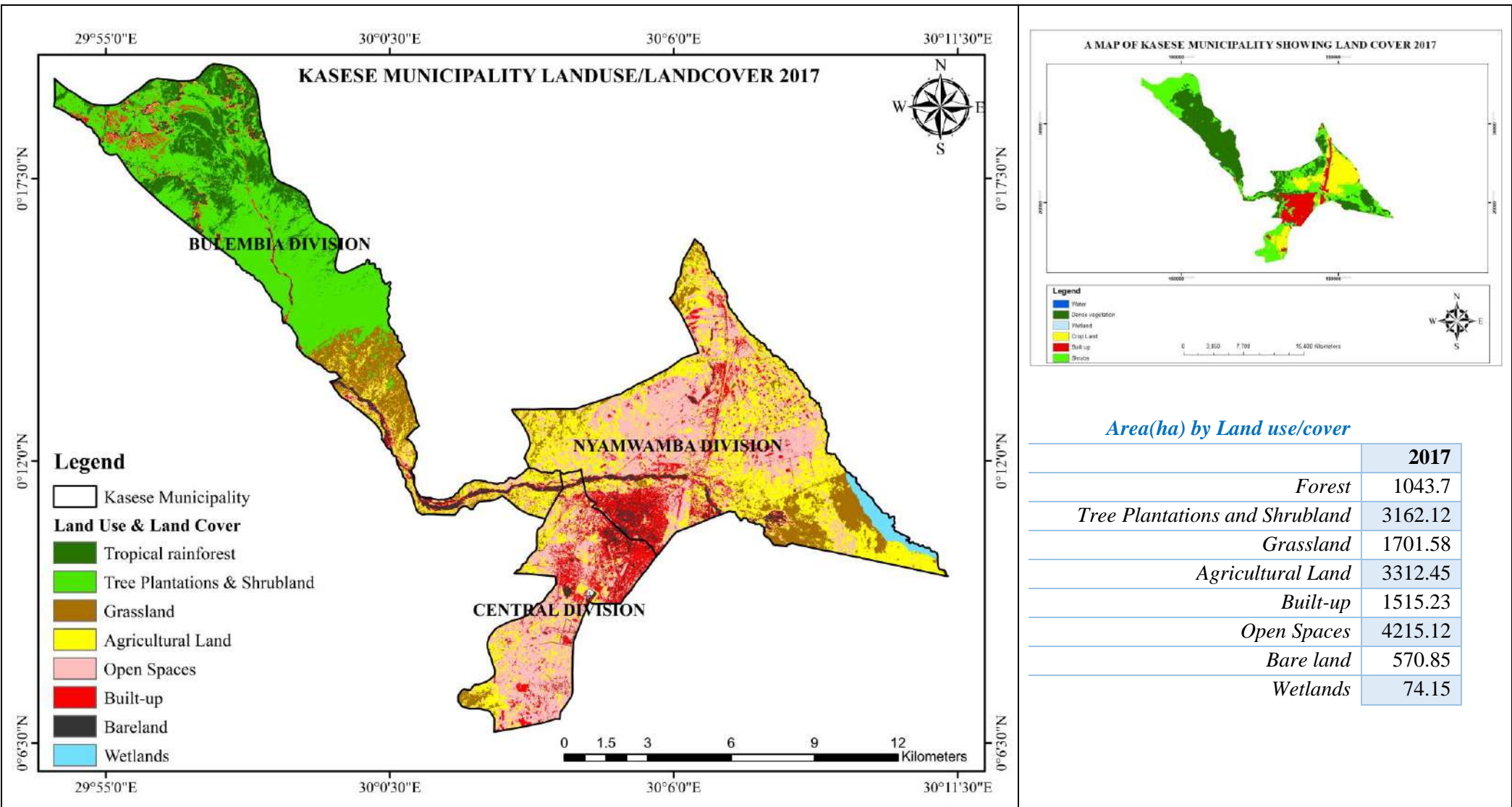
The drivers of LULC change are grouped into institutional, economic, and natural factors. Institutional factors that contributed to LULC changes in the catchment include government programs like water for production like Mubuku I and II, Operation Wealth Creation, the National Agricultural Advisory Services (NAADS) and policy frameworks like development of irrigation farming system.

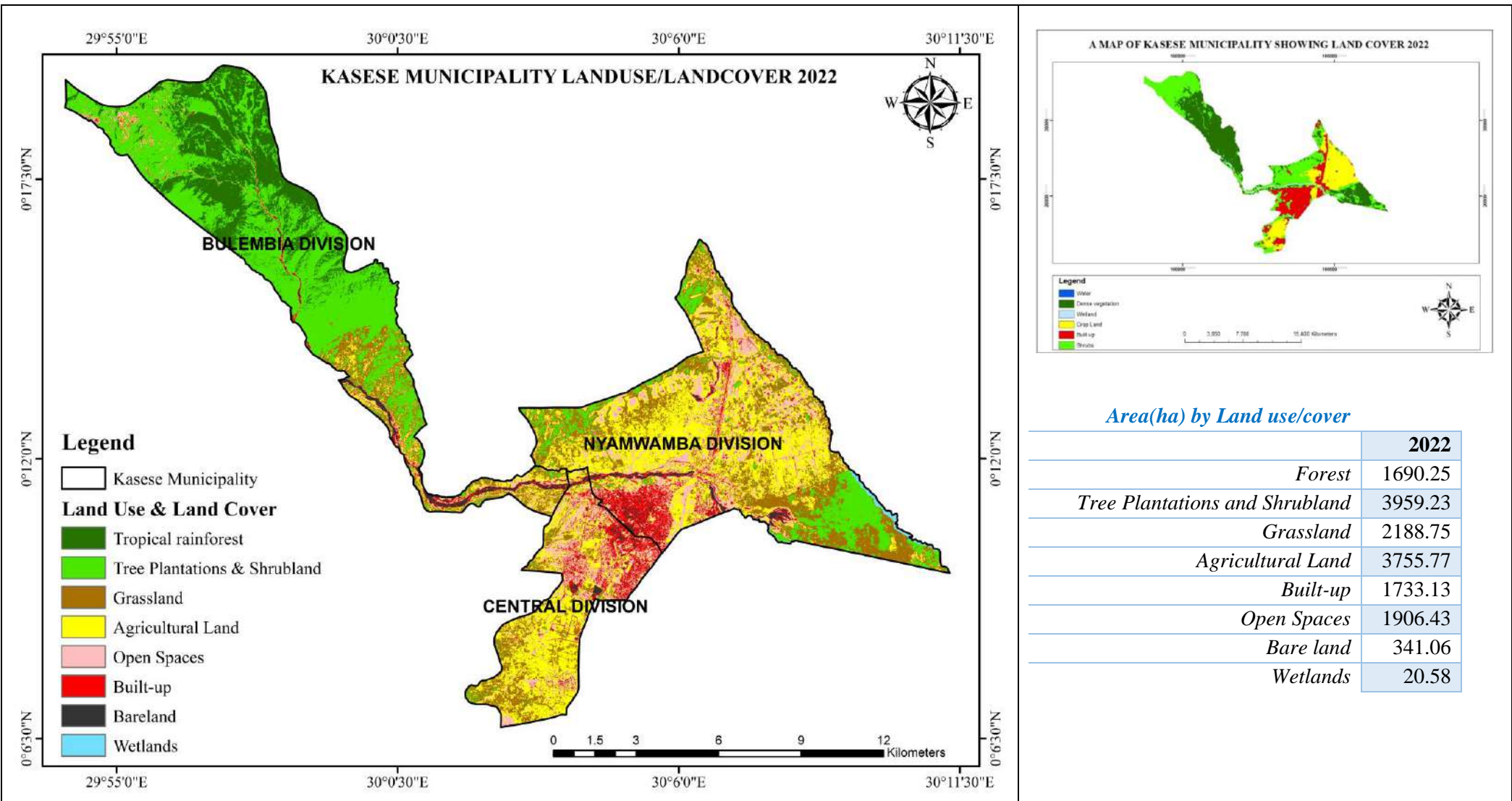
Additionally, the widespread promotion of catchment development programs by development partners, and NGOs like tree planting on degraded agricultural landscapes and protected area boundary demarcation. Contributing natural factors include climate change and variability manifested in erratic rain patterns, prolonged dry spells, and floods. Wetlands and riverbanks were assumed to provide alternative sources of income. This was based on field observations where the local community is involved in small scale business, sand mining, brick production, Horticulture and craft making among other income generating activities. Increasing dependence of local communities in Kasese Municipality on wetlands provisioning of Ecosystems Services (ESS) both for income generation and subsistence purpose has been reported in almost all the wetlands such as Kanyangeya, Kirembe, Kyondo and others.

Figure 8: Trend in Land Use and Land Cover along rivers and wetlands in Kasese municipality between 2012 to 2022

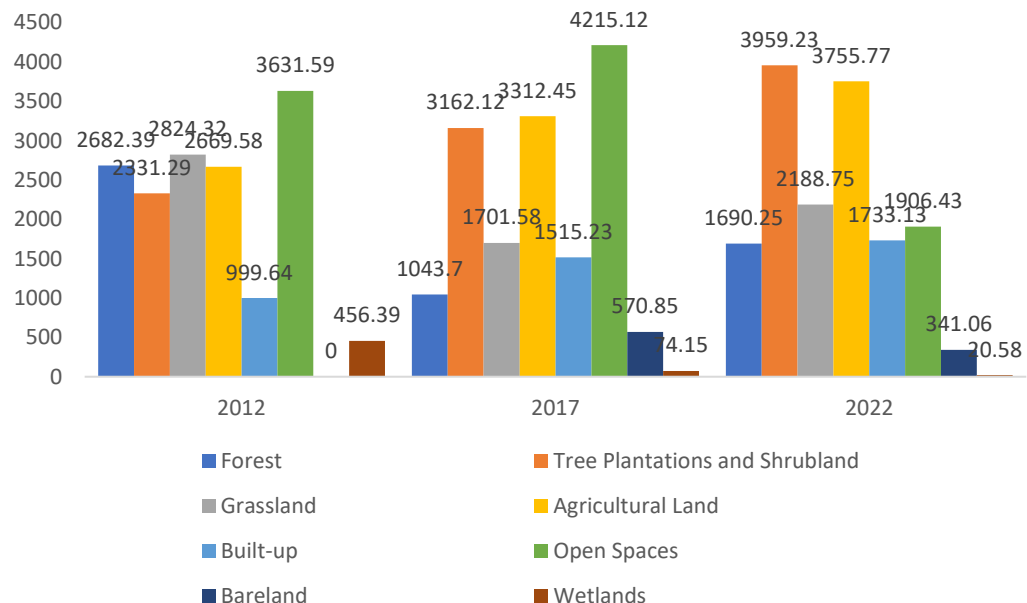




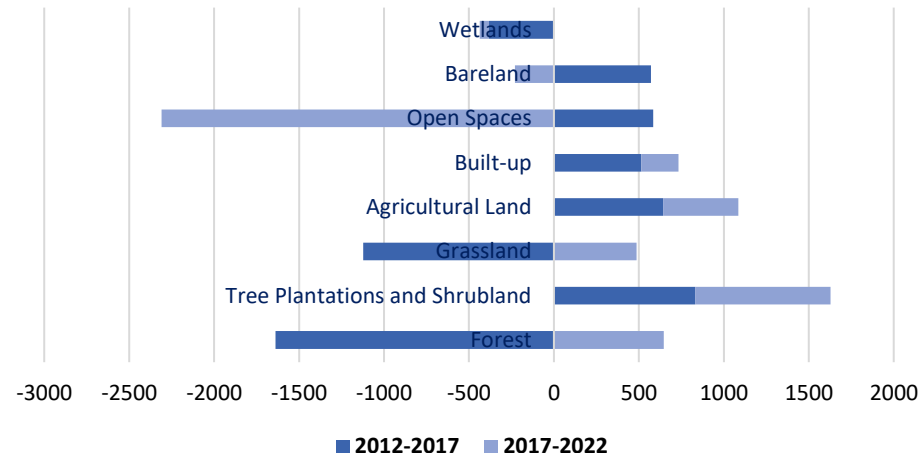




Area (ha) by Land use/cover



Change in LUC(ha)



Area(ha) by Land use/cover

	2012	2017	2022
<b>Forest</b>	2682.39	1043.7	1690.25
<b>Tree Plantations and Shrubland</b>	2331.29	3162.12	3959.23
<b>Grassland</b>	2824.32	1701.58	2188.75
<b>Agricultural Land</b>	2669.58	3312.45	3755.77
<b>Built-up</b>	999.64	1515.23	1733.13
<b>Open Spaces</b>	3631.59	4215.12	1906.43
<b>Bare land</b>	0	570.85	341.06
<b>Wetlands</b>	456.39	74.15	20.58

Change in LUC (ha)

	2012-2017	2017-2022
Forest	-1638.69	646.55
<b>Tree Plantations and Shrubland</b>	830.83	797.11
<b>Grassland</b>	-1122.74	487.17
<b>Agricultural Land</b>	642.87	443.32
<b>Built-up</b>	515.59	217.9
<b>Open Spaces</b>	583.53	-2308.69
<b>Bare land</b>	570.85	-229.79
<b>Wetlands</b>	-382.24	-53.57

### **1.3. Rationale for Wetlands and Riverbanks restoration and management**

The Wetlands and Riverbanks represent an area of interaction between land- and water based natural systems on which the community depends. For instance, Wetlands provide habitat for thousands of species of water and terrestrial plants and animals and birds. Wetlands are valuable for flood protection, water quality improvement, shoreline/ riverbank erosion control, natural products, recreation, and aesthetics. Therefore, destruction of the Wetlands and Riverbanks and associated natural environment degrades the quality of life for both people and the river systems. Restoring and protecting these Wetlands and Riverbanks presents an opportunity of improving and safeguarding the quality of natural resources in Kasese Municipality on which community livelihoods depend. Moreover, the restoration efforts will increase the resilience of KMC to floods as the restored wetlands will partly help manage flash floods, storm surge, and localized flooding in Kasese Municipality. The restored and or protected wetlands will function as natural sponges, trapping and slowly releasing surface runoff, groundwater, and flood waters. Trees, root mats and other wetland vegetation also slow the speed of flood waters and distribute them more slowly over the floodplain.

#### **1.3.1. Legal and institutional framework for environment management in Uganda**

Environment management in Uganda has its legal basis in national laws, policies, and regulations. These provide the framework for the wise use of natural resources and set out the roles to be played by different stakeholders.

The **Constitution of the Republic of Uganda (1995)** requires the State to adopt an integrated and coordinated planning approach to ensure balanced development between different regions of Uganda and the rural and urban areas, protect essential natural resources, and endeavor to fulfil the fundamental rights of social justice and economic development Ugandans. The State is also required to promote sustainable development and public awareness of the need to manage land, air, water resources, and natural resources in a balanced and sustainable manner for both current and future generations. Further, the Constitution paved the way for decentralization and devolution by clarifying Central and Local Governments' roles. Central Government's mandate is to set policy standards, supervise, inspect, coordinate, and monitor the Local Governments, while Local Governments are responsible for providing a broad range of services.

The **Water Act Cap 152 (1997)** provides for the use, protection, and management of water resources and supply, and facilitates the devolution of water supply and sewerage undertakings. The Act promotes the involvement of all stakeholders in planning for the utilization, development, and management of water and related natural resources. It addresses cross- sectoral interests in the resources and the (financial and technical) shared roles among stakeholders.

The **National Environment Act (2019)** places on every person the duty to create, maintain and enhance the environment. The Act provides for principles of environmental management that include, among others: maintaining stable functioning relations between the living and non-living parts of the environment, restoring lost or damaged ecosystems where possible and reversing the degradation of the environment and natural resources, and ensuring that adequate environmental protection standards are established and that effective monitoring of change in environmental quality is undertaken.

The **Local Government Act (1997)** underscores the role of Local Government in provision and management of water and sanitation, empowering the local authorities to plan and to implement development interventions according to local needs, and provides a framework for collaboration between local governments.

The **Physical Planning Act (2010)** aims at orderly and progressive development of land, towns, and

other areas whether rural or urban. The Act encourages local governments to prepare development plans in a participatory manner.

The **Land Act (1998)** stipulates the responsibility of the Central and Local Government in protecting environmentally sensitive areas such as natural lakes, rivers, groundwater, natural ponds, natural streams, wetlands, forest reserves, national parks and any other land reserved for ecological and tourist purposes. The Land Act indicates among others that any issuance of a land title within a wetland or within regulated Wetland and Riverbanks and riverbank zones is illegal; however, the Central or local Government may grant concessions or licenses or permits in respect of a natural resource.

The **National Water Policy (1999)** defines the Government's policy objective as “managing and developing the water resources in an integrated and sustainable manner to secure and provide water of adequate quantity and quality, with the full participation of all stakeholders”. The Act emphasizes the shared responsibility among stakeholders, including Central Government, Local Governments, the private sector, and Non-Governmental Organizations (NGOs), in the development and management of water resources and the regulation of human activities that pose potential risks to land and water resources.

**National Environmental Management Policy (1994)** has provisions to control land degradation in the country and has specific objectives to integrate environmental concerns in all development policies, planning, and activities at national, district, and local levels, with the full participation of the people.

**Uganda National Land Policy (2013)** provides a framework for articulating the role of land in national development, land ownership, distribution, utilization, alienability, management, and control. The Land Policy has a specific objective that seeks to ensure sustainable utilization, protection, and management of environmental, and natural and cultural resources on land for national socioeconomic development. It seeks to ensure that all land use practices and plans conform to principles of sound environmental management, including biodiversity, preservation, soil and water conservation and sustainable land management.

**National Forestry Policy (2001)** provides for the establishment, rehabilitation, and conservation of watershed protection forests. It aims at promoting the rehabilitation and conservation of forests that protect the soil and water in Uganda's key watersheds and river systems.

**National Policy for the Conservation and Management of Wetland Resources (1995)** is aimed at restricting the continued loss of wetlands and their associated resources and to ensure that benefits derived from wetlands are sustainably and equitably distributed to all people of Uganda.

Article 39 of the Constitution provides that every Ugandan has a right to a clean and healthy environment. Further, Article 245 of the Constitution mandates Parliament to provide a legal framework on measures intended to protect and preserve the environment from abuse, pollution, and degradation and to manage the environment for sustainable development. This article also mandates parliament to promote environmental awareness.

Furthermore, article 242 on general Land Use empowers the government to regulate land use in relation to the laws and policies made by Parliament.

Meanwhile, article 237 (b) empowers, the government or a local government as determined by Parliament to hold in trust for the people and protect, natural lakes, rivers, wetlands, forest reserves, game reserves, national parks, and any land to be reserved for ecological and touristic purposes for the common good of all citizens.

### **Domestication of the Ramsar convention in Uganda.**

The Ramsar Convention, also known as the Conservation on Wetlands, is an international treaty on conservation and wise use of wetlands. The Ramsar Convention encourages the designation of sites containing representative, rare, or unique wetlands, or wetlands that are important for conserving biological diversity. Once designated, these sites are added to the Convention's List of Wetlands of International Importance and become known as Ramsar sites. Uganda, which joined the Convention in 1988, now has 11 Ramsar sites covering a surface area of 354,803 hectares (Secretariat, 2014).

The **National Environment (Wetlands, Riverbanks and Lake Shores Management) Regulations (3/2000)** prescribe a protection zone of 100 meters from the low water mark for the following lakes: The Regulations specify 1) a protected zone of one hundred meters from the low water mark for all other lakes, and 2) that no activity shall be permitted within protected zones without the written authority of the Executive Director, National Environment Management Authority (NEMA).

**Uganda Vision 2040:** The Vision emphasizes sustainable development through preservation of natural resources such as forests and wetlands and recognizes environment and natural resources are a key social transformation sector. It outlines the efforts to ensure restoration and value addition to the ecosystems and this would be achieved through the implementation of catchment –based systems, gazettement of vital wetlands plus monitoring of ecosystems among others.

The regulations recommend that special measures be put in place to prevent soil erosion, siltation, and water pollution, for instance bunding, terracing, mulching, tree planting, agroforestry, grassing, soil engineering, compaction and placement fills, zoning and planning, gabions, and control of livestock grazing. The regulations place on every landowner or user in whose land a wetland, riverbank or lake shore is situated a duty to prevent, and repair degraded riverbanks, wetlands, and lake shores. A landowner or user who fails or refuses to carry out these measures commits an offence. The regulation further mandates the local government represented by the Environment Officer to establish local environmental committees and engage local communities and to enact necessary byelaws.

The Ministry of Water and Environment (MWE) is responsible for the protection and conservation of wetlands in Uganda. Its mandate is to promote the conservation of Uganda's wetlands to sustain their ecological and socio-economic functions for the present and future well-being of the people.

## **CHAPTER TWO**

### **2. METHODOLOGY FOR PREPARING THE ACTION PLAN**

#### **2.1 Kick off meetings.**

The preparation of the Kasese Municipality Wetlands action plan preceded several multi stakeholders' engagements to gather information as well as enable the stakeholder's interest themselves with the need to have the wetlands and rivers protected, restored and or conserved.

The first meeting (virtual, via zoom, on 2nd of November 2022) was held between Kasese Municipality and the consulting team to discuss and harmonize expectations regarding the scope and objectives of the assignment, methodology, and the milestones.

The second meeting (at Kasese Municipal Council Hall, on November 16<sup>th</sup>, 2022) was held with representatives of the Local Government (LG) at District and Municipal Council level (both political and technical), as well as other stakeholders from the private sector. The aim of this meeting was three-fold:

- 1) To introduce the consulting team to the stakeholders,
- 2) For the Consulting team to obtain preliminary insights on the current state of the wetlands and riverbanks in Kasese Municipality and,
- 3) For the Consulting team to discuss and harmonize expectations regarding the scope and objectives of the assignment, methodology, and the milestones. During the meeting, several issues related to the wetlands in Kasese municipality were discussed and immediately after the discussion (i.e., on the same day), the consulting team and some attendees had a quick visit to the nearby wetlands and riverbanks (hot spots) within the Municipality to familiarize itself with the situation.

The third phase of meetings was held between 18<sup>th</sup> - 21<sup>st</sup> of December and were community entry meetings. In this meeting, the community members from all the targeted 19 wards (of Town Centre, Kamaiba, Kirembe and railway in the central division; Bulembya, Namuhuga, Katiri and Nyakabingo11 all, in th Bulembia divisio as well as Kisanga, Kanyangeya, Nyakasanga1,2&3, Rukoki, Kihara and scheme wards in Nyamwamba division) were represented by their leaders (Local Council 1-LC3 chairpersons, community area land committees and area councilors, representatives of community target groups -those that mostly interact with natural resources being targeted) like farmers, brick makers, sand miners and crafts makers. Local government technical staff working with these communities (agriculture extension staff, town clerks, community development officers and principal town agents) also participated in this community entry meeting. The meeting purpose was two-fold:

- 1) To initiate, nurture, and sustain a desirable relationship with the community that would secure and sustain the community's interest and,
- 2) For the Consulting team to obtain preliminary information on the existence of wetlands and rivers in different wards, ownership, and usage of these resources as well as their state and finally their views of some of the applicable sustainable restoration actions that would be practical and relevant for their communities in the restoration of wetlands and riverbanks in Kasese Municipality. This meeting helped the consulting team and Kasese Municipality as well to gather some information, gain support from the community leaders and establish a good working relationship in all aspects of program.

Note: The mode of entry into a community determines the success or failure of the project.

## 2.2 . Community dialogue meetings

This was the fourth stakeholder’s engagement where, Ward -level community meetings (nineteen in total) were held with a double purpose of awareness creation on the impacts of Wetlands and Riverbanks degradation and the associated impacts within their localities and, on the need for restoration and protection of these ecosystems. During these meetings also, **gathering of data** on different themes/ issues related to rivers banks and wetlands in KMC was conducted. Different meetings and discussions were held with different categories of people including participants from the Kasese Municipal council, Lower local government (divisions, Wards, and cells), interest groups like farmers, sand miners, brick makers and craft makers. Other categories of personalities engaged included the religious and cultural leaders, civil society, opinion leaders, and the private sector. These meetings helped in using the community to identify the issues associated with the wetland and riverbanks ecosystems in Kasese as well as the goals for risk management, setting priorities, assessing the risks associated with the degradation of these resources as well as, identifying and evaluating different remediation options.



PLATE 1. KMC Community members during the dialogue meetings

### 2.2.1.1.GIS Mapping

Voyage technologies conducted a mapping exercise through GIS technology by picking the ground coordinates of the wetlands in the municipality using a CHC-i73 series RTK GNSS receiver. This was carried out in collaboration with the Municipal authorities (technical and Political) who, after introduced the team to the local leaders together with these leaders’ provided guidance in picking the wetland extents and providing the respective wetland names. Besides the wetland extents, hotspot areas where different activities are carried out on the wetland, rivers and streams were identified and captured.

A high-resolution satellite imagery (Sentinel-2) of Kasese Municipality was obtained and georeferenced. Different datasets for rivers, villages, roads, existing wetlands, and Kasese Municipality boundary were obtained from UBOS for purposes of creating detailed maps. The obtained ground coordinates of the features were imported into a Geographical Information System for analysis and map production. The obtained high-resolution satellite imagery was mainly used to digitize the wetland boundary in guidance with collected ground coordinates.

Landsat 7, Landsat 8, and Landsat 9 imagery were downloaded for purposes of creating land use/land cover maps for the years 2012, 2017 and 2022 respectively. They were then interpreted according to signatures (colors) to produce land use/land cover outlines.



With this initial mapping of wetland areas completed, the obtained ground data was done to check (ground truthing) the interpretation of the satellite imagery and correct the discrepancies. The final maps were updated and produced according to Municipal boundaries.

The mapping scale was 1:50,000 and maps include:

- Outline wetland maps up-dated from satellite data (Sentinel-2), Administrative boundaries to division level.
- Road network covering the district especially towards wetland areas.
- Villages
- Rivers

#### **2.2.1.4. Fieldwork and physical observations.**

Field work and physical observation during the formulation of the Wetlands and riverbanks management plan for Kasese Municipality was carried out to gather and or a certain the data /information on the actual location and status of the wetlands. This fieldwork was conducted by the consulting team together with officials and residents from Kasese municipal Council. Physical observations on every development going on within the wetlands in this area were done. An observation check list was used for each of the identified and visited wetlands to help the field team to understand the issues/ hazards around these wetlands as well as any management or restoration efforts going on. Wetland functions and values as well as the levels of degradation were also assessed during the field work. Others observed and recorded included the acreage or size, the riparian area, type, composition were all taken into consideration.

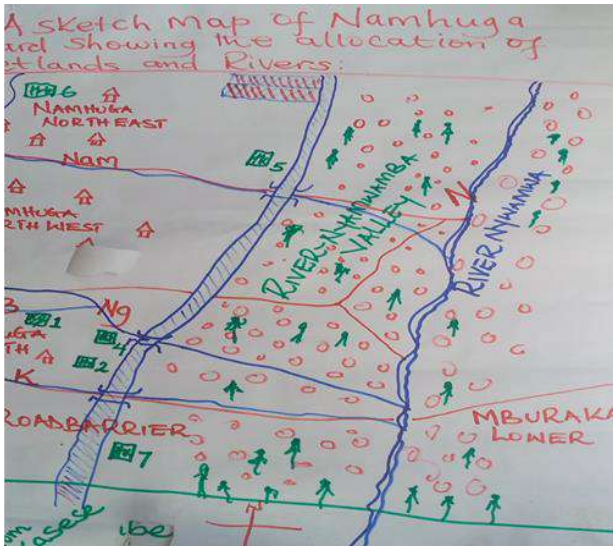
All observations were recorded on a Wetland Observation Data Sheet. The observations were used to update information on the maps but also, to obtain specific information on the wetlands, which cannot be derived from satellite imagery. The information collected at the observation sites was summarized and incorporated into subsequent sections of this report- chapter three.

Both direct observation and unstructured/informal interviews obtained field information with the local people. The respondents were chosen purposively especially from nearby homesteads or those found working in the wetland at the time of the visit. Meanwhile, it is important to note that, the recording of observations as explained above took place during a transect walk guided by best informed community members and other people with the technical skills to identify and propose solutions to issues that are visibly manifested on a walk through the wetland. A transect walk in this case was group exercise (local community members and KMC personnel) that entailed walking between two points to intentionally cross or transect a wetland. The transect walks supplemented the GIS maps and data collected through groups and from key informants. The transects were an excellent tool for creating a record of conditions arising in the wetlands.

#### **2.1.2. Community Mapping of Present Situation**

During the stakeholders/community meetings, community members were guided to draw community resource maps. This was a participatory way of bringing communities to map key infrastructure and resources within their locality and reflect on the status of their locality. This was a group exercise and involved mental mapping, taking transect walks and participatory sketch mapping. From this step it emerged that some Wetlands and Riverbanks have been encroached on by a few infrastructures of community importance including water sources schools, health centers, access roads, churches, markets, among others. Some of the community

resource maps are presented below (Figure 9 and Figure 10) as drawn jointly by the community members during the meeting. The maps are a representative of the community understanding of the wetlands and riverbank ecosystems that do exist within their localities. Also, the Participatory Land Use Mapping was used to involve community members in helping the consulting team to explore local land-use planning issues and establish a link between people's daily activities and the physical condition of the environment over time. The community mapping also worked as a ground truthing exercise to cross reference with the



information captured from the satellite imagery.

Fig. 9. Map. Community resources map of Namuhuga ward showing wetlands in Bulembya Division, Kasese Municipality

Fig.10. Map Community resource map of wetlands in Kyanjuki and Masule cells Bulembya Division, Kasese Municipality

The main challenges or issues identified during the mapping were recorded according to the respective divisions from which they emerged. Some of the issues identified include but are not limited to poor waste disposal, flooding, siltation, soil erosion, conversion for urbanization and settlement. Others are limited access to clean water, low tree cover, uncontrolled sand mining, uncontrolled brick making, and unsustainable farming along the wetland and Riverbank. Others included, grazing of domestic animals, nonnative species that compete with natives, and the removal of natural vegetation. A simple ranking technique using the force field analysis (a basic tool for root cause analysis that can help you act once the root cause has been identified) was used to assemble stakeholders' views on the severity of the challenges and, the results are presented in table 1 below.

**Table 1: Main challenges/ issues within wetlands of Kasese municipality ranked by level of severity.**

Nyamwamba Division	Bulembya Division	Central Division
1. Soil erosion	1. Farming along the Wetland and Riverbanks	1. Encroachment and conversion into settlement and urbanization
2. Flooding	2. Conversion for settlement	2. Disposal of waste materials
3. Uncontrolled sand mining	3. Uncontrolled sand mining	3. Un-sustainable farming along and in the wetland
4. Uncontrolled brick making	4. Un regulated brick making	4. Soil Erosion
5. Conversion for settlement and urbanization.	6. Pesticides and heavy metals	5. Flooding
5. Farming along the riverbanks & in the wetlands	7. Improper waste disposal	6. Human sewage
6. Pesticides and heavy metals	7. Disrupted flows from dams and sediment dumping from deforestation and soil erosion upstream.	7. Animal waste,
7. Over grazing in wetland & riverbanks	7. Flooding	8. Sediment loads and pollution
8. Removal of natural vegetation	8. Soil erosion	9. Drainage channels
9. Invasive species	9. Bush burning	
10. Poor waste disposal	10. Removal of natural vegetation	
11. Extraction of water	11. Open defecation	
12. Sediment loads	12. Poor water quality	
13. Open defecation	13. Drainage channels	
14. Poor water quality		
15. Removal of natural vegetation		

*Source: Kasese wetlands and riverbanks assessment (field work)*

While the perceived relative severity of the challenges varies between the divisions, there is consensus that the challenges need to be addressed urgently. Especially, Soil erosion, Flooding, uncontrolled brick making and sand mining, Farming along the riverbanks & in the wetlands. Other issues to be addressed, over grazing in wetland & riverbanks, Removal of natural vegetation, Poor waste disposal, Poor water quality, disrupted flows from dams and sediment dumping and human sewage.

### **2.2.1.3. Community Visioning of a desired future of wetlands and riverbanks in KMC**

Based on the developed maps (fig. 9 and 10 above) on the present situation, the stakeholders were then guided to visualize or think into the future, about their desired future state (5 years) of these Wetland and Riverbank ecosystems in Kasese Municipality. This step enabled the stakeholders to reflect on their desired future in line with livelihoods and environment management in general. This was a group exercise in which all members generally agreed upon a desired future of wetlands and river banks within Kasese municipality as follows. ***“A well protected and maintained wetland and riverbanks for sustainable, ecological and socio-economic transformation of local communities in Kasese Municipality by 2030”.***

The main features of the stakeholder visions are summarized in table 2 below:

**Table2: Summary of features of the stakeholder vision/ desired future of wetlands and riverbanks for Kasese municipality (5years time-2003-2028)**

Central Division	Bulembya Division	Nyamwamba Division
<ul style="list-style-type: none"> <li>• <b>A clear boundary of live fence planted along the wetland to delineate the wetland for ease of observation by the public on its boundaries.</b></li> <li>• <b>A public toilet on one side of the Kasese wetland in Kasese town for large population to use especially during market days; to avoid open defecation in this wetland but also, complimented by lined latrines at household level.</b></li> <li>• <b>Move the land / garbage fill from the wetland in Railway to a suitable place maybe in another cell.</b></li> <li>• <b>Ensure proper urban land use planning to indicate places delineated for specific activities and or intended use.</b></li> <li>• <b>Designated solid waste dumpsite in central division, complemented by improved waste management at household level.</b></li> <li>• <b>Woodlots along the Wetlands and Riverbanks plus tree planting at household level.</b></li> <li>• <b>Working with the existing Tree nursery operators to</b></li> </ul>	<ul style="list-style-type: none"> <li>• Woodlots along the Wetlands and Riverbanks plus tree planting at household level.</li> <li>• Small and micro-irrigation for dry season production.</li> <li>• Designated areas for sand mining, with appropriate environmental management measures.</li> <li>• The same applies to brick making, with a designated area in Kanyangeya.</li> <li>• Some parts of the wetlands in Kanyangeya and Nyakasanga were preserved and managed as animal grazing areas.</li> <li>• Designated waste dumpsite complemented by improved waste management at in different cell at household level.</li> <li>• Tree nursery to provide reliable source of seedlings.</li> <li>• The margins of the seasonal wetland being used for grazing cattle, growing arable crops, and for domestic water.</li> <li>• Decongesting the silted river base and</li> </ul>	<ul style="list-style-type: none"> <li>• Demarcation of the riverbank and wetland protection zone</li> <li>• Soil and water conservation actions like tree planting, cover cropping, grass strips and stone lines in the upstream of the wetlands and riverbanks to prevent soil erosion and flooding and siltation downstream.</li> <li>• Continuous community mobilization and sensitization and mindset change.</li> <li>• Designated and developed areas for community eco-tourism along the river and wetlands.</li> <li>• Some parts of the wetland’s basecamp and Kilembe were partially being preserved and managed as animal grazing areas.</li> <li>• Waste dumpsite complemented by improved waste management at in different cell at household level.</li> </ul>

**increase production and provision reliable source of seedlings to communities in KMC for planting on their filed and homesteads.**

- **Recreation / relaxation center or facility established near the wetland to contribute to a serene and beautiful senary to Kasese town- eco tourism.**
- **Wetland being used as a source of clean water for domestic and municipal use.**
- **Agricultural related activities are regulated /carried out only on the margins.**
- **Designated waste dumpsite, complemented by improved waste management at household level.**

reopening the blocked water channel under the old bridge

#### **2.2.1.4. Wetland and riverbanks ecosystems resource use and Stakeholder Analysis.**

This step helped the stakeholders to understand the persons that use these resources in question (wetlands and riverbanks), how they use them as well as why they use them. During the analysis, the stakeholders were able to know which persons affects (both positively and negative) these ecosystems as well as how the user of these resources get affected by the resources in question and, any decisions made on the resources. This would later help the voyage technologies and the stakeholders in determining the level of interest/influence in decision making. During this analysis, a clarification of the different actors, their interests or stakes, responsibilities and status, their rights, and duties and not least the relationship between them and the natural resource base, was established. A larger presence of the primary stakeholders (community/ residents) was present while those that did not manage to attend in person sent representatives.

From the plenary during the analysis, it emerged that brick makers and miners (of sand and stone) are one of the categories of stakeholder. This category mainly comprised of Men and youth and some few women. Most of the women stakeholders here were mainly involved in the removal/harvesting of Natural vegetation for craft, making, medicines, wood fuel and others. Other stake holders included the farmers (largest category) who had gardens in and on the fringes of the wetlands.

#### **2.2.1.5. Identification of opportunities and threats at the Wetlands and Riverbanks and surrounding areas**

After guiding the stakeholders/ communities to reflect on their resources and infrastructure and to develop their vision, this step enabled them to identify and reflect on the factors that might affect the achievement of their desired future of the wetland and riverbanks ecosystems in Kasese municipality. The identified opportunities and threats guided the stakeholders/communities in thinking of possible solutions (which are both short, medium, and long term), implementation modalities, and resources (technical and financial) required. The results of this Analysis are presented in chapter three of this report.

#### **2.2.1.6. Focused Group Discussions and Key Informant Interviews**

Several discussions were held for different categories of stake holders ranging from sand miners (6), brick makers (10), farmers (11) and craft makers (6) area land committee members (3). Meanwhile, key informant interviews were conducted for selected Kasese Municipal council technical staff (16) and political (14) leaders. Other key informants contacted include cultural and religious leaders (11) as well as. These discussions were all held to establish the driving forces, pressures/ root causes and impacts as well as identify the potential actions for regulating the drivers and pressures and potential alternative livelihood support options for uses of these ecosystems in Kasese municipality.

### **2.3 Secondary Information Review**

Secondary information collected from the Kasese Municipality Local Government, and other sources was reviewed. Secondary information review was a continuous process during the assignment. The secondary information reviewed included the KMC Forest Management plan, Kasese district wetlands inventory, Nyamwamba catchment management plan, the Uganda

wetlands atlas and other online sources as contained in the reference section of this action plan.

#### **2.4. Field transects and physical observations.**

On several occasions, voyage technologies and the stakeholders had exploratory visits to different locations along the Wetlands and Riverbanks to make observations. The fieldwork on the formulation of the wetland action plan for Kasese Municipality was carried out to gather and or a certain the data /information on the actual location and status of the wetlands. Physical observations on every development going on within the wetlands in this area were done. An observation check list was used for each of the identified and visited wetlands to help the field team to understand the issues/ hazards around these wetlands as well as, any management or restoration efforts going on. Wetland functions and values as well as the levels of degradation were also assessed during the field work. Others observed and recorded included the acreage or size, the riparian area, type and composition.

All observations were recorded on a Wetland Observation Data Sheet. The observations were used to up-date information on the maps but also, to obtain specific information on the wetland, which cannot be derived from satellite imagery. The information collected at the observation sites was summarized in a Wetland Information Sheet.

Both direct observation and unstructured/informal interviews were obtained field information with the local people. The respondents were chosen purposively especially from nearby homesteads or those found working in the wetland at the time of the visit. Meanwhile, it is important to note that, the recording of observations as explained above took place during a transect walk guided by best informed community members and other people with the technical skills to identify and propose solutions to issues that are visibly manifested on a walk through the wetland. A transect walk in this case was a group exercise (local community members and KMC personnel) that entailed walking between two points to intentionally cross or transect a wetland. The transect walks supplemented the GIS maps and data collected through groups and from key informants. The transects were an excellent tool for creating a record of conditions arising in the wetlands.

**Note:** The out puts of analysis of secondary information, together with a more practical understanding of the (status of the) Wetlands and Riverbanks obtained through field observations and participatory mapping and other processes as indicated above, informed voyage technologies and the stakeholders to determine the suitable management measures and thus, the formulation of the wetlands and riverbank restoration and sustainable management plan as contained in the subsequent chapters of this document.

#### **2.5. Action plan preparation**

Building on the information from the previous steps, an Action Plan was drafted, highlighting the issues/ pressures identified, driving force/root causes, proposed solutions (management measures and their implementation modalities), financial resources required, responsibility centers (who could do what when) see chapter 3.

## CHAPTER THREE

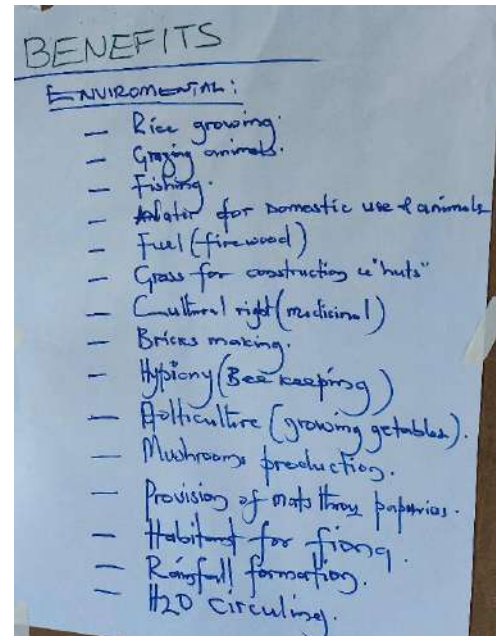
### 3. STATUS OF THE WETLANDS AND RIVERBANKS IN KASESE MUNICIPALITY

#### 3.1. Human activities in Wetlands and along Riverbanks (underlying factors, and consequences)

Wetlands and Riverbanks are a key factor in the Local Economic Development of Kasese Municipality given their numerous social, ecological, and economic benefits. The major benefits of resources as revealed by the stakeholders from Kasese Municipality include the following:

*“Wetlands are important for the role they play in society providing a range of ecological and socio-economic functions. Ecological and regulating services include erosion prevention, moderation of extreme flows, sediment traps, climate modification, soil formation, maintenance of water tables in surrounding lands, and as centers of biodiversity and wildlife habitat”. Socio-economic or provisioning services include food, medicines, water supply, fisheries, dry season grazing for livestock, nutrient and toxin retention, tourism, and so on. These benefits are summarized below.*

- Crop production due to fertile soils and access to water for production
- Livestock production due to palatable grass along the wetlands and riverbanks
- Provision of water for domestic use for the communities living near the wetlands and rivers
- Provision of materials like sand and clay for construction of roads, houses, among others.
- Source of fuel wood – firewood for food preparation
- Cultural purposes like provision of medicine to the community and cultural cleansing.
- Ecologically, wetlands and rivers in Kasese municipality contribute to the hydrological cycle, among others.
- Source of fish which provides income to the local some communities.
- Source of craft materials for basket making
- Aesthetic value- providing beauty to the city.



Note: There are on-going activities in the Wetland and along the Riverbanks, including settlements with (both semi and) permanent structures, crop farming, sand mining, brick making, Grazing of cattle, etc. Some structures are said to be decades old: the owners claim ownership over the land even if it is within the 100 meters designated by law as the buffer zone for the wetland and rivers. Despite the various benefits of the wetlands and rivers, these resources are highly under threat by these same activities.



### **3.1.1 Crop farming**

Crop production is one of the major economic activities done by the local community in Kasese Municipality. This activity has not spared the wetlands and riverbanks given the fertile soils around the wetlands, access to water, and land. The major crops grown include rice, maize, cassava, beans, among others. Production is mostly



Plate2: Crop farming in in Kirembe wetland

practiced at subsistence level with surplus sold to the local and regional markets. Meanwhile, farming practices here involve the use of rudimentary tools and sometimes excessive use of pesticides (especially in the horticulture production as seen from Mubuku irrigation scheme and along river Nyamwamba in Nyakasanga ward) and agrochemicals could have great impact on the quality and quantity of water in the Kanyangeya wetland. The increase in the grassland within the wetland and along the riverbanks as revealed by the geo-spatial analysis illustrated in figure - below, is an indication of increased nutrients in the wetlands due to cultivation therein. Also, soil erosion from the gardens results in sedimentation/silting of the rivers and wetlands. Loss/degradation of Wetlands and Riverbanks wetland belt (due to agricultural encroachment) as seen in the plate one below undermines their capacity to filter sedimentation and or stabilize the river/ shore bank.

### **3.1.2 Brick making**

Brickmaking along the Wetlands and Riverbanks happen mostly during periods of prolonged drought when the Wetlands and Riverbanks are the only place to find water. A construction industry boom in Kasese Municipality over the past 10 years has turned brickmaking into big business in this town, leaving the wetlands therein irreversibly destroyed in the process. This activity was more pronounced in



Plate 3: Brick making in Kanyangeya

Kanyangeya wetland in Nyamwamba division. Many of the wetlands have clay soils, which are ideal for making bricks. Here, clay soil dug out of the wetland with significant physical environmental consequences like open borrow pits, which are left behind where sites have not been restored. The once green belt almost stripped bare with pools of muddy water, bare soil and tree stumps dotting the area. With every rising of the hoe, more and more clay are dug up sealing the fate of the Kanyangeya swamp. This is just one of the bricks making sites strewn

across the river Nyamwamba. Other sites do exist in Kamulikwizi, Misika and Nyondo

### **3.1.3 Sand mining**

The Municipal Natural Resources department indicates that Wetlands and Riverbanks in Kasese municipality, are the main source of sand material used for construction in the municipality and its environs, supplying about 90% of the sand (raw material) in the area. This underscores the enormous contribution of sand mining in infrastructure development in this municipality. There are about four active sand mining areas along the Wetlands and Riverbanks (three in Kanyangeya Ward, one in Kyondo Ward) and each one of them owned by a 'landlord' (owner of the land where mining takes place). The sand miners indicated that while sand mining is the only source of income for them, it is not their preferred economic activity and that, with support they would start other income generating activities e.g., poultry, retail and trade, vegetable growing, and restaurants. The FGD with sand miners and some local leaders revealed that monthly earnings from sand mining are an average of UGX 50,000 per miner and UGX 200,000 per landlord.

Moreover, sand mining is a source of revenue for the Municipal Council. Through a tenderer, the Town Council collects revenue from transporters of this material at a rate of UGX 5,000 per trip of a "Forward" truck. On average, at least 15 trucks collect sand from Kanyangeya and Kyondo Wards per day during the dry season, and at least four (7) during the rainy season, making a total of roughly 4,380 trucks per year which equates to an annual revenue of UGX 21.9 million for the Municipality.

Sand mining allows for removal of vegetation and the topsoil of the mined areas. Meanwhile, sand removal from the Nyamwamba riverbed is happening at a rate faster than the materials can be renewed, which is having a huge impact on the environment. Currently, the operations are carried out without post mining treatment and management of the mined areas, leaving behind large, abandoned pits. In addition to the vegetation cleared to pave way for sand mining, the operations leave behind open barrow pits with steep slopes that encourage the collapse of adjacent soil. If the pits are near to roads, there is a risk of the road collapsing when the adjacent soil falls away due to edge effects. Abandoned pits fill up with water during the rainy season (see Plate 3), becoming a breeding ground for mosquitoes and presenting a risk of drowning to humans and their livestock. It was also reported that some wild Animals (Hippopotamus) had been spotted in Kanyangeya.



***Plate 4: Sand mining along the Nyamwamba river in Kanyangeya***



*Plate 5: Abandoned mining sites in Kanyangeya, filled up with water.*

### **3.1.4 Garbage deposition**

Solid waste is one of the greatest challenges facing the Kasese Municipal urban authorities today, with the amount of waste generated exceeding their capacity both technical and financial to collect and dispose of. The municipality is facing rapid urbanization leading to overcrowding and the development of slums and informal settlements with poor waste management practices. The urban dwellers generally consume more resources, and so generate large quantities of solid waste and sewage. Waste management in this town areas is hampered by multiple land tenure system with many tenants not having a right to the land and therefore not able to manage waste domestically and, the urban authorities are overwhelmed by the sheer volumes of garbage generated. Kasese Municipal Council (KMC) acknowledges that the amount of Solid waste generated overwhelms its capacity to collect and dispose given its enormous collection costs. Out of 20– 30 tons of garbage generated per day, only 1-4 tons are collected giving a collection efficiency of only 80%. This implies that 80% of Solid waste generated daily is not properly collected and disposed of which has resulted in indiscriminate disposal. Meanwhile, all solid waste collected by the authorities is dumped at the “gazette” landfill at compost, plus some of that is collected by the private collectors. However much of the solid waste collected by the illegal collectors and some poor informal households is disposed in ungazetted places like the roadsides, illegally constituted dumpsites, and the drainage channels due to the costs involved in waste management the public as seen below.



Plate 6. Garbage deposition in a former wetland in Nyamwamba Division



Plate 7. Garbage deposition in a Kasesa wetland in central division Kanyangeya

### **3.1.5 Human settlement**

A reasonable percentage of Kasese Municipality residents live in informal settlements in or around wetlands. Kanyangeya and Kyondo Wetlands, as well as the wetlands along the Nyamwamba river in Bulembia division, the municipality’s largest wetlands, serves as a critical water catchment area for the entirety municipality. Alongside they, provides vital social, environmental, and economic functions and has become a popular site for informal human settlement that is threatening to destroy what is left of them.

The study found that the historical drivers of wetland settlement represent a small subset of larger challenges facing Kasese Municipality today. The overlapping land tenure law in Uganda is complex to understand and to implement causing communities/ residents to see themselves as legitimate occupants of wetlands and other fragile ecosystems as is the case in Kasese Municipality. For example, because these wetlands and the riverbanks are both “publicly and traditionally held private mailo land”, residents feel they have the right to live there. Meanwhile, poverty, landlessness, population pressure and community fragmentation appeared to be factors that drove all participants to live in these wetlands. Despite the clarion call by the town authorities to leave these areas, including forced evictions in some areas, residence continues to return. The study aimed to identify a solution that would both protect these wetlands and riverbanks from further degradation, while also protecting the rights of vulnerable population.



*Plate 8. Human settlement in a wetland in Nyamwamba Division*



*Plate 9. Human settlement in a wetland in Bulembya Division*

### 3.2. Environment related issues affecting the Wetland and Riverbank.

**Table 3: Main environment related issues/challenges, their causes, and potential impact.**

<b>Main issues</b>	<b>Causes</b>	<b>(Potential) Impact</b>	<b>Most affected area /</b>
Inadequate policy and institutional frameworks	Limited funds to popularize and enforce the existing policies. Lack of byelaws and ordinances to tackle the area specific issues. Limited human capacity in form of staffing	<ul style="list-style-type: none"> <li>- Encroachment of the wetland</li> <li>- Reduced functionality of the wetland</li> </ul>	All ward (divisions)
Conversion for Settlement Urbanization & industrialization	<ul style="list-style-type: none"> <li>- Excessive demand for Fuelwood</li> <li>- Weak policies and institutional frameworks</li> <li>- Limited knowledge among the local communities on the dangers of settlement along wetlands</li> <li>- Population pressure</li> <li>- Lack of clear wetland boundaries</li> </ul>	<ul style="list-style-type: none"> <li>- Pollution of the wetland</li> <li>- Disposal of waste in the wetland</li> <li>- deforestation</li> </ul>	Nyamwamba and central
Over grazing in wetlands and along riverbanks	<ul style="list-style-type: none"> <li>- Overstocking</li> <li>- Lack of Proper Animal Management.</li> <li>- Socio-economic Conditions of the Farmer.</li> <li>- Drought or Decline in Precipitation.</li> <li>- Improper Land Use</li> </ul>	<ul style="list-style-type: none"> <li>- Reduction of plant cover,</li> <li>- Opening the land to undesirable / invasive weeds, brush, and trees</li> <li>- Increasing soil erosion/ collapsing banks</li> <li>- Reduction in the ecosystem service of wetlands.</li> <li>- Loss of soil productivity</li> <li>- Emergency of native and secondary vegetation.</li> </ul>	Nyamwamba

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<p>Flooding</p>	<ul style="list-style-type: none"> <li>- Unsustainable development in the catchment area</li> <li>- Climate change</li> <li>- Burning and conversion to other uses like rice cultivation or urban sprawl</li> <li>- Poor land use</li> </ul>	<ul style="list-style-type: none"> <li>-Soil and riverbank erosion,</li> <li>-Bed erosion,</li> <li>-Siltation of rivers and wetlands</li> <li>-Landslides</li> <li>-Damage to vegetation</li> <li>- Pollunts damage water quality</li> <li>- Impact on habitats and flora and fauna</li> </ul>	<p>Nyamwamba and Bulembya</p>
<p>Poor farming practices along the riverbanks and in wetlands</p>	<ul style="list-style-type: none"> <li>- Weak laws and policies</li> <li>- Limited access to land</li> <li>- Attitude and cultural factors</li> </ul>	<ul style="list-style-type: none"> <li>-Soil erosion</li> <li>-Degradation of wetland and riverbanks</li> <li>- Damage to the water quality</li> </ul>	<p>Bulembya and Nyamwamba</p>
<p>Removal of natural vegetation cover</p>	<ul style="list-style-type: none"> <li>- Vegetation in all wetlands is cut mainly for fuel wood (for domestic cooking), building materials, making crafts, baking bricks, and creating space for agriculture.</li> </ul>	<ul style="list-style-type: none"> <li>-Tree loss, and associated de-vegetation exposes the wetland and riverbank topsoil to erosion, reducing the land's ability to resist runoff speed and thereby being washed away downstream.</li> </ul>	<p>All divisions</p>
<p>Soil erosion</p>	<ul style="list-style-type: none"> <li>- Clearing of vegetation,</li> <li>- Soil tillage or overgrazing.</li> <li>- Poor farming practices as well as the trend toward agricultural intensification</li> </ul>	<ul style="list-style-type: none"> <li>-Increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in water living species</li> <li>-Wetlands affected by sedimentation can lose their open water areas and become choked with aquatic vegetation</li> </ul>	<p>All divisions</p>
<p>Uncontrolled sand mining</p>	<ul style="list-style-type: none"> <li>- Employment / livelihood</li> <li>- Construction to meet the human settlement pressure.</li> <li>- Drainage improvement</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Significant environmental impacts, including river erosion, shrinking river channels, land-use changes, air pollution-dust, salinization of aquifers and groundwater reserves, threats to freshwater and fisheries and biodiversity</li> </ul>	<p>Nyamwamab and Bulembya</p>

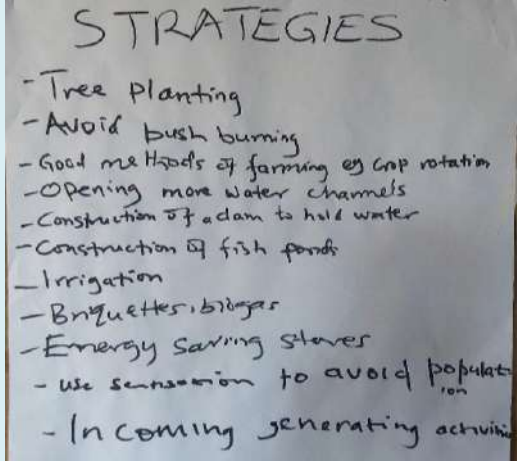
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<p>Uncontrolled brick making and sand mining</p>	<ul style="list-style-type: none"> <li>- Weak laws and policies</li> <li>- Limited access to land</li> <li>- limited alternative employment</li> <li>- Population pressure coupled with increasing dd for building materials.</li> </ul>	<ul style="list-style-type: none"> <li>-Emissions and pollution from heavy trucks and machinery.</li> <li>-Waste from the mining process may also pollute water nearby and work its way into streams and rivers.</li> <li>-The large quantities of firewood needed for firing bricks contributes to deforestation, which affects biodiversity.</li> <li>- It contributes to air pollution, soil erosion and degradation, desertification of the landscape, and reduces available fuel sources for other human activities.</li> <li>- Sedimentation and effects on base flow of water.</li> </ul>	<p>Nyamwamba and Bulembya</p>
<p>Disposal of Garbage/ waste</p>	<ul style="list-style-type: none"> <li>- Weak policies and institutional frameworks</li> <li>- Limited knowledge among the local communities on the dangers of waste disposal wetlands</li> </ul>	<ul style="list-style-type: none"> <li>- Causes air pollution, water, and soil contamination.</li> <li>- Open and unsanitary landfills contribute to contamination of drinking water and can cause infection and transmit diseases.</li> <li>- Plant death, Animal and Marine Death.</li> <li>- Loss of Habitats.</li> <li>- Loss of beauty/ aesthetic value</li> </ul>	<p>All divisions</p>

### 3.2 Strategies to restore, protect and conserve Wetlands and riverbanks in Kasese Municipality

Owing to the various challenges affecting the functionality of the wetlands and riverbanks in Kasese Municipality, the local communities and other stakeholders suggested strategies to address these bottlenecks.

**Table 4: Key strategies suggested to restore, protect, and conserve wetlands and riverbanks.**

GOVERNANCE ISSUES	WETLAND ISSUES
<ul style="list-style-type: none"> <li>- Limited enforcement of Wetland Management regulation and lack of compliance with existing standards</li> <li>- Weak operationalization of Integrated Water Resources Management (IWRM) in KMC for proper wetlands and riverbank management.</li> <li>- Limited integration of IWRM into sectoral and Municipal and District planning frameworks.</li> <li>- Limited harmonization of institutional mandates between the Kasese Municipal Local Government &amp; MDAs such as Ministry of Water and Environment, NEMA, Civil Society Organizations (CSOs) and other entities associated with IWRM.</li> <li>- Weak stakeholder engagement</li> <li>- Inadequate institutional capacity</li> <li>- Inadequate technical capacity and lack of tools by KMC Local Government for water resources allocation</li> <li>- Low level of awareness among the local communities</li> <li>- Insufficient funding for wetlands and riverbank management interventions.</li> </ul>	<ul style="list-style-type: none"> <li>- Opening water channels to minimize flooding in the areas adjacent to the wetland.</li> <li>- Facilitate the community on small scale micro irrigation and trainings other livelihood options.</li> <li>- Construction of a fishpond to reduce fishing in the wetland.</li> <li>- Promotion of energy saving stoves and briquettes to minimize vegetation loss.</li> <li>- Support to youth livelihood groups.</li> <li>- Promote alternative Nature-based Enterprises to improve household income as well as ecological nourishment.</li> <li>- Community sensitization and patriotism</li> <li>- Formulation of bylaws and empowering of local leadership on enforcement</li> <li>- Delisting of rivers</li> <li>- Earth works /bio engineering restoration works (vegetative propagation)</li> <li>- Allocation of land and resettlement of the encroachers.</li> </ul>
	 <p><b>STRATEGIES</b></p> <ul style="list-style-type: none"> <li>- Tree planting</li> <li>- Avoid bush burning</li> <li>- Good methods of farming eg crop rotation</li> <li>- Opening more water channels</li> <li>- Construction of a dam to hold water</li> <li>- Construction of fish ponds</li> <li>- Irrigation</li> <li>- Briquettes briqes</li> <li>- Energy saving stoves</li> <li>- Use sensation to avoid population</li> <li>- Income generating activities</li> </ul>

### 3.3 SWOT ANALYSIS

This section analyses the internal strength of the Municipality to effectively implement the objectives of this plan. It also analyses the weaknesses that might affect the achievement and how they can be mitigated. There is also analysis of the opportunities that can be tapped into such as availability of willing development partners to support the municipality. Lastly, it analyses the threats to the implementation of the Management plan.



Table 5: SWOT analysis

Strength	Weakness
<ul style="list-style-type: none"> <li>- Presence of Local Government units to support in implementation of restoration strategies.</li> <li>- Community awareness concerning the urgent need for wetlands and riverbanks protection in Kasese.</li> <li>- The district/ Municipality has a fully-fledged Natural Resources Department that oversees among others protect the existing water resources including wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>- Inadequate staff within the sub-sector to carry out wetland protection activities and regulation of illegal wetland activities.</li> <li>- Inadequate capacity building opportunities</li> <li>- Inadequate technology to access spatial data about wetland degradation hotspots.</li> <li>- Lack of equipment for updating wetland data</li> <li>- Limited funding to implement the planned activities.</li> <li>- Lack of cooperation and willingness among the political and technocrats on conservation.</li> </ul>
Opportunity	Threat
<ul style="list-style-type: none"> <li>- The availability of the District Natural Resources Officer and other Natural Resources staff at the district can be explored to support the wetland restoration initiatives.</li> <li>- On going related activities by partners like WWF, NRDI, MFI -, SECAP, supporting Environmental protection initiatives.</li> <li>- GOU green growth strategy</li> <li>- Ministry of Water and Environment’s country wide process of demarcating critical wetland boundaries as reserves</li> </ul>	<ul style="list-style-type: none"> <li>- Some community members have constructed permanent structures and may not easily move out of the wetlands.</li> <li>- Lack of a clearly determined ownership of the wetlands and riverbanks.</li> <li>- Prolonged dry spells associated with Kasese district and bushfires may affect the survival rates of the planted trees.</li> <li>- Increased human settlement and urbanization.</li> <li>- Interferences from the top hampers’ efforts of law enforcement.</li> </ul>

## 4. MANAGEMENT STRATEGIES AND IMPLEMENTATION MODALITIES

### 4.1. Introduction

The Kasese Municipality Wetlands and riverbanks Vision in 2.2.1.3 above is meant to present a collective, medium-to-long term desired future state of the wetlands and riverbanks from which strategies that are realistic and locally attainable can be derived. The wetlands and riverbanks vision for Kasese Municipality was developed with extensive stakeholder engagement and in response to the main issues and driving factors for the degradation of the wetland and riverbanks. To achieve this vision, four strategic objectives as outlined below were formulated.

## **4.2 . Strategic Objectives**

1. Increased restoration efforts through vegetation cover and afforestation and other stabilization techniques along the Wetland and riverbanks in Kasese Municipality for ecosystem enrichment.
2. Increased livelihood opportunities for the local communities around wetlands and riverbanks in Kasese municipality.
3. Strengthened legal and institutional frameworks on sustainable wetland and riverbanks management.
4. Enabling interventions that would propel the stakeholders in Kasese municipality to act.
5. Improving waste management and sanitation practices both at source and ungazetted dumping sites within the municipality.

## **4.3 . Overview and general prioritization of the strategic objectives**

The interventions are based on the physical and social conditions of the Wetland and Riverbanks, insights, and experiences from different parts of the country and beyond where similar challenges have been faced, and input from stakeholders (during workshops and meetings). The interventions are categorized according to the strategic objectives as shown in 4.2 above.

Timelines are suggested for implementation of the interventions because implementing them all at once is not feasible due to capacity issues, in terms of human resources and funding. Hence, interventions are prioritized based on their urgency; the priority levels being: Critical, High, Medium, and Low. The priority levels indicate an order of implementation in time, not the relevance of the interventions. (If capacity was not a limitation, it would be desirable to implement the interventions simultaneously in an integrated and coordinated manner.)

- **Critical:** Implementation should start immediately because the interventions are a prerequisite for successful introduction of the others. Interventions with this priority level should preferably be implemented within the first six months (maximum one year) following approval of the Action Plan by the Division and Municipal council level.
- **High:** The interventions are of high relevance to the key issues and with expected high impact on improving Wetlands and Riverbanks management and stopping harmful practices in the short term. The activities should be implemented in the short term (1 - 2 years after approval of the Action Plan).
- **Medium:** Activities that should be implemented at medium term (2-4 years after approval of the Action Plan).
- **Low:** Activities which can be implemented in the longer term (4 - 5 years after approval of the action plan).

The table below gives an overview of the restoration and or protection actions/ interventions, their location and priority levels. Details are explained in the subsequent text including pre-conditions underpinning their successful implementation.

**Table 6: Overview of the interventions of the Action Plan**

	<b>Category/ strategic objective</b>	<b>Interventions/ strategies</b>	<b>Location</b>	<b>Priority level</b>
1	Increased restoration efforts through vegetation cover and afforestation and other stabilization techniques along the Wetland and riverbanks	<ul style="list-style-type: none"> <li>- KMC should support existing tree nurseries through technical backstopping and financing (market linkages) -public private partnership.</li> <li>- Identify an interested local entrepreneur through a transparent tendering process.</li> <li>- Officer technical and financial support to successful entrepreneur</li> <li>- Encourage and incentivize tree growing at group and household level.</li> <li>- Community training and sensitization on tree management</li> <li>- Provision of assorted seedlings</li> <li>- Regulate sand mining.</li> <li>- Designate areas for sand mining.</li> <li>- Register sand miners and organize them into groups for support.</li> </ul>	<p>Required along wetlands in Bulembya and Nyamwamba especially those that lie along the river Nyamwamba in the stretch between Kilembe mines road barrier.) and at Kasesa wetland.</p> <p>Kyangeya</p>	Critical
		<ul style="list-style-type: none"> <li>- Encourage and incentivize tree growing at group and household level.</li> <li>- Community training and sensitization on tree management</li> <li>- Provision of assorted seedlings</li> </ul>	<p>Entire Town Council for household tree planting. Woodlots along the Wetland and Riverbank</p>	Critical
2	Enhancing businesses and livelihood support options	<ul style="list-style-type: none"> <li>- Regulate sand mining.</li> <li>- Designate areas for sand mining.</li> <li>- Register sand miners and organize them into groups for support.</li> <li>- Explore efficient sand mining innovations and jointly work with sad miners on this.</li> <li>- Work with sand miners on restoration of degraded areas due to sand mining</li> <li>-</li> </ul>	<p>Required in Nyamwamba division especially along the nyamwamba below the bridge at Kyangeya.</p>	Critical

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		<ul style="list-style-type: none"> <li>- Enhancing economic value of abandoned sand mines through fish farming</li> <li>- Train interested community members in fish farming.</li> <li>- Provide tools and materials for setting up the fishponds</li> </ul>	Nyamwamba and Bulembya division.	Low
		<ul style="list-style-type: none"> <li>- Promote small-scale irrigation system.</li> <li>- Trainings and provision of the irrigation materials to the farming community on a co-funding basis</li> </ul>	Kyondo, Kanyangeya and Sebwe	Medium
		<ul style="list-style-type: none"> <li>- Initiate alternative income generating activities (mushroom farming, Poultry, Welding, and carpentry for the youth).</li> <li>- Skilling and conditional start-up capital provided to groups on revolving basis.</li> <li>- Eco tourism to be supported for places where the community has already made a step.</li> </ul>	Required in both wards.  Kasesa and Kiwa	High
3	Strengthened legal and institutional frameworks on sustainable wetland and riverbanks management in	<ul style="list-style-type: none"> <li>- Formulation of byelaws at the Division and ordinance at the Municipality level to regulate activities within and adjacent to the wetland.</li> <li>- Popularize the byelaws and ordinances and enhance their enforcement</li> </ul>	Required in both wards in the municipality.	High
		<ul style="list-style-type: none"> <li>- Conduct quarterly coordination meetings with all key stakeholders to update on the wetland protection progress, stake stock of the existing efforts, harmonize approaches, and avoid duplication of efforts.</li> <li>- Re-energize Local Environment Committees.</li> <li>- Demarcate the Wetlands line with the MWE regulations</li> </ul>	Required in both wards in the municipality.	High

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4	Enabling interventions that create a conducive environment for implantation of others	<ul style="list-style-type: none"> <li>- Awareness and sensitization</li> <li>- Meetings, barazas, video shows, radio (announcements, talk shows), IEC materials, theatre performances.</li> </ul>	Entire municipality	
		<ul style="list-style-type: none"> <li>- Community-based monitoring and supervision of implementation</li> <li>- Training the Wetlands and Riverbanks Environment Committee (LEC) on environment management, internal working procedures, conflict resolution, community engagement, etc.</li> <li>- Provision of materials and tools for the EC to use in performing their roles.</li> <li>- Forming the EC into a VSLA</li> </ul>	Entire municipality	
		<ul style="list-style-type: none"> <li>- Lake buffer demarcation</li> <li>- Community engagement meetings</li> <li>- Procurement and installation of concrete pillars jointly with the LEC and community members</li> <li>- Procurement and planting of assorted tree seedlings jointly with the LEC and community members</li> </ul>	Cells along the Wetland and Riverbank	

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5	Improving solid waste management and sanitation practices	<ul style="list-style-type: none"> <li>- Improve solid waste collection and management.</li> <li>- Designate and develop at least one solid waste dumpsite per ward.</li> <li>- Conduct feasibility study on business case for solid waste collection.</li> <li>- Identify and support (seed funding and technical assistance) to selected entrepreneur to establish or expand the solid waste.</li> <li>- Conduct Occupational Health and Safety training to the selected entrepreneurs and co-develop with them necessary policies and procedures.</li> <li>- Procure and install waste segregation bins in the trading centers, landing sites, markets, and selected institutions.</li> <li>- Initiate and undertake monthly community clean up campaigns.</li> <li>- Train community structures and communities on collection and sorting of solid waste for disposal.</li> </ul>	Required in all the 14 wards that were involved in the plan formulation.	High
		<ul style="list-style-type: none"> <li>- Encourage and support ventures that utilize (reuse or recycle) solid waste.</li> <li>- Identify interested community members/entrepreneurs.</li> <li>- Offer support to the selected entrepreneur through seed funding and technical assistance to establish or expand their business ideas on solid waste management.</li> <li>- Equip the entrepreneurs with skills in recycling or upcycling of waste material.</li> <li>- Conduct Occupational Health and Safety training to the selected entrepreneurs and co-develop with them necessary policies and procedures.</li> </ul>	Entire Municipality especially where waste collection is carried out	High
		<ul style="list-style-type: none"> <li>- Enable household waste collection and management.</li> <li>- Support community-based entrepreneurs in establishing a business of making household waste collection bins.</li> <li>- Enforce household level waste management</li> </ul>	Entire municipal Council	High

#### **4.3.1. Strategic Objective one: Increased restoration effort through vegetation cover and afforestation and other technics along the Wetland and riverbanks for ecosystem enrichment**

The functionality of the riverbanks and wetlands in Kasese Municipality largely depends on the vegetative cover both within and in the peripheral of these ecosystems. Various interventions as indicated in 3.4. above, are earmarked to promote revegetation of the catchment area. These include:

1. Tree planting activities targeting mostly indigenous tree species with a mix of exotic trees. Exotic trees are demanded due to their commercial purposes unlike the indigenous trees that takes very long to grow. Therefore, indigenous trees will be planted in the buffer of the wetland and the neighboring institutions while exotic will be planted by individual farmers for both domestic and commercial use.
2. Raising of tree seedlings for allocation to interested households and institutions and planting along the wetlands. This should be done through establishing a Central Tree Nursery managed by the Municipality to raise mostly indigenous trees and strengthening the capacity of the existing and interested Private Nursery Operators to raise quality seedlings. The Nursery operators should be supported to certify their nursery for easy access to the market.
3. Promote Farmer Managed Natural Regeneration (FMNR) in farmlands along the wetland to facilitate natural growth of indigenous trees.
4. Promote live fencing as a way of demarcating the wetland and farmlands adjacent to the wetland. Live fencing increases vegetation cover and protects the soil against erosion.
5. Promote the use of Energy Saving Stoves among communities around the wetland. The key approaches should include the market-based approach to boost demand and supply of energy saving stoves.
6. Promote sustainable charcoal production through adoption of efficient charcoal conversion techniques such as the Casamance kiln, formation of Green Charcoal Associations, and training of charcoal producers in alternative income generating activities. This will reduce pressure on the biomass due to increased efficiency along their charcoal value chain.
7. Support women and youth groups to produce briquettes to minimize on the use of charcoal and firewood. Briquettes are produced from organic residues and used as a source of fuel. The support should be done in the form of training, input support, and technical backstopping.
8. Other efforts include biological and physical earth works that could be implemented during the rehabilitation and restoration actions along rivers and wetlands include establishment of check dams, sediment traps diversion ditches, cut off drainage channels and others.

##### **4.3.1.1. KMC to support existing tree nurseries.**

A business minded community member, or a community group, should be supported by KMC to establish a tree nursery on Public Private Partnership arrangement. Identification of the community members should be through a transparent tendering process where interested individuals or groups are asked to express their interest in writing and are assessed based on a

set of criteria. The criteria include but are not limited to the following:

- 1) Access to land for establishing a tree nursery,
- 2) Strategic location of the land for instance proximity to the road,
- 3) Prior experience of managing a business,
- 4) Good reputation in the community, etc.

The successful member/group will receive training and technical support (courtesy of KMC) in a tree-nursery establishment, and a grant to meet start-up costs. The members/group could be taken on an exchange visit to a well-managed tree nursery so that they can learn from it and its operators. Also, training in nursery bed establishment and management, benefits of having standard nurseries, marketing strategies for the seedlings and financial management will be provided to the member/group. Assorted nursery tools and materials for use in establishing the nursery will be procured and provided to the member/group, preferably on a co-financing arrangement. The member/group will receive routine monitoring and technical support from the District Natural Resources Department.

#### **4.3.1.2 Encourage and incentivize tree growing at group and household level.**

Community members will be trained and sensitized, through community meetings, on the importance of trees, tree growing and management, and the various tree growing techniques. Community members will be asked to express, in writing, their interest in tree growing and to prepare their land for tree planting as per guidance received during the training; this step encourages ownership of the process by the community. Assorted tree seedlings of an appropriate size will be procured from the supported nursery and distributed to interested and affected community members to plant on their land or on communal land along the Wetland and Riverbank. Seedlings will be protected from destruction by free range animals through fencing; single tree (Plate 10) or whole woodlot level protection will be considered



**Plate 10: An example of single tree protection.**

depending on the context and will use locally available materials such as twigs and thorny shrubs. The fences will be removed when the seedlings are mature enough to survive on their own.

#### **4.4.2. Strategic objective 2: Enhancing businesses and livelihood support options/opportunities for the local communities around wetlands and riverbanks.**

Promote bankable Nature-based Enterprise among local communities' adjacent riverbanks and wetlands to diversify income generating activities and alternative livelihood options to reduce pressure on the wetland. This should be done through technical training in the various value chains, input support to operate these businesses, linkages with potential markets, access to financial services, and technical backstopping. Some of the NBEs that can be done adjacent the



wetlands include small scale/ micro irrigation, piggery, Apiary, horticulture, fish farming, poultry farming (rearing of ducks and chicken) and small-scale grazing.

#### **4.4.3.1. Regulate sand mining.**

Sand mining will be regulated to balance between short term economic gains by involved parties (miners, landlords, and Municipal Council), long-term environment management and well-being of the general community. A critical first step in the regulation journey will be the registration of sand miners by the Municipal Council, organizing them into groups (for easy follow-up and cross-support), and allocating them designated areas for sand mining for a specific period. The designation of sand mining areas for a specific number of years is not new to Kasese Municipal Council. Sand mining operations in the Municipal Council have moved into space over time. Kanyangeya cell was previously the sand mining area; from there, the miners started activities in Kyondo, then Nyamwamba and currently in Misika. Miners' shift from the locations is driven by the availability of the raw material and the site where the sand is required. Going forward, compulsion from the municipal council through guidance on minimum requirements on the post mining treatment and management of mined areas should be given by the municipal council Natural Resources department.

Meanwhile, Community members who are engaged in sand mining and brick making should be supported through their groups to start alternative income-generating activities, for instance retail and trade, irrigated vegetable growing, animal husbandry especially poultry and piggery (also with market linkages). The support will include skilling and conditional start-up capital provided on revolving basis through groups. Skilling will cover business management including planning and budgeting, record keeping, financial management, marketing, etc., and will be tailored to the enterprise selected by the groups. Others could include oyster mushroom production, energy saving stoves, tree nursery operation, craft making – stone curving.

Apiculture or bee keeping provides honey and other honey products that can be sold to generate income. This is one of the short-term incomes generating enterprises that can be mixed with long term economic and environmental protection interventions like tree planting.

#### **4.4.3.2. Enhancing the economic value of abandoned sand and clay mines through fish farming.**

This intervention will aim at establishing a stable and self-sustaining management system that allows communities to derive economic value from the sites in an environmentally conscious way. Community members, especially those with a claim over land where current or abandoned sand and brick mines are found, and existing groups or cooperatives should be sensitized and trained in fish farming. Topics covered will range from fishpond siting, pond construction, pond preparation, fish stocking, fish growing, fish harvesting, pond management, marketing, and financial management. Consequently, assorted tools and materials required for setting up the fishponds will be provided to the community members through the KMC production and marketing department.

#### **4.4.3.3. Promote small-scale irrigation systems.**

Sub-irrigation by small-holder farmers, both individuals and in small groups or cooperatives should be promoted, especially for high value crops, for instance vegetables. This intervention should include training and provision of the materials (inputs) on a co-funding basis. During the

community meetings, communities in Nyakasanga and Kanyangeya cells expressed interest in this intervention. The exact locations will be identified through a feasibility assessment. The community involved here could be linked to an irrigation company like Kickstart that is currently giving farmers irrigation kits- pumps at subsidized costs on loan basis.

#### **4.4.4. Strategic Objective 3: Strengthened legal and institutional frameworks on sustainable wetland management.**

Effective conservation of wetlands and riverbanks is dependent on the policies and institutions in charge of wetlands. The weaker the policies, the higher the rate of degradation. Therefore, the following strategies should be implemented to strengthen the policies and institutions in charge of wetland protection.

##### **4.4.4.1. Formulation of byelaws at the Division and ordinance at the Municipality to regulate activities within and adjacent to the wetland.**

This should be done through a participatory process involving all the relevant stakeholders like local communities, Local leaders, private sector, among others to ensure ownership of these laws.

##### **4.4.4.1.1. Popularize the byelaws and ordinances and enhance their enforcement:**

This could be achieved by translating them into the local language for easy access by the local communities. Additionally, popularization of the laws can be done through community wide sensitization for the local communities to increase awareness on the benefits and wise use of wetlands. These can be done through radio talk shows, spot messages, road drives. Identify community champions to promote peer to peer learning on the existing wetland laws and wise use of the wetland. Meanwhile, collaboration on waste management should be a collective responsibility in KMC. Under collaboration, the residents should be able to report to their counterparts that dump waste in undesignated areas. They should also be able to report to their counterparts who they do not see handing over their waste to the waste collectors. However, this mechanism requires that that KMC together with the waste collector/ vender comes up with a mechanism of giving an incentive in terms of a token of appreciation to the informer. Some people in KMC, especially where waste is being dumped uncontrollably were willing to offer information on who dumps waste in undesignated areas near the Kasesa wetland. However, the law enforcement team should be motivated with their pay coming in time but also, having law enforcement on waste management budget for in KMC annual budgets.

A management information system together with an online solid waste Crime Database if developed, will allow KMC to track people generating and dumping waste improperly, profile the types of people who are involved in this illegal activity (to target law enforcement as well as waste management projects) and monitor the progress. KMC is connected to the computerized closed-circuit cameras of the Uganda police. Working with the police in this town, KMC can be able to identify criminals that dump waste in the wee hours of the night and track them for apprehension in accordance with the law.

**4.4.4.1.2. Conduct quarterly coordination meetings** with all key stakeholders to update on the wetland protection progress, stake stock of the existing efforts, harmonize approaches, and avoid duplication of efforts.

**4.4.4.1.3. Re-energize Local Environment Committees as part of the referral pathway for illegal activities within the wetland.** Besides, these committees are a big vehicle in the community-wide sensitizations.

**4.4.4.2. Demarcation of the wetland and river boundaries in line with the Uganda regulation.**

The boundaries of wetlands and rivers are not well delineated, and this brings confusion among the regulators and local communities on the boundaries of the wetland. The communities adjacent to the wetland perceive that the wetland expanded into their land hence cultivation in the wetland. Therefore, the Municipal authorities should work with the MWE (Albertine Water Management Zone) to mark clear boundaries for the wetland based on the provided maps or improving them. To successfully undertake a demarcation exercise for the rest of the wetlands and riverbanks in KMC, all the relevant stakeholders (especially those directly affected) will be engaged in sessions of dialogue, sensitization, capacity building and participatory planning to ensure that the ultimate decision will not result into conflict. We have observed that inclusive, just, and effective participation of stakeholders and building trust is key to successfully implement an intervention that involves ultimate restriction of people to access certain sections of land perceived to be “theirs” and the targeted efforts may fail if not carried out with adequate knowledge of how stakeholders will react to change or take responsibilities for action. In places where communities are currently settled and practicing livelihood support activities, sub-zoning the buffer zone will be considered. In other places, the entire buffer zone (200 meters) will be planted with trees and grass or left to naturally regenerate. The sub-zones could include:

**1. A Restricted Zone 50 meters from the wetland and river edge.**

It is responsible for protecting the physical and ecological integrity of the wetland and because of its critical importance in protecting water quality, this zone will have the most stringent restrictions. Permitted activities will include harvesting of grass, animal grazing, fish farming, water-loving trees, and vegetation. Restricted activities include any form of soil disturbance and removal of vegetation (except where necessary to accommodate permitted activities), crop farming, construction of permanent structures other than access roads/paths and fish landing facilities.

**2. The Outer Zone starts from the edge of the restricted zone and extends for 100 meters.**

Its main purpose is to protect the restricted zone. Permitted activities include crop farming with appropriate soil erosion control measures and inorganic pesticide and fertilizer avoidance, tree planting, removal of mature trees, regulated sand mining, and approved public infrastructure including those for recreation use, sanitation, or other uses as determined by the relevant government agencies. Restricted activities include construction of permanent structures other than those already existing or access roads/paths and fish landing facilities.

While the ‘official’ wetland buffer zone is 200 meters from the lake edge, there are measures that landowners whose property borders with the 200 meters can undertake to enhance its function. The measures include but are not limited to:

- 1) Planting or preserving vegetation (trees/grass) to encourage infiltration of runoff.
- 2) Avoiding the construction of permanent structures adjacent to the buffer, practice soil erosion control measures. The Municipal Council will provide such landowners

with the necessary support in implementing those measures.

#### **4.4.4. Strategic intervention 4: Enabling interventions.**

##### **4.4.4.1. Awareness and sensitization**

Awareness campaigns will be launched using suitable materials and methods. Information, Education, and Communication (IEC) materials about environment management (with specific focus on the wise use of Wetlands and Riverbanks resources), solid waste management, sanitation, and hygiene, among others, will be developed (with consultation of the Municipality communications office) and disseminated. This Action Plan and, generally, environment management, should be popularized through radio campaigns (talk shows and associated spot messages), community caravans and meetings/barazas as well as drama and theater plays.

This intervention should be led by the Municipality Community Services Department in conjunction with the political leaders from all the divisions within the Municipal Council; supported by technical officers at relevant levels. It will target not only the Wetlands and Riverbanks communities but the entire Municipality. This will create awareness amongst people of the impact their negative activities have on the rest of the population, thereby triggering enthusiasm for corrective action.

##### **4.4.4.2. Community-based monitoring and supervision of implementation**

Resource constraints at Local Government level (Kasese Municipal Council) make follow up of and support to the communities difficult. Community based monitoring structures could solve this challenge if they are adequately capacitated, supported, and supervised by relevant stakeholders. To enable community-based monitoring and supervision of implementation, a community-based multistakeholder structure called the Wetlands and Riverbanks Environment Committee also referred to as local Environment Committee (LEC for purposes of this report), should be established, this committee will be responsible for mobilization of community members for implementation, supervision of implementation by fellow community members, local coordination, and monitoring and reporting environmental offences. The LEC should be established (during the community sensitization meeting) considering government guidelines, especially within the Catchment-based Integrated Water Resources Management framework promoted by the Ministry of Water and Environment (MWE). The LEC will report to the Municipal Council monthly on the progress of Action Plan implementation by the community members.

The LEC brings together stakeholder categories relevant to the Wetlands and Riverbanks and surrounding areas, including local leaders at Ward and Village level, the Town Agents, farmers, sand miners, brick makers, religious leaders, and representatives of other interest groups among others.

#### **4.4.5. Strategic objective 5: Improve solid waste collection, management, and Sanitation practices.**

##### **4.4.5.1. Improve waste collection and management.**

The Town council should designate at least one dumping site per ward for solid waste, and then decentralize garbage collection using a private entrepreneur to set up and manage a

business of collecting garbage. During the consultations, it was learned that stakeholders in the trading centers are willing to pay for garbage collection provided a good service is provided; as such it is worthwhile to explore and promote further the “business-thinking” around garbage management. KMC can learn from Kampala where this is already working to complement city efforts in waste management. The selected entrepreneur should be introduced by the Municipal Council to solid waste generators especially markets, institutions, and households; this will be done through organizing introductory meetings between the entrepreneurs and the stakeholders.

The selected entrepreneur will be offered support through seed funding and technical assistance to establish or expand the solid waste management business. The technical assistance will include start-up business development training and follow-up technical support. Additionally, Occupational Health and Safety training should be conducted for the selected entrepreneurs; it will include developing with the entrepreneurs the necessary policies and procedures.

Community structures (market committees, local political leadership, traders, and shop operators in trading centers) and communities will be trained in collection and sorting of solid waste for disposal. Waste segregation bins should be procured and installed in the trading centers, markets, and selected institutions in the Municipality and sensitize stakeholders about the same. Monitoring and enforcing usage of the bins will be a responsibility of private waste collectors in collaboration with the local leaders including committees such as market committees, and others as applicable. Monthly community clean-up campaigns should be initiated. The first step will be to engage the stakeholders (through community meetings) in the selection of a day for the clean-up and to develop necessary byelaws (rules, terms, and conditions) to govern the activity.

#### **4.4.5.2. Encourage and support ventures that utilize (reuse or recycle) solid waste.**

Waste to wealth business initiatives should be supported by the Municipal Council, giving priority to recycling of plastics (or converting them to building blocks) and conversion of organic waste to animal feeds or organic fertilizers. Interested community members will be identified and provided with a grant (as co-funding) and technical support to establish or expand business ventures. Technical support should include training in the technical aspects related to business ventures, and in marketing and business management. Additionally, the members will be equipped with skills in recycling or upcycling of waste material. Further, an Occupational Health and Safety training will be conducted for the members; it will include developing with the entrepreneurs the necessary policies and procedures.

#### **4.4.5.2. Enable construction of solid waste collection bins and use at household level.**

The Municipal Council should make construction of waste collection bins mandatory for all households, augmented by support to community-based entrepreneurs in establishing a business of making plastic or wooden boxes for waste collection. Solid waste collection bins are suitable for all households that generate waste. Meanwhile, for households within the vicinity of the river and wetland areas, use of eco-San toilets should be made mandatory, due to the high-water table and loose, collapsing soils as is the case for these Wetland and Riverbanks. This could partially solve water contamination by fecal matter from these latrines. The support to waste collection bins as well as the eco-San toilet entrepreneurs will include training, exposure visits, and grants/co-finance for establishing or expanding the business. To achieve this, KMC can learn from Kampala where this is already working to complement city efforts in waste

management.

## **5. FINANCING AND IMPLEMENTATION PLAN**

### **5.1 Anticipated funding sources**

Funding sources for implementing the Action Plan include:

1. Allocation by the central government, District Local Government and Municipal Council through local revenues and budgetary support from the Central Government as appropriate.
2. Resource mobilization and support by development partners for instance expertise France.
3. Co-financing by private sector players and entrepreneurs interested in implementing some of the interventions.
4. Own contribution by community members for interventions that will be implemented at household level such as own eco-San latrines, waste collection bins, tree planting, soil, and water conservation measures, among others.

**Table 7: Budget for the Wetland Restoration and Sustainable Management Action Plan**

<b>BUDGET</b>								
<b>Wetlands and Riverbanks Restoration and Sustainable Management Action Plan for Kasese Municipality (2023 – 2028)</b>								
Interventions	Activities	Location	Priority level	Notes	Implementation cost (UGX)	Notes	Yearly Running cost (UGX/year)	
<b>Improving waste management and sanitation practices</b>					<b>158,675,000</b>		<b>9,400,000</b>	
Improve solid waste collection and management	Designate at least one dumping site per ward for solid waste	Required in 14 out of the 19 wards	Medium	Community meeting (2), compensation of landowners (2)	24,000,000			
	Conduct feasibility study on business case for solid waste collection & identify interested local entrepreneur	Required in the entire municipality		Consultant (20 days)	37,500,000			
	Offer support (seed funding and technical assistance) to selected entrepreneur to establish or expand the solid waste management			Seed funding (1), introductory community meetings (4)	28,000,000	Technical support by DLG official and TC official (4 months)	1,760,000	
	Procure and install 30 waste segregation bins in the trading centres, landing sites, markets, and selected institutions			waste segregation bins (30)	21,000,000			
	Initiate and undertake monthly community clean up campaigns.			Community meetings (2), 2 days allowances for joint committee (3 DLG officials, 3 TC officials)	4,480,000	Monthly monitoring and participation by DLG and TC	6,000,000	
	Train community structures and communities on collection and sorting of solid waste for disposal			Community trainings (3), transport and allowance for DLG official (3 days), allowance for TC official (3 days)	5,280,000			
Encourage and support ventures that utilize. (Reuse or recycle) solid waste	Identify interested community members & provide them co-funding and technical support		Required in the entire municipality	Medium	Community meeting (2), co-funding (1)	22,000,000	Technical support by DLG official (4 months)	1,640,000
	Equip the entrepreneurs with skills in recycling or upcycling of the waste material	Community trainings (4), transport and allowance for DLG official (4 days), allowance for TC official (4 days)			7,040,000			
	Conduct Occupational Health and Safety training to the selected entrepreneurs and co-develop with them necessary policies and procedures.	Consultant (5 days)			9,375,000			
<b>Increasing vegetation cover</b>					<b>17,200,000</b>		<b>2,550,000</b>	
Establish and support at least one tree nursery as a business	Identification of interested local entrepreneur through a transparent tendering process	Location to be determined	Critical	Community meetings (2), 2 days allowances for joint committee (3 DLG officials, 3 TC officials, 1 external resource person)	4,920,000			

	Technical and financial support to successful entrepreneur					Technical support by DLG official (4 days per month for 2 months), visits by TC official (4 days per month for	1,680,000
Encourage and incentivise tree growing at group and household level	Community training and sensitisation on tree management	Municipal wide for household tree planting; Woodlots along the Wetland and Riverbank	Medium	Community trainings (3), transport and allowance for DLG official (3 days), allowance for TC official (3 days)	5,280,000	Monitoring support by DLG official (1 day per month for 3 months) and TC official (2 days per month for 3 months)	870,000
	Provision of assorted seedlings				160,000,000		
<b>Enhancing businesses and livelihood support options</b>					<b>456,000,000</b>		<b>2,850,000</b>
Regulate sand mining	Designating areas for sand mining	Municipal Council wide	Critical	Community meeting (1)	2,000,000		
	Registration of sand miners and organising them into groups			Community trainings (6) for training sand miners	9,000,000	visits by TC official (4 days per month for 2 months)	240,000
Enhance economic value of abandoned sand mines through fish farming	Training of interested community members on fish farming	Kanyangeya and Kyondo wards	Low	Community trainings (4)	6,000,000		
	Provision of tools and materials for setting up the fishponds			tools and mterials (2)	240,000,000	Monitoring support by DLG official (1 day per month for 3 months) and TC official (2 days per month for 3 months)	870,000
Promote small-scale irrigation system	Trainings and provision of the materials on a co-funding basis	Kyondo and in Kanyangeya and Nyakasanga wards	Medium	Community trainings (6), co-funding (3)	69,000,000	Monitoring support by DLG official (1 day per month for 3 months) and TC official (2 days per month for 3 months)	870,000
Initiate alternative income generating activities	Skilling and conditional start-up capital provided on revolving basis through groups	Both Wards, especially in Nyakasanga, Kanyangeya and central ward.	High	Community trainings (20), start-up capital (10 groups)	130,000,000	Monitoring support by DLG official (1 day per month for 3 months) and TC official (2 days per month for 3 months)	870,000
<b>Enabling interventions</b>					<b>430,590,000</b>		<b>59,120,000</b>
Awareness and sensitization on environment management	Community caravan/barazas (with educational music and videos)	Municipal and District wide	Critical	1 per quarter for 2 years	22,400,000		
	Radio campaign (60 minutes talk show & associated spot messages)					cost of radio talk show and associated spot messages (24 per year), allowances for DLG officials (2 per show) and TC	50,400,000
	IEC materials (brochures, flyers, t-shirts, calendars, etc)			procuring the materials (2000 units)	20,000,000		
Community-based monitoring and supervision of implementation	Training the Wetlands and Riverbanks Environment Committee (LEC) on environment management, internal working procedures, conflict resolution, community	Both Wards	High	Community trainings (3), transport and allowance for DLG official (3 days), allowance for TC official (3 days)	5,280,000		
	Provision of materials and tools to the LEC to use in performing their roles			materials and tools	8,000,000		
	Forming the LEC into a VSLA			start up materials	1,800,000		
Wetlands and riverbanks buffer demarcation	Community engagement meetings	Wards along the Wetland and Riverbank	Medium	community meetings (6), allowance and transport for DLG official s (3 each 6 days), allowance for TC officials (3 each 6 days)	13,440,000		
	Procurement and installation of concrete pillars jointly with the LEC and community members			Concrete pillars procurement and installation costs (500)	9,000,000	spot checks by TC (1 official, 1 day/month)	360,000



	Procurement and planting of assorted tree seedlings pillars jointly with the LEC and community members			Assorted seedlings (10,000)	180,000,000		
Provision of conditional incentives through revolving funds	Sensitisation meetings about the revolving funds	Both wards	High	community meetings (12), allowance and transport for DLG officials (2 each 12 days), allowance for TC officials (2 each 12 days)	25,920,000		
	Provision of the funds			Funds (6 groups)	120,000,000	spot checks by TC (1 official, 1 day/month)	360,000
	Enactment of byelaws			Developing the byelaws through a community-driven process	Entire Town Council	High	Consultant (10 days), community meetings (3)
	Monitoring and enforcement of compliance		Quarterly monitoring visits	8,000,000			
<b>TOTAL</b>					<b>1,062,465,000</b>	<b>73,920,000</b>	

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