SANGO BAY – MINZIRO TRANSBOUNDARY WETLAND MANAGEMENT PLAN

NELSAP-CU
NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany

NELSAP-CU
NILE BASIN INITIATIVE
INITIATIVE DU BASSIN DU NIL

TRANSBOUNDARY WETLAND MANAGEMENT PLAN FOR THE SANGO BAY – MINZIRO WETLAND BETWEEN THE REPUBLIC OF UGANDA AND THE UNITED REPUBLIC OF TANZANIA

2020 - 2030

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany

Wetlands INTERNATIONAL

ACACIAWATER

NatureUganda

June 2020

Foreword

Wetlands form transition zones between land and water that create a unique ecosystem characterised by hydrology, soils and vegetation, providing rich habitat and breeding grounds for fish, amphibians and migrating birds. Wetlands help to offset the human effect on rivers by cleansing the surrounding ecosystems, comparable to the functioning of kidneys and are as vital to the health of all other biomes, wildlife and humans everywhere. Wetlands provide natural buffers, similar to a sponge that absorbs water during rainy seasons, thus prevent flooding, while reducing impacts of drought through a steady release of water in dry seasons, to help keep river levels normal while filtering and purifying the surface water.

Unfortunately, and despite these vital functions, wetlands are in retreat the world over. According to the authoritative Ramsar Global Wetlands Outlook (2018), 35% of the world's wetlands were lost between 1970 – 2015, resulting in a staggering loss of 81% of inland wetland species populations. The loss rate is accelerating, driven by population increase, urbanisation, and changes to land and water use and agriculture while the ones left are under threat from water drainage, pollution, unsustainable use, invasive species, disrupted flows from dams and sediment dumping from deforestation and soil erosion.

Wetlands comprise only 4% of the Nile Basin. Considering the vital role these wetlands play in water quality and stabilising river flow, the Nile Basin Initiative decided to proactively establish a strategy to prevent further encroachment and start to reverse the degradation through a Wetland Management strategy approved by the Nile Council of Ministers in 2013. To implement this strategy, Nile Equatorial Lakes Subsidiary Action Program (NELSAP) with support from GIZ, on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under the International Climate Initiative commissioned Wetlands International to undertake a diagnostic analysis of 3 transboundary wetlands that include the Sango Bay – Minziro wetlands. The aim was to a) identify drivers, threats and impacts on the wetlands, their ecosystems and communities they support b) develop concrete transboundary wetland management plans that simultaneously incentivise stakeholders to conserve the wetlands by promoting sustainable livelihoods and c) develop Investment Project Plans (IPPs).

The Sango Bay - Minziro wetland landscape is a large, biologically rich, transboundary landscape that expands across the Minziro Nature Forest Reserve in northwest Tanzania (25,700 hectares) and in southern Uganda where riparian communities tripled the protected, Ramsar designated area from 22,000 increased to 77,000 hectares in 2017 based on their appreciation of the economic, social and livelihood benefits accruing from the system

The Minziro Ecosystem in Northern Tanzania is both a natural forest and a wetland, maintaining soil moisture and fertility throughout changing seasons thus providing the base for high agricultural productivity and leading to high population growth, which unfortunately has led to overexploitation of valuable forest hardwoods and wetland conversion to grow paddy rice and other water-intensive crops, exacerbated by seasonal burning of grasslands to establish new shoots for migrant livestock; resources

from the rapidly growing human population. To protect the region, the Government of Tanzania upgraded the status of the ecosystem to Minziro Nature Forest Reserve.

In 2017, The United Republic of Tanzania and the Republic of Uganda signed a Memorandum of Understanding on cooperation in development and management of the shared environment, water and natural resources between the two countries in the sustainable management of the common watersheds, wetlands, lakes, river regulations, and biodiversity conservation, flood management, and water quality management to promote integration, peace and economic development.

This Transboundary Wetland Management Plan for Sango Bay - Minziro thus represents an important pillar in support of the two countries vital interest in strengthening their transboundary cooperation for environmental sustainability while contributing to their citizens' well-being and livelihoods.

Hon. Sam Cheptoris (MP)

Minister of Water and Environment
Uganda

Hon. Hamisi Kigwangalla

Minister of Natural Resources and Tourism
Tanzania

Acknowledgement

The development and finalisation of this Transboundary Wetland Management Plan was made possible by the Nile Basin Initiative (NBI)/Nile Equatorial Subsidiary Action Program (NELSAP) with support from with support from the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under the International Climate Initiative. Implementation was through a team led by Wetlands International, supported by Acacia Water, Nature Uganda and Nature Tanzania.

Valuable contributions were made by stakeholders of the Sango Bay – Minziro wetland landscape during field campaigns and consultative stakeholder workshops. These include wetland dependent communities, National and District government officials and Non-Governmental Organisations. Together with the Nile Technical Advisory Committees (Nile-TACs) from Tanzania and Uganda, these stakeholders also reviewed and validated the plan document.

The implementation team benefited from inputs provided by Jackson Twinomujuni, Commissioner, Transboundary Water Resources Management (Uganda), Lucy Iyango, Assistant Commissioner, Wetlands (Uganda), Wycliffe Tumwebaze, Senior Water Officer (Uganda), George Wamunga, Senior Wetlands Officer (Uganda), Tumaini Mwamyalla, Ministry of Water (Tanzania), Deogratius Paul Nyangu, Vice President's Office, Department of Environment (Tanzania), Bernard Mwigulu, Tanzania Forest Service (Tanzania), Dr. Malte Grossman, Head of Projects (GIZ), Juan Carlos Sanchez, Advisor (GIZ), Andy Maro Tola, Program Officer – Water Resources (NELSAP) and Sadiki Lotha Laisser, Regional Project Officer (NELSAP).

Eng. Elicad Elly Nyabeeya

Regional Coordinator NELSAP-CU

Executive Summary

This Transboundary Wetland Management Plan (TWMP) has been developed in line with the *Ramsar resolution VIII.14: New Guidelines for Management Planning for Ramsar Sites and Other Wetlands.* It supports the establishment of management mechanisms that build upon and strengthen those already in place at local, national and transboundary levels in the Sango Bay – Minziro wetland landscape. The TWMP planning process was both participatory and interactive. This comprised screening and scoping, consultative reviews, field surveys, public consultations and workshops which involved key stakeholders from the local national and regional levels including local community members, civil society organisations, district and national governments and regional institutions. This TWMP will be implemented over a period of ten years (2020 – 2030).

The overall objective of the Sango Bay - Minziro TWMP is 'to restore the wetland and ensure retention of ecosystem services for the benefit of people.'

The Strategic Objectives are:

- ☐ To promote conservation of the Sango Bay - Minziro wetland ecosystem and its catchment;
- ☐ To promote and support sustainable sources of livelihoods for the communities' dependent on the Sango Bay - Minziro transboundary wetland; and
- ☐ To support the establishment and strengthening of governance structures for the management of the Sango Bay - Minziro transboundary wetland.

A successful implementation strategy for community-based wetland management plan requires adequate representation and involvement of grassroots resource users (primary) and other stakeholders in a co-management approach. During the consultative engagement workshops, participants from both Tanzania and Uganda provided their accepted management structures that would yield sustainable results

During implementation of the TWMP, changes are expected in the context of the environment in which the stakeholders operate. Therefore, there is a need to develop an adaptive management framework that ensures the TWMP maintains relevance through a cycle of periodic reviews of monitoring and adaptation.

The monitoring and evaluation framework will be utilised to build an information base and identify critical information gaps. This necessitates meaningful dialogue and engagement with all stakeholders. An evaluation of the effectiveness and efficiency of the TWMP should take place on a five-year cycle. This evaluation should also include a review of the strategic objectives. A mid-term review will be undertaken after two and a half years.

Name
Chairperson, Nile-COM

Table of Contents

List of Figures

List of Tables

Acronyms and Abbreviations

AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
amsl	Above Mean Sea Level
BMUB	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
CBD	Convention on Biological Diversity
CBO	Community Based Organisation
CBWMP	Community Based Wetland Management Plan
CEPA	Communication, Education and Participation and Awareness
CFM	Collaborative Forest Management
CFR	Central Forest Reserve
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMIP	Coupled Model Intercomparison Project
CMS	Conservation of Migratory Species
DPSIR	Drivers – Pressure – State – Impact – Response
EAC	East African Community
EACOP	East African Crude Oil Pipeline
EEALIP	Euregio-East Africa Livelihood Improvement Programme
EIA	Environmental Impact Assessment
FBD	Forest and Beekeeping Division
GEF	Global Environment Facility
GIZ	German Development Cooperation
Ha	Hectares
IBA	Important Bird Area
IGA	Income Generating Activity
IPP	Investment Project Plan
ITCZ	Inter-Tropical Convergence Zone
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resource Management
LVBC	Lake Victoria Basin Commission
LVBWB	Lake Victoria Basin Water Board
LVEMP	Lake Victoria Environment Management Project
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MEA	Multilateral Environmental Agreements
MEDO	Missenyi Environmental Organisation
MEF	Minziro Educational Fund
MNFC	Minziro Natural Forest Conservation
MNRT	Ministry of Natural Resources and Tourism
MUIENR	Makerere University Institute of Environment and Natural Resources
MWE	Ministry of Water and Environment
MWLD	Ministry of Water and Livestock Development

NA	Native Authority
NBI	Nile Basin Initiative
NDCs	Nationally Determined Contributions
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NEMA	National Environment Management Authority
NEMC	National Environmental Management Council
NFA	National Forestry Authority
NFR	Nature Forest Reserve
Nile-COM	The Nile Council of Ministers
Nile-SEC	The Nile Basin Initiative Secretariat
Nile-TAC	The Nile Technical Advisory Committee
NGO	Non-Governmental Organisation
NWAG	National Wetland Advisory Group
PREPARED	Planning for Resilience in East Africa Through Policy, Adaptation, Research and Economic Development
RAMCEA	Ramsar Centre for Eastern Africa
RAS	Regional Administrative Secretary
SAMUKA	Sango Bay-Musambwa Island-Kagera Wetland System
SDGs	Sustainable Development Goals
TFS	Tanzania Forest Services
TWMP	Transboundary Wetland Management Plan
UNDP	United Nations Development Programme
UPDF	Uganda Peoples Defence Force
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations International Children's Fund
URA	Uganda Revenue Authority
USAID	United States Agency for International Development
UWA	Uganda Wildlife Authority
WID	Wetlands Inspection Division
WMD	Wetlands Management Department
Yr	Year

SECTION ONE: INTRODUCTION

1.1 Background

The Nile Basin is one of the world's major river basins, which covers an area of 3,349,000 Km^2 and traverses eleven (11) countries including Burundi, the Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania and Uganda. The Nile serves a critical role in the social and economic development of these countries which have a high dependency on its resources for basic needs including agriculture and hydropower. Population growth in all the eleven countries creates a high demand for water and causes land-use changes exacerbating the risks posed by climatic changes to the river basin. Recognising the need to preserve and sustainably benefit from the Nile River basin, global, regional and national attention has been drawn towards the riparian countries in ensuring inter-country cooperation and sustainable and equitable utilisation of the resource.

The Nile Basin Initiative (NBI) is advancing conservation of Nile Basin transboundary wetlands of regional significance to enable state parties to meet their obligations both under the Ramsar Convention and the Convention on Biological Diversity (CBD). The objective of the wetlands programme is to develop the capacities of the NBI and its member states to sustainably manage wetlands of transboundary significance based on an ecosystem management approach. This programme is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMUB) under the International Climate Initiative and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). To maintain their biological diversity and productivity, and to permit the wise use of their resources, there is need to develop and implement focused management actions, and where they exist, conduct regular reviews to address emerging challenges and issues in line with the changing environmental context of the wider wetland landscape.

This document provides the Transboundary Wetland Management Plan (TWMP) for the Sango Bay – Minziro wetland in the border of Tanzania and Uganda. It details a consensus strategy and common framework to support stakeholders of the wetland landscape in their planning towards using the wetland resources effectively and efficiently and achieving long-term sustainable development by introducing a concept for balancing growing demands with limited resources. This TWMP was developed based on the Ramsar Guidelines for management planning for Ramsar sites and other wetlands. It takes cognisance and harmonises existing conservation plans and instruments such as the *'Economic valuation of Sango Bay – Minziro ecosystem (2016)', 'Minziro Nature Forest Reserve Management Plan (2017)'* and the *'Conservation Investment Plan for Sango Bay (2016)'.* The *2017 Memorandum of Understanding between Tanzania and Uganda also provides an agreement on collaboration to strengthen cross-border collaboration,* including on shared resources such as the Sango Bay – Minziro wetland. Moreover, since the wetland area is inextricably linked to the wider basin and the activities that occur there, the plan also mainstreams wetland management into river basin planning processes and cross-border catchment planning process of smaller sub-basins by integrating the management plan into existing basin-wide structures for purposes of national and regional harmonisation.

1.2 Need for Transboundary Wetland Management Planning

Several factors define the need for a TWMP for the Sango Bay – Minziro wetland. Firstly, due to its location, the wetland landscape is considered to be of high biogeographic importance. It consists of the Minziro Nature Forest Reserve established in 2016 by the Tanzania Forest Service. This nature reserve is rare in the region as it represents an 'outlier' of a forest habitat type otherwise found in central and western African, and as such it holds quite a unique combination of species for Tanzania. It is also an Important Bird Area providing habitat and breeding ground for diverse bird populations and is part of the Sango Bay - Musambwa Island - Kagera Wetland System (SAMUKA) Ramsar site established in Uganda in 2006. These rich natural resources with varied ecosystems are inhabited by communities whose livelihoods depend on its resources. It is thus important that an overarching framework for the management of the wetland resources is developed to ensure these services are sustained.

Secondly, the Ramsar Convention provides that a management plan should be prepared and implemented to ensure sustainable management and conservation of a wetland that has been declared a Ramsar Site. On the Ugandan side of the border, SAMUKA is one of the country's twelve (12) Ramsar sites, whereas there are plans to designate Minziro Nature Forest Reserve in Tanzania as a wetland of international significance. Preparation of this TWMP serves to meet requirements of the convention that the two countries are party to.

Thirdly, the Sango Bay - Minziro wetland ecosystem faces numerous challenges due to among others destruction of the wetland, overexploitation of resources, unsustainable resource management practices and weak institutional and enforcement capacity. Coupled with the rapid population growth and developmental plans, there is a need to accommodate the diverse, complex and competing interests of all stakeholders.

Additionally, past and ongoing interventions in the wetland landscape point towards the need for a common approach and joint planning in this transboundary wetland. For example, recommendations from the 2016 report on the *'Economic Valuation of Sango-Bay Minziro Ecosystem'* developed under the Planning for Resilience in East Africa Through Policy, Adaptation, Research and Economic Development (PREPARED) provides a clear picture of the importance of the ecosystem to local communities and different actors who use different resources for their cash and non-cash benefits. It further goes on to call for joint measures between institutions in Tanzania and Uganda for rationalised use of the valuable resources. include the establishment and capacity strengthening of transboundary wetland institutional frameworks which will contribute to enhanced governance of shared resources in the region. In the same year, the Lake Victoria Basin Commission (LVBC) Biodiversity Task Force issued a directive for Conservation Investment Plans (CIPs) to be developed in biologically significant areas of the Lake Victoria Basin. This CIP was designed to harmonise, integrate and promote various conservation strategies and plans developed for the Sango Bay landscape. To support its implementation, there is need to develop and implement mechanisms for joint governance overseeing wise and sustainable use of the resources in the wetland landscape (MWE, 2016). The Global Environment Facility (GEF) Cross Borders Biodiversity Project implemented in the Sango Bay-Minziro Forest reserves across the Uganda-Tanzania border

established mechanisms for local community participation in resource conservation at key sites and the establishment of compatible and effective policy and legal frameworks. To sustain gains made from this project, there is need to develop and implement transboundary wetland management interventions such as those proposed in this plan.

Given the importance and the challenges in the wetland landscape, management planning is important to maximise the benefits derived from ecosystem goods and services and avoid resource use conflicts. Therefore, the plan guides the utilisation of resources by specifying activities that should or should not be carried out or regulated. It spells out management actions needed to address existing and potential threats, as well as roles of stakeholders at the regional, national and local levels. Implementation of the plan will ensure sustainable utilisation of natural resources and provide for the equitable allocation of resources based on priority needs.

Lastly, planning for this transboundary wetland landscape will not only lead to the effective management of the ecosystem but also contribute to the two country's national, regional and international obligations on protection and conservation of fragile ecosystems.

1.3 Plan Development Approach

The development of the Sango Bay - Minziro Transboundary Wetland Management Plan is built on three other processes i.e.

1. Wetland Monograph: Established the physical context, biodiversity and ecosystems, policies and institutions, socio-economics and livelihoods, and social dimensions where key development aspects that inform wetland management planning will be addressed (NBI, 2020).
2. Investment Project Plan (IPP): Many environmental management plans often have excellent situation analysis including causes and threats to ecosystems from human, environmental or climate issues, but fail to clarify the economic value or propose sources of funding. IPPs expound on the economic benefits and detail the financial outlays and economic benefits that can be derived from the implementation of management actions. These are presented as investment packages to attract public and private financing.
3. Early Investment Projects: In the last three decades, many environmental studies have been undertaken within the Nile Basin, mobilising stakeholders and communities. To ensure there is sustained interest and demonstrate the potential of the IPP portfolios, the project with local stakeholders and communities is preparing readily implementable priority actions that promote ecosystem conservation through sustainable livelihoods.

The methodology used in the development of the Sango Bay - Minziro Transboundary Wetland Management Plan is derived from the *Ramsar resolution VIII.14: New Guidelines for Management Planning for Ramsar Sites and Other Wetlands.* The planning process began with an inception phase which laid the basis for the subsequent assessments on stakeholders, resources and socio-economic, policies and institutional frameworks and the environmental context. The assessment phase was followed

by an analysis and design phase in which the different interventions were identified and designed. The final step included the development of the TWMP

Plan development adopted an inclusive process that engaged key stakeholders as far as possible, including national and local government, local communities, and civil society organisations in the two countries. Resource users, including farmers, papyrus harvesters and livestock keepers, were also involved.

Several stakeholder workshops held in April, July and November 2019 aimed at presenting an overview of the wetland landscape, major issues, problems, trends and opportunities identified during the assessment phase, prioritising the issues which need to be addressed by the TWMP and development of a joint vision, planning objectives, management actions and a monitoring framework.

A summary of this approach is provided in Figure 1 and the methodology of each step of the process is described in detail in section 5 of this plan.

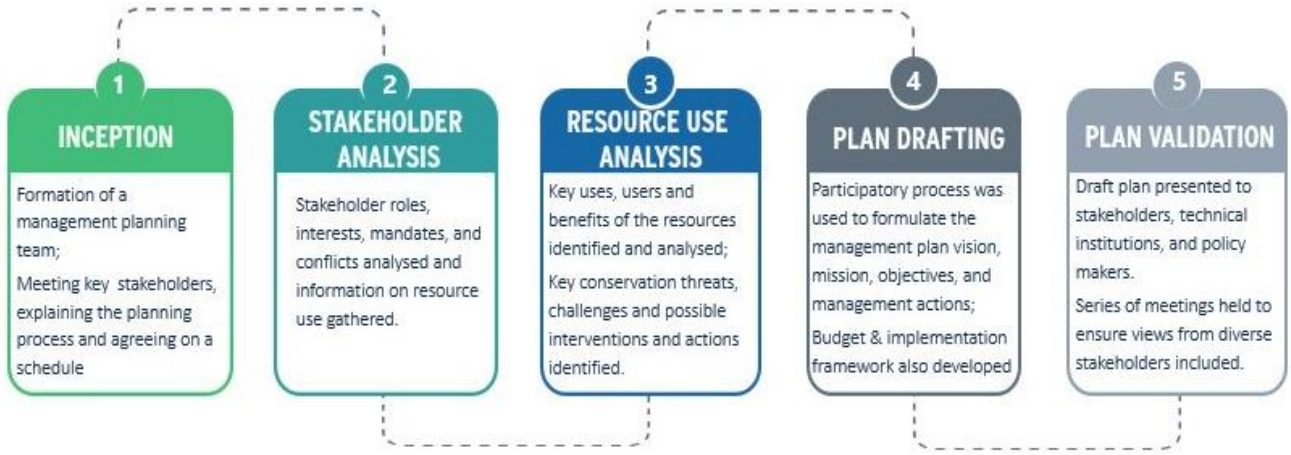


Figure 1: Summary of plan development approach (Wetlands International 2019b)

1.4 Outline of the Transboundary Wetland Management Plan

This Transboundary Wetland Management Plan is divided into eight sections.

Section 1 gives the introduction, background and outline of the plan. It also summarises a justification for the TWMP.

Section 2 describes the main characteristics of the wetland landscape including its location, biophysical features, climate conditions and socio-economic context. It also details the ecosystem values and services of the wetland. The findings of this section provide the information required to understand the functioning of the wetland landscape.

Section 3 provides an overview of the policy, legal and institutional context on wetland conservation and management in the wetland landscape. It specifies the relevant policies, laws and strategies in Tanzania, Uganda and the region, and how different actors are involved in wetland conservation and management.

Section 4 highlights the key issues, threats and challenges facing the wetland landscape.

Section 5 goes further to link the trends and key issues identified in broad management actions. These are detailed in a management planning framework. The joint vision of the TWMP is defined providing the basis for the development of management objectives for the wetland landscape.

Section 6 draws the priority interventions for implementation providing an action plan agreed by the stakeholders. These interventions are organised under three (3) thematic areas: 1) ecosystem protection and restoration, 2) livelihood improvement and 3) institutional strengthening. Actions to enhance partnerships and communication are integrated into the three thematic areas as relevant. The total budget for implementation is also provided

Section 7 guides the roles and responsibilities for the successful implementation of the strategy. It details the management structures agreed upon by stakeholders from Tanzania and Uganda to facilitate a co-management approach for dialogue, conflict resolution and implementation.

Section 8 details the arrangements to monitor and evaluate the efficiency with which the different components of the plan can be assessed and improvements initiated.

SECTION TWO: STATUS OF THE SANGO BAY – MINZIRO WETLAND LANDSCAPE

2.1 Geographical Location

The Sango Bay - Minziro wetland landscape is a transboundary wetland system located west of Lake Victoria and lies at the boundary between Uganda and Tanzania. Within Uganda, the wetland landscape is concentrated in the Kyotera and Kakuuto counties in Kyotera District and is part of the Sango Bay-Musambwa Island - Kagera Wetland System (SAMUKA) Ramsar site established in Uganda in 2006. In Tanzania, the bulk of the area lies within Missenyi District, with smaller portions in Bukoba Rural and Bukoba Urban Districts. Here, the south-western boundary encompasses the Minziro Forest Reserve (Figure 2). The Sango Bay-Minziro wetland lies between latitude 0.51 - 1.30 °S and longitude 31.38 - 31.88 °E and has an area of approximately 3000 square kilometres (1,244 square kilometres in Tanzania and 1,746 square kilometres in Uganda). The plan area extends 200 metres into Lake Victoria to account for seasonal changes in the shoreline and more long-term effects of erosion and sedimentation.

The reference point of 'Sango Bay' is used to refer the Central Forest Reserves (CFRs) of Kaiso, Malabigambo, Tero East and West, and Namalala and the nearby Lake Victoria area of Uganda, and covers approximately 15,100 ha. The Sango Bay lies in the eastern part of the Kyotera District and the southern part of the Masaka District, in the Central Region of Uganda. SAMUKA is not only a Ramsar site but an Important Bird Area (Byaruhanga et al., 2003) which covers an area of 55,100 ha (WMD/NU, 2008).

The Minziro Nature Forest Reserve (NFR) is located in the north-west of Tanzania in Missenyi District, Kagera Region. The Minziro NFR (25,717 ha) is contiguous with the forests of Malabigambo and Kaiso along the Uganda-Tanzania border; without any defined demarcation on the administrative border (TFS, 2017). The Minziro forest borders Kagera River to the south and meanders north to form the eastern boundary of the reserve. The villages of Minziro, Kigazi and Kalagala are in the enclave on the higher ground of the area, with the reserve extending around them.

The catchment of Kisoma River, together with the sub-catchments of Kibaale and Kagera Rivers and the shoreline of Lake Victoria with a 200 metres buffer zone (into the lake) defines the boundary of the Sango Bay Minziro wetland landscape (Figure 2).

A full description of the wetland landscape can be found in the Sango Bay – Minziro Wetland Monograph (NBI, 2020), which should be read in conjunction with this plan.

2.2 Biophysical Context

2.2.1 Landscape

The landscape is generally flat with small, scattered rocky outcrops. Patches of *Baikiaea-Podocarpus* seasonal swamp forest occupy area interspersed with extensive areas of grassland, dotted with pockets of *Acacia polyacantha* woodland and stands of Papyrus alongside the Kagera River. The Sango Bay area consists of extensive seasonal flood plains and permanent riverine and lakeshore wetlands; with moist swamp forests, mainly in the five gazetted CFRs (Kakuru, 2016). The edge of the wetlands is varied; with sandy, rocky and forested shores and some vegetation zones modified by human impacts from fishing villages. The lake shoreline along the Sango Bay-Minziro area is fringed by different wetland zones such as papyrus, merging into extensive floodplains of the different river inflow zones to the lake; which in most areas have scenically beautiful deltas.

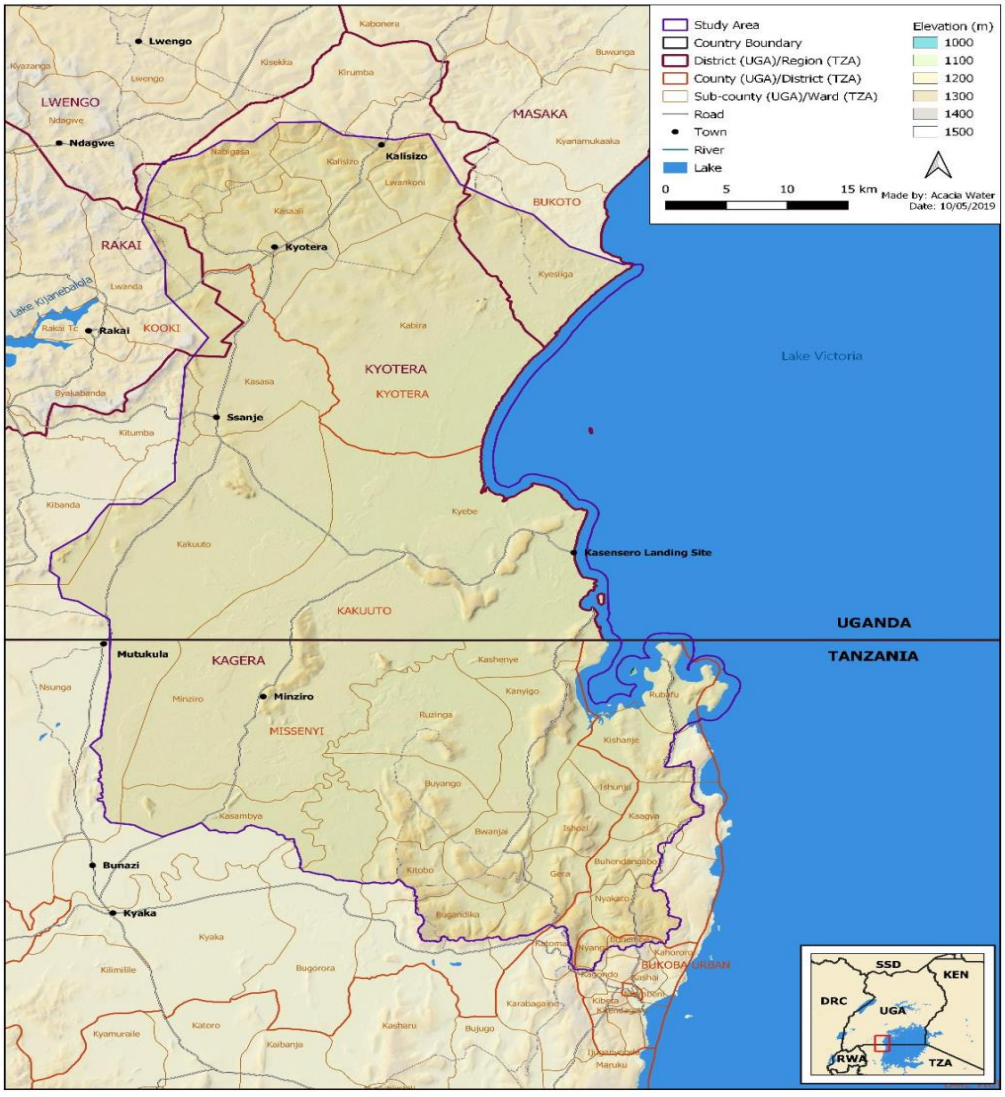


Figure 2: Location and administrative boundaries of the Sango Bay-Minziro Wetland landscape

Most of the bay and lakeshore area is relatively unsheltered and experiences some level of wave action, which affects the aquatic diversity. At the mouth of the Kagera and other rivers, the shore is relatively exposed, with mainly sandy shores merging into papyrus swamp (MWE, 2016).

2.2.2 Topography

The general elevation in the Sango Bay-Minziro wetland landscape varies between 1,135 and 1,180 metres above mean sea level (amsl). Some of the rocky hills, on top of which most villages are located, rise to elevations of 1,350 m amsl. The topography is generally flat with Minziro Forest Reserve (Tan) and Kaiso, Malabigambo, Tero and Namalala Forest Reserve (Uganda) ranging from 1,150 to 1,170 m amsl. Missenyi district (Tanzania) lies between 1,000 to 1,400 metres above sea level, ranging from the Lake Victoria shores with some few hills (NBI, 2020).

The wide flat plains of seasonally flooded grassland with pockets of woodland and papyrus are located in between the Kagera riverbanks and a North-South orientated elongated rocky hill. The plain is very flat and, nearly unhabituated and is covered with grassland and some remaining patches of forest *(Figure 3 - L).* The escarpment of Ssekaningo Forest Reserve situated on the low plain at the foot of the ridge gives rise to a high productive protected spring supplying water to Kasensero town and surroundings *(Figure 3 - R).*

Figure 3: Viewpoint over the wide flat plains of seasonally flooded grassland with pockets of woodland (L) and papyrus and Viewpoint on the escarpment and Ssekaningo Forest Reserve situated on the low plains R)

2.2.3 Geology and Soils

The geology of any particular land surface determines the drainage patterns of the area in addition to influencing land-use systems. The geology of the Sango Bay - Minziro wetland system is mainly composed of metasedimentary rocks and alluvial deposits. The several thousand feet thick layers of sedimentary rock consist of argillaceous sandstone and fine-grained, indurated sandy shales. These sandstones have undergone metamorphism to some degree and are of Mesoproterozoic (1000 – 1600 Ma) to Paleoproterozoic (1600 – 2500 Ma) age (Robel et al., 2015). These metasandstones (or quartzite sandstones) form the rocky outcrops in the area and are poor to very poor in nutrient releasing minerals. In the low parts, the metasedimentary rocks covered with surficial alluvium and swamp deposits of Holocene age. The sandy and loamy soils (fluvisols) are formed by the erosion of the Precambrian Karagwe-Ankolean metamorphic system that underlies most of the Kagera basin area and deposited by Kagera River. Towards the outlet of the Kagera River, quaternary lacustrine sediments are found. The extensive flat sandy river terrace along the Kagera River is made up of well to excessively drained brown loamy sand to sandy loams (cambisols), that splits up in several delta-arm levees, spreading out over the lake bed area eastward and comprising fluvisols, arenosols and gleysols. The flat to almost flat lowlands comprise the greater part of a lacustrine plain of imperfectly drained silt over clay deposits (acrisols and planosols) at about 1,130 m amsl These terraces gradually merge into extensive swamps in the downslope direction (histosols) (MWE, 2016). Soils developed on these sands, silts and clays have relatively more nutrient reserve. Figure 4 shows field observations of sandstones and conglomerates appearing as highly weathered banks or big boulders.

Figure 4: Boulders of highly weathered quartzite sandstones and conglomerates outcropping at Kyabasimba Landing Site, Uganda (L) and near Kashambia village, Gera ward, Tanzania (R)

2.2.4 Hydrology

The Sango Bay-Minziro wetland system includes permanent and seasonal swamp-forests, papyrus swamps and herbaceous swamps interspersed with palms and seasonally flooded grasslands which are influenced by the Kagera River floodplain. About three-quarters of the reserve consists of seasonal swamp forest and about a quarter of which is seasonally flooded grassland with pockets of woodland and papyrus on the river edge (NBI, 2020). The wetland system stretches along several rivers, including the Kagera, Bukora, Kibale, Kisoma and others, that flow into their flood plains and the shores of Lake Victoria. It is thus an important ecological component of the floodplain ecosystem, regulating the flow of water through the Kagera River system. During the dry season, the wetland system maintains a steady discharge of water and supplements the water supply to the lake and surrounding areas. It also serves to trap sediments carried from the surrounding catchments in times of heavy rainfall and hence reduces the silt carried into Lake Victoria.

The dominant hydrological factors in the lower basin are rainfall, evapotranspiration and the storage as well as the release of wetlands. The wetlands prove to be effective in reducing the amount of water entering Lake Victoria. According to Haskoning et al (2002), rainfall and evapotranspiration are about 10 times the absolute value of the runoff in the lower reaches of Kagera River in Sango Bay – Minziro area. On an annual basis, the flow recorded at the mouth (7.5 km^3/year) is not much more than that recorded at Rusumo Falls (7.2 or 7.3 km^3/year).

2.2.5 Climatic Conditions

The wider area of Sango Bay-Minziro is located within a relatively humid equatorial climate zone, where the topography, prevailing winds and water bodies cause large differences in rainfall patterns. The wetland landscape receives a bimodal type of rainfall (March to May and September to November). Average annual rainfall ranges from 800 mm to 2,000 mm. The average daily temperature is around 28^{o}C but varies with altitude. Sea surface temperatures in the distant tropical Pacific, Indian and, to a lesser extent, Atlantic Oceans determine the movement of the Inter-Tropical Convergence Zone (ITCZ) which strongly influences annual rainfall amounts and timing in the area.

Global climate change projections indicate that overall precipitation totals are not expected to change significantly by 2050, though precipitation may increase by 5–8% in November–February. In the dry season, the uncertainty is low and all models predict that precipitation will not change significantly. In the wet seasons, and November in particular, the uncertainty is larger, and different models predict a range from a 20% decrease to a 40% increase in precipitation.

The temperature is projected to increase by about 1.5 °C by 2050 (Figure 5) based on the results of the CMIP-5 experiment (Taylor et al. 2012), though some models predict temperature increases of more than 1.5 °C. The warming is projected to be more intense in the slightly cooler period between May and August, and slightly less intense in November. Due to this warming, there is a potential for an increase in the frequency and intensity of extreme events (e.g. heavy rainstorms, flooding, droughts) which would escalate the risk of disasters such as floods and landslides.

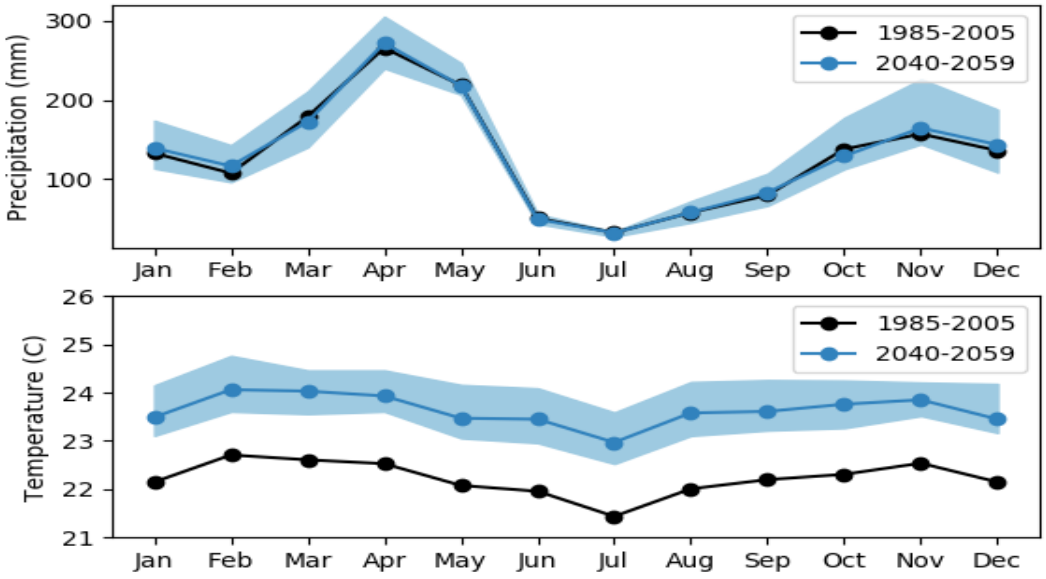


Figure 5: Historical monthly precipitation and average temperature for the period 1985 - 2005 and for the RCP4.5 climate scenario for the period 2040-2059. The blue line shows the model ensemble median, the shaded area shows the 10th – 90th percentiles of the model ensemble (n=35)

2.2.6 Flora and Fauna

a. Flora

The vegetation of the Sango Bay-Minziro area is composed of a mosaic of wetlands, grasslands and forests. The wetlands include permanent and seasonal swamp-forests, papyrus swamps and herbaceous swamps interspersed with palms and seasonally flooded grasslands.

The ecosystem can be classified as a *Baikiaea-Podocarpus* seasonal swamp forest rich in floral diversity. Sango Bay has 410 plant species have been identified out of which are 164 tree species (40%), 127 herb species (31%) and 119 shrubs (27%). More than 60% of the tree species are habitat-specific and were exclusively encountered in forest habitats. Other species occur across several habitat types, such as forest, woodland and grassland. *Rhus natalensis* is the predominant plant species recorded in all habitat types, except for wetlands. 174 species are reported to be of medicinal value, the majority of these being herbs (49.7%). According to IUCNs species red list, currently, four out of 410 species are considered threatened, *Afrocarpus usambarensis* being listed as 'endangered' (Namaganda, 2019).

Minziro plant diversity is reflected by the existence of a diversity of bird species in the area. Minziro counts over 600 unique plant species. These include *Baikiaea insignis,* Afrocarpus dawei *(Podocarpus usambaresis), Warburgia ugandensis, Syzygium guineense, Mimusops bagshwawei, Beilshmedia ugandensis, Manilkara obovata, Syzygium cordatum, Maesopsis eminii, Maytenus undata, Albizia gumifera, Sapium ellipticum* and *Gardenia imperiallis.*

b. Fauna

Sango bay in Uganda and Minziro in Tanzania are identified as Important Bird Areas (Byaruhanga et al., 2001; Baker and Baker 2002). The Sango Bay - Minziro wetland system is of major importance for fish populations, both in the wetland itself and as a nursery function for Lake Victoria. Fish is one of the major sources of income for Kyotera and Missenyi districts. Commercial fishing is mainly done in Lake Victoria and the fish species mostly found are Nile Perch, Nile Tilapia and the *Dagaa/Omena/Mukene.* Other species from Lake Victoria include *Haplochromine spp*. (*Furu/Nkejje*), catfish and Lungfish (URT: Missenyi District Socio-economic Profile, 2017 & Kyotera District Development Plan 2017). The endemic fish species that have disappeared or are rarely encountered in Lake Victoria can be found in those areas. For instance, Tilapiine species are present and act as gene banks for Lake Victoria. Other indigenous fish species found include *Momyrus* spp., *Bagrus* spp., Haplochromine spp, Lungfish, Catfish and varieties of Tilapiine spp (ibid).

The total species checklist of the birds of Sango Bay-Minziro is five hundred and seventy-two (572), including fourteen (14) globally threatened species and one introduced species, the Papyrus Yellow-Warbler. The most abundant bird species in the wetland are the Common bulbul followed by the Brown Illadopsis, Cameroon Sombre, Little Bee-eater, Olive Sunbird, and Red-eyed Dove (Nalwanga 2019). One of the valuable sites in the Sango Bay area - the Musambwa islands - contains the largest known breeding colony of Grey-headed Gulls, and is recognised as one of the few known breeding areas for Little Egrets and Long-tailed Cormorants in Uganda.

The African Elephant, the Sitatunga and the African Golden Cat are the only globally threatened mammal species found in the wetland landscape. The sub-species *adolfi-friederici* of the Black and White Colobus Monkey is restricted to Sango Bay in the Ugandan part of its range. Also, Sango Bay is part of the limited range of the doggetti sub-species of the Blue Monkey. Other mammals found in the wetland landscape include Western Pied Colobus, Grey-cheeked Mangabey, Red-tailed Monkeys, Greater Galago, Slit-faced Bats, Red-legged sun squirrel, Brush-furred Mouse, Soft-furred Mouse, Western Tree Hyraxes, Bushbuck and Duikers. A recent survey conducted on mammals (Rovero et al, 2019) as part of the Rapid Assessment of biodiversity and conservation status of Minziro Forest Nature Reserve, (CAWM 2019) recorded twenty-three (23) mammals using camera traps. The sitings include several species of antelope, monkeys, the near-threatened African Buffalo, fire-footed rope squirrel and the vulnerable tree pangolin and giant pangolin ("scaly anteaters"). The siting of the African Golden cat (*Caracal aurata,* also an IUCN-Vulnerable) during this survey was the first-ever record in Tanzania.

The wetland landscape is important for invertebrates such as dragonflies and butterflies, some of which are rare in the region. According to Akite (2019), a total of three hundred and nine (309) species of butterflies and sixty-one (61) species of dragonflies have been recorded in the Sango Bay – Minziro wetland landscape. These include 51 and 7 endangered species of butterflies and dragonflies listed as Vulnerable (VU), Endangered (EN) or Critically Endangered (CR) on the Uganda National Red List.

2.3 Social and Environmental Context

2.3.1 Human Demography

The Sango Bay – Minziro wetland landscape lies predominantly in Missenyi and Kyotera Districts, which are among the fastest growing districts in Tanzania and Uganda respectively. Therefore, for purposes of identifying the demographic patterns in the wetland landscape, reference will be made to these two districts, which are the enumeration areas used to collect census data in Tanzania and Uganda.

The 2012 Population and Housing Census of Tanzania show that in Missenyi the population stood at 202,632, out of which, females accounted for 52 percent and males accounted for 48 percent of the population. Population in the district increased by 32.6 percent (49,846 people) between 2002 (152,786) and 2012 (202,632) (Missenyi District, 2018). The average population increased to 75.9 people per sq. km in 2012 from 51.9 people per sq. km in 2002. Migration contributed to population increase in Missenyi with Haya's, Ha's (from Kigoma) and Sukuma's (from Mwanza) being the main migrant ethnic groups. The main reason for incoming migration is the presence of industries such as Kagera Sugar Company, OLAM Coffee Processing Industry and Missenyi Ranch (Missenyi District, 2018).

The 2017 Population and Housing Census of Uganda show that in Kyotera District, the population stood at 253,538, out of which females accounted for 51 percent and males accounted for 49 percent of the population. In Kyotera District, 78% of the people living in the rural area depend on subsistence farming. Summary demographics of the two districts within the wetland landscape are provided in figure 6 below.

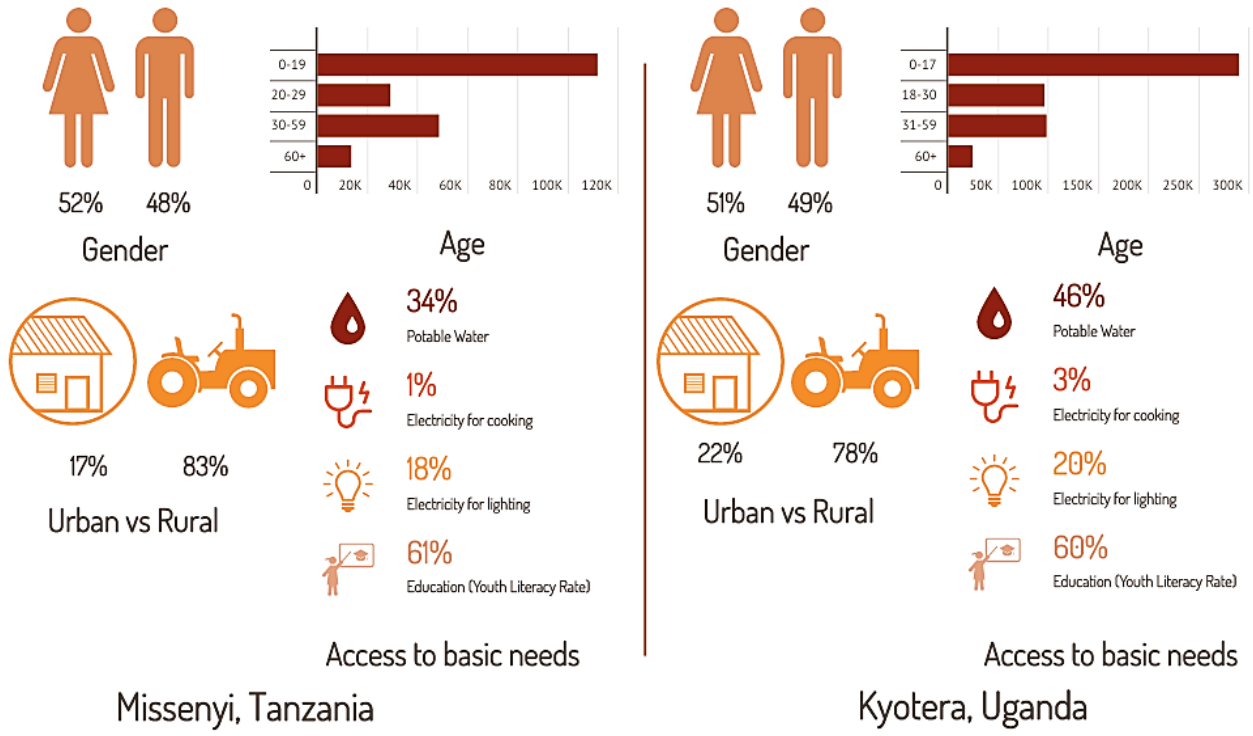


Figure 6: Summary demographics - Missenyi and Kyotera Districts (Wetlands International 2019c

The same census data (UN 2019; UBS 2017; URT 2013) was used to forecast the total population in the wetland landscape until the year 2030, as shown in (Figure 7), which is expected to rise from the current 498,000 (2019) to 563,000 in 2025 and 622,000 in 2030 with a population growth rate of 2.04.

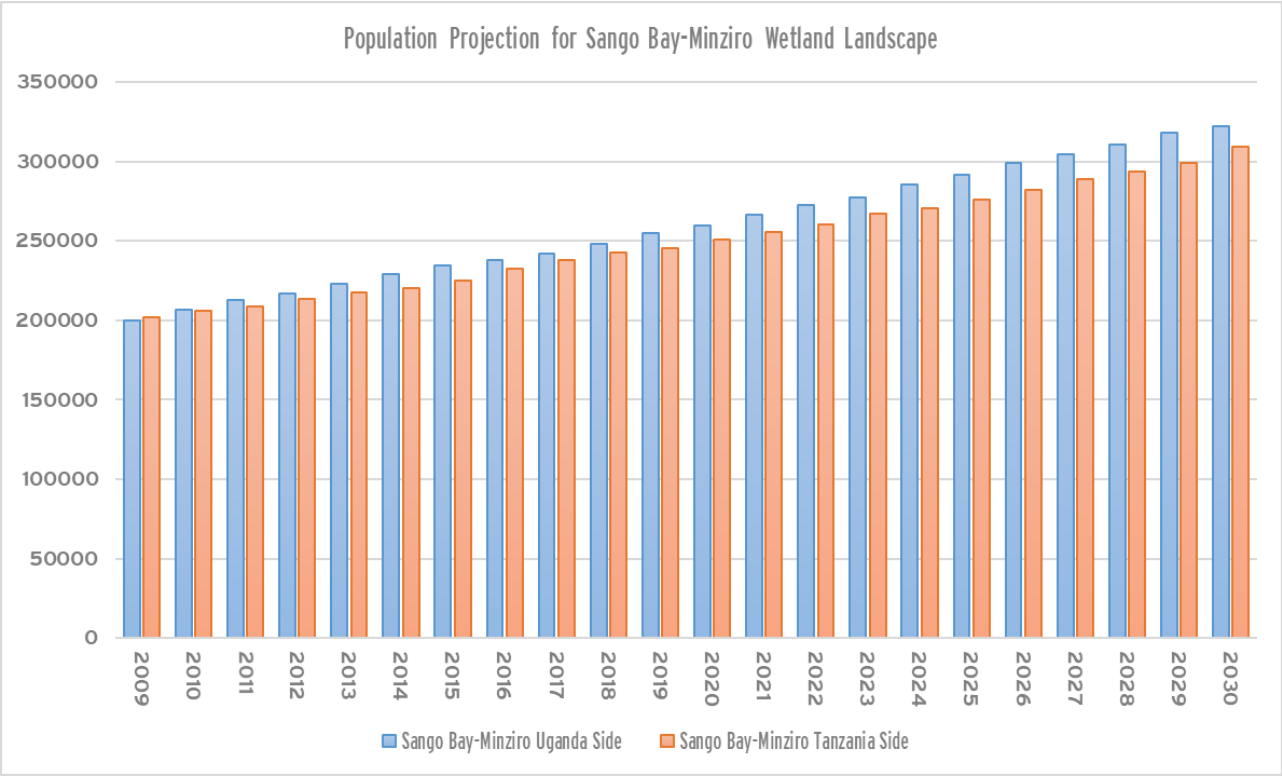


Figure 7: Population Projection Sango Bay - Minziro Wetland Landscape (UBS, 2017 & URT, 2013)

2.3.2 Livelihoods

Agriculture is the backbone of the Missenyi and Kyotera Districts economy and most of its residents depend on it as their main source of livelihoods. Crop production is the main source of income for 84% of the households, followed by formal employment (8%) and off-farm activities (5%). Fishing and livestock keeping accounts as the main source of income for 1% of the households. Poverty remains widespread in most parts of Uganda and Tanzania, with a high Multidimensional Poverty Index (55% of the population in Tanzania and Uganda is in multidimensional poverty; UNDP 2019b), and is generally perceived differently by the different categories of people.

Main food crops include finger millet, maize, beans, bananas, sorghum, sweet potatoes, Irish potatoes, cassava, vanilla and groundnuts. Coffee is the major cash crop in Kyotera and Missenyi districts. Fruits and vegetables such as passion fruit, tomatoes, pineapples, onions and cabbage are also grown. Others are fishing, agro-forestry, sand excavation and brick making. The large proportion of the population is engaged in agriculture which implies that people's economic livelihoods are dependent on the exploitation of natural resources (Wetlands International 2019c).

2.3.3 Land Use

Apart from forestry land use, the other types of land in the wetland landscape are agriculture and pastoralism. Agriculture is the main reason for the depletion of forests in the area as the result of the method of land preparation and the kind of cultivation practised. Bushes and scrubs are cut; the trash is collected and burnt. Grazing areas are needed due to the increasing animal population in the area.

The land use in the area has changed over recent decades. A rapidly growing population has led to a sharp increase in agricultural land and residential areas, resulting in encroachment along River Kagera. Based on the Land cover dataset of the European Space Agency, the built-up area including settlements and residential areas tripled between 1995 and 2015. Increasingly, settlements and croplands are located on steep slopes, which increases the risk of landslides and erosion (Annex D, Land Cover Map).

Pressure on grazing land is leading to the proliferation of less palatable and more woody species. These unsustainable practices lead to soil nutrient mining and loss of protective vegetation cover, which results in soil erosion, reduced rainwater retention and excess runoff and increasing risk of drought periods.

2.4 Ecosystem Services and their Values

2.4.1 Ecosystem Services

The Sango Bay-Minziro wetland landscape is situated predominantly in the Lake Victoria Regional Mosaic and is considered to be of high biogeographic importance as it is part of the transition zone between the East and West African vegetation zones. The ecosystem therefore, has unique features and rich biodiversity due to its biogeographical ecotone location in the Guinea-Congolian biome. This means that forests in the landscape have characteristics of Congo and Guinea, that reach their eastern range limit. Also, part of the wetland is designated as a Ramsar site and an Important Bird Area.

The benefits obtained from this wetland landscape are referred to as ecosystem services. These include provisioning services, regulating services, supporting services and cultural services (USAID 2016) and are categorised below (Figure 8).

The wetland supports subsistence and commercial agriculture, capture fisheries, grazing land and pasture, timber and non-timber products and traditional medicine. During the dry seasons, the wetland serves as a watering area for livestock herds from drier districts such as Lyantonde and Lwengo in Uganda. The local communities also use palm leaves, sedges and grasses from the wetland and forests for making mats and other handicrafts (Wetlands International 2019c).

The wetland system also plays an important role in trapping the sediments and effluents from surrounding catchments; and hence reduces the level of sediments carried to Lake Victoria, thereby helping to maintain the natural clean water conditions important for the survival of fish and many other aquatic living organisms in the lake. The forests and wetlands also help to control the speed of the water flowing along the streams and rivers that flow into Lake Victoria, therefore helping to manage flooding.

Figure 8: Categories and examples of ecosystem services of Sango Bay - Minziro wetland (Source: Wetlands International 2019b)

Tourism is one of the most important and viable economic sectors in the wetland landscape, and this has the potential of attracting investors, who can spur economic development in the region. The Minziro ecosystem includes the Kagera and Ngono Rivers, which harbour many tourist attraction centres, the most obvious one being Lake Victoria (the second largest freshwater lake in the world), whose tourism potential was reported by most respondents to be still not optimally promoted. On the other hand, Sango Bay contains one of the world's Stone Age sites, which is of archaeological and religious importance and is a significant tourist attraction. The area, internationally known as the Sangoan archaeological site, is located both in wetland and woodland forest areas and includes tools that were used approximately 200,000 years ago (USAID, 2016).

Additionally, the Kagera basin is estimated to contain more than 50% of all peatlands in the Nile Equatorial Lakes region, with possibly containing more than 70% of its total carbon stock (1.8-4.2 billion tonnes of organic carbon). This does include the upstream areas of the Kagera River, where thick peat layers are encountered in Burundi, Rwanda and south-west Uganda (Elsehawi et al. 2019).

These contribute not only to human well-being but also to a functioning economy. The benefits also provide incentives that can strengthen conservation efforts. However, the ecosystem is under stress from increasing demands from the ever-increasing population. If appropriate measures are not undertaken to conserve the area, many good and services provided by the wetland will not be available for future generations.

2.4.2 Economic Values

In 2016, economic valuation of ecosystem services within the wetland landscape conducted by USAID estimated the value of ecosystem services at USD 235,904,137 per year; 49.4 percent of which is derived from Sango Bay and 50.6 percent from Minziro (Table 1)

Table 1: Economic Valuation of Sango Bay - Minziro Wetland Ecosystem Services (USAID, 2016)

Ecosystem Service	Value Sango Bay (US$/yr)	Value Minziro (US$/yr)	Total Value Sango Bay – Minziro (US$/yr)
Provisioning Services	**61,347,496**	**28,272,728**	**89,620,224**
Capture fishery and other aquatic ecosystems	7,021,939	4,623,400	11,645,339
Wood based energy and construction material	21,844,848	8,944,800	30,789,648
Water for domestic use	1,696,247	1,116,587	2,812,835
Water and grass for livestock production	9,323,845	10,324,537	19,648,418
Crop farming, irrigation and mulching	4,027,705	2,096,000	6,123,705
Other wetland products (non-wood and fisheries)	17,432,911	1,167,368	18,600,279
Regulating and Supporting Services	**49,867,750**	**82,037,403**	**131,905,153**
Soil fertility and moisture	6,689,300	11,004,563	17,693,863
Pollination, seed dispersal and pest control	3,095,500	5,092,405	8,187,905
Water storage and recharge	11,400,500	18,754,955	30,155,455
Water quality regulation	18,965,600	31,200,926	50,165,896
Flood control	2,476,400	4,073,924	6,550,324
Carbon storage and sequestration	588,900	968,799	1,557,699
Habitat/Refugia	6,628,900	10,905,199	17,534,099
Pharmaceutical value	22,650	37,262	59,912
Cultural Services	**5,436,000**	**8,942,760**	**14,378,760**
Nature based tourism and cultural values	5,436,000	8,942,760	14,378,760
Total	**116,651,246**	**119,252,891**	**235,904,137**

These benefits serve as incentives to motivate the participation of the different actors in sustainable use and conservation. Articulation of the economic value for Sango Bay – Minziro ecosystem should be used as a clear justification for financing the management and conservation of the wetland landscape through interventions identified in this plan and the Investment Project Plan.

2.5 Stakeholders

Participatory planning requires the involvement of key stakeholders. It includes identifying their concerns and values and developing a broad consensus that considers their views. For the Sango Bay - Minziro TWMP, it also included utilising the vast amount of information and experience held by the stakeholders to find joint workable solutions.

2.5.1 Stakeholder Inventory

Stakeholders within the wetland landscape have been classified as either primary, secondary or tertiary based on their varying interests, influence, impact and capacities on the wetland (Table 2). This provides useful insights on the level and type of stakeholder involvement and participation in the implementation of the TWMP. A detailed list is provided in Annex B.

Table 2: Stakeholder Classification (Wetlands International 2019b)

Primary Stakeholders	Secondary Stakeholders	Tertiary Stakeholders
☐ Crop farmers ☐ Livestock herders ☐ Beekeepers ☐ Hunters and gatherers ☐ Fisher folk ☐ Mat weavers ☐ Bark cloth makers ☐ Brick makers ☐ Traditional healers ☐ Lumberjacks ☐ Tour guides	☐ National government departments ☐ Local government departments ☐ Political leaders ☐ Community Based Organisations ☐ National NGOs ☐ International NGOs ☐ Development partners ☐ Regional institutions	☐ Research institutes ☐ Cultural leaders ☐ Religious leaders ☐ Private sector ☐ Security agencies ☐ Immigration departments ☐ Media

The primary stakeholders are those that are ultimately directly or indirectly affected by actions or interventions in the wetland landscape. As such they have the highest interest in wetland conservation and management. However, their influence is rather low and their focus is localised. They have a good knowledge of the area, providing insights into historical use and wetland conservation mechanisms. Involving this group of stakeholder in the wetland management planning process promotes the uptake of their prioritised issues and options and contributes to the acceptance of the TWMP across borders and in their communities. in the community. When their voices are not heard or they do not have the chance to participate in the planning process, the sustainability of the project outcomes is at risk as changes will not easily be adopted.

The local government technical officers are representatives of the primary stakeholders. They are mandated by law to implement government plans and policies. They have both high interest and influence in the TWMP process. They have the knowledge and skills, as well as information networks to perform their functions and make key decisions on wetland conservation and management. Despite this, they have limited funding and inadequate staffing to adequately perform their functions.

2.5.2 Stakeholder Interests and Impacts

The interests of all stakeholders are often difficult to define, especially if they are 'hidden' (covert) or in contradiction with the openly stated aims of the individuals, groups or institutions involved. However, this is an important process as knowing the interest of a stakeholder is a key to their involvement and participation in the management planning and overall role in the management of the resource. This classification is summarised below.

Table 3: Classification of Stakeholder Interests and (Likely) Impacts in Sango Bay – Minziro (Wetlands International 2019b)

	INTERESTS	(LIKELY) IMPACTS
Primary Stakeholders		
Local community members	Enhanced quality of life	(+)
	Improved water and resource supply	(+)
	Social status	(+/-)
Cattle keepers	Sustained production and income	(+/-)
	Social status	(+/-)
Crop farmers	Sustained yields and income	(+/-)
	Improved water supplies	(+)
Fisherfolk	Sustained production and income	(+/-)
	Improved markets and fishing inputs	(+)
Beekeepers	Sustained production and income	(+)
	Better value for bee products	(+)
Brick makers	Sustained production and income	(+/-)
	Better value for bricks	(+)
Secondary stakeholders		
Government agencies		
Kyotera and Missenyi Districts (Environment, Fisheries, Forest, Production, Physical Planning and Community Development Offices) and NEMA, UWA and CFM	Better utilisation of wetland and natural resources	(+)
	Achievement of mandates	(+)
	Controlled encroachment	(+/-)
	Enhanced stakeholder awareness	(+)
	Enhanced capacity (technical and financial)	(+)
	Enhanced compliance of laws and regulations	(+)
Ministry of Water and Environment (MWE), Ministry of Water (MOW) and Ministry of Natural Resources and Tourism, Tanzania Forest Service	Achievement of mandates	(+)
	Improved ecosystem integrity	(+)
	Improved water serviced	(+)
	Increased human (technical) capacity	(+)
	Enhanced compliance of laws and regulations	(+)
	Increased sector funding	(+)
Private companies		

Tanneries, Sugar and Fish factories	Sustained/Increased productivity and income Availability of water supplies Good enabling environment for business (permits, waste disposal etc)	(+/-) (+/-) (+/-)
Civil Society Organisations		
Tunza Mazingira Byamtenga, MEDO – Missenyi Environmental Organisation, Fire prohibition organisation, Misitu Nimali Kassabya Kanyigo Group, Nature Uganda	Achievement of complementary objectives Development of operating capacity Constituent/beneficiary capacity strengthening Development of partnerships and collaboration Stakeholder mobilisation	(+) (+) (+) (+) (+)
Tertiary Stakeholders		
NBI, Inter-governmental Authority on Development (IGAD) and United Nations Development Programme (UNDP)	Achievement of complementary objectives Fulfilment of sector policy objectives Cost-effective disbursement Sustained resource use and conflict prevention	(+) (+) (+) (+)
Members of Parliament, Resident District Commissioner (RDC), Chief Administrative Officer (CAO), District Council	Policy formulation Border security	(+) (+/-)
Religious leaders	Enhance public awareness	(+)
Academia/Research Institutes	Wetland research Knowledge generation	(+) (+)

2.5.3 Power dynamics

The interests of all stakeholders are often difficult to define, especially if they are 'hidden' (covert) or in contradiction with the openly stated aims of the individuals, groups or institutions involved. The interests and influence of the classified stakeholder groups are visualised in Figure 9. Although generalised, their position in the chart (Box A – D) is reflective of their level of influence and interest, and is key to their involvement and participation in the management planning and assigning them roles in the management of the resource as described below.

Box A: Stakeholders of high interest but with low influence could become strong participants of wetland conservation and management. They require special mechanisms if their interests have to be protected but their actions if not monitored may cause degradation to the wetland.

Box B: Stakeholders with a high degree of influence, and high interest in the conservation of the wetland could be strong allies in the implementation of identified interventions. Need to develop good working relations among these stakeholders to ensure an effective coalition of support.

Box C: Stakeholders with low influence and low interest. For the plan processes, they require limited monitoring and management.

Box D: Stakeholders in this box can affect the outcome of plan development and implementation processes. They may be a source of significant risk and will need careful monitoring and management. It is therefore important to keep them well-informed and lobby towards their support for improved wetland conservation and management in collaboration with other stakeholders.

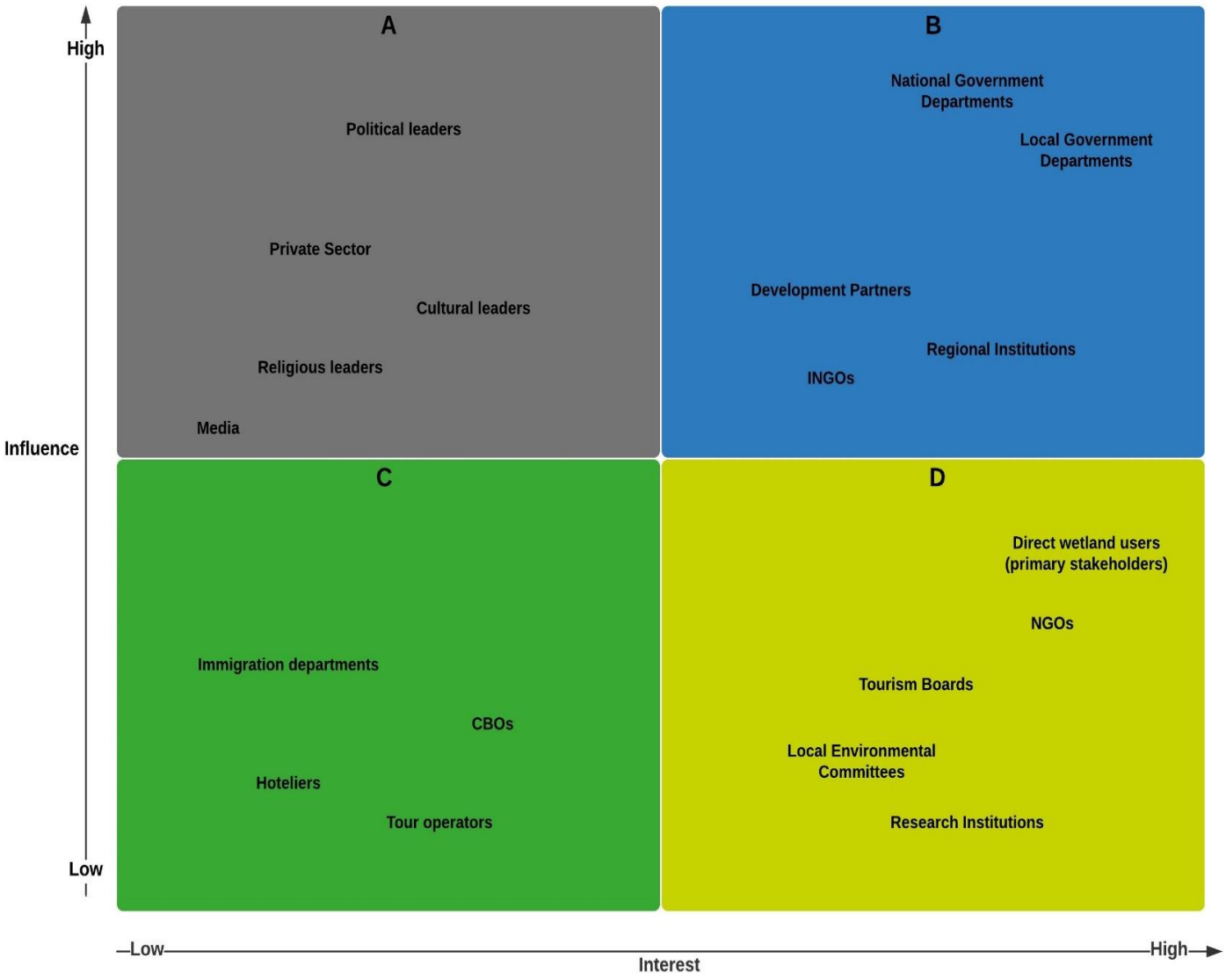


Figure 9: Sango Bay - Minziro Power Dynamics Map (Wetlands International, 2019b)

SECTION THREE: POLICY, LEGAL AND INSTITUTIONAL CONTEXT

The sustainable management of the wetland resources is not limited to the physical management, but also incorporates the institutional framework of legislation, policies, economic tools and the institutions and stakeholders involved in wetland management, regulation and utilisation. Several international and national frameworks guide the management and conservation of Sango Bay - Minziro wetland landscape. The most relevant frameworks are highlighted below.

3.1 Global and Regional Multilateral Environmental Agreements (MEA)

MEA	Remarks
Ramsar Convention on Wetlands of International Importance, 1971	This is the most relevant International Agreement to Sango Bay – Minziro TWMP. The Convention was ratified by Uganda and Tanzania in 1988 and 2000 respectively. It provides guidelines for sustainable use, management and governance of wetlands and a framework for international action and cooperation for the conservation and wise use of these areas and their resources. Most relevant to this Plan is the call for international cooperation between contracting parties and individual countries to formulate national policies on wetlands. The Convention provides for the establishment of national wetlands committees to assist in its implementation at the national and grassroots levels to the stakeholders who are the primary dependents on wetlands. This Plan proposes to establish and strengthen the Sango Bay - Minziro Transboundary Wetlands Management Committee for the management of the wetland. The main gap in the Convention is the lack of clarity on how to support the Transboundary Wetlands Management Committees.
2030 Sustainable Development Goals	Wetlands are critical in meeting most of the 17 United Nations Sustainable Development Goals (SDGs) and the 169 associated targets, focusing on poverty, hunger, health, energy, consumption and climate change. SDG 15 is the most relevant to this Plan as it specifically calls for conservation and sustainable use of “inland freshwater ecosystems and their services”. SDG 6 focuses on water and sanitation with a target relating to trends in water-related ecosystems. The major weakness of the SDGs is on how to integrate wetland conservation, wise use and restoration into SDG planning and implementation. There is a challenge in including wetlands in national SDGs and ensuring that progress reports reflect the contributions of wetlands so that their conservation, wise use and restoration can directly link to the sustainable development agenda.

Paris Agreement of 2015	Through the Paris Agreement, 196 governments including Uganda and Tanzania agreed to an ambitious programme of climate change mitigation and adaptation under the UN Framework Convention on Climate Change. The Agreement calls on States to develop Nationally Determined Contributions (NDCs) to address climate change, with nature-based solutions as a key component, including from wetlands. These have a critical role in both adaptation and mitigation through carbon storage and sequestration, particularly in peatlands. Through this Plan, Tanzania and Uganda are encouraged to prioritise inclusion of Sango Bay - Minziro wetlands conservation and management in their NDCs. However, in spite of the increased recognition on safeguarding wetlands as key natural climate buffers in landscapes, very few climate initiatives have identified the need to protect, restore and sustainably manage these ecosystems.
Convention on Biological Diversity (CBD), 1992	The CBD prioritises the protection of ecosystems such as wetlands, which are species-rich and are important for endemic and threatened species and obligates states to develop national strategies, plans or programs for conservation and sustainable use of biological diversity and to integrate them into sectoral or cross-sectoral plans, programs and policies. This makes the CBD relevant and justifies the rationale for the development of this Plan for sustainable management of biodiversity within the Sango Bay - Minziro transboundary wetlands ecosystem. Uganda ratified the CBD in 1993 and Tanzania in 1996.
Convention on the Conservation of Migratory Species of Wild Animals (CMS) or (Bonn Convention), 1979	Ratified by Uganda in 2000 and Tanzania in 1999, CMS provides a global platform for the conservation and sustainable use of terrestrial, aquatic and avian migratory species, their habitats and migration routes. Sango Bay - Minziro wetland is thus protected under this Convention as an important habitat category because the migratory water birds use them as layover sites for feeding, resting and sheltering from harsh weather.
Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)	AEWA is dedicated to the conservation of migratory waterbirds and their habitats across Africa. It provides guidance for the conservation and management of waterbirds and their habitats and an African Plan of Action is in place that identifies priority actions. Sango Bay area is one of the critical sites identified by AEWA as part of its Critical Site Network. Uganda acceded to the agreement in 2000 while Tanzania ratified in 2009
Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973	Regulates international trade in endangered species of wild animals and plants to ensure that this does not threaten their survival. Many of the endangered and threatened species like the vulnerable African Golden Cat are found within Sango Bay - Minziro wetlands in the Minziro Nature Forest Reserve.
Agreement on the Nile River Basin	Governs the relations of the Nile Basin States with regard to the Nile River Basin. The treaty intends to establish a framework to promote integrated management,

Cooperative Framework, 2010	sustainable development, and harmonious utilisation of the water resources of the Basin including Sio-Siteko as well as their conservation and protection for the benefit of present and future generations. The Agreement has however not formally entered into force because only four (4) countries - Ethiopia, Tanzania, Uganda and Rwanda have ratified. This falls short of the six (6) countries that are required to ratify or accede to the treaty for it to enter into force.
East African Community (EAC) Treaty, 2000	Obligates parties to cooperate in matters of environment and natural resource management in their countries as well as those that are transboundary. It's Protocol on Environment and Natural Resources Management, 2006, obligates parties to harmonise, adopt and domesticate common policies, laws and frameworks to ensure that there is sustainable management and use of the wetlands resources within their borders and also ensure the same for the transboundary resources such as Sango Bay - Minziro. However, the Protocol faces the challenge of having a joint framework on environment and natural resources matters. Tanzania is yet to ratify.

3.2 Policy, Legal and Regulatory Framework for Wetland Management in Uganda

Uganda has a specific policy for wetlands management, which is currently under review. The country is also in the process of formulating the Wetlands law. However, Uganda has experienced challenges in implementation of the Policy ranging from inadequate institutional funding, policy conflicts such as the Wetlands Policy and the Agricultural policies, overlapping institutional mandates leading to conflicts e.g. National Environment Management Authority (NEMA) and Wetlands Management Department (WMD) on issuance of development permits. It is critical therefore that other Policies such as Agriculture policies and the role of institutions such as Uganda Wildlife Authority (UWA), NEMA and the WMD are harmonised.

Policy and legal framework	Remarks
Draft National Environment Management Policy, 2017	This draft policy is under review. It acknowledges that wetlands are critical ecosystems that provide ecological values and functions contributing to socio-economic development of the country. The policy presents six guiding principles and nine strategies for wetland management and conservation. Most relevant to this Plan are inter alia: strengthening the mapping, demarcation and gazettement of wetlands; preparing and implementing wetland management plans; and promoting transboundary cooperation for the sustainable management of cross-border wetlands.
National policy for the conservation and management of wetland resources, 1995	Promotes conservation of Uganda's wetlands in order to sustain their ecological and socio-economic functions. It is implemented through the Wetlands Sector Strategic Plan (2011 – 2020) that define projects and programmes and provides the basis for informed investment discussions by the central and local governments and development partners by outlining the needs and aspirations of Uganda for wetland utilisation and sustainable management. Its key objectives are: improving the planning, management and conservation of wetlands and the institutional and technical capacity for sustainable wetland management Therefore, the formulation and implementation of this Plan is in line with the goal of this Policy.
Draft Wetlands Policy and Bill	The above National Policy for the Conservation and Management of Wetland Resources, 1995 is under review. The Bill is also being developed to operationalise the Policy. These will provide a comprehensive framework for wetlands management including the implementation of this Plan
National Fisheries And Aquaculture Policy, 2017	The Policy notes that almost 20% of Uganda's surface area is covered by open fresh water resources comprising of major and minor lakes, rivers, wetlands and water reservoirs among others, which raise its potential for fisheries and aquaculture development. The Government commits to secure the long-term

	future of the fisheries and aquaculture sub-sector that contributes to a sustainable development through liaising with other relevant agencies in regulating sand mining, other mineral exploration and pollution inducing activities in water bodies, wetlands and catchment
National Climate Change Policy, 2015	This Policy promotes long-term wetland conservation and restoration of degraded wetlands so that they can continue to provide global services including mitigating climate change while supporting the sustainable development needs of communities and the country.
Climate Change Bill	The Climate Change Bill is being formulated to operationalise the above Policy. It a relevant legislation for promotion of wetlands conservation and restoration of degraded wetlands for climate change mitigation as envisaged in the Policy.
The Uganda Vision 2040	Provides development paths and strategies for the country to transform from a low income to a competitive upper middle income. Articles 295 and 296 of the Vision 2040 outline efforts necessary to restore ecosystems such as wetlands through implementation of catchment-based systems, gazetting of vital wetlands for increased protection and use and, monitoring and inspecting restored ecosystems.
Wetland Sector Strategic Plan 2011/2020	The Wetlands Sector Strategic Plan (2011 – 2020) highlights as key objectives enhancing the knowledge base on wetlands for informed decision making; reinforcing public and stakeholder awareness; improving the planning, management and conservation of wetlands; strengthening compliance mechanisms and governance systems; and improving institutional and technical capacity for sustainable wetland management at all levels.
National Development Plan II (2016 – 2020) and the Draft National Development Plan III	One of the objectives of these Plans is to increase wetland coverage and reduce degradation. The proposed measures to achieve this include development of wetland management plans for equitable utilisation of wetland resources.
Constitution of Uganda, 1995	Obligates the state to protect and conserve wetlands on behalf of the people of Uganda and provides for parliament to introduce measures necessary to protect and preserve the environment (including wetlands) from degradation.
National Environment Act, 2019	Sections 54 and 55 provides for management of wetlands to comply with *interalia* special measures essential for the protection of wetlands of international, national and local importance as ecological systems and habitats for fauna and flora species, and for cultural and aesthetic purposes, as well as for their hydrological functions. The Act provides restrictions on activities that destroy, damage or disturb wetlands. The Act further provides for mandatory

	Environmental Impact Assessment (EIA) on all projects to be implemented in wetlands, and gives NEMA the authority, in conjunction with District Environment Committees, to declare any wetland as a protected wetland thereby excluding or limiting human activities in the wetland. This Plan is a reinforcement of the National Environment Act.
Water Act, 1995	Defines water to include swamps and marshes thereby extending protection to Sango Bay - Minziro wetland ecosystem. The Act provides for the issuance of a Water Permit for extraction of water from a natural source and issuance of a Waste Water Permit for discharge of waste water or trade waste into any water body, including wetlands. Under the Act, the government can declare any part of Uganda to be a controlled area, and establish a comprehensive and integrated plan for managing land, water and wetlands within such area.
The Fish (Amendment) Act, 2011	An Act to make provision for *interalia* the control of fishing and the conservation of fish. Section 4 restricts basket fishing while section 5 provides for licensing before fishes from any vessel in any waters including wetlands of Uganda unless a valid fishing vessel licence to fish either with long lines or with nets is in force in respect of the vessel. These are important provisions for the conservation of fish within the wetlands. The Act further prohibits the use of poison or explosive or electrical device for fishing. Under section 8, the Act mandates the Minister to control particular methods of fishing. It states ….”In any case where it appears to the Minister that an otherwise lawful method of fishing is likely to prove unduly destructive, he or she may by statutory order, which order may be made to apply to the whole or to any part or parts of Uganda—prohibit the use of the method”.
Local Government Act, 1997	Provides for decentralisation at all levels of local governments to ensure good governance and democratic participation in, and control of, decision making by the people. It devolves the management of wetlands to local governments to ensure country-wide demarcation, restoration and management planning of wetlands.
Land Act, 1998	Provides for the tenure, ownership and management of land. It prohibits Government from leasing out or alienating wetlands except as provided for under the law. Under this law, Sango Bay - Minziro wetland is protected.
National Forest and Tree Planting Act, 2003	Addresses the problem of the rapidly decreasing cover, depletion of green belts and the indiscriminate tree felling in Uganda. It makes provision for the conservation, management and development of forest resources in Uganda and establishes the National Forestry Authority (NFA) and a fund for tree planting. The NFA is mandated to oversee the management of Management of Central Forest Reserves (CFRs) in partnership with private sector and local communities including Kaiso, Malabigambo, Tero East and West, and Namalala CFRs which are

	found within the wetland landscape.
National Wildlife Act, 2019	Provides for the conservation and sustainable management of wildlife and strengthening of the roles of Uganda Wildlife Authority (UWA). Under the act, the roles and responsibilities of institutions involved in wildlife conservation and management are streamlined, addressing the issue of conflicting mandates on wildlife conservation in the country.
National Environment (Wetlands, River Banks and Lakeshores Management) Regulations, 2000	These Regulations aim to promote the conservation and wise use of wetlands and wetland resources. They provide for establishment of a National Technical Committee on Biodiversity Conservation responsible for advising NEMA on wetlands management matters. It also outlines functions of District and Local Environment Committees with respect to wetlands resources management. The Regulations mandate the Minister to declare any wetland to be a protected wetland. It lists traditional activities in wetlands that may be carried out without a permit, and prohibits all other activities except under a permit issued by NEMA in consultation with the Lead Agency and District and Local Environment Committees.

3.3 Policy, Legal and Regulatory Framework for Wetland Management in Tanzania

Tanzania does not have a standalone policy or legislation on the management, conservation and wise use of wetlands. Different sector specific policies address wetlands management issues in implementing sectoral development. Sector Ministries under whose jurisdiction any area of a wetland falls, shall be responsible for the management of wetlands falling under their respective jurisdiction. There are numerous uncoordinated provisions in natural resources management policies and legislation that address key matters related to the conservation and management of wetlands. Various sector specific policies such as natural resources management, land and water address wetland management issues in implementing sectoral development. However, since such provisions and sections are segmented, uncoordinated and fragmented, they may be only useful in providing a very general skeletal guide on the general management of Tanzanian wetlands. To ensure consistency with applicable national policies and related laws in wetland management, there is need for harmonisation in order to reconcile possible inter-sectoral conflicts of interest. Main legislation such as those covering agriculture, forests, water and land issues, for example, are segmented, and might not precisely and directly address wetland protection in their provisions.

Policy and legal framework	Remarks
National Environmental Policy, 1997	Provides the overall direction on sectoral and cross-sectoral environmental management activities in various government departments. The policy makes specific reference to the need to improve the management and conservation of wetlands and identifies the problems related to wetland management as land degradation, lack of accessible water of adequate quality and deterioration of aquatic resources. It further provides for EIAs before any development projects can be undertaken in conservation areas to minimise negative impacts on wetlands and its resources.
National Water Policy, 2002	Its main objective is to develop a comprehensive framework for sustainable development of Tanzania's water resources through establishing an effective legal and institutional framework. The Policy includes wetlands in its definition of water resources and seeks to address cross-sectoral interests in water, watershed management and integrated and participatory approaches to water resources planning, development and management. It requires developers to use water judiciously by putting water conservation measures in place. The Sango Bay -Minziro TWMP provides a framework for integrated water and wetlands resources including establishment of a Wetland Committee to implement the proposed actions within the Plan.
Wildlife Policy, 2007	Adopts the definition of wetlands from the Ramsar Convention. It focuses on wildlife protection and conservation in order to ensure sustainability of wildlife ecosystems.

	Objectives of the Policy include establishment, maintenance and development of Protected Areas network in order to enhance biological diversity and conservation of wetlands. The Policy only covers wetland areas reserved for wildlife within a protected are such as national parks or game reserves hence leaving out key wetlands of international importance. The Minziro NFR within the wetland landscape is endowed with wildlife resources that can be used in ecotourism and community-based ecotourism and provide the government and local communities with foreign income.
National Lands Policy, 1995	Promotes land tenure systems, facilitating social and economic development, without upsetting the ecological balance of the environment. It is noted in the policy that wetlands have often been regarded as wastelands and considered useless for social and economic development; the policy seeks to reverse this negative perception by proposing that wetlands are properly studied. A draft National Land Policy 2016 has been circulated for consultation with stakeholders.
Agriculture and Livestock Policy, 1997	Notes that agriculture is dependent on natural resources such as wetlands and that environmental issues cut across sectors. The rehabilitation of traditional irrigation systems, rather than large-scale irrigation, is acknowledged as a means to achieve less negative impact on wetlands. However, without regulations or restriction for discharging of agricultural/livestock wastes or industrial effluents to the environment, this Policy falls short of supporting the management and conservation of the Sango Bay - Minziro wetland. Further, it allows exploitation of water resources including wetlands for the development of crop irrigation systems.
National Forest Policy, 1998	The Policy sets out general guidelines for managing forest resources, aimed at ensuring a sustainable supply of forest products and services, and generally acknowledges the need for cross-sectoral regulation. It is relevant to Sango Bay - Minziro wetland because of the Minziro Natural Forest Reserve and its important functions in water catchment
National Fisheries Sector Policy and Strategy Statement, 1997	This strategy is concerned with the degradation of fishery waters and promotes the wise use principle. It also acknowledges the economic significance of wetlands. It is more engaged in the management of coastal than inland fishing
National Irrigation Policy, 2010	Promotes efficient water use in irrigation systems, and ensuring that irrigation development is technically feasible, economically viable, socially desirable and environmentally sustainable. The Policy aims to have irrigation systems that are environmentally sound by ensuring compliance to relevant legislation; protecting and conserving water and land sources including wetlands; pollution control in irrigated agriculture and promotion of proper land use practices.

Mining Act, 1998	Requires license holders to take all appropriate measures for the protection of the environment, including wetlands.
Land Act, 1999 and Village Land Act, 1999	The fundamental principle of the Land Act is to ensure that land is used productively and that any such use complies with the principles of sustainable development. Among others, the Act prohibits any development activities in environmentally sensitive areas such as wetlands and swamps. The Village Land Act as well empowers the Village Government to have legal control on village land and its uses. This also includes prohibiting or minimising land problems like bush fires as well as land use related conflicts between farmers and livestock keepers/pastoralists.
Fisheries Act, 2003	Regulates fishing activities in both fresh and marine waters. Among other things, it emphasises on the conservation of fisheries resources in particular critical habitats or endangered species, and restricts the issuance of fishing licences for fishing in any conserved areas. The Act also provides for enforcement in collaboration with fisher communities to ensure effective implementation and requires formation of community management units for the purpose of protecting and conserving fishery resources.
Environmental Management Act, 2004	Provides for preparation and execution of environmental management plans at national, sectoral and local level including environmental management plans in respect of national protected areas. Such plans must identify areas of biological diversity and associated communities, other users and institutions to be involved; describe extension and education work with communities and users on the establishment of protected areas; indicate costs and benefits of the area's protection in a manner that is equitable to identified communities; describe the boundaries of national protected area including wetlands; define management measures to be taken within the national protected area like zoning, access restrictions, use restrictions, benefit sharing, entrance fees and permits and other appropriate and proper measures for sound use of the area. This Act is key in the management of Sango Bay - Minziro wetland.
Wildlife Conservation Act, 2009	Provides for the conservation of wildlife and ensures protection, management and sustainable utilisation of wildlife resources, habitats, ecosystems and the non-living environment supporting such resources, habitats or ecosystems with actual or potential use or value such as wetlands.
Water Resource Management Act, 2009	Provides the legal framework for the management of water resources within the Integrated Water Resources Management (IWRM) framework. The Act provides for pollution control and issues discharge permits of effluents to water bodies, including wetlands. The Act also provides measures for flood mitigation and control to prevent or minimise the risk of flooding, flood damage and water pollution.

3.4 Institutional Framework Relevant to the Management of Sango Bay - Minziro Wetland

3.4.1 Regional Institutional Framework

The Ramsar Centre for Eastern Africa (RAMCEA)

RAMCEA is a regional initiative based in Uganda consisting of Burundi, Djibouti, Kenya, Rwanda, Tanzania and Uganda as Member States. It supports members, other stakeholders and institutions to improve and implement the Ramsar Convention in their countries. RAMCEA further supports the mission of the Convention by building capacity of the administrative authorities and other stakeholders to put in place appropriate instruments to promote the wise use of wetlands. RAMCEA recognises the need for regional initiatives but calls for mobilisation of technical support to the regional interventions on wise use of wetlands by all interested stakeholders. Through such a forum, countries are able to report back to a veto body to make a unified decision rather than individual decisions.

Nile Council of Ministers

The Nile Council of Ministers (Nile-COM) is the highest political and decision-making body of the Nile basin Initiative. Nile-COM comprises of Ministers in charge of Water Affairs in the Member States. Among the Nile-COM's roles and responsibilities are: approving annual work plans and budgets; ensuring smooth implementation of NBI's activities; and ensuring contribution of member states as well as external support agencies and Non-Governmental Organisations (NGOs).

Nile Technical Advisory Committee

The Nile Technical Advisory Committee (Nile-TAC), comprises twenty (20) senior government officials, two from each of the Member States. Nile-TAC provides technical support and advice to the Nile-COM on matters related to the management and development of the Nile waters. It also acts as an interface between the Nile-COM and development partners, and between Nile-COM and the Secretariat, programmes and projects of the NBI. Nile-TAC also provides oversight for NBI programmatic activities.

Nile Basin Initiative Secretariat

The Nile Basin Initiative Secretariat (Nile-SEC) is the executive arm of the NBI. The Nile-SEC was established in November 2002 by the Nile-COM and is based in Entebbe, Uganda. The Secretariat's work is organised around basin cooperation and water resources management. The basin cooperation programme aims to facilitate open discussions and understanding of the interests, positions and expectations of the Basin States in matters concerning the management and utilisation of the shared Nile Basin water and related resources. The platform is also vital for sharing information and responding to shared challenges in the

basin. The water resources management programme seeks to strengthen Member States' institutional and technical capacities and sharing knowledge bases to support decision making and action at local levels.

East African Community (EAC)

The objective of the Environment and Natural Resources Management sector is to promote conservation of the environment and sustainable exploitation of natural resources including wetlands in the Community. The EAC Partner States have agreed to take measures to foster co-operation in the joint and efficient management and sustainable utilisation of natural resources.

Lake Victoria Basin Commission (LVBC)

Lake Victoria Basin Commission (LVBC) is a specialised institution of the East African Community (EAC) mandated to coordinate sustainable development and management of the Lake Victoria Basin in the 5 EAC Partner States. Its mission is to promote, facilitate and coordinate activities of different actors towards sustainable development and poverty eradication of the Lake Victoria Basin.

The Intergovernmental Authority on Development (IGAD)

The Intergovernmental Authority on Development (IGAD) promotes regional cooperation and integration to add value to Member States' efforts in achieving peace, security and prosperity. One of its objectives is to harmonise policies with regard to trade, customs, transport, communications, agriculture, and natural resources and environment, and promote free movement of goods, services, and people within the region. IGAD division of Agriculture and Environment and the Water Technical Advisors ply an important role in wetlands management.

3.4.2 Institutional Framework in Uganda

Ministry of Water and Environment

The Ministry of Water and Environment is responsible for management of water and environment resources including coordination of cross border and trans-boundary ecosystems. This is implemented through;

i. Department of Transboundary Water Affairs in the Directorate of Water Resources Management, which plays a key role in coordinating the preparation and review of Integrated Water Resources Management (IWRM) activities on transboundary river and lake systems including wetlands with transboundary water significance and coordinate implementation of integrated plans such as this Transboundary Wetlands Management Plan (TWMP). It also plays the coordinating role of all Nile Basin (NBI) activities at national level.

ii. Department of Wetlands Management in the Directorate of Environment Affairs doubles as the National Ramsar Committee that provides strategic level Institutional support. It comprises of

representation from Line Ministries, Departments, Agencies, Civil Society, Private Sector and Academia; and

iii. Victoria Water Management Zone, established under Water Sector Reform in 2006, the Ministry of Water to implement Integrated Water Resources Management (IWRM) that is aimed at de-concentration of water resources management at the Water Management Zone and catchment levels. There are four Water Management Zones (WMZ), which are defined by the drainage patterns. The Sio-Siteko Wetland is part of the Victoria Water Management Zone.

National Environment Management Authority (NEMA)

NEMA is the principal environment enforcement agency with the principal role of enforcing the Environment Act across all sectors including wetlands. In fulfilling its mandate, NEMA works with Lead Agencies, Government departments and Local Governments as specified in the National Environment Act Cap. 153 and the Local Governments Act Cap. 243.

National Forestry Authority (NFA)

Established under section 52 of The National Forestry and Tree Planting Act, the NFA is mandated to manage all Central Forest Reserves including swamps in forests.

District Environment Committees

The management of wetlands is further decentralised to the Local Governments level. The District Environment Committee is the sub-committee of the District Council that provides policy guidance on the management of wetlands. Local Governments are supported by the WMD and NEMA. At local Government level, there is Natural Resource Department under which the Environment Unit is placed, and at sub-county level there is a Focal Point handling wetland related issues.

National NGOs and Community Based Organisations (CBOs)

These non-state actors are crucial for ensuring sound wetlands management in Uganda. Communal Wetlands Associations have worked with Wetlands Inspection Division (WID) to establish Community Based Wetlands Management Plans that provide guidelines for utilising local wetlands. The Associations are also useful in settling disputes over wetlands use and tenure. Members of Communal Wetlands Associations can monitor wetland activities and community members can report illegal encroachment to the Associations examples are BUDA (Busia – Dabani Association), BUMASI (Buhehe – Masinya Association) and LUMA (Lumino – Majanji Association).

In addition, there is an Environment Sector Consortium coordinated by Environment Alert (an NGO). Within this Consortium wetlands, issues are also handled, spearheaded by the International Union for the Conservation of Nature as Wetland Thematic Area leader.

3.4.3 Institutional Framework in Tanzania

Wetland management cuts across sectors and several Tanzanian institutions have an important stake in their management. These include Fisheries, Forests and Beekeeping and Tourism Divisions, Ministry of Water and are described below.

Ministry of Water

The Ministry of Water is responsible for all water resources, water supplies, sewage and drainage, drilling and dam construction. It oversees the adoption of a holistic water basin approach, integrating multi-sectoral planning and management to limit negative effects on water resource development. Under this Ministry, the Water Resources Division is mandated with planning and research, regulation and enforcement, issuing water use permits and inspecting water abstraction systems. The Water Quality Services Division which is responsible for water quality monitoring, controlling pollution of waterbodies and analysis of water treatment chemicals is also under this Ministry.

Lake Victoria Basin Water Board

This is one of nine (9) Basin Authorities in the country. It is charged with managing water resources in an integrated and comprehensive manner that ensures equitable, efficient and sustainable development of water resources. It is also responsible for issuing water withdrawal permits and effluent discharge permits.

Wildlife Division

The Convention on wetlands is vested in the Ministry of Natural Resources and Tourism (MNRT) within the Wildlife Division, and the Wildlife Conservation Society of Tanzania is the NGO focal point for awareness activities. The Wildlife Division is also the focal point for the Convention on Migratory Species (CMS) and to the Convention on International Trade in Endangered Species (CITES).

Fisheries, Forests and Beekeeping and Tourism Divisions

These comprise other important wetland stakeholders in the MNRT. There is a clear link between the status of wetlands including water management and quality and the Fisheries Division. There also exists a direct link to the Forest and Beekeeping Division in riverine forest and in particular with regard to mangrove management in the coastal areas and swamp forests. Moreover, forests managed by or under the guidance of the FBD comprises essential catchment areas for many wetlands. The importance of wetlands for the tourism industry in Tanzania is highly significant and therefore relevant to the Tourism Division.

District Councils

District Councils have the day-to-day management responsibility for wetlands outside protected areas as a part of the overall natural resource management. District Councils are responsible for the co-ordination of extension services, revenue collection, law enforcement, capacity building, local priority setting, by-laws, monitoring of natural resources, and are key to wetland management implementation at the local level.

SECTION 4: ISSUES AND THREATS FACING THE SANGO-BAY MINZIRO WETLAND LANDSCAPE

The Drivers – Pressures – State – Impact – Response (DPSIR) framework was used to understand, synthesise and visualise the cause – effect interactions of the wetland landscape and develop potential actions for improving the implementation of sustainable wetland conservation and management activities in the Sango Bay – Minziro wetland landscape. This conceptual framework is described in sub-sections below.

4.1 Drivers of change

Drivers of change are the socio-economic and socio-cultural factors driving human activities, which increase or mitigate pressures on the environment (Ramsar, 2018). Section 2.3 of this plan identified the socio-economic factors driving human activities within the Sango Bay - Minziro wetland landscape. For this TWMP, the focus is on drivers with a negative effect on the ecological character of the wetland landscape.

Direct drivers are the natural or human induced causes of biophysical changes at a local or regional scale (Van Asselen et al, 2013). Some of the clear direct drivers to ecosystem change in the Sango Bay – Minziro wetland are changes in local land use and land cover such as deforestation, sand mining, eutrophication and pollution and climate change. The East African Crude Oil Pipeline (EACOP) is under construction, planning to traverse the Sango Bay - Minziro wetland landscape, along the western boundary of Minziro National Park and crossing the SAMUKA Ramsar wetland system. This rising demand for crude oil may also drive environmental change

Indirect drivers include demographic, socio-political (governance, institutional and legal frameworks), cultural and religious changes. Within this landscape, rapid population growth is significant. In 2009, the human population of the wetland landscape was about 410,000 (NBS, 2013, UBS, 2017, URT, 2013) and 498,000 in 2019. By 2030, the population is projected to be 622,000 with a population growth rate of 2.04. The implication of this rapid growth is high demand for agricultural, residential, industrial land and increased demand for wetland resources such as fish, timber and fuelwood. Weak governance systems and structures including inadequate allocation of financial and human resources to strengthen enforcement of existing policies and legislation is increasing the occurrence and impacts of illegal overexploitation of natural resources and destruction of the wetland system. Widespread poverty (55% of the population in both Tanzania and Uganda is in multidimensional poverty; UNDP 2019b) is also a key driver of change. The intimate relationship between the poor and wetlands is further reflected in people's livelihood opportunities and vulnerabilities. Only by addressing the environmental and nature challenges in combination with strengthened livelihood resilience can conservation become a success.

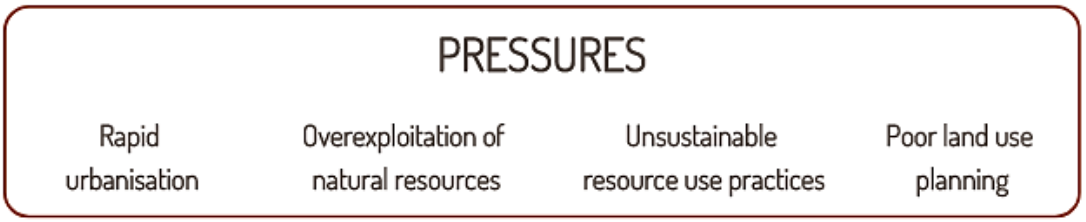
4.2 Pressures

Pressures are the stresses that human activities place on the environment. This wetland landscape faces various pressures dependent on the nature of driving forces. The wetland changes have been identified as a consequence of rapid urbanisation, poor land use planning, poor understanding of the value of wetlands, pollution, unsustainable resource use practices and overexploitation of natural resources.

Rapid urbanisation and expansion of Missenyi and Kyotera towns has and continues to bring lots of threats to the wetland landscape. The increasing pressure from population increase coupled with poor land use planning causes an increase solid and liquid waste accumulation, in faecal contamination and many other developmental related pressures.

Within the Sango Bay – Minziro wetland landscape, wetland products such as papyrus, wood and fish are being overexploited. Also unregulated and indiscriminate harvesting of logging, timber, and charcoal and therefore smuggling is rampant in the area. The endemic forest hardwood tree species Podocarpus has been virtually wiped out, and a number of trees with medicinal value, such as Phoenix *reclinata, Prunus Africana*, Rytigynia beniensis, *"Omunyabuliko"* and *"Olikwatango",* are seriously declining.

Some of the unsustainable resource management practices taking place within the catchment of River Kagera and ultimately affecting the status of Sango Bay - Minziro wetland are: Poor agricultural practices, unsustainable land use management and river bank degradation, resulting in increased erosion, destabilisation of the river banks and siltation of the river mouth where River Kagera flows into Lake Victoria. Over time and because of poor farming practices, soils are gradually losing their vitality. Basic good agricultural practices, such as mulching, soil and water conservation, crop rotation and application of fertilizers are insufficiently applied. Due to soil degradation, farmers continue looking for new farm lands (wetland encroachment).



4.3 State

The pressures discussed above have contributed to changes in the ecology (state) of the wetland. It is a combination of these pressures impacting the health and the integrity of the wetland that increase the likelihood of abrupt changes in its ecosystem with significant consequences for human well-being (MEA 2005).

Apart from reducing habitat area, infrastructure development and rapid urbanisation have brought about **deterioration of water quality and quantity**. Land cover changes upstream such as deforestation and wetland encroachment have a negative effect on flood control, water buffering and drought mitigating capacity of Sango Bay - Minziro wetlands.

The unsustainable land use practices are also enhancing **river bank, lakeshore and wetland degradation, soil erosion and landslide risk.** The detached soil material is transported downstream by streams and rivers resulting in a high sediment load of rivers (like River Kagera) and siltation of Lake Victoria (NBI, 2020a)

The fragmentation of the natural vegetation, intensification of natural resources uses and increasing invasive species (e.g. Iguana spp, water hyacinth and Kariba dam weed) entering the ecosystem, which tend to suppress native species, have resulted in **declining species populations.** Seasonal burning of grasslands and bushes is a common occurrence during the dry seasons, and was observed to take place inside protected area near Minziro NFR. The burning is a traditional method for destroying ticks and other vectors as well as stimulating fresh pastures, creating sweet young shoots for livestock, and to clear areas in advance of tilling farms (NBI, 2020a). The illegal hunters also burn wetlands to scare animals so they can easily hunt them. Bush burning degrades the wetlands, and contributes to **biodiversity loss** and migration of wild animals.

4.4 Impact

Changes in the quality and functioning of the ecosystem have an impact on the welfare of humans, including the production of ecosystem goods and services and ultimately, human well-being.

Section 3.4 and 3.5 of this TWMP detail the value of ecosystems and the services they provide. Provisioning services directly contribute to the livelihoods of communities as food and income sources. However, the ecosystems in the Sango Bay – Minziro wetlands are vulnerable to external pressures which are detrimental to their attributes.

Overfishing, increased competition and the use of illegal fishing methods is reducing fish stock indiscriminately and breeding sites are disappearing. Fish species such as *Ningu (Labeo spp), "Enkuyu" spp., Endera (Barbus spp),* tilapia, and *Ngege (Oreochromis esculentus)* have continued to disappear. The decline in fish diversity and abundance has a direct impact on **loss of incomes and species.** Wild animal populations, including elephants and buffaloes, are reducing due to illegal hunting both for domestic consumption as well as wildlife trade across borders, poaching and encroachment into the forest-wetland area.

An increasing number of **resource use conflicts** has been reported between the National Forest Association and internal migrants (settlers) that enter into the protected areas. As land is becoming scarce little land is left for free grazing of livestock, which has led to an increase in conflicts between herders and farmers. The scramble for land has led to encroachment on wetlands and is compromising its ecological functioning. See Annex C for a typology of conflicts in the wetland landscape.

Also, livestock **productivity is low.** Due to shortages of water and pastures during droughts, high pest and animal disease incidence (including foot and mouth disease), and limited vaccination campaigns as these are hindered by a lack of resources and drug stock-outs (NBI, 2020a).

Health risks, due to contamination by pathogens from non-point and point sources of pollution, are wide reaching impacts in parts of the wetland. The direct discharge of untreated waste into water sources negatively affect the water quality leading to algal blooms including harmful algae. The deteriorating water quality is therefore detrimental to many people who are directly fetching water from the wetlands for domestic use.

4.5 Responses

Responses are actions taken by groups or individuals in society and government to prevent, compensate, ameliorate or adapt to changes in the state of the environment; and to modify human behaviours that or to compensate for social or economic impacts of human condition on human well-being.

For a transboundary wetland such as Sango Bay – Minziro, the problem of shared ownership is reflected when it comes to managing the wetland resources. Institutional cooperation and collaboration within and across the borders is a challenge. Implementation of national and regional policies and frameworks is also not cascaded to the local level. Thus, the inadequacies in policy implementation, participation of the local communities and institutional collaboration are leading to ineffective conservation and management of wetland resources. Setting up and strengthening transboundary wetland institutions bringing together diverse stakeholder groups is therefore crucial for conservation of the wetland.

To this end, section 4 and 5 of this plan details the multilevel responses including development and implementation of decision support tools, strengthening governance systems and structures, outreach and education, resource management, development and implementation of by-laws, sustainable livelihood improvement, restoration – including green borders along the wetland landscape as feedback to driving forces, pressures, changes of state and impacts. A summary of the responses is presented in the DPSIR framework (Figure 10).

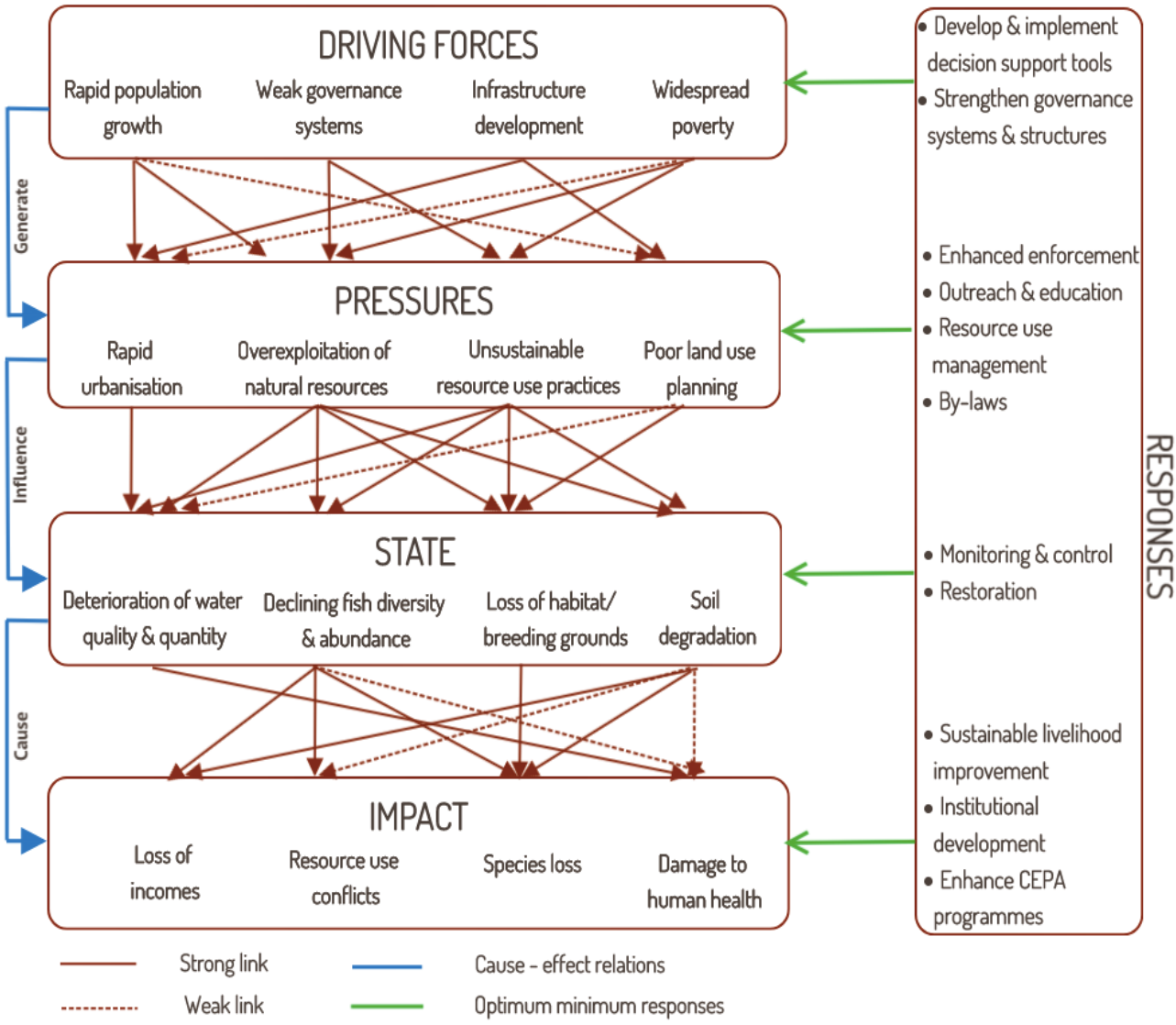


Figure 10: DPSIR response model of intervention Sango Bay Minziro Transboundary Wetland (Wetlands International, 2020b)

SECTION FIVE: MANAGEMENT PLANNING FRAMEWORK

5.1 The Transboundary Wetland Management Planning Process

This Transboundary Wetland Management Plan (TWMP) has been developed in line with the *Ramsar resolution VIII.14: New Guidelines for Management Planning for Ramsar Sites and Other Wetlands.* It supports the establishment of management mechanisms that build upon and strengthen those already in place at local, national and transboundary levels in the Sango Bay – Minziro wetland landscape.

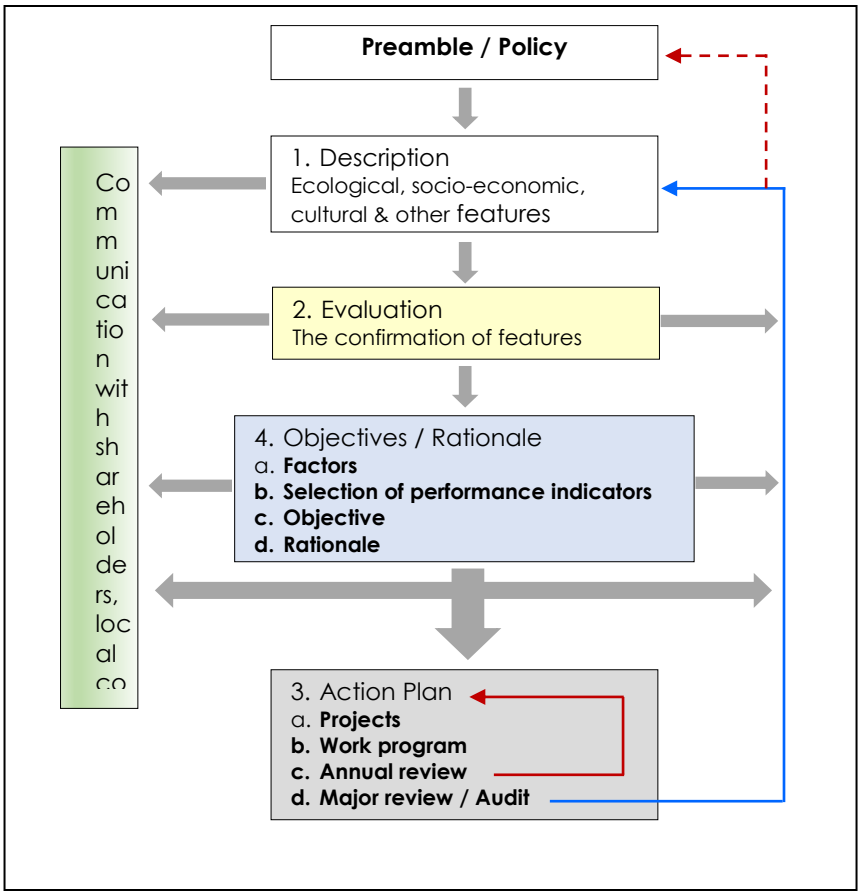


Figure 11: Management Planning Framework for Wetlands (Ramsar, 2007)

The TWMP planning process was both participatory and interactive. This comprised screening and scoping, consultative reviews, field surveys, public consultations and workshops which involved key stakeholders from the local national and regional levels including local community members, civil society organisations, district and national governments and regional institutions. Engaging stakeholders in the planning process helped to: Raise awareness and create greater understanding for the TWMP; Facilitate the commitment of stakeholders to the plan under development and institutionalisation of identified mechanisms for conflict resolution, enforcement and wetland management measures. It also

encouraged sharing of good practices and strengthened relationships among participants across the border. The steps and activities undertaken are summarised in the Table below:

Table 4: Steps and activities undertaken during the development of the TWMP

Planning step	Activities
Inception phase	Kick-off meeting held with senior technical officers from NELSAP, Nile Basin Initiative, GIZ and Directorate of Wetlands, Uganda on December 10, 2018 in Entebbe, Uganda. Scoping mission to Sango Bay-Minziro: Ten regional project representatives from NELSAP, NBI, Acacia Water, Uganda's Ministry of Water and Environment, GIZ, Nature Uganda and Wetlands International visited the Sango Bay and Minziro Forest Nature Reserve (FNR) from 9 to 11 January 2019. During the visit, consultative meetings, briefings, site visits, participant observations and individual interviews were held to inquire on various issues regarding the Sango Bay-Minziro FNR. Key outputs: Development of tools to facilitate the planning process, awareness creation among the government officials and stakeholders on purpose and scope of wetland management planning and agreements on schedules for the management planning process
National level consultations	Consultations undertaken in advance of field missions with both NELSAP, Nile-TAC members, GIZ and officials at national level responsible for wetlands, environment, natural resources and water. This step included explaining the management planning process and agreeing on a schedule for the management plan process. Socio-economic and ecological information on the area from national and local institutions was also gathered. This workshop was held in Kampala, Uganda from 9 to 10 April, 2019 and brought together 50 participants (34 men and 16 women) drawn from five (5) member states representing government agencies, civil society and research institutes.
District/County level consultations at the wetland sites	Consultations undertaken with local government officials, CSOs and community representatives at the wetland site. This was combined with capacity building sessions to establish the importance of wetlands management planning. Particular emphasis laid on stakeholder mapping and resource analysis. These meetings were held from 25 – 29 April in Kyotera, Uganda and Missenyi, Tanzania with participation of 32 and 34 participants respectively. Collection of biophysical, social, economic and biodiversity data (plants, mammals, fish) was also carried out through joint field visits with community members and workshops with informed stakeholders.
Joint District/ County level	Joint cross-border workshops organised bringing together 44 different local government officials, technical departments, CSOs and community

consultations at the wetland site Data compilation	representatives from Tanzania and Uganda This was combined with capacity building sessions on wetlands ecosystem services. This meeting was held from July 29 – 2 August 2019 in Missenyi, Tanzania. Joint identification of resources, resource analysis, stakeholder mapping, visioning, objectives, interventions and a monitoring and evaluation plan were developed. The purpose was to strengthen joint planning for the entire wetland by stakeholders from both sides of the border
Literature review and synthesis of all information from the consultations	All information was collated and synthesised to form the inception and first draft TWMP. Baseline information on the status of the wetland landscape collected and compiled into a Wetland Monograph for the transboundary wetland.
Presentation of the zero draft to the TWG	The first draft TWMP was presented to the NELSAP-GIZ Technical Management Team for appraisal
Participatory drafting and validation workshops	After incorporation of comments and input, the first draft of the TWMP was presented to the first regional workshop with feedback from Nile-TAC members obtained. Incorporation of comments and further information to produce the second draft of wetlands management plan which was presented at the second regional workshop held in Nairobi, Kenya on 22 and 23 November 2019.

5.2 Vision

The following Vision was formulated and adopted through a participatory process involving key stakeholders in the wetland landscape:

'A sustainably managed Sango Bay-Minziro transboundary wetland providing equitable opportunities and benefits for posterity'

It was further translated to Swahili as follows:

'Usimamizi endelevu wa eneo oevu la Sango Bay-Minziro kwa ajili ya kutoa fursa sawa kwa faida endelevu ya jamii'

5.3 Strategic Objectives of the Management Plan

The overall objective of the Sango Bay - Minziro TWMP is 'to restore the wetland and ensure retention of ecosystem services for the benefit of people.'

The Strategic Objectives are:

- ☐ To promote conservation of the Sango Bay - Minziro wetland ecosystem and its catchment
- ☐ To promote and support sustainable sources of livelihoods for the communities' dependent on the Sango Bay - Minziro transboundary wetland
- ☐ To support the establishment and strengthening of governance structures for the management of the Sango Bay - Minziro transboundary wetland

5.4 Key Result Areas

Based on the biophysical and socio-economic conditions in the wetland landscape, the process of the assessment of issues, needs and opportunities, the developed vision and strategic objectives, and the prioritisation of management actions, this Transboundary Wetland Management Plan has identified key result areas under each strategic objective which will be implemented over a period of ten years.

Strategic Objective 1: To promote conservation of the Sango Bay - Minziro ecosystem and its catchment

Ecological restoration involves maintaining and improving the ecological character of wetland ecosystem through sustainable management practices. It is an established fact that the integrity of the wetland ecosystems has been interfered with due to the several anthropogenic activities taking place within and around the transboundary wetland landscape. This can be attested from the problems and conflicts associated with the wetland goods and services identified in the earlier sections of this plan. The following targets will address conservation of the wetland landscape.

Target 1.1: Rehabilitate and restore 5% of degraded biodiversity sites within the wetland landscape annually

Target 1.2: Integrate wetland wise-use into river basin development planning for improved water quantity and quality

Target 1.3: Promote sustainable land use practices for improved livelihoods and reduce degradation

Target 1.4: Promote sustainable fishing practices for improved fish diversity and abundance

Table 5: Summary of Management Action for wetland conservation and restoration

Strategic Objective 1: To promote conservation of the Sango Bay - Minziro ecosystem and its catchment		
Key Result Area	**Management Actions**	**Expected Outputs/Outcomes**
1.1 Rehabilitate and restore 5% of degraded biodiversity sites within the wetland landscape annually	Identify, demarcate and gazette key sites including biodiversity hotspots	Complete survey and measures for protection in place
	Establish green borders and rehabilitate demarcated and degraded sites	Increased biodiversity cover
	Introduce alternative energy saving technologies e.g. hydraform	Increased adoption of sustainable energy options/Reduced wood fuel consumption
	Conduct feasibility studies on the potential of carbon credit projects in the wetland landscape	Sustained conservation and potential to generate sustained income
1.2 Integrate wetland wise-use into river basin development planning for improved water quantity and quality	Develop and implement water allocation plans as a decision support tool	Equitable allocation of available resources to broader social, economic, environmental and development needs
	Conduct regular water quality and hydrological monitoring	Improved understanding of trends in water quality in the wetlands landscape
	Enforce water quality regulations within the riparian zones	Improved compliance with water quality regulations on both sides of the border
	Conduct environmental flow assessments and impacts of river course diversions in the wetland	Guaranteed freshwater ecosystem services and continued access to water for people
1.3 Promote sustainable land use practices for improved livelihoods and reduce degradation	Strengthen capacity of crop farmers on sustainable farming practices (soil and water conservation measures)	Reduced runoff and siltation of the Lake and wetlands leading to improved water quality and soil productivity
	Establish demonstration sites showcasing good land use practices for knowledge exchange e.g. paludiculture	Reduced net greenhouse gas emissions from agriculture, forests and other forms of land use
	Construct water storage facilities for irrigation and livestock use during the dry seasons	Reduced pressure and water resource use conflicts
	Formulate and implement grazing by-laws and zoning plans where appropriate	Strengthened community and formal enforcement systems on land use
1.4 Promote sustainable fishing practices for improved fish	Strengthen capacity of fisher folk on sustainable fishing practices and systems	Improved understanding and adoption of sustainable fishing practices
	Identify and protect fish breeding	Increased fish diversity and abundance

diversity and abundance	grounds (no-take zones)	in degraded/overexploited sites
	Promote sustainable aquaculture	Adoption of aquaculture to reduce pressure on capture fishery
	Formulate and implement of by-laws on fisheries and enforcement of fisheries regulations	Strengthened community and formal enforcement systems on fisheries

Strategic Objective 2: To promote and support sustainable sources of livelihoods for the communities' dependent on the Sango Bay - Minziro transboundary wetland

The livelihoods of communities adjacent to wetland ecosystems is closely linked to the exploitation of natural resources. If unchecked, this normally leads to degradation of the quality of these resources to levels where they can no longer support their ecosystem and social resilience. Building resilience is therefore very important if communities are to continue benefiting from the fragile wetland resources. Sustainable livelihoods through value addition plays a very significant role in diverting attention of the local communities from overexploitation of wetland resources already under stress. Livelihoods at the local level will be improved by enhancing income from existing enterprises and diversification of income from other sustainable alternative livelihood sources. The following targets will address sustainable economic development and local livelihoods.

Target 2.1: Promote adoption of aquaculture and sustainable fishing practices for improved fish production

Target 2.2: Promote wise use and value addition to wetland plants for improved livelihoods of 20% of households in the wetland landscape annually

Target 2.3: Promote value-addition of agricultural produce and improve the value chain

Target 2.4: Promote sustainable eco-tourism for improved livelihoods and nature conservation

Table 6: Summary of Management Action for livelihood enhancement

Strategic Objective 2: To promote and support sustainable sources of livelihoods for the communities' dependent on the Sango Bay - Minziro transboundary wetland		
Key Result Area	**Management Actions**	**Expected Outputs/Outcomes**
2.1 Promote adoption of aquaculture and sustainable fishing practices for improved fish production	Identify and promote uptake of sustainable aquaculture and small scale fisheries	Diverse livelihood activities undertaken by local communities and supplementing income streams
	Improve fish post-harvest handling and value addition	Improved access and use of resources in a sustainable manner
	Promote business and enterprise models for small scale fisher folk and value chain actors	Improved climate resilience in aquaculture production systems and fisheries livelihoods

	Promote localised fisheries management and broader-scale governance improvements	Improved enabling environment for efficient value chains and equitable livelihoods
2.2 Promote wise use and value addition to wetland plants for improved livelihoods of 20% of households in the wetland landscape annually	Strengthen capacity of communities on value of wetland plants and the sustainable use options	Improved understanding and adoption of wetland plants for livelihood diversification
	Establish demonstration sites showcasing good uses of wetland plants	Increased uptake of sustainable wetland plant uses
	Promote business and enterprise models for smallholders and value chain actors	Improved production systems and livelihoods derived from wetland products
2.3 Promote value-addition of agricultural produce and improve the value chain	Promote the adoption of locally suited practices and technologies for climate smart agriculture e.g. drought tolerant crops, improved livestock breeds etc.	Improved understanding and adoption of climate smart agriculture practices for increased community and ecosystem resilience
	Establish demonstration sites showcasing good agricultural practices for knowledge exchange e.g. mulching	Improved awareness and adoption of sustainable agricultural practices
	Promote establishment of agro-based micro and small enterprises for small holders	Increase in net return per unit of product sold
2.4 Promote eco-tourism for improved livelihoods and nature conservation	Identify and develop ecotourism sites with consideration of cultural and religious values	Increased incomes and awareness towards conservation of natural resources
	Build capacity of local communities to serve as tour guides	Employment opportunities and improved community well-being

Strategic Objective 3: To support the establishment and strengthening of governance structures for the management of the Sango Bay - Minziro transboundary wetland

Both Tanzania and Uganda have well established legal structures for managing their wetland ecosystems and resources thereof. In a transboundary set up, harmonious governance structures must be sought, guided either by regional or international legal frameworks or mutual agreements through by – laws. Section 3 of this TWMP has given a broad outline of national, regional and international institutional and legal frameworks for managing wetland ecosystems. Successful management relies heavily on building adequate institutional capacity across relevant sectors with a view of promoting sustainable management. In this TWMP, several governance issues have been incorporated in different components of the implementation framework. The implementation of the plan will be conducted by elected

community members and government officials from the grassroots to transboundary level in line with national regulations. This is clearly exemplified in Section 6 on implementation strategy. The following targets will address governance issues:

Target 3.1: Enhance transboundary coordination and cooperation of transboundary wetland institutions

Target 3.2: Enhance communication, education and public participation and awareness

Table 7: Summary of Management Action for governance strengthening

Strategic Objective 3: To support the establishment and strengthening of governance structures for the management of the Sango Bay – Minziro transboundary wetland		
Key Result Area	**Management Actions**	**Expected Outputs/Outcomes**
3.1 Enhance transboundary coordination and cooperation of transboundary wetland institutions	Establish Transboundary Wetland Management Committees	Functional structure enhancing coordination and conservation efforts in the wetland landscape
	Strengthen capacity of relevant institutions to effectively manage the wetland landscape	Improved understanding of transboundary wetland functions and systems
	Facilitate transboundary exchange visits for cross-learning and experience sharing	Enhanced skills and knowledge on wetland conservation and management
	Facilitate process of designating Minziro Nature Forest Reserve as a wetland of international importance under the Ramsar Convention	Minziro Nature Forest Reserve identified as a Ramsar Site. New protection status accords various conservation implications at national and international level
3.2 Enhance communication, education and public participation and awareness	Conduct education and awareness campaigns at transboundary level on the importance of the wetland	Improved awareness on the values of wetlands through outreach campaigns and public awareness
	Strengthen community groups to champion conservation activities	Actively engaged community groups supporting local authorities with resource monitoring
	Develop and implement resource use conflict resolution mechanisms	Conflict resolution mechanisms adopted and implemented

SECTION SIX: MANAGEMENT PROGRAMMES

VISION: A SUSTAINABLY MANAGED SANGO BAY-MINZIRO TRANSBOUNDARY WETLAND PROVIDING EQUITABLE OPPORTUNITIES AND BENEFITS FOR POSTERITY

STRATEGIC OBJECTIVE 1: To promote conservation of the Sango Bay - Minziro ecosystem and its catchment

RESULT 1.1: Rehabilitate and restore 5% of degraded biodiversity sites within the wetland landscape annually

MANAGEMENT ACTION	UNIT	TARGET	INDICATORS	ANNUAL TARGETS (YEARS)					RESPONSIBLE INSTITUTIONS IN UGANDA	RESPONSIBLE INSTITUTIONS IN TANZANIA	ESTIMATED BUDGET	
				1	2	3	4	5			UGX	TZS
1.1.1. Identify, demarcate and gazette key sites including biodiversity hotspots	No.	5	Number of sites demarcated and gazetted	2	2	1	-	-	Kyotera District; Sango Bay Community; NFA; NEMA; MWE; UWA; LVEMP	Missenyi District; Minziro Community; TFS; LVBWB; Ministry of Lands, Housing and Human Settlement; Kagera Sub Basin Office	500M	350M
1.1.2 Establish green borders and rehabilitate demarcated and degraded sites	No.	500	Nursery beds established	200	150	100	25	25	NGOs; KIMAKA, Kigazi Tukwatirewamu, and Mugamba Mujanjabula CFMs; Wetlands International	Kagera Regional Secretariat; Missenyi District; TFS; NGOs (World Vision, KADETF)	35M	350M
	Area	100	Acreage restored	30	10	20	20	10	Village Councils; Kyotera District; Mugamba Mujanjabula & Kigazi Tukwatirewamu, CFM; Twezimbe Farmers' Group Gwanda; NFA; NEMA	Village Council; TFS; Missenyi District; Wetlands International	300M	200M

1.1.3 Introduce alternative energy saving technologies	No.	100	Briquettes in use in place of energy intensive stoves	25	25	25	25	-	Village Councils; Kyotera District; Mugamba Mujanjabula & Kigazi Tukwatirewamu CFMs; Twezimbe Farmers' Group Gwanda; District Production Department	Village Council; Missenyi District	150M	130M
	No.	400	Biogas facilities installed	100	100	100	50	50	Village Councils; Kyotera District; Twezimbe Farmers' Group Gwanda; District Production Department	Village Council; Missenyi District; Livestock Production Department	1.2B	1B
	No.	10	Improved technologies such as hydraform introduced	5	2	2	1	-	Kyotera District; Minziro Community	Missenyi District; Sango Bay Community	150M	100M
1.1.4 Conduct feasibility studies on the potential of carbon credit projects in the Sango Bay – Minziro wetland landscape	No.	1	Study conducted	-	1	-	-	-	NFA, NEMA, Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Bigada Catholic Development Group; Nature Uganda	Kagera Regional Secretariat; Missenyi District Council; TFS; NGOs (CHEMA, KADEFT and MAYAWA)	2B	1.5B
RESULT 1.2: Integrate wetland wise-use into river basin development planning for improved water quantity and quality												
1.2.1 Develop and implement water allocation plans as a decision support tool	No.	2	Plans developed and implemented	-	1	-	1		MWE; Victoria Water Management Zone; LVEMP; Kyotera District	Ministry of Water; LVBWB; Missenyi District; Kagera Sub Basin Office	800M	850M

1.2.2 Conduct regular water quality and hydrological monitoring	No.	120	Monthly monitoring tests	24	24	24	24	24	NEMA; Kyotera District; DWRM; Victoria WMZ; UWA; MWE	Ministry of Water; LVBWB; Kagera Sub Basin Office; Missenyi District	100M	80M
1.2.3 Enforce water quality regulations within the riparian zones	No.	40	Quarterly compliance assessment reports	8	8	8	8	8	NEMA; Kyotera District; DWRM; Victoria WMZ; UWA; MWE	Ministry of Water; LVBWB; Kagera Sub Basin Office; Missenyi District	100M	80M
1.2.4 Conduct environmental flow assessments and impacts of river course diversions on the wetland	No.	1	Assessment report and data on river flow	-	1	-	-	-	NEMA; Kyotera District; DWRM; Victoria WMZ; UWA; MWE	Ministry of Water; Missenyi District	600M	700M
RESULT 1.3: Promote sustainable land use practices for improved livelihoods and reduce degradation												
1.3.1 Strengthen capacity of crop farmers on sustainable farming practices (soil and water conservation measures)	No.	2000	Farmers adopting good agricultural practices	400	400	400	400	400	MAAIF; Kyotera District; crop farmers; District Production; Agricultural Extension Officers; NFA; Wetlands International; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs	Ministry of Agriculture Food Security and Cooperatives; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS	2.5B	1.85B
1.3.2 Establish demonstration sites showcasing good land use practices for knowledge exchange e.g. on paludiculture	No.	20	Demonstration sites established	6	8	6	-	-	Village Councils; Kyotera District; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Twezimbe Farmers Group Gwanda; Production Department	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS	165M	110M
1.3.3 Construct water storage	No.	4	Dams	1	1	1	1	-	MWE; NFA; Kyotera District; Sango Bay	Ministry of Water; National Irrigation	1.5B	1B

facilities for irrigation and livestock use during the dry seasons	No. No.	20 500	Valley Tanks Water tanks	5 100	5 100	5 100	5 100	- 100	Communities; UWA; LVEMP	Commission; Kagera Sub Basin Office; TFS; Missenyi District; Minziro Community; Water Users Associations; TAWA;	700M 1B	500M 1.9B
1.3.4 Formulate and implement grazing by-laws and zoning plans where appropriate	No.	8	By laws developed through a participatory process	2	2	2	2	-	MAAIF; Kyotera District; Community members	Ministry of Livestock Development and Fisheries; Missenyi District; Missenyi Community members	150M	150M
RESULT 1.4: Promote sustainable fishing practices for improved fish diversity and abundance												
1.4.1 Strengthen capacity of fisher folk on sustainable fishing practices and systems	No.	500	BMUs and community members trained	100	100	100	100	100	Kyotera District; MAAIF; BMUs	Missenyi District; Community; Ministry of Livestock and Fisheries; BMUs	1B	800M
1.4.2 Identify and protect fish breeding grounds (no-take zones)	No.	10	Fish breeding sites identified and protected	3	2	1	2	1	Kyotera District; Community; MAAIF; BMUs	Missenyi District; Community; Ministry of Livestock and Fisheries; BMUs	1B	800M
1.4.3 Promote sustainable aquaculture	No.	150	Aquaculture infrastructure e.g. ponds, cages set	50	50	25	25	-	Kyotera District; Community; MAAIF; BMUs	Missenyi District; Community; Ministry of Livestock and Fisheries; BMUs	2B	1.8B
1.4.4 Formulate and implement by-laws on fisheries and enforcement of fisheries regulations	No.	8	By laws developed through a participatory process	2	2	2	2	-	Kyotera District; Community members; BMUs; MAAIF	Missenyi District; Missenyi Community members; BMUs	150M	150M
STRATEGIC OBJECTIVE 2: To promote and support sustainable sources of livelihoods for the communities' dependent on the Sango Bay – Minziro transboundary wetland												

RESULT 2.1: Promote adoption of aquaculture and sustainable fishing practices for improved fish production												
2.1.1 Identify and promote uptake of sustainable aquaculture and small scale fisheries	No.	4	Sustainable alternatives identified, disseminated , operational and reported	2	1	1	-	-	Kyotera District; Community members; BMUs; NEMA; UWA; MAAIF	Missenyi District; Missenyi Community members; BMUs; Bukoba Agricultural Research and Development Institute	300M	250M
2.1.2 Improve fish post-harvest handling and value addition	No.	50	Storage facilities established	10	10	10	10	10	Kyotera District; Community members; BMUs; NEMA; MAAIF Production Department	Missenyi District; Missenyi Community members; BMUs; Ministry of Livestock and Fisheries	2B	1.8B
2.1.3 Promote business and enterprise models for small scale fisher folk and value chain actors	No.	200	Pond, cage farming and aquaculture models prioritised	50	100	50	-	-	Kyotera District; Community members; BMUs; MAAIF; Production Department; Private Sector	Missenyi District; Missenyi Community members; BMUs; Ministry of Livestock and Fisheries; Private Sector	4B	3.6B
2.1.4 Promote localised fisheries management and broader-scale governance improvements	No.	40	Monitoring reports from fisheries patrols by BMUs	8	8	8	8	8	Kyotera District; Community members; BMUs; MAAIF	Missenyi District; Missenyi Community members; BMUs	150M	150M
RESULT 2.2: Promote wise use and value addition to wetland plants for improved livelihoods of 20% of households in the wetland landscape annually												
2.2.1 Strengthen capacity of communities on value of wetland plants and the sustainable use options	No.	120	Community members trained	2	2	-	-	-	Village Councils; Kyotera District; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Twezimbe Farmers Group Gwanda; Production Department	Missenyi District; Missenyi Community members; Bukoba Agricultural Research and Development Institute; Ministry of Livestock and Fisheries; Private Sector	85M	50M

2.2.2 Establish demonstration sites showcasing good uses of wetland plants	No.	20	Demonstration sites established	6	8	6	-	-	Village Councils; Kyotera District; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Twezimbe Farmers Group Gwanda; Production Department	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS	165M	110M
2.2.3 Promote business and enterprise models for smallholders and value chain actors	No.	4	Marketing cooperatives established	-	2	2	-	-	Village Councils; Kyotera District; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Twezimbe Farmers Group Gwanda; Production Department	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS	120M	105M
RESULT 2.3: Promote value-addition of agricultural produce and improve the value chain												
2.3.1 Promote the adoption of locally suited practices and technologies for climate smart agriculture e.g. drought tolerant crops, improved livestock breeds etc.	Acres No.	0.3 100	High yielding crops planted Livestock breeds distributed	100 20	50 20	50 20	50 20	50 20	Village Councils; Kyotera District; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Twezimbe Farmers Group Gwanda; Production Department	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS; Livestock production department	800M 850M	750M 750M
2.3.2 Establish demonstration sites showcasing good agricultural practices for knowledge exchange	No.	16	Demonstration sites established	4	4	4	4	-	Village Councils; Kyotera District; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; Twezimbe Farmers Group Gwanda; Production Department	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS	750M	700M
2.3.3 Promote establishment of agro-based micro and small	No.	10	Cottage industries established	2	6	2	0	0	MAAIF; Kyotera District; crop farmers; District Production Departments; Agricultural Extension	Ministry of Agriculture Food Security and Cooperatives; Missenyi District; Bukoba	1.2B	850M

enterprises for small holders e.g. pasture preservation etc.	No.	200	Farmers trained on value addition	50	50	25	25	0	Officers; NFA; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs	Agricultural Research and Development Institute; TFS		
RESULT 2.4: Promote eco-tourism for improved livelihoods and nature conservation												
2.4.1 Identify and develop ecotourism sites with consideration of cultural and religious values	No.	4	Eco-tourism sites operational	-	2	-	2	-	National and District government officials; community representatives; NGOs and Private Sector	National and District government officials; community representatives; NGOs and Private Sector	1.5B	1.2B
2.4.2 Build capacity of local communities to serve as tour guides	No.	40	Tour guides employed and trained	-	20	-	20	-	National and District government officials; community representatives; NGOs and Private Sector	National and District government officials; community representatives; NGOs and Private Sector	300M	250M
STRATEGIC OBJECTIVE 3: To support the establishment and strengthening of governance structures for the management of the Sango Bay - Minziro transboundary wetland												
RESULT 3.1: Enhance transboundary coordination and cooperation of transboundary wetland institutions												
3.1.1 Establish Transboundary Wetland Management Committees	No.	1	Transboundary Wetland Management Committee in place	1	-	-	-	-	National and District government officials; community representatives; NGOs and Private Sector	National and District government officials; community representatives; NGOs and Private Sector	100M	100M
3.1.2 Strengthen capacity of relevant institutions to effectively manage the wetland landscape	No.	60	Number of awareness meetings held and reports produced	12	12	12	12	12	National and District government officials; community representatives; NGOs and Private Sector	National and District government officials; community representatives; NGOs and Private Sector	500M	320M
3.1.3 Facilitate transboundary exchange visits for	No.	10	Exchange visits organised	2	2	2	2	2	National and District government officials; community	National and District government officials; community	500M	500M

cross-learning and experience sharing									representatives; NGOs and Private Sector	representatives; NGOs and Private Sector		
3.1.4 Facilitate process of designating Minziro Nature Forest Reserve as a wetland of international importance under the Ramsar Convention	No. No.	6 1	Stakeholder consultation meetings Completed Ramsar Information Sheet	6 1	- -	- -	- -	- -	- -	Ministry of Water; Ministry of Foreign Affairs; Ministry of Natural Resources and Tourism; Directorate of Forest and Beekeeping; Vice President's Office – Division of Environment; TFS; TAWA; TAFIRI; TAFORI; Kagera Regional Administrative Secretariat	-	1.2B
RESULT 3.2: Enhance communication, education and public participation and awareness												
3.2.1 Conduct education and awareness campaigns at transboundary level on the importance of the wetland	No.	30	Training sessions	6	6	6	6	6	Kyotera District; District Production Departments; Agricultural Extension Officers; NFA; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; UWA; Community members	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS; Community members	120M	90M
3.2.2 Strengthen community groups to champion conservation activities	No.	30	No. of community groups trained	10	10	10	-	-	Kyotera District; District Production Departments; Agricultural Extension Officers; NFA; Kigazi Tukwatirewamu, Mugamba Mujanjabula & KIMAKA CFMs; UWA; Community members	Village Council; Missenyi District; Bukoba Agricultural Research and Development Institute; TFS; Community members	1B	900M
3.2.3 Develop and implement resource use conflict resolution mechanisms	No.	-	Mechanisms established	-	-	-	-	-	National and District government officials; community representatives; NGOs and Private Sector	National and District government officials; community representatives; NGOs and Private Sector	500M	320M

SECTION SEVEN: IMPLEMENTATION STRATEGY

Successful implementation strategy for community-based wetland management plan requires adequate representation and involvement of grassroots resource users (primary) and other stakeholders in a co-management approach. During the consultative engagement workshops, participants from the both Tanzania and Uganda provided their accepted management structures that would yield sustainable results (Figure 12). The different levels of engagement identified for complementarity with respective suitable representatives as presented below.

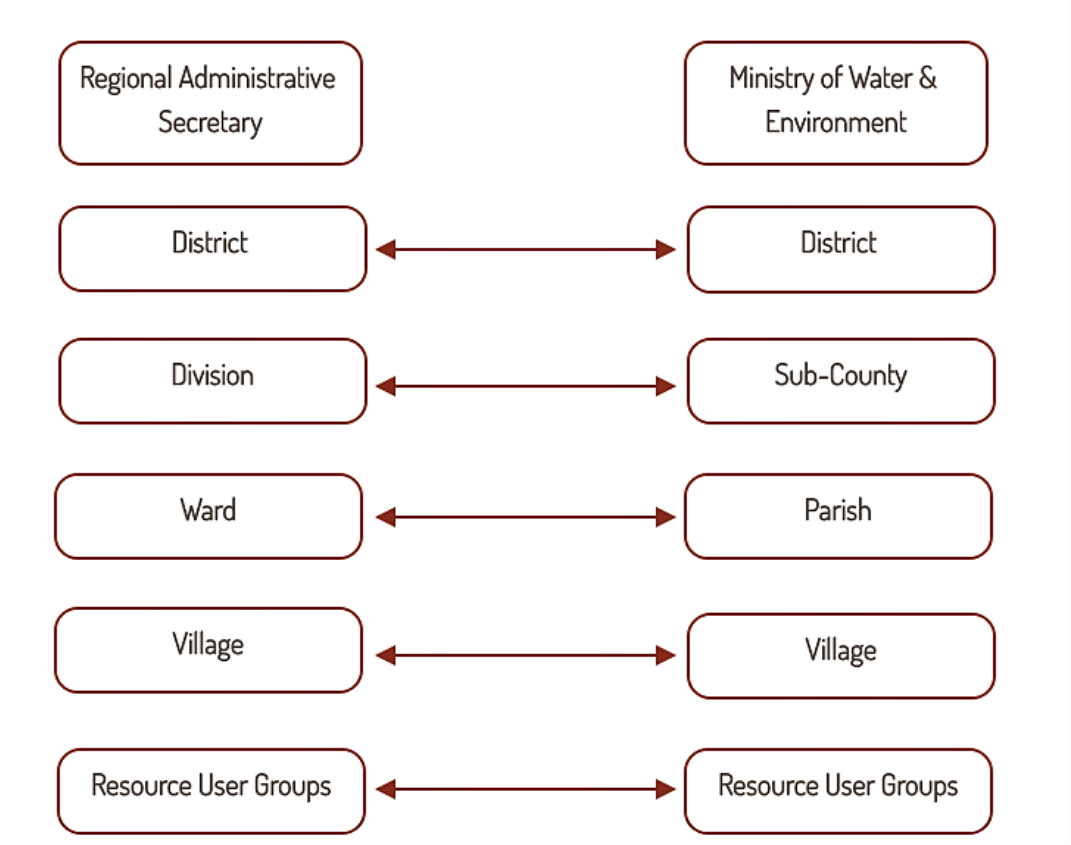


Figure 12: TWMP Implementation Structure (L – R: Tanzania – Uganda) (Wetlands International 2019b)

6.1 TWMP Implementation Committee

The following institutions were elected in an open process to oversee implementation of the Wetland Management Plan at District level (Table 7).

Table 8: TWMP Implementation Committee

Institution	Designation
TANZANIA	
1. Missenyi District Council	Land officer
2. Missenyi District Council	Community Development officer
3. Missenyi District Council	Village Executive officer
4. Kassambya Ward	Councillor
5. Minziro Ward	Councillor
6. Missenyi District Council	Economist & Planning Officer
7. Missenyi District Council	Wildlife Officer
8. Tanzania Forest Service	Conservator-Minziro NFR
9. Regional Administrative Secretary - Kagera	RNRO – Kagera
10. World Vision	NGO Representative
11. Minziro village	Environmental committee representatives
12. Kalagala village	Environmental committee representatives
13. Kigazi village	Environmental committee representatives
UGANDA	
14. Kyebe Sub-County	Farmer representative – Sub County level
15. Kyebe Sub-County	Farmer representative – Parish level
16. Kyebe Sub-County	Fisherfolk representative
17. Kyebe Sub-County	Grazer representative
18. Kyebe Sub-County	Wetland Association representative
19. Kyebe Sub-County	CBO representative
20. Kyebe Sub-County	LCI
21. Kyebe Sub-County	LCIII Chairperson
22. Kakuuto Sub-County	Farmer representative – Parish level
23. Kakuuto Sub-County	Farmer representative – Sub County level
24. Kakuuto Sub-County	Farmer representative – Village level
25. Kakuuto Sub-County	Wetland Association representative
26. Kakuuto Sub-County	CBO representative
27. Kakuuto Sub-County	Grazer representative
28. Kakuuto Sub-County	LCI
29. Kakuuto Sub-County	LCIII Chairperson
30. Kabira Sub-County	Farmer representative – Sub County level
31. Kabira Sub-County	Farmer representative – Village level
32. Kabira Sub-County	LCI
33. Kabira Sub-County	LCIII Chairperson
34. Nangoma Sub-County	Fisherfolk representative

35. Nangoma Sub-County	CBO representative
36. Nangoma Sub-County	Grazer representative
37. Nangoma Sub-County	LCI
38. Nangoma Sub-County	LCIII Chairperson

At the grassroots level, the committee will link with the five Wards (Mutukula, Nsunga, Kassambya and Minziro) and the respective villages from the wards on the Minziro side of the wetland (Table 8).

Table 9: Local Level Implementation Committee - Minziro

Ward	Village
Mutukula	Mutukula
Nsunga	Byamutemba, Igayaza
Kassambya	Mabuye, Kakindo
Minziro	Kigazi, Kalagala, Minziro

6.2 WMP Implementation Committee

The Ugandan team elected local representatives to serve in the TWMP Implementation committee (Table 9). The composition is mainly the resource user groups from different sub counties represented within the wetland. The structure is disaggregated as the local and District committees and ex-officials.

Table 10: Wetland Management Plan Committee Composition - Uganda

District Committee	Local Committee	Ex-Officials
☐ The Chief Administrative Officer (Chairperson of Committee) ☐ District Information Office (Vice Chairperson) ☐ District Natural Resources Officer (General Secretary) ☐ District Planner (Secretary Finance)	☐ District Community Development Officer ☐ District Forest Officer ☐ District Environment Officer ☐ NGO representative ☐ District Agricultural Officer ☐ District Fisheries Officer ☐ Physical Planner ☐ District Water Officer	☐ Implementing Partners ☐ Representatives from Agencies (NEMA, NFA, UWA) ☐ Representative from CBOs ☐ All LCIII chairpersons within the wetland Ecosystems ☐ All Sub County Chiefs within the Wetland Ecosystems ☐ Parish Chiefs

SECTION EIGHT: MONITORING AND EVALUATION ARRANGEMENTS

This TWMP will be implemented over a period of ten years. During this time, changes are expected in the context of the environment in which the stakeholders operate. Therefore, there is need to develop an adaptive management framework that ensures the TWMP maintains relevance through a cycle of periodic reviews of monitoring and adaptation.

The monitoring and evaluation framework will be utilised to build an information base and identify critical information gaps. This necessitates meaningful dialogue and engagement with all stakeholders. An evaluation of effectiveness and efficiency of the TWMP should take place on a 5-year cycle. This evaluation should also include the review of the strategic objectives. A mid-term review will be undertaken after 2.5 years.

The effectiveness and sustainability of this monitoring plan is dependent on the following:

- Participatory implementation of the TWMP
- Timely reporting of feedback to all stakeholders that aid decision making and adaptive management.

Table 11: Monitoring and Evaluation Matrix

STRATEGIC OBJECTIVE 1: TO PROMOTE CONSERVATION OF THE SANGO BAY – MINZIRO AND ITS CATCHMENT AREA				
Management action	**Units**	**Target**	**Performance Indicators**	**Means of verification**
RESULT 1.1: Rehabilitate and restore 5% of degraded biodiversity sites within the wetland landscape annually				
1.1.1. Identify, demarcate and gazette key sites including biodiversity hotspots	No.	5	• Number of sites gazetted and demarcated • Area sustainably managed (rehabilitated, protected)	• Records of gazettement • Biodiversity baseline (selected target groups of species (e.g. birds, fish, etc) • Monitoring plan developed
1.1.2 Establish green borders and rehabilitate demarcated and degraded sites	No. Area	500 100	• Number of nursery beds established and trees planted • Acreage and type of diversity of restored/rehabilitated sites	• Field monitoring reports on restoration • Satellite maps on land use land cover trends
1.1.3 Introduce alternative energy saving technologies	No. No. No.	100 400 10	• Number of briquettes in use in place of energy intensive stoves • Number of biogas facilities installed • Number of improved technologies such as hydraform introduced	• Reports on improved technologies in place • Detailed monitoring reports including levels of uptake
1.1.4 Conduct feasibility studies on the potential of carbon credit projects in the Sango Bay – Minziro wetland landscape	No.	1	• Study conducted • Project concepts and proposals developed • Number of stakeholders engaged	• Study reports • Concepts and proposals developed and submitted • Report on stakeholder engagement
RESULT 1.2: Integrate wetland wise-use into river basin development planning for improved water quantity and quality				
1.2.1 Develop and implement water allocation plans as a decision support tool	No.	2	• Water allocation plans that meets ecological and socio-economic needs operationalised • Management committee set up to oversee management plan • Conserved catchment areas	• Water allocation plans • Management committee reports • Water quantity and quality reports
1.2.2 Conduct regular water quality and hydrological monitoring	No.	120	• No. of households accessing clean and safe water for domestic use • Reduced volume of sediment and siltation into water sources within the wetland	Water quality test reports

1.2.3 Enforce water quality regulations within the riparian zones	No.	40	• No. of households accessing clean and safe water for domestic use • Reduced volume of sediment and siltation into water sources within the wetland	Quality monitoring and compliance reports
1.2.4 Conduct environmental flow assessments and impacts of river course diversions on the wetland	No.	1	• Equitable and fair allocation of the e-flow plan • Flooding regimes throughout the plan period monitored and reported	E-flow allocation assessment reports
RESULT 1.3: Promote sustainable land use practices for improved livelihoods and reduce degradation				
1.3.1 Strengthen capacity of crop farmers on sustainable farming practices (soil and water conservation measures)	No.	2000	• Improved participation in sustainable land use practices • Improved water resources management and crop productivity	• Training reports • Changes in trends photos
1.3.2 Establish demonstration sites showcasing good land use practices for knowledge exchange e.g. on paludiculture	No.	20	• Increased and diversified sources of income • Improved participation in sustainable land use practices	• Demonstration sites established • Number of visits recorded motivating replication
1.3.3 Construct water storage facilities for irrigation and livestock use during the dry seasons	No.	524	• Improved access to water for use during dry seasons • Reduced instances of water resource use conflicts	• EIA reports for medium to large water infrastructure developed • Number of water storage facilities operational
1.3.4 Formulate and implement grazing by-laws and zoning plans where appropriate	No.	8	• Improved capacity of local communities to address land use challenges • Decreased cases of overgrazing reported	Operational regulations on local land use governance and management in place
RESULT 1.4: Promote sustainable fishing practices for improved fish diversity and abundance				
1.4.1 Strengthen capacity of fisher folk on sustainable fishing practices and systems	No.	500	Improved understanding and adoption of sustainable fishing practices	• Number of BMUs and community members trained • Training reports and modules
1.4.2 Identify and protect fish breeding grounds (no-take zones)	No.	10	Increased fish diversity and abundance in degraded/overexploited sites	• Frame survey reports • Monitoring, control and surveillance reports
1.4.3 Promote sustainable aquaculture	No.	150	Increased adoption of aquaculture to reduce	Number of ponds and hatcheries set up

			pressure on capture fishery	and handed over to communities
1.4.4 Formulate and implement by-laws on fisheries and enforcement of fisheries regulations	No.	8	Strengthened community and formal enforcement systems on fisheries	• BMU reports • Operational regulations on local fisheries governance and management in place
STRATEGIC OBJECTIVE 2: TO PROMOTE AND SUPPORT SUSTAINABLE SOURCES OF LIVELIHOODS FOR THE COMMUNITIES' DEPENDENT ON THE SANGO BAY – MINZIRO TRANSBOUNDARY WETLAND				
RESULT 2.1: Promote adoption of aquaculture and sustainable fishing practices for improved fish production				
2.1.1 Identify and promote uptake of sustainable aquaculture and small scale fisheries	No.	4	• Type and diversity of sustainable alternatives identified, disseminated and operationalised • Increased and diversified sources of income	• Field monitoring reports • Training reports • Books of accounts on IGAs
2.1.2 Improve fish post-harvest handling and value addition	No.	50	• Type and scale of aquaculture infrastructure i.e. ponds, cages and storage facilities established • Improved access and use of resources in a sustainable manner	• Field monitoring reports on aquaculture infrastructure in place • Reports on maintenance activities in place
2.1.3 Promote business and enterprise models for small scale fisher folk and value chain actors	No.	200	Increased production and value addition of fisheries resources	• Training reports • No. of community groups trained on site selection, pond construction and management reported
2.1.4 Promote localised fisheries management and broader-scale governance improvements	No.	20	Improved enabling environment for efficient value chains and equitable livelihoods	BMU financial reports
RESULT 2.2: Promote wise use and value addition to wetland plants for improved livelihoods of 20% of households in the wetland landscape annually				
2.2.1 Strengthen capacity of communities on value of wetland plants and the sustainable use options	No.	120	Improved understanding and adoption of wetland plant products for livelihood diversification	• Training modules • List of participants trained • Training reports
2.2.2 Establish demonstration sites showcasing good uses of wetland plants	No.	20	Increased uptake of sustainable wetland plant uses and diversification of income streams	Monitoring reports

2.2.3 Promote business and enterprise models for smallholders and value chain actors	No.	4	Improved production systems and livelihoods derived from wetland products	• Number of marketing cooperatives in place • Record of craft items produced
RESULT 2.3: Promote value-addition of agricultural produce and improve the value chain				
2.3.1 Promote the adoption of locally suited practices and technologies for climate smart agriculture e.g. drought tolerant crops, improved livestock breeds	Acres No.	0.3 100	Improved understanding and adoption of climate smart agriculture practices such as paludiculture for increased community and ecosystem resilience	Diversity of high yielding crops planted and livestock breed distributed
2.3.2 Establish demonstration sites showcasing good agricultural practices for knowledge exchange e.g. mulching	No.	16	• Increased and diversified sources of income • Improved participation in sustainable agricultural practices	• Demonstration sites established • Number of visits recorded inspiring replication and upscaling
2.3.3 Promote establishment of agro-based micro and small enterprises for small holders e.g. pasture preservation	No. No.	10 200	• Cottage industries established • Farmers trained on value addition • Increase in net return per unit of product sold	• Field visit reports • Training reports • Attendance lists
2.4.1 Identify and develop ecotourism sites with consideration of cultural and religious values	No.	4	Increased incomes and awareness towards conservation of natural resources	• Ecotourism sites operational • Income generated • Visitors log book
2.4.2 Build capacity of local communities to serve as tour guides	No.	40	Employment opportunities and improved community well-being	• Training manuals • Training reports • List of participants
STRATEGIC OBJECTIVE 3: To support the establishment and strengthening of governance structures for the management of the Sango Bay – Minziro transboundary wetland				
RESULT 3.1: Enhance transboundary coordination and cooperation of transboundary wetland institutions				
3.1.1 Establish Transboundary Wetland Management Committees (TWMCs)	No.	1	Functional TWMCs enhancing coordination and conservation efforts in the wetland landscape	• TWMCs list of members • TWMC Terms of Reference

3.1.2 Strengthen capacity of relevant institutions to effectively manage the wetland landscape	No.	60	• Improved understanding of transboundary wetland functions and systems • Improved participation and decision making on transboundary wetland conservation initiatives	• Reports • Attendance lists • Copies of training manuals
3.1.3 Facilitate transboundary exchange visits for cross-learning and experience sharing	No.	10	• Exchange visits held with experiences shared upscaled or replicated • Enhanced skills and knowledge on wetland conservation and management	• List of participants • Follow up and monitoring reports
3.1.4 Facilitate process of designating Minziro Nature Forest Reserve as a wetland of international importance under the Ramsar Convention	No. No.	6 1	Minziro NFR identified as a Ramsar Site	• Number of stakeholder engagement meetings held • List of participants • Completed Ramsar Information Sheet (RIS) list
RESULT 3.2: Enhance communication, education and public participation and awareness				
3.2.1 Conduct education and awareness campaigns at transboundary level on the importance of the wetland	No.	30	• Improved awareness on the values of wetlands through outreach campaigns and public awareness • Enhanced uptake of conservation measures	• Outreach materials developed • Training modules • Number and list of participants • Training reports
3.2.2 Strengthen community groups to champion conservation activities	No.	30	Actively engaged community groups supporting local authorities with resource monitoring	• Training modules • Number and list of trained participants • Training reports
3.2.3 Develop and implement resource use conflict resolution mechanisms	No.	-	Reduced instances of natural resource use conflicts reports	• Number of conflict resolution mechanisms adopted and implemented • Monitoring reports

REFERENCES

1. Akite, P. (2019) Status of selected insect fauna (Butterflies and dragonflies) of the selected wetland systems: Sio – Siteko, Sango Bay – Minziro and Semliki Delta. Dept. of Zoology Entomology and Fisheries Sciences, Makerere University, Uganda
2. Byaruhanga, A., Kaganzi, E. Busulwa, H. Kyambadde, R. and Kiwazi, F. (2000) Sango Bay Wetlands Site Profile. Wetlands Inspection Division, Kampala, Uganda
3. Byaruhanga, A., Kasoma, P. and Pomeroy, D. (2001) *Important bird areas in Uganda*. Kampala: Nature Uganda
4. CAWM 2019 (College of African Wildlife Management) Mweka Tanzania. "Rapid assessment of biodiversity and conservation status of Minziro Forest Nature Reserve, Tanzania, in the context of the *EUREGIO's East Africa Livelihood Improvement Programme 2017-2019" Report*, July 2019
5. Convention on Wetlands (2002) *New Guidelines for management planning for Ramsar sites and other wetlands*, viewed 31 May 2019
6. Elsehawi, S., Berthelmes, B., Beer, F., Joosten, H. (2019) *Assessment of Carbon (CO^2) emissions avoidance potential from the Nile Basin peatlands. Technical report,* as part of Biodiversity Conservation and Sustainable Utilisation of Ecosystem Services of Wetlands of Transboundary Relevance in the Nile Basin. Greifswald Mire Centre, Germany. NBI 2019
7. Government of Uganda (2009). Higher local government statistical abstract. Rakai district. Government RDL, editor
8. Haskoning et al (2002), Environment for Development: *An Ecosystems Assessment of Lake Victoria Basin Environmental and Socio-Economic Status, Trends and Human Vulnerabilities*
9. Kakuru, W. (2016). *Economic valuation of Sango Bay – Minziro Ecosystem.* Report to the PREPARED Project. LTS Africa: Nairobi
10. Kyotera District Development plan (2017)
11. Martin and Rovero (2019). Rapid Assessment of biodiversity and conservation status of Minziro Forest Nature Reserve, Tanzania. *Report on community perception and forest disturbance assessment.* June 2019
12. MEA (2005). *Millennium Ecosystem Assessment, Ecosystems and Human Well-Being: Synthesis*. Island Press, Washington, DC
13. Namaganda, M. (2019). *Documenting plant diversity in the transboundary wetlands of Semliki Delta, Sango Bay – Minziro and Sio – Siteko, Uganda*. Dept. of Plant Sciences, Microbiology and Biotechnology, Makerere University, Uganda.
14. Robel Ogbaghebriel Berakhi, Tonny J. Oyana & Samuel Adu-Prah (2015) Land use and land cover change and its implications in Kagera river basin, East Africa, *African Geographical Review,* 34:3, 209-231, DOI: 10.1080/19376812.2014.912140
15. TFS (2016) *Management Plan for Minziro Nature Forest Reserve* 2016/17 – 2020/21
16. Ministry of Water and Environment (2016) *Conservation Investment Plan for Sango Bay.* USAID
17. Nalwanga, D. (2019). Report on avian diversity: Status of biodiversity in the Sango Bay – Minziro, Semliki Delta and Sio – Siteko Wetlands. Nature Uganda, Uganda.

18. Namaganda, M. (2019). Documenting plant diversity in the transboundary wetlands of Semliki Delta, Sango Bay – Minziro and Sio – Siteko, Uganda. Dept. of Plant Sciences, Microbiology and Biotechnology, Makerere University, Uganda
19. NBI (2020). Biodiversity conservation and sustainable use of ecosystem services in wetlands of transboundary significance in the Nile basin - *Monograph for the Sango Bay Minziro (Tanzania - Uganda) Wetland Landscape.* NELSAP -CU
20. NBS (2013). National Bureau of Statistics & Office of Chief Government Statistician. (2013) 2012 Population and Housing Census. Population Distribution by Administrative Areas. Ministry of Finance, Dar es Salaam; President's Office, Finance, Economy and Development Planning, Zanzibar
21. National Wetlands Advisory Group (NWAG) 2011. Terms of Reference (ToR). Ministry of Water and Environment, Kampala, Uganda
22. Ramsar Convention on Wetlands. (2018). Global Wetland Outlook: State of the World's Wetlands and their Services to People. Gland, Switzerland: Ramsar Convention Secretariat
23. Ramsar Convention (2006) Ramsar Sites Information Service, 2006
24. Taylor,K. E., R. J. Stouffer, and G. A. Meehl, (2012) *An Overview of CMIP5 and the Experiment Design. B Am Meteorol Soc,* 93, 485-498. 10.1175/bams-d-11-00094.1. CCKP data products: prepared and processed by National Center for Atmospheric Research - Research Applications Laboratory (NCARRAL)
25. Uganda Bureau of Statistics. (2017). The National Population and Housing Census 2014 – Area Specific Profile Series, Kampala, Uganda.
26. URT URoT (2013) Population and Housing Census 2012 Report—Age & Sex Distribution. Tanzania: National Bureau of Statistics. 1–244 p.
27. USAID (2016). *Economic valuation of Sango Bay-Minziro Ecosystem.* Planning for Resilience in East Africa through Policy, Adaptation, Research, and Economic Development (PREPARED) Project. USAID, December 2016
28. Van Asselen, S., Verburg, P.H., Vermaat, J., Janse, J.H. (2013) Drivers of wetland conversions: a global meta-analysis. PLoS ONE, 8, pp. e81292, doi: http://dx.doi.org/10.1371/journal.pone.0081292
29. Wetlands International (2019a) *Sango Bay – Minziro Forest Reserve Focus Group Discussion – Wetland monograph, notes,* Wetlands Across Borders regional workshop, Kampala, Uganda, held on April 9, 2019. (Regional Workshop)
30. Wetlands International (2019b) Biodiversity conservation and sustainable use of ecosystem services in wetlands of transboundary significance in the Nile basin – *Transboundary Meeting Report for Sango Bay and Minziro Forest Nature Reserve ecosystem,* Wetlands Across Borders project, May 2019. (Transboundary, District and Community Meeting)
31. Wetlands International (2019c) Sango Bay Activity Report for development of Sango Bay-Minziro transboundary wetland landscape management plan – *Stakeholders and resources analysis for wetlands management plan development report,* Wetlands Across Borders project, May 2019. (Community Meeting)
32. Wetlands International (2019d) *Sango Bay-Minziro transboundary workshop report* at Missenyi, Tanzania, Wetlands Across Borders project, July 2019
33. WMD/NU (2008). *Implementing the Ramsar Convention in Uganda: A Guide to the management of Ramsar sites in Uganda.* Wetland Management Division/Nature Uganda, Kampala.

ANNEXES

A. List of Stakeholders Identified from the Stakeholder Analysis

Primary stakeholders	Secondary stakeholders	Tertiary stakeholders
1. Herders 2. Peasant farmers 3. Timber harvesters 4. Charcoal producers 5. Grass cutters 6. Fishermen 7. Hunters 8. Herbalists 9. Traditional healers 10. Non-forest product harvesters (fruits, mushrooms, herbs) 11. Ritual /cultural performers/ leaders 12. Clay and sand miners 13. Wild honey producers 14. Papyrus harvesters 15. Water collectors 16. Researchers, 17. Tourists 18. Mineral exploiters 19. Grass cutters and weavers 20. Eco-tourism operators 21. Improved stove makers/ pottery makers 22. Historical site users (religion, culture, spiritual) 23. Sand miners 24. Brick makers 25. Iron tool makers (knives, machetes etc.) 26. Reed harvesters 27. Builders and construction material makers/suppliers 28. Pot makers 29. Lumber jacks 30. Tour guides 31. Livestock keepers 32. Craft makers	**Central Government institutions/organisations** 1. Forest department 2. Ministry of Natural resources and Tourisms 3. Tourism department 4. TFS Agency 5. District Security Committee 6. Tanzania Tourist Board 7. Tanzania Wildlife Research Institute 8. National Environmental Management Council 9. Ministry of Water and 10. Ministry of Livestock and Fisheries 11. Ministry of Defence 12. Ministry of Lands 13. Ministry of Minerals 14. Environmental committees 15. VPO 16. Ministry of agriculture 17. Ministry of Home Affairs 18. MWE 19. MoTWA 20. UWA 21. CFM **Local government:** 1 Sub village committee. 2 Village committee 3 Ward level committee 4 District Councils 5 Municipalities **Non-Governmental Organisation (NGOs)/International agencies** 1 Tanzania Environmental Organisations 2 Lawyers Environmental Organisations 3 World vision 4 NBI	1. Parliamentary committees of Natural resources 2. Budget committee in the parliament 3. Development partners e.g. GEF, UNDP, TAFF, EEALIP 4. Posho millers 5. Carpentry workshop owners 6. GIZ 7. Trust Fund 8. President's Office 9. UPDF 10. UP 11. URA 12. Judiciary 13. Immigration Office

	5 UN Habitat 6 UNDP 7 UNHCR 8 UNICEF 9 Kolping Society of Tanzania 10 World Vision 11 Minziro Nature Reserve 12 MAPEC 13 Minziro Education Fund 14 EACOP (East African Crude Oil Pipeline) **Community Based Organisations (CBOs)** 1. Tunza Mazingira Byamtenga 2. MEDO – Missenyi Environmental Organisation 3. Fire prohibition organisation 4. Misitu Nimali Kassabya 5. Kanyigo Group	

C. Resource Use by Gender

RESOURCE	VALUES	RESOURCE USE BY GENDER			
		FEMALE ADULT	FEMALE YOUTH	MALE ADULT	MALE YOUTH
Water	Domestic use				
	Irrigation				
	Livestock watering				
	Transportation				
Fish	Consumption				
	Medicine				
	Animal feed				
	Income generation				
Grass	Livestock fodder				
	House construction (thatch)				
	Crop mulching and manure				
	Handicrafts				
Papyrus and wetland sedges	Pasture				
	Handicrafts				
	House construction (thatch)				
	Income generation				
Trees	House construction				
	Furniture				

	Fuelwood				
	Charcoal				
	Income generation				
	Fruits				
	Medicine				
Fuelwood	Cooking				
	Brick making				
	Income generation				
	Food				
	Tourism				
	Weather forecast				
	Seed dispersal and pollination				
	Cultural rites				
Clay	Construction				
	Pottery				
	Cultural practices				
	Crop production				
Sand	Construction				
	Income generation				
	Agricultural production				
Herbs	Medicine				
	Food				
	Income generation				
Wild animals	Food				
	Hides and skins				
	Income generation				
	Medicines				
Mushrooms (Bubaala)	Food				
	Medicine				
	Income generation				
	Fuelwood				
Ants (White ants and termites)	Food				
	Income generation				
	Fish bait				
Ornamental	Tourism				
	Decoration				
	Income generation				
	Ceremonial (cultural practices)				

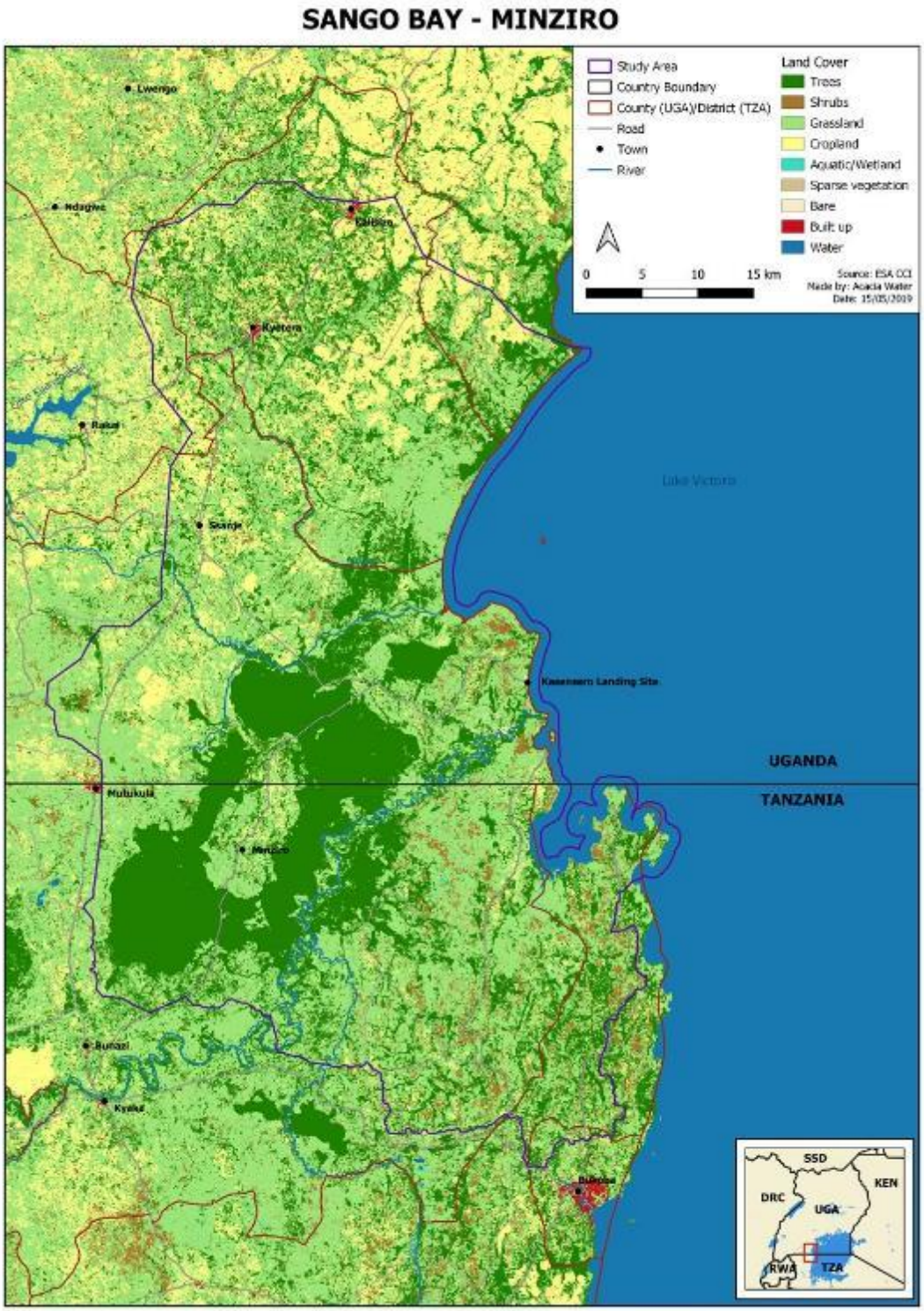
C. Resource use conflicts, coping strategies and suggested solutions

Wherever people with different interests utilise and co-manage natural resources, there is potential for conflicts. This is amplified in the case of transboundary resources such as the Sango Bay – Minziro wetland, where there are different governance systems and stakeholders across the border. If not addressed in an effective and timely manner, these conflicts can adversely affect community livelihoods and result in resource degradation. It is therefore necessary to identify current and potential conflicts, causes and propose viable and solutions – both traditional and alternative - for dealing or resolving the conflicts.

Table 12: Analysis of Resource-Use Conflicts in the Sango Bay - Minziro Wetland

CONFLICT TYPOLOGY	CAUSES	PROPOSED COPING/RESOLUTION MECHANISMS
Crop farmers vs herders	• Destruction of crops by livestock • Competition over water resources	• Proper demarcation or zoning of land uses • Fencing of crop land • Collective action to address resource action by addressing resource competition e.g. by-laws
Humans vs Wildlife	• Encroachment into wildlife habitats • Water scarcity • Destruction of cropland	• Enforce zonation laws • Strengthen both statutory and traditional conflict resolution mechanisms • Put measures in place such as hot pepper lines
Resource users vs. Resource Managers	• Illegal fishing, farming and hunting practices	• Promote collaborative and participatory resource use management • Sensitisation on the importance of sustainable management • Clear demarcation of wetland boundaries • Enforcement and strengthening of existing governance frameworks • Promote uptake of sustainable livelihoods

D. Land Cover Map



E Historical Timeline of Key Events in the Sango Bay – Minziro Wetland Landscape