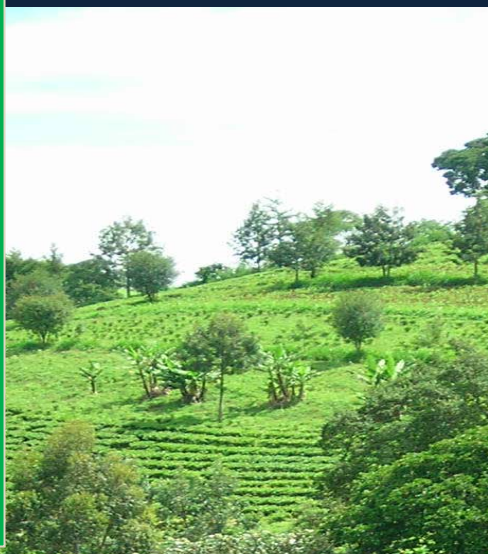
# A Basin-Wide Strategy for Sustainable Land Management in the Lake Victoria Basin



## Lake Victoria Basin Commission

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## ACRONYMS AND ABBREVIATIONS

| Abbreviation | Meaning |
|---|---|
| CBD | Convention on Biological Diversity |
| CBO | Community Based Organization |
| CDD | Community-Driven Development |
| EAC | East African Community |
| EALA | East African Legislative Assembly |
| EIA | Environmental Impact Assessment |
| ESAs | Ecologically Sensitive Areas |
| FAO | Food and Agriculture Organization |
| GDP | Gross Domestic Product |
| GEF | Global Environmental Facility |
| GIS | Geographic Information Systems |
| ICRAF | International Centre for Research in Agro-forestry |
| IPCC | Intergovernmental Panel on Climate Change |
| IUCN | International Union for Conservation of Nature |
| KEFRI | Kenya Forest Research Institute |
| LVB | Lake Victoria Basin |
| LVBC | Lake Victoria Basin Commission |
| LVEMP I | Lake Victoria Environmental Management Project, Phase 1 |
| LVEMP-II | Lake Victoria Environmental Management Project Phase 2 |
| LVFO | Lake Victoria Fisheries Organisation |
| MDG | Millennium Development Goal |
| M&E | Monitoring and Evaluation |
| MIS | Management Information Systems |
| MRB-TWRUF | Mara River Basin – Trans-boundary Water Resource Users Forum |
| MW | Mega Watts |
| NAPs | National Action Plan |
| NAPA | National Adaptation Plan of Action |
| NBSAP | National Biodiversity Strategy and Action Plan |
| NDP | National Development Plans |
| NGO | Non-Governmental Organisation |
| NRM | Natural Resource Management |

| | |
|---|---|
| NTFP | Non-Timber Forest Products |
| PRSP | Poverty Reduction Strategy Paper |
| RAMSAR | Convention on the protection of wetlands. |
| REDD | Reducing Emissions from Deforestation and Degradation |
| SIDA | Swedish International Development Agency |
| SLM | Sustainable Land Management |
| SMART | Specific, Measurable, Attainable, Relevant and Time bound |
| UNCCD | United Nations Convention to Combat Desertification |
| UNCBD | United Nations Convention on Biological Diversity |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environmental Programme |
| UNFCCC | UN Framework Convention on Climate Change |
| WKIEMP | Western Kenya Integrated Ecosystem Management Project |

## PREFACE

Lake Victoria water quality has declined significantly since 1970s, mainly due to increased sedimentation, as well as pollution and eutrophication caused by poor land uses/management among other causes in Lake Victoria Basin (LVB).

Poor land management and unsustainable land uses are key contributing factors to the poverty of farmers in LVB. The poverty is associated with a number of inter-related factors including rapid population growth; land degradation; and declining human health, agricultural productivity and water quality. High population growth, coupled with poverty and unsustainable agricultural practices have increased pressure on land. Some small scale farmers have resorted to cultivating in areas with steep slopes, riverbanks, forests, and wetlands. Overgrazing has also contributed significantly to soil erosion. The highest erosion risks are in fields cultivated with annual crops, and rangelands on bare hills. The average annual soil loss is highest on annual crops (85 tons/ha), followed by degraded rangelands (45 tons/ha), banana (28 tons/ha), and coffee (27 tons/ha). The estimated economic value of the soil lost due to soil erosion in the LVB is approximately US$10 million per year[1].

Agriculture development around the littoral zone of Lake Victoria has resulted in the destruction and/or degradation of fringing wetlands that are refuges and sites for fish breeding. Extensive wetlands around Lake Victoria are being destroyed or degraded through conversion to agricultural land, excavation for sand and clay, and use as disposal sites. It is estimated that about 75 percent of Lake Victoria's wetland area has been affected significantly by human activity and about 13 percent is severely damaged.

Despite of efforts made by LVEMP I on land management through application of best land management practices, only limited impact on decreased sediment load from land uses to Lake Victoria (LV) was realised. Among other reasons given for this was on the uncoordinated approaches used and low adoptions of the best land management practices.

The Protocol for Sustainable Development of Lake Victoria Basin (Articles 6, 7, 8 and 9) emphasises the need for Partner States to jointly promote sustainable agriculture and land use practices in order to achieve food security and rotational

[1] LVEMP I - Lessons-learned report on Soil and Water Conservation, 2005

agricultural production within the basin and, in accordance with the provisions of Articles 105, 106, 107, 108, 109 and 110 of the Treaty, for establishing EAC. LVBC Secretariat to mobilise funds and developing a sustainable funding mechanism for facilitating sustainable development in the basin.

The LVBC is aiming to achieve sustainable land management through this Basin-wide Sustainable Land Management Strategy (SLM) as a useful tool to guide the LVBC Secretariat and LVB countries to facilitate and coordinate development of integrated watershed management plans which include, among others, the coordinated community-driven sub-projects to conserve watersheds/ catchments as well as to increase households' incomes.

The strategy provides situation analysis on the socio-economic, legal and institutional framework, gender, opportunities and challenges related to land management in the Lake Victoria basin; and strategy Vision, Goal and Objectives in the nine key strategic areas and expected outputs of each strategic area. The strategy also provides a financing plan to implement this strategy.

This Strategy will create incentives to the land users to adopt and invest in the SLM best practices and hence increase adoption rates as well as impact of the SLM to reduce soil erosion and other sources of pollution from land uses. According to East African experiences of the Regional Land Management Unit (RELMA-Sida supported unit), linking best SLM practices, agricultural production to markets is a critical step in ensuring that conservation measures are attractive to individuals.

The LVBC Secretariat is committed to coordinate the EAC Partner States to apply this strategy to achieve sustainable land management in the LVB.

Dr. Canisius Kanangire
**EXECUTIVE SECRETARY**
**LAKE VICTORIA BASIN COMMISSION SECRETARIAT**

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## DEFINITION OF TERMS

Some words and concepts applied in this Report have been used many times and are defined up-front in order to enhance the better understanding of the context in which they are used.

**Climate Change -** Climate change refers to the impact of an ever warmer planet brought about by increased levels of greenhouse gases such as carbon dioxide, methane and nitrous oxide that are trapped in the atmosphere (IPCC 2001).

**Climate Change Vulnerability -** The degree to which a system is susceptible to, or unable to cope with, the adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC 2001).

**Goals-** Goals are the ends to be attained through the general strategy and individual activities that are identified.

**Impact** – The desired future state of land management to be demonstrated by this strategy.

**Land Tenure –** Land tenure is the relationship, whether legally or customarily define, among people, as individuals or groups, with respect to land and management and administration.

**Objective** –is a specific statement detailing a desired accomplishment or outcome of a SLM Strategy.

**Outcome –** The desired future state/ product at objective level.

**Output** – The desired product of an activity or task.

**Policy** – The basic principles/ fundamental rules developed and used by governments to guide proper management of land and other related natural resources.

**REDD+ -** Reducing Emissions from Deforestation and Forest Degradation, the role of conservation Sustainable Management of Forests and Enhancement of forest carbon stocks in Developing Countries (IPCC 2001)**.**

**Result –** is the desired future state of a target.

**Situation Analysis –** An analysis of the factors (direct threats, underlying causes, and opportunities) affecting land management.

**Strategic framework** –is a comprehensive picture/structure of the organization's strategy. It clarifies how individual efforts and team projects can be connected to achieve the best outcome. It includes meaningful target measures and a sequence of activities that help focus on the key efforts that implement the strategy.

**Strategic Objectives** – A broadly defined objective that the strategy desires to achieve and make the strategy succeed.

**Strategy** – Is a logically connected set of policies and activities leading to goals which are explicitly stated. It describes the specific means by which the Government or organisation intends to achieve policy goals. Strategies include objectives, outputs, and activities the Government or organisation established to achieve set goals.

**Sustainable Land Management -** The wise use of land and its associated natural resources (soils, minerals, water, flora and fauna) including the ecosystems biodiversity to meet present and future human needs whilst maintaining and enhancing ecosystem integrity.

## EXECUTIVE SUMMARY

### BACKGROUND

The Lake Victoria Basin Commission (LVBC), an institution of the East African Community (EAC) of five Partner States of Burundi, Kenya, Rwanda, Tanzania and Uganda, is charged with the mandate of coordinating various interventions on Lake Victoria and its Basin that covers an area of 193,000 Km², shared amongst Burundi (7%), Kenya (22%), Rwanda (11%), Tanzania (44%), and Uganda (16%). LVBC proposes to address the continued and serious land degradation in the Basin, through the development and implementation of a Sustainable Land Management Strategy in the context of Lake Victoria Environmental Management Project Phase 2 (LVEMP II). The Strategy consists of 4 Chapters: Chapter 1 the Introduction; Chapter 2 the Situational Analysis in the Basin; Chapter 3 the Strategy – Approaches, Interventions and Participating Institutions and Chapter 4 the Implementation and Funding Plans,

The approach to the development of the Strategy was based on a broad review of literature, research outputs on the LVB and staged consultative meetings, workshops and feed-backs. Workshops and meetings were held in each of the five Partner States with the national experts drawn from relevant sectors such as the environment, agriculture and livestock, forestry, water, energy, research and implementing agencies as well as the LVBC Secretariat. The collected information was consolidated in country specific issues, challenges and opportunities and presented to two regional TWG workshops of relevant national professionals and one regional TWG workshop for validation of the Strategy. This Strategy is therefore a result of extensive consultation with community based SLM groups and professionals in the EAC Partner States.

### SITUATIONAL ANALYSIS

The Situational Analysis in Chapter 2 shows that the LVB is endowed with immense natural resources that include forests, savannahs, rangelands and fisheries providing livelihoods for communities around the Basin. With a population of about 35 million and an average density of 300 persons per square km and increasing at the rate of 4% per annum, the demands to meet the needs of the increasing human

and livestock populations in the form of space, shelter, food, water, health services and waste disposal are putting high pressure on the available natural resources - the ecology and ecosystems, natural vegetation and forests, fisheries, hydrology and water, farming systems and energy resources. The available literature and reports, as well as direct observations, indicate that the natural resources in the Basin are degrading and declining fast. In addition, the Governance of the natural resources (protocols, policies and laws and institutional capacity) requires strengthening in order to improve the management of these resources. The underlying motivation for the development of this Strategy is the evidence of over-exploitation of the available resources within the Basin in an unsustainable manner coupled with the inadequate co-ordination at a regional level of strong national policies.

**SYNTHESIS OF KEY ISSUES**

This chapter summarises the key SLM challenges (issues) and opportunities in the Socio-economic; Ecology and Ecosystems; Natural Vegetation and Forests; Fisheries; Hydrology and Water Resources; Farming Systems; Land Tenure and Land Use; Energy Resources; Climate Change and Governance. These issues are addressed by this strategy.

**THE STRATEGY**

The proposed Strategy is based on adopting the preferred scenerio and principles that affirm that it will be possible to realise positive economic gains whilst maintaining the natural resources using a sound and best practice management system. It also asserts that adaptive strategies to climate change and variability, good governance, M&E, energy prices and social changes will be possible. Best available technology and good management practices will be used to achieve sustainable environmental and socio-economic benefits. The Strategy has been designed to provide a mechanism that will address issues and challenges prevalent in the Basin by considering present trends and possible future situations which will impact the management of resources and livelihoods of the Basin's population.

The centre-piece of the Strategy is the strategic objectives, interventions and institutions and regulatory framework in each of the key areas of natural resource management - Ecosystem Management; Natural Vegetation and Forests, Land Tenure and Land Use; Energy, Fisheries and Farming Systems in the context of

Climate Change and Variability and Good Governance. The expected benefits (monetary and non-monetary), including livelihoods development of SLM will, to a large extent, depend on effective implementation; enforced legislation, institutional support; available capacity (education, awareness, training and research); and M&E all with anticipated specific objectives and ultimate outcomes.

**IMPLEMENTATION AND FINANCING PLAN OF THE STRATEGY**

The SLM Strategy is anticipated to be implemented using a three-pronged approach. Firstly, through the harmonization of national policies and strategies that conform to this over-arching strategy. It is proposed that the Partner States will identify focal institutions and co-ordinators of the strategic objective activities and subsequent actions. The second is harmonizing policies and strategies, it is expected that the national instruments of the Partner States will be working towards a common goal. Thirdly, each Partner States will draw implementation plans to respond to this strategy, individually and in collaboration with the EAC/LVBC Secretariat and design some of the interventions as projects. The roles of the various institutions in the implementation process are also outlined. The responsibilities for numerous activities overlap, suggesting that co-ordination and joint action is essential.

Interventions have been identified and prioritized for funding: Short-term up to 5 years; medium term 5-15 years; and longer term over 15 years. The short term priority is sensitizing and lobbying the EAC and Partner States to adopt and ratify the Strategy and subsequently to strengthen the policies and institutions in land management.

Funding of the Strategy shall be through direct and indirect sources that include charges for economic operations; contributions by EAC Partner States; development partners; International conventions and memberships (CBD, UNFCCC, UNCCD) and participatory community initiatives.

# CHAPTER 1 - INTRODUCTION

## 1.1 BACKGROUND TO THE STRATEGY

The Lake Victoria Basin (LVB) covers an area of 193,000 Km², shared amongst Burundi (7%), Kenya (22%), Rwanda (11%), Tanzania (44%) and Uganda (16%). The Basin is the home to about 35 million people with a population density of about 300 per km², which is higher than the national averages of some member states such as Uganda (235), Burundi (210), and Tanzania (190). Only Kenya and Rwanda, with national averages of 342 and 378 respectively, have higher densities than the Basin average.

The Basin suffers from serious land degradation that threatens the environmental well-being, the food and income security and the general livelihoods of people in the Partner States of the East African Community. The situation is particularly critical in the Lake Victoria Basin where demands to meet the needs of the rapidly increasing human and livestock (domestic animals) populations in the form of space, shelter, food, water, health services and waste disposal, have placed very high pressure on the resources of the Basin (LVBC, 2011). The conversion of woodlands, forests, and wetlands into farmlands has given rise to growth in agricultural production in recent years with significant negative impact on the natural resource base and decline in yield per unit area.

Recent studies indicate the occurrence of severely accelerated land degradation in the Basin with an estimated soil erosion rate of about 20,000 metric tonnes per ha per year, (Guthiga, 2007). A National Workshop reported that research in the Simiyu Valley has recorded up to 150,000 tonnes of soil loss per hectare per year. The national experts and participants at various workshops observed that agriculture development around the littoral zone of Lake Victoria has resulted in the partial destruction and/or degradation of fringing wetlands that are refuges and sites for fish breeding. The experts reported that wetlands around Lake Victoria are also being partly destroyed through the extraction of sand and clay and the disposal of wastes. These deleterious practices have resulted in the loss of flora and fauna including the diversity of commercial fisheries. It was reported that overgrazing has also contributed significantly to soil erosion and, according to LVB Secretariat, the

highest erosion risks are associated with fields cultivated with annual crops and rangelands on bare hills. In addition high erosion of nutrients from non-point sources into the lake has given rise to heavy hyacinth infestation.

Some of the major factors reported to be contributing to poor land use practices include; lack of market-led initiatives, especially for risk-averse farmers unable or unwilling to invest in best practises in Land Management, limited effective coordination, fragmentation and conflicts in policy and weak NRM governance. The situation is also exacerbated by the emerging negative impacts of climate change and variability combined with socio-economic and biophysical challenges affecting most people but especially the poor and marginalised. The result is low per capita food production, increased poverty and natural resource degradation, including the destruction of the fragile natural resource base such as the wetlands along the shores of Lake Victoria, steep slopes of the hills and riparian zones, further increasing environmental degradation of Lake Victoria which has resulted in water hyacinth infestation.

## 1.2 PURPOSE AND SCOPE OF THE STRATEGY

The LVBC, an institution of the EAC, charged with the mandate of coordinating various interventions on Lake Victoria and its Basin, is seeking to address the continued land degradation in the LVB through the development of a Strategy for Sustainable Land Management (SLM) with funds from the World Bank, GEF and SIDA. The strategy is intended to provide a framework for the co-ordination of policies and actions in the five Partner States for an effective management of the watersheds. The strategy stems from the earlier work by LVEMP I which aimed at counteracting the threats to the Lake. These covered water quality and quantity monitoring, industrial and municipal waste management, fisheries, water hyacinth control, wetland and water catchment management, afforestation, land-use planning and micro projects to counter poverty. Tenure issues posed a problem in the adoption of improved land use management practices on communal lands, (Muyodi et al. 2009). Although significant progress was made by LVEMP I interventions, there has been little project sustainability as most interventions ended with the expiry of the project. The perceived lack of Basin-wide and regionally co-ordinated efforts in sustainable land management (SLM) is the motivation behind the

formulation of this current strategy which seeks to achieve, *inter alia,* sustainable land management within the LVB to guide the development of integrated watershed management plans.

The purpose of the SLM Strategy is to provide an agreed framework to co-ordinate the policies and actions of all five EAC Partner States of Burundi, Kenya, Rwanda, Tanzania and Uganda, with regard to the management of Basin catchments. In this context, it is an over-arching strategy that will guide national and sector policies, strategies and programmes with regards to natural resource utilization and conservation. It is acknowledged that the Partner States have their own national policies and strategies aimed at the Basin environment and that these are pertinent to Basin management as well. This Basin-wide overarching strategy provides the standard against which harmonization and co-ordination of national instrument for Basin management can be made possible.

The overarching SLM strategy is contextualized by global conventions, the EAC Charter and East Africa Community/Lake Victoria Basin Commission protocols on the environment and related issues, including SLM management. It acknowledges efforts to deal with issues at the national level, in clear recognition of the different states of the economy in each and all of the Partner States.

The Strategy addresses relevant land management issues that impact on the socio-economic and environmental issues for improved welfare and livelihoods of the population in the short and long run. It will contribute towards the achievement of the EAC's Lake Victoria Basin Development Vision which is "*a prosperous population living in a healthy and sustainably managed environment providing equitable opportunities and benefits to all*".

The overall objectives of the Strategy are to:

(i) Improve collaborative management of the trans-boundary natural resources of LVB for the shared benefits of the EAC Partner States;

(ii) Reduce environmental stress in targeted pollution hotspots and selected degraded sub-catchments to improve the livelihoods of communities dependent on the natural resources of the Lake Victoria Basin;

(iii) Slow down and ultimately reverse the current land degradation trend and commence a new chapter in the management of the Lake Victoria Basin watershed.

The Strategy covers all the salient issues and institutions that have a bearing on land management in the region. Existing issues lie in the areas of natural resource management (land for agriculture, livestock, forestry and mining; and water); energy, regulatory, legal and institutional arrangements. The Strategy further proposes an implementation plan for operationalizing the various components. The plan sets priorities for the various interventions in the short, medium and longer term, including the resources that will be required and the institutions that will be responsible for implementation.

## 1.3 GLOBAL, REGIONAL AND STRATEGIC CONTEXT OF THE SUSTAINABLE LAND MANAGEMENT

The Basin-Wide Strategy for Sustainable Land Management in The Lake Victoria Basin covers the Lake's watersheds in the five East Africa Community (EAC) Partner States of Burundi, Rwanda, Tanzania, Uganda and Kenya. The Strategy was developed on the basis of international, national and regional frameworks on environmental conservation. These efforts follow the 1992 Rio Summit, particularly Agenda 21, where World Countries set out to reverse the declining trends of quality in environmental and natural resources conservation on mother earth.

The Partner States have since then developed National Action Plans and Strategies on environmental conservation such as the NEAP (National Environmental Action Plan) and the laws and policies that give NEMA operational powers, the National Biodiversity Strategies and Action Plans to implement the Convention on Biological Diversity (CBD). The Partner States have also been implementing other global conventions such as United Nations Convention to Combat Desertification (UNCCD), United Nations Framework Convention on Climate Change (UNFCCC) and agreements on International Waters.

As Partner States of the EAC, they are parties to the EAC Protocol on Sustainable Development of the Lake Victoria Basin. Article 3 of the protocol provides areas of cooperation which relate to the conservation and sustainable utilisation of the resources of the Basin. Article 33 establishes the LVBC as a body of the EAC for

sustainable development and management of the LVB with broad range of functions such as guiding implementation of sector projects and programmes; promotion of capacity building and institutional development and initiation and promotion of programmes that target poverty eradication.

In addition the EAC has also prepared a protocol to facilitate cooperation on Environment and Natural Resources Management. In 2005, the EAC published its Vision and Strategy Framework for Management and Development of Lake Victoria Basin which establishes a shared vision and long term plans for sustainable management and development of the LVB. Partner States of the EAC have also prepared policy and legal frameworks of managing the environment and natural resources in the Basin.

Natural Resources play a critical role in socio-economic development the world over. However, in developing countries and those with economies in transition, natural resource management is greatly affected by the limited human and infrastructural capacities. Since the economies of these countries are predominantly natural resource based, sustainable management of these resources is paramount if sustainable development is to be achieved. The objectives of the Multilateral Environmental Agreements (MEAs) are consistent with sustainable development and hence contribute to national development objectives of the least developed countries.

Partner States are signatory to these MEAs and are, accordingly, required to implement the commitments of these agreements. However, they have limited human and institutional capacities, particularly weak institutional coordination, and they demonstrate inconsistencies in policies relevant to implementation of SLMs. In the EAC, natural resource degradation is impacting most on the survival of mankind and the environment in general. Striking examples of natural resource degradation in developing countries include: the mismanagement of some vital natural resource components (like forests), leading to climate change and variability and eventually speeding up desertification; high rates of soil erosion and pollution of water bodies and encroachment on wetlands. This has simultaneously caused biodiversity degradation and interfered with water cycle and systems, thus diminishing the welfare of the affected communities and beyond.

It was because of the importance of conservation, management and sustainable utilisation of the resources of the Basin that LVBC, with its oversight and coordination roles, requires this Strategy in order to harmonise the conflicting and inconsistent policies among Partner States. Implementation of the Strategy for SLM is therefore expected to coordinate and harmonise efforts to reverse these negative trends.

A number of challenges have been experienced in the implementation of international and EAC protocols on natural resources management and development. The purpose of the SLM Strategy is to provide an agreed framework to coordinate the policies and other SLM interventions of all five EAC Partner States in line with the global, regional and national protocols and Conventions.

## 1.4 BASIS FOR PREFERRED SITUATIONS

This SLM Strategy will be used to slow down and ultimately reverse the current land degradation trend and commence a new chapter in the management of the Lake Victoria Basin natural resources. The Strategy is in line with the EAC protocol for Sustainable Development of Lake Victoria Basin that was signed on 29th November 2003 and came into force in 2004.

The EAC Council of Ministers then recommended that Partner States, civil society organizations, development partners and other stakeholders adopt this framework as a development guideline in the sustainable management and development of the Lake Victoria Basin.

The Strategy Framework is clustered into five Policy Areas. Of greater relevance to this study is the Policy Area 1, which covers Ecosystems, Natural Resources and Environment with a developmental objective of attaining **"***a prosperous livelihood and enhanced management of ecosystems, natural resources and a clean and healthy environment".*

As a result of implementing this SLM Strategy, as per the EAC protocol for LVB and natural resources and other instruments listed under section 1.3 above, it is expected therefore that rural livelihoods will improve by promoting Basin-wide best practices, good ecosystem management and by collecting and disseminating

knowledge and using it to manage resources. More specifically, the Strategy will assist *'the Partner States to adopt common measures and strategies to prevent soil and land degradation and ensure sustainable management of soil and land resources' for improved productivity of the natural resources and the environment for posterity.*

## 1.5 DEVELOPMENT OF THIS STRATEGY

The approach to the development of the Strategy was based on a broad review of literature, particularly research outputs on the LVB, visits to hotspots and discussions with respective community based-organizations in various Partner States. Staged consultative meetings, workshops and feed-back sessions were also undertaken. Workshop and meetings were held in each country with the national experts drawn from government, private sector and NGOs from relevant sectors of agriculture and livestock, forestry, water, energy, research, and as well as from the LVBC Secretariat. The collected information was consolidated in country specific issues, challenges and opportunities and projected into future scenarios under different assumptions. National issues were then presented to two technical regional workshops where teams of relevant professionals reviewed and consolidated national issues into broad regional Basin-wide set of issues. Subsequently the compiled regional issues and strategy was reviewed and validated at a regional workshop of stakeholders from the five Partner States. Thus, the Strategy results from intense consultative meetings with professionals and practitioners in sustainable land management.

Annex 2 shows the regional consolidated matrix of clusters of issues of common concern to the Partner States. The clusters have been re-arranged with respect to common goals and outcomes into the eight strategic objectives of the Strategy with two strategic objectives of general clusters of Monitoring and Evaluation (M&E); and Capacity Building and Governance.

## 1.6 ORGANIZATION OF THE STRATEGY

This Strategy is organized in four Chapters. The first Chapter provides background information on the rationale of preparing this Strategy and the approach used to conduct the study and prepare the SLM Strategy. Chapter 2 is a situation analysis of the status of land management practices, risks, opportunities and challenges

underlying the present situation and identifying gaps in land management that the Strategy will address. Chapter 3 describes the Strategic Objectives, interventions and expected output and outcomes of implementing best practices of the Strategy as they relate to the identified gaps. The last Chapter provides a framework for implementing the Strategy with regard to priority, timing, funding and responsible institutions.

# CHAPTER 2 - SITUATIONAL ANALYSIS

This chapter describes the current situation of land management in the Lake Basin focusing on the risks, opportunities and challenges. The components impacted by the current land management include among others:

i. Socio-economic;
ii. Ecology and Ecosystems;
iii. Natural vegetation and forests;
iv. Fisheries;
v. Hydrology and Water resources;
vi. Farming Systems;
vii. Land Tenure and Land Use;
viii. Energy Resources;
ix. Climate Change;
x. Governance.

## 2.1. SOCIO ECONOMIC

The key drivers of the economy in the Basin are fisheries, agriculture, forestry, transport, tourism, cross border trade and mining. Fishing is by far the most important economic activity for those living in lakeshore areas. Introduction of Nile perch and the subsequent expansion of fish exports to Europe and Asia triggered a boom in this sector. Fishing and fish processing industries generate much-needed income and hard currency earnings. Current annual fish catch estimates for the lake range between 800,000 – 1,000,000 tonnes, valued at US$350 – 400 million at the beach, with export earnings estimated at US$ 250 million, (Lugoe, 2010).

The Basin has pockets of significant mineral wealth, especially in Tanzania near Mwanza and Mara. Tanzania is Africa's third largest gold exporter (Curtis and Lissu 2008) and it continues to grow. Activities include both artisanal and large-scale production, both of which are focused in close proximity to Lake Victoria. Although there have not been reports of serious environmental accidents as a result of large-scale mining activities, environmentalists have raised concerns about the potential for processing chemicals to pollute water resources. Several large-scale operations have recently been granted permits or commenced operation.

The Basin has other mineral potential, including apatite, graphite, ilmenite, carbonite, copper, gold, radioactive minerals, rare earths, iron limestone, silver, soapstone, tin and nickel. Between 1999 and 2003 the Geita gold mines and the North Mara and Tulawaka mines were all opened and four additional mining operations were set to commence operations the following year (SIDA 2004). In Rwanda, mining has been scaled-up and its contribution to foreign exchange earnings has also substantially increased over the last five years, (CIA, 2011b).

There is potential risk of processing chemicals polluting water resources. Gold mining causes land degradation around mines and water pollution far beyond the mine. This poses a threat to the Lake and its flora and fauna if it is not carried out in a responsible manner. Mercury, which is mainly used by small-scale miners for processing of gold, is a heavy metal which accumulates in the food chain and may be dangerous once the amounts accumulated are high and widespread.

The Basin's main foreign exchange earners, coffee, tea, and recently tourism and horticulture, are all based on the natural resource base. Tourism, which is now the fastest growing economic sector, is largely focused on wildlife protected areas. In 2008, tourism was Rwanda's primary foreign exchange earner. The mountain gorilla (Gorilla gorilla beringei), a rare species found in Rwanda and Burundi and the large herbivorous and associated predators and other big game in the Mara and Serengeti are world-class tourist attractions that makes the LVB a unique tourist destination. A number of service industries and artisanal activities are associated with the tourism industry, such as the manufacturing and sale of art and craft products that are now being marketed locally and abroad. Most are dependent on environmental resources, for example basket making is reliant on grasses and sometimes reeds harvested from wetlands.

There are two principal aspects of the linking environmental conservation, sustainable development and the elimination of poverty:

i. Environmental degradation can itself have an adverse effect on the livelihoods of the poor. Preventing it or reversing it can make a direct contribution to reducing poverty;

ii. Other development actions that are aimed at poverty elimination, including economic growth, may have adverse impacts on the

environment. Unless these potential impacts are avoided or contained, development may not be sustainable.

Sustainable Land Management is therefore essential to reduce environmental stresses from the Lake Basin, through the implementation of sustainable soil and water management practices and livelihood improvement interventions, using community-driven development (CDD) approaches, to improve water use efficiency in the Lake Victoria Basin and generate positive externalities to downstream countries will go a long way in the downward poverty trend.

## 2.2. ECOLOGY AND ECOSYSTEMS

The ecological importance of Lake Victoria cannot be overstated. Not only is it the second largest lake in the world, it is also the source of the white Nile and its waters and wetlands are home to numerous fish and bird species, some of which are already threatened or endangered. The ecological significance of the lake is further heightened by the role it plays in shaping regional weather patterns, especially with regard to rainfall.

The surface temperature of the Lake is significantly correlated to the Basin-wide spatial distribution of rainfall (Anyah and Semazzi, 2004). This phenomenon occurs because large inland lakes *"affect atmospheric circulations through frictional and thermal contrasts between lake surfaces and the adjoining land areas"* (Mukabana and Pielke 1996). Large inland lakes, such as Lake Victoria, are also sources of significant moisture and latent heat, both of which drive tropical climates. The relationship between Lake Victoria's surface temperatures and climate is especially strong, even compared to other large lakes, because of its high-altitude location, which contributes to strong wind circulations in the region (Anyah and Semazzi 2004). With lake-surface temperatures so strongly correlated to regional climate and rainfall patterns, any changes could have a major impact on agricultural productivity and thus the livelihoods of millions of people in the Basin area. Additionally, if surface temperature changes cause a significant disturbance to rainfall amounts, it will have a marked effect on the Lake itself, as rainfall is the primary natural determinant of water levels.

Inter-linkages between the highland and lowland ecosystems are important in terms of water regulation and also for the transfer of nutrients and sediments. These ecological processes are directly affected by human intervention which determines net losses upstream – run-off, erosion, fertility decline - and net gains downstream, where there is a fine balance between benefits in terms of productivity of aquatic and terrestrial systems and risks of sediment/nutrient loading and flooding.

Soils, vegetation and landscapes vary widely with rainfall and altitude giving four main agro-ecological zones:

i. The wet highland zone in Kenya, Rwanda and Burundi (with altitude over 1,900- 2,500m, and rainfall 1,400-2,000mm),

ii. Incised plateaux over-looking Lake Victoria in Kenya, Tanzania and Rwanda extending into Uganda (alt. 1,500-1,900m, rainfall 1,000-1,400mm),

iii. The drier lowlands and floodplains (600-1,000 mm) all around the lake in the partner states of Kenya, Tanzania and eastern Rwanda.

The basin lies in the sub-humid agro-ecological zone with a bimodal rainfall, the long rains from late February to May/June and short rains from late September to early December, providing a growing period of 90 to 200 days.

The diverse topography and climate of the area is amenable to various land uses agriculture, agroforestry, fisheries, pastoralism, hunting, mining and tourism. The Basin has the highest species diversity of large herbivorous in the world. The basin has a diversity of vegetation ranging from forest to savannah through which large number of animals live and migrate like the Masai-Mara-Serengeti Ecosystem and the monkey and Chimpanzee in the mountain ecosystems in Rwanda and Burundi. The spectacular annual wildebeest migration in the Masai-Mara-Serengeti Ecosystem is considered one of the wonders of the world. Lake Victoria itself is the second largest fresh water lake in the world.

Ecosystems are facing increasing pressures as a result of rapid population growth, agricultural and livestock intensification characterised by progressive reduction in farm sizes and unsustainable land use and management practices. The Basin's

land and freshwater resource base, associated biodiversity and populations whose livelihoods and food security depend on those resources, are threatened by land degradation, declining productive capacity of croplands and rangelands, deforestation and encroachment of agriculture into wetlands. Present land management practises that result in high land degradation and heavy inflow of nutrients into the lake result in water pollution, siltation and poor water quality.

Industrial facilities discharge effluent directly into the lake, frequently with little prior treatment. This primarily is a problem in the major urban centres of Mwanza, Musoma, and Bukoba in Tanzania; Kisumu, Bomet and Homabay in Kenya; and Kampa, Entebbe, Masaka and Jinja in Uganda (Figure 1).

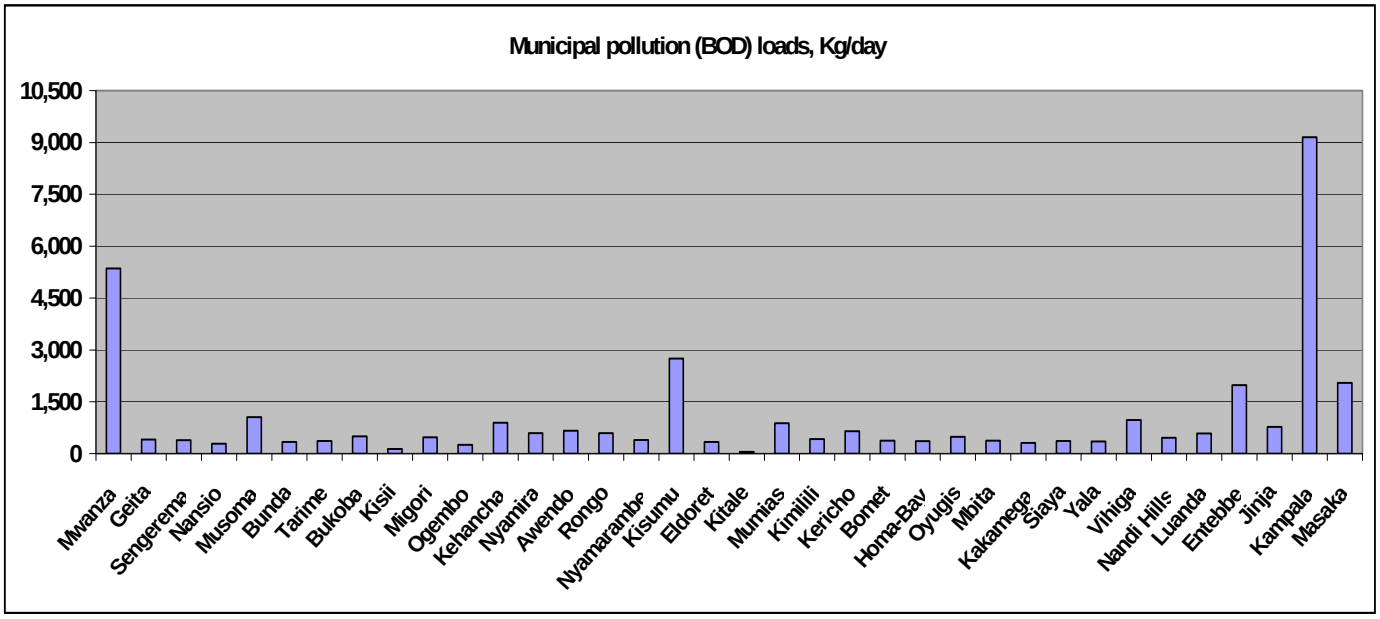


**Figure 1: Ranking of Municipal Point Sources of Pollution for Lake Victoria (*Source: LVEMP, 2005)***

However, adding to the industrial contamination is the non-point source pollution from human and animal wastes entering the lake from urban areas and rural villages alike. It is estimated that 80% of the riverine phosphorus entering Lake Victoria comes from municipal and industrial sewage and the dumping of untreated sewage from villages and small settlements (2007). Human and animal wastes also are contaminating lake ecosystems and contain dangerous bacteria that can negatively affect water quality and sicken communities. The lack of treatment poses a major risk to public health because 70 percent of the basin population utilizes raw water in some form or another. Illness associated with

contaminated water and poor sanitation practices include typhoid fever, cholera, dysentery, and malaria.

**Box 1: Ecosystem Management Challenges, a Case of the Mau Forestry**

**The Importance and Challenges of Mau forest in Kenya**

**Importance**

i. Supports crucial sectors such as energy, tourism, agriculture and water supply.
ii. Important water catchment area in the Rift Valley and Western Kenya (feeding the vitally important Mara River which flows into Lake Victoria). Productive agricultural land small and large scale (tea, wheat and maize farms).
iii. Provision of other ecosystem services.
iv. Regional water tower for rivers flow to the Lake Victoria
v. Migration of wildlife in Masaai Mara and flamingos depends on the Mau.

**Challenges**

i. Deteriorating state of natural forests and an ongoing land issue.
ii. Land subdivided to very small parcels
iii. Forests being excised
iv. Drastic effect in water supply and quality
v. Heavy soil erosion
vi. Intense human conflict
vii. Reduced biodiversity

Source: Wachira**,** 2008**;** KIFCP, n.d.).

## 2.3. NATURAL VEGETATION AND FORESTS

Natural forest cover in the Lake Victoria Basin consists of tropical high forest (THF), woodlands and forest. A large proportion of the rural population (80 percent of households) depends on forest resources for basic needs and forestry provides a range of environmental services and biodiversity values, such as greenhouse gas (GHG) mitigation, watershed regulation, climate regulation, soil and water

conservation, and nutrient cycling. The forestry sector contributes an average of about 6-10 percent to Partner States GDP and creates about 850,000 to 100,000 jobs in the formal sector and the majority in fuel-wood and charcoal production.

The diverse ecosystems and convergence of lowland species provide an array of habitats for multiple species of high global significance. This includes remaining species of mega-fauna in protected areas (and habitats) such as the Akagera National Park, Lake Mburo and the Burigi Game Reserve, the Maasai Mara National Park in Kenya and the Serengeti National Park in Tanzania, as well as the unique tropical biodiversity of the groundwater forests (Minziro, Munene and Rwasina Forest Reserves). It also includes natural forests (such as Gishwati, Nyungwe. Kakamega, Nandi and Timborua, and remnants of previously widespread riverine forest along the Kagera, Mara, Nzoia, Yala Nyando, Miriu, Simiyu rivers) with endemic plant and animal species (including those used in medicine, for wild foods and agroforestry, such as *Ficustoningii, Markhamialuttea* and *Eritrinaabbissinic).*

Extensive swampy forests and grasslands, with dense tall grasses and papyrus, are important ecological components of the floodplain ecosystem of the Lake Basin. These have been, and are continuing to be, cleared for commercial farming and for subsistence agriculture as well as being used for grazing in times of drought. This severely compromises the important function that swamps and wetlands play in regulating water flow, filtering nutrients such as excess nitrogen and phosphorous, capturing sediments and nurturing biodiversity and habitat for fauna and flora, upon which the health and productivity of the Lake Victoria depends.

### 2.3.1. Forest degradation

Despite the value of forest resources to the Basin's economies, the forests are severely strained. The stress has been attributed to deforestation, population growth and human encroachment. The problem is particularly acute outside of protected areas, on forested private and public/ communal lands that are not regulated or managed by government. Communities living in these non-regulated forest lands depend on forest resources for firewood, building materials, medicinal plants but are also faced with more immediate livelihood needs, prompting over-exploitation. The deforestation rate is estimated to be 55,000 to 100,000 ha per

year, based on habitat change from 1990-1995. Other estimates push the figure higher to between 1.1% and 3.15% per year.

The Lake Victoria Basin (LVB) is a highly density populated region with an annual growth rate of 3%. It is estimated that by 2020, the population of Lake Victoria basin will double, (Lubovich, 2009).

The growing population has led to increasing needs and demands, coupled with insecure tenure systems and dwindling natural resources which already pose a significant threat to Basin ecosystems. Rapid population growth has contributed to water pollution, soil erosion and run-off triggered by deforestation, wetland destruction and poor agricultural practices which further threaten the quality of the water.

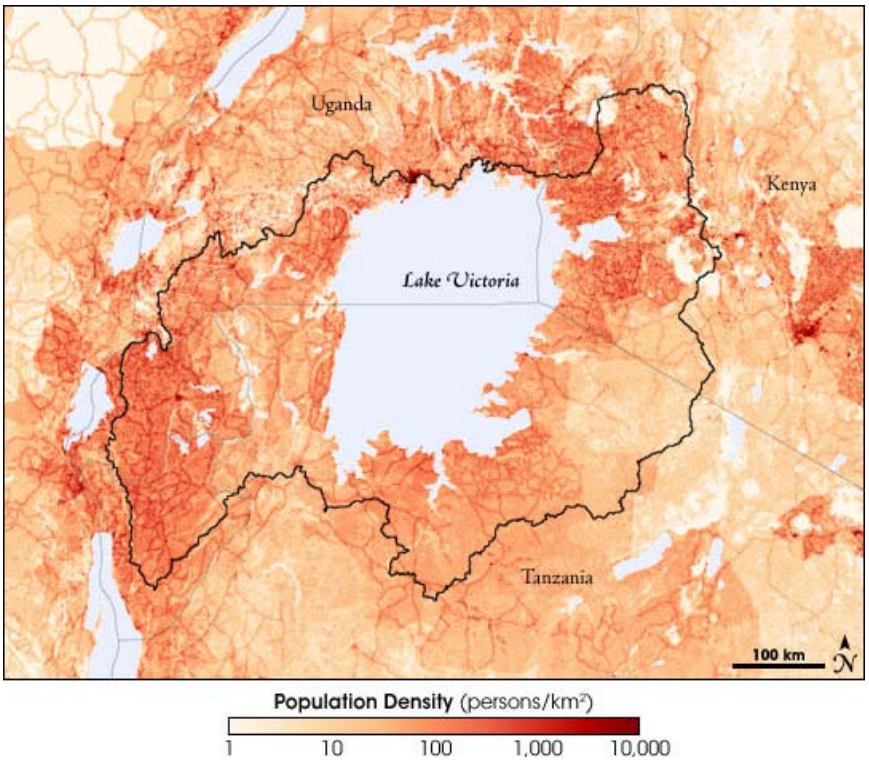


**Figure 2: Population around the Lake Victoria Basin- LVEMP-2005**

The growing population (figure 2) has led to increasing needs and demands, coupled with insecure tenure systems and dwindling natural resources which already pose a significant threat to Basin ecosystems. Rapid population growth has contributed to water pollution, soil erosion and run-off triggered by deforestation, wetland destruction and poor agricultural practices which further threaten the quality of the water.

A doubling of the population by 2020, with no concomitant improvement in farming systems or alternative income opportunities would pose a significant, if not insurmountable challenge.

Most Basin residents are also very poor, earning between US$90 and US$270 per year (i.e. much less than the World Banks Extreme Poverty line of US$1.25/day in 2005 prices). As stated in previous chapter, LVB people depend on these natural resources for food, shelter and income. The exploitations of these resources are not sustainable and hence cause not only low production per unit, but also destructions on these resources.

Refugee movements in recent decades in the region have increased actual and potential conflicts between interest groups and countries, putting pressure on protected areas and natural resources in the basin. It is estimated that there are over 10,000 refugees and 100,000 internally displaced persons (IDPs) in the region, (CIA, 2011a). The repatriation and reintegration of returnees and the accommodation of refugees and IDPs increases pressure on the forests and poses potential difficulties in watershed management, as peace and cooperation are fundamental to the sustainable management of natural resources and watersheds.

**Figure 3: Poor agriculture practices**

Notwithstanding these conflicts, population losses and displacements, there is an appreciable urban migration of about 4% per year, with population growth rates as high as 5-10% in urban areas. The urban population remains largely dependent on forest as sources of charcoal.

The forest degradation is caused by encroachment and conversion for agriculture due to increasing demands of the growing population for fuel wood, charcoal, timber, and construction purposes. Deforestation has been severe over the last few decades, including loss of high altitudes forests, riverine forests, and low land forest/ woodlands in national forest and local forest reserves. The loss in permanent vegetation cover has accelerated run off and increased exposure of soils to sheet and gully erosion. The remaining forests, woodlands and trees in savannah systems and on –farm across the basin are facing severe pressures. Valuable indigenous tress (e.g. Podocarpus spp. *Markhamia lutea* for timber, Fito, *emitongole, eminyinya, enkukuru, obukagati*, used for making local products), wild life and non-wood forest products, including diverse medicinal plants are threatened (LVEMP II PAD, 2009)

### 2.3.2. Sediment loss and run off

The moderate to high sediment loss and run off noted for the Katonga, Nyando, Simiyu and Kagera brown water was mainly attributed to poor land management practices. The river flows exhibited high sediment yield and run off due to the poor / highly degraded nature of rangelands in these areas. Estimates vary widely but between 690 million tons and 19,800 million tons of soil lost per year according to the UN-sponsored Global International Waters Assessment (GIWA). Land degradation is therefore a serious threat to Lake Victoria, but also in terms of the food and the livelihood security of the rapidly increasing population. Declining soil fertility is also a major concern in many parts of the Basin.

The sedimentation causes Lake ecological changes, including low oxygen availability, spread of waterborne diseases, invasion of the non-indigenous water hyacinth (*Eichhornia crassipes),* that is related to the nutrient deposition and accelerate eutrophication. Water hyacinth invasion has had significant socioeconomic and environmental impacts, including disruption of transport, fishing, and fish marketing activities; disruption of lakeside recreational business;

reduction of water supply; negative impacts on water quality for humans and livestock.

Another consequence of biodiversity decline is the loss of riverine migratory routes to important potamodromous fishes. A number of indigenous noncichlids (e.g., several catfishes, cyprinids, and mormyrids) periodically migrated upriver to spawn during the rainy seasons, but many of their migratory routes are now unavailable due to siltation of the river mouths and draining river swamps for agriculture.

Degradation of floodplains, caused by agriculture and deforestation in riparian zones, may also have contributed to the decrease of preferred migratory and spawning grounds in other areas of the basin.

Available information in LVB shows that the poor are increasingly farming marginal land prone to land degradation. Expansion into marginal areas brings increased risks of crop failure and loss of soil, forest, watershed functions, and biodiversity. Consequently there is an urgent need in the Basin to break the cycle between poverty and land degradation by employing strategies that empower farmers economically and promote sustainable agricultural intensification using efficient, effective and affordable SLM practices.

## 2.4. FISHERIES RESOURCES

Lake Victoria had a multi-species fishery of over 500 endemic fish species with tilapia and haplochromines being the dominant species. Now, available stock assessment data indicates that the lake is predominantly a three species ecosystem (the Nile perch (Latesniloticus), Dagaa, Omena or Mukene

**Figure 4: Harvesting of small size fish-Over-fishing- (2008)** **Photo by Dr. Tamatamah**

(Rastrineobolaargentea) and Nile Tilapia (Oreochromisniloticus). Most other fish species have declined to insignificant levels, (Kudhongania and Coenen, n.d.).

Notwithstanding, Lake Victoria is the most productive freshwater fishery in Africa. Annual fishery yield from the Lake is of the order of magnitude of 800,000 – 1,000,000 tonnes, valued at US$350 – 400 million at the beach, with export earnings estimated at US$ 250 million, (Lugoe, 2010). Over 75% of the Nile perch goes directly to fish processing factories for export, while Dagaa and tilapia serve regional and local markets. In 1950s and 1960s Nile tilapia (Oreochromisniloticus) and Nile perch (Latesniloticus) were introduced to boost fish production. Nile perch feed on the haplochromines. This has drastically affected artisanal fisheries. Overfishing has become a major problem (Lubovich 2009).

The poor land management in the catchment due to deforestation, cultivation, chemical pollution, river bank erosion and other forms of land degradation together with the water hyacinth and the river mouth siltation in the lake are affecting fish breeding quality of fish and the overall fisheries sector. According to Eseza

Kateregga and Thomas Sterner (2008), the water hyacinth in it first infestation is believed to have promoted fish diversity, particularly smaller species and the young. Mechanisms for this include providing shelter from predators as well as reducing fishing pressure. However generally the results indicate that the catchability of fish in the Lake Victoria fisheries was reduced by a factor of 2–45 percent during the period when the lake was highly infested by the water hyacinth. The decline was greatest in the Kenya section.

Furthermore, the highly significant bio-diverse fishery resource, exports and livelihoods, is threatened by land degradation and other deleterious practices in the Basin's watershed.

Though most attention is naturally given to the fishery of the Lake itself, non-Lake fisheries also exist. These include on-farm fish farms. Though of minor importance at the moment, they offer the potential to improve livelihoods and contribute to improve SLM.

## 2.5. HYDROLOGY AND DRAINAGE

According to the Transboundary Diagnostic Analysis (TDA-December 2006) of the Lake Victoria Basin; the Kagera River, the largest inflow, originates from Rwanda and Burundi and from parts of South-western Uganda and contributes up to 33% of the riverine inflow. The other rivers are Bukora and Katonga which originate in Uganda; the Nzoia, Sio, Mara, Yala, Awach, Gucha, Migori and Sondu originate from Kenya while the, Mori, Simiyu and many small tributaries originate from Tanzania (Table 1).

**Table 1: Surface water resources within LVB and their contribution to Lake Victoria**

| **Country** | **Drainage Basin** | **LVEMP Study (1950-2000)** | | **LVEMP (2001-2004)** | | **Long term 1950-2004** | |
|---|---|---|---|---|---|---|---|
| | | Flow in Cumecs | % | Flow in Cumecs | % | Flow in Cumecs | % |
| Kenya | Sio | 11.4 | 1.4 | 9.8 | 1.4 | 11.3 | 1.4 |
| | Nzoia | 116.7 | 14.5 | 107.4 | 15.7 | 116.1 | 14.6 |
| | Yala | 37.7 | 4.7 | 47.9 | 7.0 | 38.4 | 4.8 |
| | Nyando | 18.5 | 2.3 | 41.9 | 6.1 | 20.3 | 2.6 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | North Awach | 3.8 | 0.5 | 3.3 | 0.5 | 3.7 | 0.5 |
| | South Awach | 5.9 | 0.7 | 5.5 | 0.8 | 5.9 | 0.7 |
| | Sondu | 42.2 | 5.2 | 43.9 | 6.4 | 42.4 | 5.3 |
| | Gucha-Migori | 58.0 | 7.2 | 39.9 | 5.8 | 56.6 | 7.1 |
| Tanzania | Mara | 37.5 | 4.7 | 23.1 | 3.4 | 36.5 | 4.6 |
| | Grumeti | 11.5 | 1.4 | 4.6 | 0.7 | 11.0 | 1.4 |
| | Mbalageti | 4.3 | 0.5 | 3.5 | 0.5 | 4.2 | 0.5 |
| | E. Shore Streams | 18.6 | 2.3 | 11.3 | 1.6 | 18.1 | 2.3 |
| | Simiyu | 39.0 | 4.8 | 12.2 | 1.8 | 37.0 | 4.6 |
| | Magogo-Maome | 8.4 | 1.0 | 1.6 | 0.2 | 7.8 | 1.0 |
| | Nyashishi | 1.6 | 0.2 | 0.3 | 0.0 | 1.5 | 0.2 |
| | Issanga | 31.0 | 3.9 | 4.3 | 0.6 | 29.0 | 3.6 |
| | S. Shore Streams | 25.7 | 3.2 | 3.5 | 0.5 | 24.1 | 3.0 |
| | Biharamulo | 17.8 | 2.2 | 18.3 | 2.7 | 17.9 | 2.2 |
| | W. Shore Streams | 20.7 | 2.6 | 18.9 | 2.7 | 20.6 | 2.6 |
| | Kagera | 261.1 | 32.4 | 252.5 | 36.8 | 260.5 | 32.7 |
| Uganda | Bukora | 3.1 | 0.4 | 2.0 | 0.3 | 3.0 | 0.4 |
| | Katonga | 5.1 | 0.6 | 2.1 | 0.3 | 4.9 | 0.6 |
| | N. Shore Streams | 25.6 | 3.2 | 28.2 | 4.1 | 25.8 | 3.2 |
| | **Total** | **805.3** | **100** | **686.2** | **100** | **796.6** | **100** |

**Source:** Integrated Water Quality and Limnology Study of Lake Victoria LVEMP, 2005.

Overall, there is adequate water drainage in the LVB (figure 5) but the uneven distribution, poor infrastructure and poor quality are the main causes of water scarcity in the LVB.

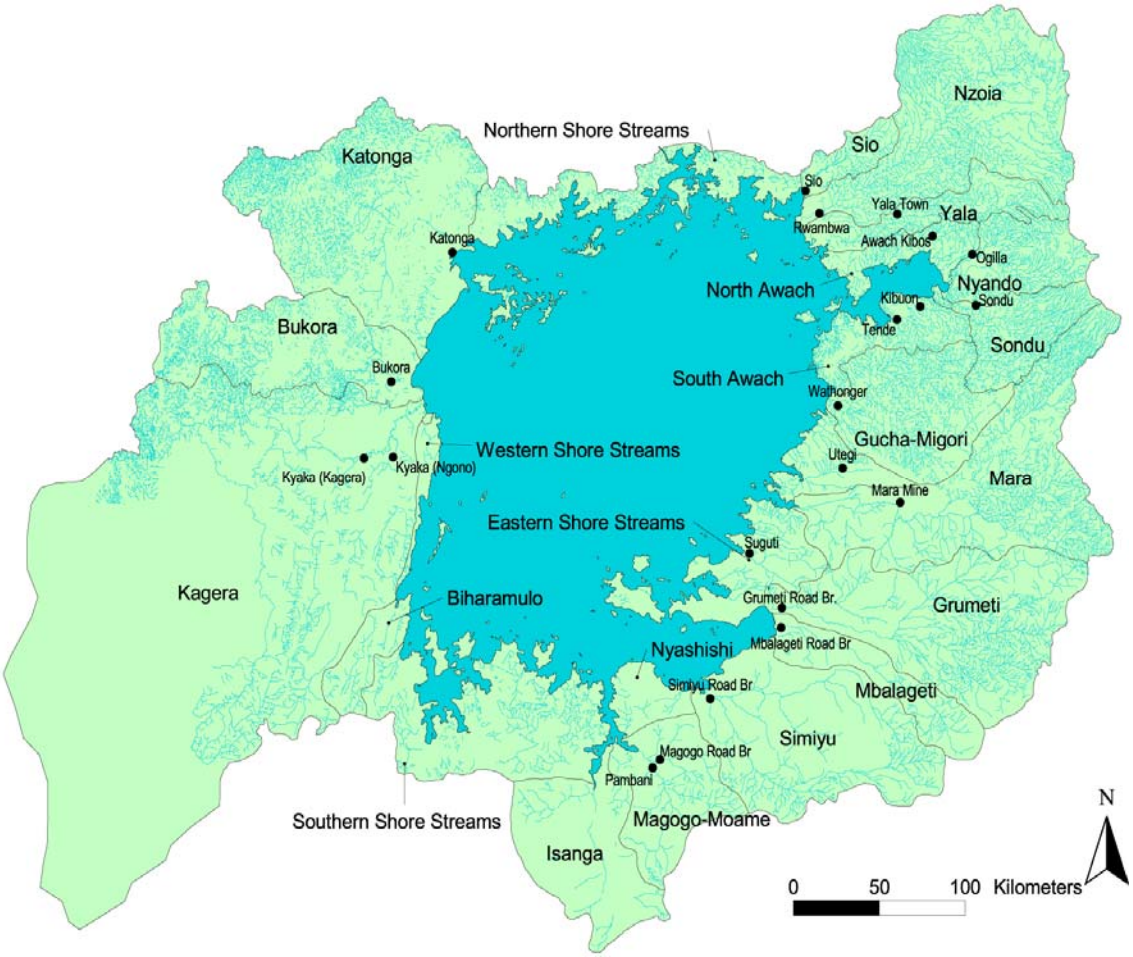


**Figure 5: Lake Victoria Drainage System- Source: LVBC –Operational Strategy (2011)**

Water is abundant in the highlands where arable land is less available. In the lowlands water is often in the valleys that are below the arable land where it can be used. Temporal (seasonal and annual) distribution is uneven. Due to poor land management practises farmers are encroaching on wetlands in search for water. Also the growing of unsuitable trees such as eucalyptus along the river sources is diminishing water availability (figure 6). There is therefore need for sustainable management of land and water resources in order to realize the full agricultural potential in the basin.

**Figure 6: Communities along Isei River removing Eucalyptus and replace with water friendly trees- (photo by Fredrick mngube-2008).**

On the Kenya side, there are several rivers in the Basin that include the Sio, Nzoia, Yala, Nyando, Sondu/Miriu, Gucha and Mara. These rivers originate in the vast highlands and drain into Lake Victoria. Reports indicate that ground water potential is higher in the northern than in the southern part of the Kenyan basin. The highest potential is in the Sio / Malaba, Lower Nzoia, Yala basin and the Gucha / Migori basin. Low potential is found in the lake shore zone. This potential is attributed to the high rainfall in the highlands. The inflow from rivers entering the lake from Kenya, which contains the smallest portion of the lake, contributes over 40% of the surface water inflows.

Uganda contributes about 10 percent of the river inflows, mainly from the pastoral areas to the west with seasonal and spatial rainfall.

On the Tanzania side of the Basin, rainfall is quite variable. In the extreme east, the rainfall ranges from 500 to 750 mm pa; and increases to 2000mm in the western areas of Bukoba and Ssese. The major rivers flowing into Lake Victoria are the Mara, Mori, Suguti, Gurumeti, Simiyu, Ngono, Magogo, Mbalageti, Maome and Kagera, on the Tanzania side of the Basin.

The Kagera River Basin is shared by Burundi, Rwanda, Tanzania and Uganda. Maintenance of the Kagera flow regime is vital for maintaining water levels of Lake Victoria and outflow to the Nile. It has two main tributaries the Ruvubu and

Nyabarongo. The Kagera River drainage is the main system for Rwanda and Burundi and contributes the largest river inflow into the lake. Extensive swampy forests and grasslands, dominate the floodplain ecosystem of the Kagera River, providing important water flow regulation and buffering functions.

As a fresh water source, Lake Victoria provides conducive conditions for irrigation and rainfed farming – mainly for sugar cane, cotton, coffee, tea, maize, rice, bananas, pulses, and livestock. About 82 percent of the water entering the lake is through precipitation. The remaining 18 percent comes from rivers and other ground flows. Direct evaporation and outflow through the River Nile are the major means of drainage. Outflow is limited primarily to evaporation; accounting for some 85 percent of the water leaving the lake and the other 15 percent goes out via the River Nile

The climate of the Basin is heavily influenced by the Lake Victoria itself, ranging from moist and humid in the districts bordering the lake to arid and semi-arid in the hinterland districts. In Kenya, although the inter-seasonal rainfall amounts vary considerably, the average annual precipitation ranges from a low 500mm in the arid and arid districts of Narok and West Pokot to 2500mm in Kakamega.

The Tanzanian part of the Lake Victoria Basin exhibits varied climatic conditions. Due to its proximity to the equator and variation in temperature caused by different levels of elevation / altitude, rainfall varies considerably between as low as 800mm in the extreme east, to 2000mm in some places particularly in the western shores of the lake - areas of Bukoba and Ssese.

On the Ugandan side of the Basin the climate ranges from moist sub-humid along the shoreline and the islands of to semi-arid in the dry pastoral areas to the west with rainfall varying from over 2500mm on the lake to less than 750mm in the dry areas. The national visions of the Partner States have recognised that water management in all its forms holds the key to success in agriculture, more so in the LVB. The policies in the various ministries of water and irrigation/ water resources have re-oriented their policies to promote water management techniques that are more appropriate to the local conditions. The strategies so far used by Partner States have been to focus on the needs of smaller farming units where small scale irrigation and water management technologies are needed.

## 2.6. WETLANDS SYSTEMS

Wetlands around the Lake Victoria and river systems in the LVB are categories into two major profiles; that are the Upland and Floodplain wetlands. Upland Wetlands are mostly in the western mountainous areas perched in valleys along the tributaries of rivers, which originate from Rwanda and Burundi. On the other hand, flood plain wetlands are extensive in the south at the border between Rwanda and Burundi and along the lakeshore in Kenya, Uganda and Tanzania. Pressure on flood plain wetlands by resident communities and large-scale developers is evident and is set to increase (LVB TDA-2006).

Plants and animals commonly found in wetlands are Sedges, Cyperus spp, Bulrush (Typha spp), Date palm (Phoenix spp) Grasses (Pennisetum spp., and Hypperhenia spp), Reeds (Phragmites spp), Hippopotamus, Sitatunga (Tragelaphus spekel) Nile crocodile (Crocodiles niloticus) Wild pigs (Potamochoerus porcus) and Snakes, Fish species, Amphibians and Birds.

In Kenya, wetlands include the Yala Swamp with 17,500 ha; the Nyando Swamp measures 15 by 6 km; the Sondu- Miriu wetland 10,000 ha occurring at the mouth of the Sondu River; the Saiwa Swamp, is about 20 km long on the Nzoia River and the Kimandi River wetland which is 4,800 ha on the tributary of the Yala River.

In Tanzania, there are a total of 422,000 hectares of wetlands occurring in 28 distinct sub-Basins of the Tanzanian part of the Lake Victoria Basin. Of these, 57,000 hectares is permanent swamp or (14%) and seasonal swamp occupies 73%. In Tanzania the biggest wetlands are found in Mara (figure 7) and kagera river basins.

In Uganda Wetlands cover 13% of total surface area and are categorised as swamp (8,392 sq. km), swamp forest (365 sq. km) and zones with impeded drainage (20,392 sq. km). They include areas of seasonally flooded grasslands and swamp forest (Sango Bay), permanently flooded papyrus, grass swamp and upland bog. Most wetlands in the country fall into two broad categories; those associated with lakes (lacustrine) and those that lie along rivers. These include wetlands that border the bays of Berkeley at the Kenya/Uganda border, Macdonald, Hannington and Napoleon Gulf; as well as the bays of Murchison, Waiya and Bunjako. Katonga wetland is also very extensive wetlands. The islands of Kalangala also have

extensive fringes of wetlands. Lacustrine wetlands are often permanently flooded (LVB TDA-2006).

Fringing wetlands and the littoral zones are closely connected to the ecological of health Lake Victoria .

**Figure 7: Mara River Wetland at Kirumi Bridge - Photo by Fredrick Mngube (2009).**

Development around the littoral zone of the lake has resulted in the destruction and/ or degradation of fringing wetlands that offer refuge and are sites for fish breeding; are also the exchange of nutrients with the lake and act as filters, trapping incoming sediments and pollutants. Extensive wetlands around Lake Victoria and its satellite lakes are being destroyed or degraded through conversion to agricultural land, excavation for sand and clay , settlement, construction industrial establishment and use as disposal sites. It is estimated that about 75 percent of Lake Victoria's wetlands area has been affected significantly by human activity and about 13 percent is severely damaged (LVEMP II PAD, 2009)

## 2.7. LAND TENURE AND LAND USE

Overall in the Lake Victoria Basin there is a variety of land tenure systems that include freehold, leasehold, communal, state land etc. It has been observed that land management is directly affected by the type of land tenure system. Freehold land tenure system land owners invest in sustainable land management, while communal and state ownership tend to invest less because they are unsure about the future returns. Whatever the case, security of land tenure tends to encourage

best practise in land management. In the partner states communal land tenure system such as in the Simiyu and Maasai Mara land has been degraded. On the other hand freehold land with title deeds as observed in the region is well managed.

Generally in the region land tenure system is gender insensitive to women and youth, even though they are the people who work in the land. Thus land management issues are relatively unimportant to them.

Land is mostly used for crop and livestock agriculture, human settlements, ecotourism, urban development and transport. Only a small proportion of the basin's land area has favourable agro-ecological conditions for agricultural development. Most of the land has either fragile ecosystems that need to be protected, soils with low fertility and poor texture, biotic challenges such as tsetse flies, or is prone to natural disasters such as floods. Agricultural land is increasingly claimed for urbanization and urban growth has reached very high levels in some districts.

Hence, there is a limited availability of arable land. Though eighty percent of households live on the land by practising crop and livestock farming, land distribution is not adequate for households to meet their livelihood needs. About 35 percent of the population in the Basin have access to arable land at a per capita land holding of about 0.75 ha. This is expected to fall further to 0.35 ha by 2025. The steady decline has continued for the past 35 years from a per capita land holding of 2.75 ha in 1975. By 2025 land available for different land uses, including agriculture, grassland, forestland, infrastructure and others, is likely to be significantly reduced. This constitutes a major threat to food security for local population. Furthermore, due to population pressure, there is undue use of steep hill slopes and river banks. Thus land use planning would be vital for SLM.

**Table 2: Land Availability for different Land Uses in LVB -2005**

| Country | Land Type and Area in ($km^2$) | | | | |
|---|---|---|---|---|---|
| | Agriculture (in $km^2$) | Grassland | Forestland | Built up | Other |
| Kenya | 7900 | 10500 | 13050 | 2630 | 18350 |
| Burundi | 940 | 1260 | 1570 | 320 | 2195 |

| | | | | | |
|---|---|---|---|---|---|
| Rwanda | 1280 | 1705 | 2130 | 427 | 2986 |
| Tanzania | 15437 | 20582 | 25728 | 5146 | 36020 |
| Uganda | 12086 | 16114 | 20143 | 41029 | 28200 |
| **TOTAL** | **37643** | **50161** | **50921** | **12552** | **8775** |

Source: Swallow et al, 2005.

The fact that there is not enough land to provide satisfactory livelihoods for the existing size of the population (let alone the growing population) solely from agriculture implies that non-farm rural economic activities should be promoted in order to cater for the growing population and to sustain the use of the land. The competition for land for farming and other uses has intensified over the past fifty years, such that land and tenures disputes over the use of natural resources underlie many socio-political problems in the basin, leading to armed conflict and social unrest. Land reform is needed to address these disputes. It involves re-dressing land or property rights, providing a basin-wide land information system and for viable and regulated land markets (Lugoe, 2011).

**Box 2: Some Land Statistics**

i. The average regional per capita land holding is about 0.75 ha.
ii. The average regional per capita income is under US$25.
iii. An estimated 150,000 km$^2$ of land has been affected by soil degradation since 1980, including as much as 60% of agricultural land.
iv. About 75 percent of wetland areas have been significantly affected by human activities and about 13 percent is severely degraded.
v. A two-fold reduction of degraded land is necessary in the next 20 years for the growing needs of inhabitants

**Source: Swallow et al, 2001, quoted in UNEP, 2006a**

### 2.7.1. Farming systems

According to the Lake Victoria Shared Vision and Strategy Framework Document (2006) more than 80% of the population of in Lake Victoria Basin live in rural areas where agriculture is the main source of income and employment. Subsistence farming is widespread. The agricultural sector has a prominent position as the

major provider of food security, nutrition and human well-being. Farming systems have direct bearing on the quality of the environment through land amount and growth of land acreage under cultivation and the use of agro-chemicals, herbicides and pesticides. All over the Basin the area under cultivation is increasing at the expense of forest cover, wetlands and riverbanks, purposely to meet the increasing demand for food and cash. Cash crops are expanding at the expense of traditional food crops, creating disparities between different socio-economic groups. In many parts of the basin technical advice and innovations on soil fertility are either rudimentary or nonexistent.

In various lowland areas, off-season production cannot be undertaken due to inadequate irrigation facilities. Loss of traditional seed banking techniques affect farmers who cannot afford certified seeds. Women lack access to emerging technological innovations, yet they are most active in farming.

Livestock production is an important source of livelihood and a critical enterprise with extensive potential in the Lake basin area. However, development of the livestock sector is constrained inadequate grazing pastures and water shortages, inadequate skills to improve domestic livestock breeds, especially for dairy production, and inadequate veterinary services. Technological innovations such as zero grazing are limited and farmers are reluctant to adopt improved breeds for fear of losses.

A dry land agro-pastoral system is practiced in the Basin. It is essentially a subsistence agriculture system, based on savannah grasslands rich in indigenous plant and animal species and the cultivation of diversified cereals, tea, coffee sugar cane and bananas. Use of agro-inputs, especially fertilizers is generally low or negligible. These systems are further characterized by high labour inputs and a limited sale of surplus food and cash crops such as bananas, maize, and livestock products such as meat, milk, hides and breeding stock. Limited areas are under commercial farms (sugar cane, horticulture, coffee, tea). Some of the drier areas along the shores of Lake Victoria in Kenya, Tanzania and eastern Rwanda were, until recently, used for semi-nomadic pastoralism – but most pastoralists are now settled and have adopted other livelihoods' systems.

There are also cultural pastoral farming issues that negatively impact on the land management. Communities such as the Maasai keep stock as a form of wealth,

building up overstocked numbers that overgraze and degrade the land. This is exacerbated by the survival of stock with better animal health. In many areas, wandering stock causes the destruction of plants and compromises reforestation and agroforestry efforts. There are also continuing conflicts between pastoralists and agriculturalists over the use of land (e.g. cross-boundary conflicts across the Kenya/Tanzania border).

The farming landscapes and the socio-economic and cultural context vary widely within and among districts and countries. The land-use-livelihood systems can be classified in four main types, with several sub-types according to management intensity and biological diversity:

i. Livestock based systems: transhumant/free grazing, paddock/ ranch

ii. Mixed systems: agro-forestry, crop-livestock (tethered, zero grazing); crop-fish;

iii. Perennial arable/tree based systems: mainly banana and sugar cane, coffee, tea, cassava, mangoes, avocadoes

*iv.* Annual cropping systems – cereal based and integrated to various extents with legumes, tubers and some agroforestry species (e.g. *Grevillea, robusta, colliandra sp Calliandra).*

Rangelands in the LVB are relatively abundant as in the Simiyu, Mara, Eastern Region of Rwanda, the Livestock corridor of Uganda and Lower Gucha, but they have not been managed well for extensive livestock production and they are now over grazed and deteriorating. The livestock sector provides milk and meat to urban markets. However, most livestock products are consumed at home. In mixed farming systems, livestock are an important source of manure, especially in densely populated areas, and cattle and small stock are a way of accumulating capital to insure the household against risk. It has been estimated that 43.5 percent of the Lake Victoria basin is already under cultivation and 80 percent of the population living in the Basin derive their livelihoods from subsistence agriculture (Lubovich, 2009).

Across the Basin, there is a breakdown in traditional land protocols that regulate grazing. The practice of grazing livestock on arable land after cropping season

relieves the grazing rangelands, but prevents the incorporation of organic material into arable land and makes it difficult to manage arable land effectively. Traditional land use systems achieved high productivity with low external resource inputs, relying on rotations, fallows, shifting cultivation and transhumance / nomadic livelihoods. Increasing pressures on land resources are leading to changing land use systems, over-exploitation of resources and greater reliance on poorer lands for crop and livestock production. Most pastoralists are unable to invest in improved resources management or education and have limited access to improved technologies, information and services (research, credit, reliable markets, inputs and dispensaries). In upland areas, water for domestic use and livestock is scarce, as wells and watering points are mostly in lowland areas, or is sold from kiosks at prices most people cannot afford (FAO, 2009). In turn, this exacerbates poverty and vulnerability to environmental and health shocks, as well as inability to satisfy basic requirements - food, shelter clothing and access to health services, education and safe drinking water. The human-induced pressures are largely driven by human population growth, but also by poverty, illiteracy and the significant migrations of people and their animals that have taken place over recent years, due to civil strife. As a result, the agricultural sector in the LVB is under

**Box 3: TransVic: Improved Land Management Across the Lake Victoria Basin**

The TransVic project provides extension agents, policy makers and researchers with information, methods, technologies and approaches for improving land productivity while enhancing the local and regional environments in the Lake Victoria basin. Since 1999 the project has covered three river basins in the Kenyan portion of the Lake Victoria basin, with emphasis on the highly degraded and impoverished Nyando river basin. The project approach integrates across scales and disciplines and develops new approaches for research, extension and institutional development.

River monitoring and sediment core analysis are used to quantify sediment loads in the major rivers of Kenya and to relate sediment levels to the on-going

eutrophication of Lake Victoria. Spectral reflectance and advanced analytical methods have been developed for interpolating soil properties across large parts of Western Kenya from a library of soil samples from the region. The "snowflake" research design has been developed for the integrated collection and analysis of socioeconomic and biophysical data at scales from small plot to 100 $Km^2$ blocks. Farm and community trials with new techniques and approaches have been implemented with farmers, designed in response to community priorities. These have been integrated into the main extension approach of the Ministry of Agriculture.

The project works closely with agricultural extension staff to make the extension approach more effective, better targeted, more sustainable and more appropriate to the needs of poor farmers. Joint impact assessments are conducted. Extension staffs have been trained in participatory monitoring and evaluation, which has been integrated into extension planning and assessment. Trials of agroforestry techniques, water management and grazing exclusion have been conducted with farmers in a number of land management "hotspot" areas. Over 3,000 farmers in 18 focal areas have adopted new innovations. However, land management and human development problems are deep-seated, requiring large-scale investments and policy commitment.

**Source: B. Swallow, et al, 2003**

### 2.7.2. Irrigation Sector

Water resources, from rainfall, surface and underground, are abundant in the LVB. Despite this, the water is not always where it is needed. Water is abundant in the highlands where arable land is less available. In the lowlands water is often in the valleys which are below the arable land where it can be used. Temporal (seasonal and annual) distribution is very uneven.

**Figure 8: Water Pump at Mara River for Commercial agriculture-Photo by Fredrick Mngube 2007.**

Farmers are encroaching on wetlands because there is water. Irrigation is obviously the answer the solution to this problem (figure 8). The National Visions from the Partner States have recognised that, water management in all its forms holds the key to success in agriculture, more so in the LVB. The policies in the Ministries of Water and Irrigation / Ministry of Water Resources have re-oriented their policies to promote water management techniques that are more appropriate to the local conditions.

The strategy here is to focus on the needs of smaller farming units where small scale irrigation and water management technologies are needed by the small holder farmer. The crops to be targets for irrigation include vegetables, fruits, fodder crops, and some circumstances field crop.

## 2.8. ENERGY RESOURCES

The importance of forests to livelihoods cannot be over-stated and is underscored by the significance of forest biomass for meeting energy needs. Most critical for Basin rural populations is the reliance on natural forests for fuel wood supplies. With the exception of Uganda, people in the Lake Victoria Basin rely to a large measure on electricity generated outside of the Basin. The electric power is insufficient to meet basic needs and most of the villages are not connected to mains electricity. Alternative forms of energy have not been explored though the potentialities exist. One of the five policy areas of the Strategy Framework for the Management and Development of Lake Victoria Basin focuses on improving infrastructure. The cross-cutting strategy is to "encourage energy efficiency and use of alternative forms of energy".

**Figure 9: Kiira and Nalubaale Dams in Uganda**

Uganda, Kenya and part of Tanzania depend on Lake Victoria as a source of power needed for economic development. This is especially true in the case of Uganda, which already relies on two dams near Jinja (the Nalubaale and Kiira dams) to produce a combined 380MW of electricity (Figure 9). According to the 2007 Renewable Energy Policy for Uganda, the country hopes to expand hydropower capacity from the 2007 level of 380MW to 1200MW by 2017 (Government of Uganda 2007).

The government is moving ahead with plans to build the Bujagali dam, construction of which began in 2007, and the plant is expected to produce an additional 250MW of electricity (Government of Uganda 2007). Further plans are being developed to add 100MW to 200MW at Karuma, 450MW at Kalagala (EAC 2006), 300MW at Ayago North, 250MW at Ayago South, and 600MW at Murchison Falls.

Although Uganda currently has the most developed hydropower industry within the Basin, Kenya has significant potential. The EAC estimates that Kenya could generate a total of 278MW of electricity from Lake Victoria tributaries Sondu-Miriu, Gucha, Nzoia, and Yala (EAC 2006). The drastic reduction in forest cover in recent years has had serious consequences. According to the FAO, the demand for charcoal and other forms of wood fuel will increase by over 40 percent in the wider Eastern African region over the next 30 years. A similar situation exists in Partner States (UNEP, 2006b). Fuel-wood is already increasingly in short supply and alternatives such as paraffin or electricity are only accessible in the few urban centres. The demand for fossil fuels is increasing beyond the availability of supplies, with the result that prices will most likely continue to rise. Alternative forms of energy have not been fully explored, though the potentialities exist. One of the five policy areas of the Strategy Framework for the Management and development of Lake Victoria Basin focuses on improving infrastructure. The cross-cutting strategy is to "encourage energy efficiency and use of alternative forms of energy". It is quite possible to exploit the nature of the lake as one surrounded by hills to generate electric power. The basin has many livestock farmers who can easily produce biogas for energy needs and other uses. Experience shows the potential for alternative energy technologies, such as biogas; solar electricity (photovoltaic); biomass briquettes; efficient cooking stoves (jikos), charcoal production kilns, liquid biofuel production and windmills for water pumping (Government of Tanzania, 2003). However, access to alternative forms of energy, such as electricity is inhibited by poverty.

Hence, the ability to pay for these alternatives will remain an obstacle to the uptake of alternative, more environmentally benign energy technologies. This suggests that there is a need to re-think energy policy to ensure that both the needs of the poor and those of the moneyed economy are catered for.

Hydro-power from kale Victoria depends on the lake Victoria water levels. Regarding Lake Victoria water levels, have fallen by more than two meters since 2002 with serious environmental and economic consequences. Low water levels have become a serious economic burden for Tanzania and Uganda. In Tanzania, the Mwanza Urban Water Authority was forced to shut down one of its three water intakes from Lake Victoria and use submersible water pumps to augment supply. Water supply to the city was reduced from 42,000 m3/day to 38,000 m3/day, an amount insufficient to meet the city's needs. Shipping and trade routes also have been affected, with large vessels no longer able to dock in previously accessible ports. In some cases, the ships cannot be loaded to full capacity or take trucks on board. The falling water levels also have caused a reduction in the water flow necessary to power the hydroelectric facilities of Nalubaale and Kiira, upon which Uganda is especially dependent. In 2005, Uganda experienced a 30-percent decline in electricity production at the dams, resulting in frequent blackouts for some of Uganda's most densely populated urban areas, and frequent brownouts remain the norm today.

## 2.9. CLIMATE CHANGE AND VARIABILITY

Over the past few years, rains have been variable and unpredictable in the Basin. This has led to recurrent droughts, with serious implications on the environment and on the livelihoods of 35 million people living in the Basin. There have been crop failures, severe water supply shortages, reduced water quality and a decline in hydropower generation capacity due to low water levels, aggravated by increased sedimentation. These adverse impacts have exacerbated poverty levels and disrupted socio-economic activities, (Lake Victoria Basin Commission, 2011). This has been attributed to climate change.

Respondents in a survey of the Basin's vulnerability to climate change in Mayuge (one of the basin's sub-catchments in eastern part of Uganda) stated that prolonged drought has been observed. An almost similar proportion of respondents (48.2%) in the sub-catchment had also expereinced flooding. Seasons have become irregular to the extent that they could no longer predict the start and end of the seasons. In November the rains used to decline, but now rains just start in November. The duration and intensity of the dry season has changed and is very irregular (Lake Victoria Basin Commission, 2011).

According to the Intergovernmental Panel on Climate Change (IPCC, 2007), greenhouse gas concentrations are projected to increase throughout the century, with continued increases in global temperatures. It is unknown how much and how quickly the earth's temperature will increase because of the uncertainty of future greenhouse gas and aerosol emissions and the Earth's response to changing climatic conditions. Natural influences such as sun and volcanic activity may also affect temperatures, though the affect is unknown because the timing and intensity is unpredictable, (US Environmental Protection Agency, 2011).

With these cautions in mind, the IPCC made a number of projections for future warming, including:

i. Land areas will warm more than oceans in part due to water's ability to store heat;
ii. Warming will not be evenly distributed around the globe. High latitudes will warm more that low latitudes. Africa will warm more than the global average;
iii. Warming will differ with season, with winters warming more than summers in most cases.

Temperature projections were made to the year 2100, based on a range of emission scenarios and global climate models. Scenarios that assume the highest growth in greenhouse gas emissions (high growth) estimate rises in temperature of 1.8$^0$C to 4$^0$C by 2100; moderate emissions could see a rise in temperature to 2.6$^0$C and with low emissions to 1.8$^0$C, (US Environmental Protection Agency, 2011). These projections were made in 2007. Since then there has been growing concern that a 2.0$^0$C rise in average temperatures could be reached by 2050, or even sooner, as greenhouse gas emission have continued to rise, due in part to continued high economic growth in some Asian countries, notably China and India, despite the global financial crisis and depressed economic growth in most western countries.

Climate change could therefore have a drastic impact on the Lake Victoria Basin. At present, global climate models for Africa are not precise enough to quantify the impact of global warming on small countries. For instance in Rwanda, precision is hampered by seasonal and regional climatic volatility, with more intensive variations during El Nino and La Nina periods, such that it is not yet possible to

quantify the future change to rainfall patterns, extreme weather events or crop yields that could be attributable to climate change. However, generalizations and observations are very informative.

## 2.10. GOVERNANCE

### 2.10.1. Conventions

The five Partner States of the EAC are signatories and have ratified to global environmental conventions, protocols and strategies all of which have a bearing on SLM, such as the United Nations Convention on Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNFCCD) the UN Framework Convention on Climate Change (UNFCC) and the RAMSAR Convention on the protection of wetlands. As signatories, there are clear international obligations by states to develop strategies and policies dealing with these issues. Under the CBD, states are required to prepare a national biodiversity action plan and strategy (NBSAP). All Basin countries except Tanzania have done this, though Burundi's is still at the draft stage. Under the UNFCC, states are required to prepare a National Adaptation Plan of Action to Climate Change (NAPA) and (NAPs) of the (UNCCD) All Basin countries have done this, save Kenya. The most incisive strategies dealing with SLM are the National Action Plans (NAP) for combating desertification and drought under UNCCD. Burundi, Rwanda and Kenya have each prepared one. Uganda prepared a framework for the NAP in 1999, but has not progressed this further.

The NAPs (UNCCD) can be quite far-reaching, dealing with issues such as periodic changes in climate and the effects of drought and flooding on genetic resources, wildlife and livelihoods and on land-use activities and practices. Some of the outstanding NAP issues associated with land considered by a workshop in Uganda included deforestation, inadequate water supply, poor infrastructure, traditional/cultural beliefs, poverty and illiteracy, insufficient knowledge and training, high seasonal to inter-annual rainfall variability, poor agricultural practices, bush burning, soil erosion, overgrazing, insecurity and the burden of work on women, (Republic of Uganda, 1999).

One of the drawbacks of the NAPs is that they are now becoming outdated and do not address current specific issues affecting the situation in the basin. They adopt

appropriate sentiments, such as the need to develop 'appropriate mechanisms to sensitize and mobilize stakeholders to develop viable programmes and projects', to mobilize resources, to be transparent and accountable and to integrated NAP into regional and sub-regional programmes, but generally these general sentiments have not been followed through with concrete actions (Republic of Kenya, 2002).

The NBSAP process also traverses many similar issues and topics. For instance, Uganda's states:

> *Our interest in the preparation of this National Biodiversity Strategy and Action Plan does not therefore aim only at fulfilling our international obligation but also in promoting the socio-economic development of this country. This is consistent with Uganda's overall strategy of poverty reduction, which is articulated in the Poverty Eradication Action Plan (PEAP) and in the Plan for Modernization of Agriculture (PMA),* (Republic of Uganda, 2002).

More recently, the consequences of climate change have become more and more serious and pervasive. In 2006, some time now since the latest dire predictions, Uganda acknowledged that: *"global warming has far-reaching consequences on social and economic development and the entire global ecosystems. (It) threatens to undo many years of development efforts and frustrate poverty eradication programmes in developing countries".* In reflection of this wide concern, the government has eight prioritized interventions areas: land and land use, farm forestry, water resource, health, weather and climate information, Indigenous Knowledge documentation and awareness creation, policy and legislation, and infrastructure, (Republic of Uganda, 2006).

Other Basin countries also take a broad view and link climate change strategies with sustainable development, (e.g. Republic of Burundi, 2007) and advocate a wide range of priorities. Examples include priorities for an integrated water resource management system, intensive agro-pastoral activities and the promotion of non-agricultural income generating activities, amongst others in Rwanda (Republic of Rwanda, 2006); afforestation programmes in degraded lands, the development of community forest fire prevention plans and programmes and the establish of a good land tenure systems, amongst others in Tanzania, (United Republic of Tanzania, 2006).

Adherence to these international conventions creates capacity problems and logistical issues. The requirements are overlapping. They need to be synthesised and rationalised to avoid duplication.

### 2.10.2. Policies and Laws

National laws and policies require an integrated, cross-sectoral approach and a system to evaluate the overall socio-economic and ecological costs and benefits of proposed policies and actions. Furthermore, since many SLM issues are trans-boundary, a regional approach is also necessary. This requires the development of an overarching regional legislative and institutional framework for SLM in the Lake Victoria Basin. This does not exist at present, partly because the modality for its creation is relatively new: the Treaty for Establishment of the East African Community was signed on 30 November 1999 and entered into force on 7 July 2000 following its ratification by the original three Partner States – Kenya, Uganda and Tanzania. The Republic of Rwanda and the Republic of Burundi acceded to the EAC Treaty on 18 June 2007 and only became full Members of the Community on 1 July 2007. Furthermore, although the Protocol on Environment and Natural Resources Management was enacted in 2006, it has yet to be ratified and hence come in to force.

In the absence of a regional SLM Strategy, there has been a reliance on national policies and legal frameworks in Partner States. Governments of Partner States have put in place a number of legal and policy frameworks for that support SLM. These laws and policies contribute to the achievement of national sustainable development and poverty alleviation goals and also provide the basis for international agreements and EAC protocols to be implemented. In each member state of the EAC, natural resource conservation is enshrined in the respective national constitution, which provides for the protection of important natural resources (land, water, wetlands, fauna and flora). Under the constitution, governments are empowered to create and develop National Parks, forests, reserves and conservation areas to protect the biodiversity and ensure sustainable utilization and management of natural resources. In addition to the constitution, different acts and master plans (Forestry, Wildlife, Environment, Land, Tourism and Local Government) provide a framework for conservation and utilization of the respective natural resources (Kenya, 1995; Tanzania, 1996; Uganda, 2008).

These laws and policies include: National Environment Acts in each EAC Member States. In Uganda, National Forestry and Tree Planting Act (2003); Food and Nutrition Policy (2003); National Water Act; The Local Government Act (1998) and National Energy Policy (2002).

In Kenya, there are the Kenya Forestry Master Plan (KFMP, 1994); Agriculture Policy of (2010); National Soils Policy (1999). The 2005 Organic Law on Environmental Protection, Conservation and Management that regulates the protection of the environment in Rwanda. There are also the Environmental Impact Assessment Regulations developed by REMA and the Ministerial Order N°004/2008 of 15/08/2008 that provide guidelines and requirements for EIA and mitigation measures in Rwanda. Others include National Wetlands Policy; National Policy on Internally Displaced Persons; Disaster Preparedness and Management Policy; National Gender Policy; and National Forestry Policy (2001). In Burundi there is the National Adaptation Plan of Action (NAPA) of 2005 that focuses on Burundi's three major problems, i.e. degradation and exhaustion of soils, degradation of forestry resources and human environmental degradation.

While these laws and policies are in place and address environment issues in general terms, they do not specifically make reference to SLM. They vary widely and have been developed separately to suit national, not regional, trans-boundary situations. They also suffer from being sectoral policies with perspectives and approaches designed to address specific sectoral issues, (see, for instance, Government of Burundi, 2007) whereas the proposed actions are cross-cutting and highlight the need to resolve inherent conflicts between different objectives and proposed actions. The deficiencies in the present approach become apparent at the operational level, where conflicts become apparent. For instance, in Rwanda, one NAPA strategy is to develop irrigated areas by gravity water systems from perennial streams and rivers in zones vulnerable to prolonged droughts. But, the issue for SLM is how to reconcile this with reducing run-off and the contamination of water systems that intensification of agriculture brings.

The laws are often weak and fragmented as well. For instance, in Tanzania, environmental legislation is split between different departments such as industry, forestry, mines and wildlife, regional secretariats, the National Environment

Management Council and the Division of Environment in the Vice President's Office. The overlapping mandates, duplication of tasks amongst different institutions affects the performance of the environmental sector. This is apparent in monitoring and inspecting activities where central and local governments do not share case studies of non-compliance of environmental legislation, (Ubwani, 2011).

A number of policies are inconsistent with one another and have given rise to subsidiary policies that are also inconsistent. In Kenya, an enshrined policy requires the setting aside of produce for strategic reserves, as a hedge against the importation of food. In Rwanda there is the policy of clean agriculture but at the same time subsidies are provided to promote the production in crops that do not necessarily have a comparative advantage. In Kenya and Tanzania discrepancies exist between the Agricultural Act, Water Act, the Local Government and Environment Acts, especially on river bank protection. In Kenya the Act requires a space of 30m on either side from the bank of the river to be left uncultivated; while the actual practice is that a farmer's rights extend to the centre of the river. In Tanzania the Local Government Act provides for a space of 30m while the Water Act provides for a space of 60m on either side of the river to be preserved. Such discrepancies need to be dealt with and these and other inconsistencies need to be continuously identified and corrected.

Protocols, strategies, laws and bylaws can however only go so far in providing for SLM. At best they provide a mandate for action and an umbrella for programmes, projects and actions. As noted above, they need to be applied at the local level, necessitating comprehensive and far reaching extension efforts and uptake by the local community, bringing in the need for a whole raft of capacity and educational building activities. The rule of law and enforcement is necessary, but never sufficient. Some activities, such as subsistence agriculture and animal husbandry are diffuse activities. They cannot be controlled by environmental impact assessments (which in most cases are only applied to large-scale government or private developments) or the draconian application of laws. They have to be guided by best management practices, the uptake of environmental guidelines and the provision of alternatives to local communities. This strategy aims at a common approach across the Basin, and even within countries so as to harmonize conflicting standards between different ministries.

### 2.10.3. Institutions and Capacity Building

Furthermore, the planning process is often hierarchical, from the top downwards, with little meaningful inclusion of civil society. Nevertheless, the potential exists to improve the situation, as there are District Environment Officers and established environmental committees from district to local level. Given adequate support and re-orientation, they can provide the entry point for demonstrating SLM activities and best management practices and the development of better conditions for environmental management and participatory planning and monitoring and evaluation.

Low awareness and inadequate involvement of local communities has greatly reduced the sense of ownership of projects by communities (Republic of Kenya, 2002). Implementation of laws and regulations is further constrained by the low level of awareness and capacity inadequacies at national, district and community levels. These challenges are compounded by the insufficient financial resources, weak coordination and harmonisation, inadequate physical and communication infrastructure and restructuring of the relevant institutions.

To compound the problem, there are a plethora of institutions responsible for environmental management. In just one sector, water, in Kenya, there are over 30 institutions, both governmental and non-governmental, that play various roles. These institutions lack policy guidelines, elaborate legal framework and human and fiscal capacity to effectively undertake their respective responsibilities. This situation leads to a duplication of effort, conflicts and non-accountability, (Republic of Kenya, 2002). A review of LVEMP I revealed serious limitations in performance hence more attention has now been places in building human and institutional capacity.

The existence of NEMA in each partner state, as the principal government agency acting on environment matters and with a role to coordinate, supervise and monitor all matters of environmental management, provides a good institutional foundation for synergistic implementation of the international environmental agreements and EAC protocols. Having different lead agencies for the international agreements and EAC protocols (i.e. Meteorology Department for Climate Change, NEMA and REMA in Rwanda for biodiversity, and Ministry of Water and Irrigation

in Kenya, Ministry of Water, Environment, Land and Urban Planning in Burundi, for international waters) fragments the process of integration.

Other regional institutions include the Lake Victoria Environmental Management Project, the Lake Victoria Fisheries Organisation, Focal Ministries, various local and central government institutions, stakeholder forums and participating NGOs, CBOs, private sector interests. They have a narrow range and a limited mandate to undertake trans-boundary policy and implementation initiatives. There are no common harmonised policies for sustainable land management. These drawbacks make coordination and implementation difficult at the national and regional level, (East African Community, 2006).[2]

## 2.11. GENDER, MARGINALISED GROUPS AND SUSTAINABLE LAND MANAGEMENT

Of concern in the enhancement of SLM in the Basin is the issue of gender. Gender is a SLM issue identifying and understanding the social roles and relations of men, women of all ages and how this impact on sustainable land management.

In the Basin, men women and the youth play a complementary role in development process. Despite this, development and in particular sustainable land management is affected by unequal gender relations resulting in gender imbalances in access to and control over productive resources (credit, loans, land, education, training and technology among others). Gender inequality is not only costly to women, but also costly to children and to men as well. It exacts costs in lower output (GDP), lower development of people's capacities, lower leisure and lower well-being. Over 80% of women in the Basin live in the rural areas where the majority are engaged in farming food and cash crops, livestock keeping, and in agro-based and off farm income generating activities.

Besides individual farming, many women groups in Lake Victoria Basin are engaged in agricultural and livestock development activities such as cooperative

farming, horticulture, food processing and marketing, zero grazing, goat keeping, and bee keeping. The structure of women groups therefore provides a viable channel for out-reach by government and other development agencies for implementing SLM. It also provides a mutually supportive environment for women's education and awareness creation.

Degradation of wetlands tends to affect men and women differently as evidenced by the impact of wetland reclamation in Kampala area. Declining wetland resources are affecting women because traditionally division of labor among gender prescribe and charge women with the responsibility to certain social and economic chores for the family. In this case then, they are naturally the ones to utilize wetlands more than men do for their households' food and medicinal resources. The impact of resource decline or degradation like deforestation of natural forests or drying up of water sources do affect women more than men because women are traditionally expected to collect both water and fuel wood. The declining forests increase distances to collect firewood, while water pollution also means that people have to travel further distances to access clean water sources.

The need to boil water results in increased use of firewood. Attainment of sustainable land management will therefore necessitate maximum and equal participation of men, women and youth in all sectors of SLM.

**Marginalised Groups**

The Lake Victoria Basin exhibits some of the poorest regions, with people comprising of the most highly skilled to the least educated, and from the highest to the lowest standard of living. About one third of EAC's rural and urban population is at risk of poverty, many from marginalised groups, live in the area. Many of the slam communities, street families, etc., whom live in the Region, suffer especially from social and economic exclusion, spatial segregation and sub-standard living conditions. Efforts to escape these have EAC-wide effects, but the causes must be addressed first in the Region.

**Box 4: Transboundary Agro-Ecosystem Management Programme for the Kagera River Basin (Kagera TAMP)**

The Kagera River basin is shared by Burundi, Rwanda, Tanzania and Uganda. The basin covers a surface area of 59 700 km$^2$ and contributes almost a quarter of the inflow into Lake Victoria (7.5 km3 of water per year). The tributaries of the Kagera river in Rwanda and Burundi are fed by the remotest upstream sources of the River Nile. Hence, maintenance of the Kagera flow regime is vital for maintaining water levels of Lake Victoria and outflow to the Nile. More than 16.5 million people (2006) live in the Kagera basin, the majority depending directly on farming, herding and fishing activities.

The Kagera TAMP was approved by the Global Environment Facility in June 2009. The goal is to adopt an integrated ecosystems approach for the management of land resources in the Kagera basin that will generate local, national and global benefits including: restoration of degraded lands, carbon sequestration and climate change adaptation and mitigation, protection of international waters, agro- biodiversity conservation and sustainable use and improved agricultural production, leading to increased food security and improved rural livelihoods.

It is expected that sustainable management of shared land and ecosystems of the Kagera basin and revitalised farm-livelihood systems will generate significant environmental benefits through restoration of well functioning ecosystems and maintenance of their goods and services.

Land-use systems workshops have been held and land use maps for the four countries have been developed. These are being used as the basis for land degradation and SLM assessments and mapping across the Basin. Participatory Expert Assessment workshops have been organized in Rwanda, Burundi and Uganda (with participation from Tanzania too). The data and maps will contribute to the project baseline and will help in the identification of representative areas for project intervention in the Kagera basin and the target districts/ provinces in each country.

**Source: FAO, 2010; FAO, 2011**

## 2.12. RISKS, OPPORTUNITIES AND CHALLENGES

### 2.12.1. Risks

Major flooding, droughts, and industrial pollution events are all too frequent. Prevention, preparedness and effective reaction require a high degree of cooperation and information sharing.

Socio-economically, the region has very wide disparities. It has some of the most successful but also the poorest regions in the East Africa region. Security, serious and organised crime: significant problems such as trafficking in drugs and smuggling of goods persist in several countries. Corruption undermines public confidence and hampers development.

These challenges are best addressed together with developers and conservationists identifying the priorities, finding innovative solutions and agreeing and implementing actions to resolve together the most difficult issues for the benefit of the whole Basin.

### 2.12.2. Opportunities

i. In-situ and ex-situ conservation of rainwater through a range of innovative techniques plus the enhancement of rainwater-use efficiency through supplemental irrigation are positive developments in several different agro-ecologies.

ii. The success of interventions is further enhanced through integrated nutrient management (use of legumes and green manures, micro and secondary nutrients), integrated pest management, microenterprises, village-based seed banks and rehabilitation of common property resources.

iii. For the sustainability of such models, empowerment of all the stakeholders (farmers, partners, NGOs, government departments and policy makers) through capacity development is very critical. Further, there is a need to investigate and explore a range of opportunities to promote village level micro-enterprises and pathways for market links for rural produce.

### 2.12.3. Challenges

There are four main sources of environmental stresses adversely impacting the LVB ecosystem, as well as the region's economy and livelihoods. These originate from the lake, littoral zone (near shore), within the Basin (upper watershed) and outside the Basin. Cumulatively, they cause degradation of the Lake, reduce its resiliency, and contribute to some of the emerging conflicts over resource use.

***Stresses within the lake:*** Originating from unsustainable fishing practices and pollution in the lake and on Islands (e.g. from fuel and oil spills, solid wastes, and untreated liquid wastes), reduces fish stocks and diversity, and destroy important spawning areas.

***Stresses on the littoral zone:*** Resulting from conversion of shoreline wetlands for urban and agricultural development. Both construction and farming along sensitive littoral zone without adequate environmental mitigation measures (e.g. buffering strip, landfills, sewage treatment and disposal) increase liquid and solid waste loads into the lake. In addition, wetland conversions for these purposes result in loss of aquatic habitat and reduced filtering capacity (and natural protection).

***Stresses from the Basin:*** These include reduced water inflows into the lake, over abstraction of lake water, inflow of water hyacinth, increased watershed degradation, including soil erosion and loss of vegetation cover; and increased water pollution from industries, livestock, agriculture, mining and urban run-off. These stresses are altering the hydrological and ecological processes. As a result, they accelerate eutrophication, impact fisheries and navigation, and contribute to conflicts over use of resources.

***Stresses from outside the Basin:*** These include nutrients transported into the basin as airborne particulates, demand for Nile perch fisheries for export, and climate change (LVEMP II PAD, 2009).

**2.12.4. *Gender:*** Women and the youth play an important role in development. In the Basin the Partner States are in gender transition towards expanded rights and participation of women and youth in development.

## 2.13. SWOT ANALYSIS OF THE RISKS, OPPORTUNITIES AND CHALLENGES

**Table 3: SWOT Analysis**

| Strengths | Weaknesses | Opportunities | Threats |
|---|---|---|---|
| i. Strong Institution at National and EAC<br>ii. Population dynamics<br>iii. Economic potential<br>iv. Peace and stability<br>v. Trade regimes | i. Diversity in laws and institutional frameworks<br>ii. Legal and legislative procedures<br>ii. Low capacity and weak institutions at local level | i. Vast land resources<br>ii. Trade and investments<br>iii. Tourism<br>iv. Transportation<br>v. Communications<br>vi. People and services<br>vii. Intellectual Property Rights | i. Poverty<br>ii. Population growth<br>iii. Lack of adequate legislation<br>iv. Climate change and variability<br>v. Politics<br>vi. Gender disparities<br>vii. Low funding from Governments |

# CHAPTER 3 -SYNTHESIS OF KEY ISSUES

s identified in chapter two above, land management in the Lake Victoria Basin has been facing many challenges and at the same time there many opportunities that can be used to address these challenges.

This chapter summarises the key SLM challenges (issues) and opportunities in the in Socio-economic; Ecology and Ecosystems; Natural vegetation and forests; Fisheries; Hydrology and Water resources; Farming Systems; Land Tenure and Land Use; Energy Resources; Climate Change and Governance.

## 3.1 SOCIO-ECONOMIC

The following are key Socio-economic challenges and opportunities which are addressed by this strategy in chapter 4 and 5:

### a) Challenges

The following are key challenges facing the drivers of the economy in the Basin:

i. The Lake Victoria Basin (LVB) is a highly density populated region with an annual growth rate of 3 percent. A doubling of the population by 2020, with no concomitant improvement in farming systems or alternative income opportunities would pose a significant, if not insurmountable challenge.

ii. Most Basin-area residents are very poor (earning between US$90 and US$270 per year) despite of the fact that the basin is very reach in natural resources,

iii. Health of Basin residents as a manpower to drive economy is poor. The residents are facing diseases such as HIV/AIDS, tuberculosis, malaria, and dysentery among others. These have greatly impact in the general socio-economic situation losing productive manpower, human skill and social integrity.

iv. Physical infrastructure such as roads, railways, water transport and airports not well developed in the Basin. These services are primarily

important factors and incentive for the economy of residents particularly on agriculture and other markets; and

v. Most of the economic incentives are concentrated to the major towns, leaving rural areas outside district headquarters or major market centres with limited access to economic facilities.

**b) Opportunities:**

The Lake Victoria Basin was designated an important explosive economic growth zone of the East African Community. The Basin is estimated to cover over 194,000 square kilometres and boasts of a market potential of over 40 million people. The Basin has an estimated annual GDP of USD 40 billion and a wealth of resources of economic importance. To address the socio-economic challenges, the following are opportunities available:

i. The Lake Victoria Basin Commission was established by the EAC as a key stakeholder to co-ordinate the different actors and interest groups in the LVB. The LVBC in carrying out its mandate encourages all actors to build partnerships and work together to invest in agriculture, fisheries industry, mining, transportation, health towards achievement of the Lake Victoria Basin shared vision of a "prosperous population living in a sustainably managed environment providing equitable benefits and opportunities";

ii. The Capacity to increase production and income is achievable, with availability of the required skills, appropriate technology, support services and infrastructure to enhance productivity and equitable access to markets; and

iii. The signing of the Common Market Protocol provides the opportunity to enhance the vibrancy of this economic growth zone.

## 3.2 ECOLOGY AND ECOSYSTEMS;

The following are key lake ecology and ecosystems challenges and opportunities which are addressed by this strategy in Chapters 4 and 5:

**a) Challenges**

The following are key challenges facing the ecology and ecosystems of the LVB:

i. ***Stresses within the lake:*** Originating from unsustainable fishing practices and pollution in the lake and on Islands (e.g. from fuel and oil spills, solid wastes, and untreated liquid wastes), reduces fish stocks and diversity, and destroy important spawning areas.

ii. ***Stresses on the littoral zone:*** Resulting from conversion of shoreline wetlands for urban and agricultural development. Both construction and farming along sensitive littoral zone without adequate environmental mitigation measures (e.g. buffering strip, landfills, sewage treatment and disposal) increase liquid and solid waste loads into the lake. In addition, wetland conversions for these purposes result in loss of aquatic habitat and reduced filtering capacity (and natural protection).

iii. ***Stresses from the Basin:*** These include reduced water inflows into the lake, over abstraction of lake water, inflow of water hyacinth, increased watershed degradation, including soil erosion and loss of vegetation cover; and increased water pollution from industries, livestock, agriculture, mining and urban runoff. These stresses are altering the hydrological and ecological processes. As a result, they accelerate eutrophication, impact fisheries and navigation, and contribute to conflicts over use of resources.

iv. ***Stresses from outside the Basin:*** These include nutrients transported into the basin as airborne particulates, demand for Nile perch fisheries for export, and climate change (LVEMP II PAD, 2009).

v. ***Gender:*** Women and the youth play an important role in development. In the Basin the Partner States are in gender transition towards expanded rights and participation of women and youth in development.

**b) Opportunities:**

To address the lake Victoria Basin ecological and ecosystem challenges, the following are opportunities identified:

i. EAC legal and institutional frameworks here including Treaty for establishing EAC, Protocol for Sustainable Development of lake Victoria Basin; Protocol for EAC Environment and natural resources provides guidelines on how all Partner States can work together to address the above challenges;

ii. National policies and legislations, although not harmonised but are basis to guide EAC Partner States to address all challenges above by enforcing environmental, sustainable land management related laws;

iii. National Institutions related to management of LVB ecology and ecosystem are available in each country; what is required is coordination and financial support to these institutions; and

iv. LVEMP II project has started, and the objectives are to: improve the collaborative management of the trans-boundary natural resources of the LVB for the shared benefits of the Partner States; and reduce environmental stress in targeted pollution hotspots and selected degraded sub-catchments to improve the livelihoods of communities, who depend on the natural resources of LVB. These objectives build foundation to implement this strategy and hence address the above challenges.

## 3.3 ENVIRONMENTAL DEGRADATION

The following are key environment, forestry, water quality, degradation of wetlands and Soil erosion challenges and opportunities which are addressed by this strategy in Chapters 4 and 5:

### 3.3.1. Forestry

#### a) Challenges

The following are key challenges facing the forest management in the LVB:

i. Deforestation due to population growth, human encroachment for agriculture and other economical activities;

ii. Poverty and lack of alternative income generation for alternative energy, food shelter and health. The available resource and cheaper to exploit is forest;

iii. Refugee movements in recent decades in the region have increased actual and potential conflicts between interest groups and countries, putting pressure on protected areas and natural resources in the basin;

iv. The urban growth which remains largely dependent on forest as sources of energy;

v. Planting of exotic tree species that interfere/ not compatible with agriculture crops and water resources management; hence low production of agriculture crops and depletion of water sources;

vi. Poor enforcement of forest policies and laws;

vii. Low capacity of forest resource management institutions to manage this resource; and

viii. Insufficient involvement of key stakeholders and private sectors, including communities around forests to manage these resources (Co-management of resources)

**b) Opportunities:**

To address the Lake Victoria Basin forest management challenges, the following are opportunities identified:

i. EAC legal and institutional frameworks here including Treaty for establishing EAC, Protocol for Sustainable Development of lake Victoria Basin; Protocol for EAC Environment and natural resources provides guidelines on how all Partner States can work together to address Forest management challenges in LVB;

ii. National policies and legislations, although not harmonised but are basis to guide EAC Partner States to address all challenges above by enforcing forestry related laws;

iii. National Institutions related to management of LVB Forests are available in each country; what is required is coordination and financial support to these institutions; and

iv. LVEMP II project provides supports to undertake forest management in the selected catchments and under CDD projects under component three.

### 3.3.2. Water Quality

#### a) Challenges

The following are key challenges facing the water resources management in the LVB:

i. The water resources in the lake basin show signs of degradation and depletion, due over-abstraction, diversion, destruction of filtering mechanisms, and release of agro-chemicals, waste and refuse to water bodies.

ii. Demand for water is increasing with population growth and economic development intensifying the pressure on the resource.

iii. Poor trans-boundary co-ordination systems and integrated management of the water resources in the LVB;

iv. The management and control of the water resources and their use is split between different central and local government agencies, with limited financial means to meet the challenge of providing clean water to the rural and urban population;

v. Destructions on wetlands which increase the sedimentation and siltation in the lake;

vi. the increased risk of flash floods in rivers and tributaries primarily hit flood prone, marginal areas often inhabited by the poorest section of the population;

vii. lack of water catchment and sub-catchment management plans in most of river basins;

viii. lack of coordination to all water resources management boards around lake Victoria;

ix. lack of Lake Victoria management plan; and

x. Uncontrolled or lack of regional mechanism to control water release and abstractions from the river and lakes which causes the fluctuation of Lake water level.

**a) Opportunities:**

To address the lake Victoria Basin forest management challenges, the following are opportunities identified:

i. EAC legal and institutional frameworks here including Treaty for establishing EAC, Protocol for Sustainable Development of lake Victoria Basin; Protocol for EAC Environment and natural resources provides guidelines on how all Partner States can work together to address water resources management challenges in LVB;

ii. National policies and legislations, although not harmonised but are basis to guide EAC Partner States to address all challenges above by enforcing water resources management laws;

iii. All countries have water resources management boards responsible for water management of LVB; what is required is coordination and financial support to these institutions; and

iv. LVEMP II project provides supports to undertake water resources management in the selected catchments and under CDD projects under component three.

### 3.3.3. Degradation of Wetlands

**a) Challenges**

The following are key challenges facing the wetlands management in the LVB:

i. Wetlands is one important class of habitat under increasing pressure, suffering from overuse and destruction from an increasing population, economic activities like wood harvesting, shelter construction and removal of material for handicrafts as well as degradation due to abusive practices like waste dumping, increased land runoff pollution, and excavation of sand and clay;

ii. Reliable estimates of wetland loss are not available. Some recent remote sensing assessments of wetland change show conversion of wetlands to intensive scale agriculture and acclamation of land for new settlements and road construction;

iii. Access to land and ownership rights for women, who count more than 80% of the rural smallholders, are significant problems. Basin wide due to climate change and variability, the area under cultivation is increasing at the expense of wetlands and riverbanks, purposely to meet the increasing demand for food and cash;

iv. Most of EAC Partner States don't have wetland management policies and/or, laws or management plans; hence it is difficult to manage wetlands.

**b) Opportunities:**

To address the lake Victoria Basin forest management challenges, the following are opportunities identified:

i. LVB still have good wetlands to be managed, although pressure is increasing to convert the same to other uses;

ii. Protocol for Sustainable Development of lake Victoria Basin; Protocol for EAC Environment and natural resources provides guidelines on how all Partner States can work together to address wetlands resources management challenges in LVB;

iii. All countries have wetland resources management unit, but most of them lack funding and enforcement mechanism/ capacity; and

iv. LVEMP II project provides supports to undertake wetland management in he selected catchments and under CDD projects under component three.

### 3.3.6. Soil Erosion

#### a) Challenges

The following are key challenges facing the soil erosion control in the LVB:

i. Most of areas within LVB are hilly, mountainous and valleys. As the population density is very high, people are forced to live and cultivate in the areas of more than 5 percent slope with limited soil conservation measures;
ii. Adoption to soil conservation best practices is very low as the costs are high and farmers are poor;
iii. In some countries land is very scarce, hence people are forced to cultivate along the riverbanks and wetlands; this reduces the vegetations that filters soil from entering rivers and lake; and
iv. Capacity of ministry of agriculture and other ministries and institutions related to best land management is low if not limited to meet the demands;

#### b) Opportunities:

To address the Lake Victoria Basin forest management challenges, the following opportunities are identified:

i. Low cost soil and water conservation practices have been researched; examples are available to be used;

ii. All countries have soil and water conservation unit, but most of them lack funding and enforcement mechanism/ capacity; and

iii. LVEMP II project provides supports to undertake sustainable land management in selected catchments and under CDD projects under component three.

## 3.4 INVESTMENT IN SUSTAINABLE LAND MANAGEMENT

### a) Challenges

The following are key challenges facing the investments in the SLM in the LVB:

i. low investment in the land management related sectors (Agriculture, livestock, forest, fisheries, water) poor management, low funding of extension and research;

ii. Poor incentives like subsidised inputs and involvement of private sector in the investment;

iii. Low/ declining of national budgetary allocations;

iv. Low price and frustrating crops prices; poor marketing/ investment in infrastructure and limited capacity;

v. High costs of production, processing;

vi. Different Land tenure systems / ownership and equity/ that discourage investments in SLM; and

vii. Un-harmonised policies and laws regarding investments in SLM.

### b) Opportunities:

To address the lake Victoria Basin SLM investment challenges, the following are opportunities identified:

i. EAC legal and institutional frameworks here including common market Protocol and Protocol for Sustainable Development of lake Victoria Basin provide guidelines on how all Partner States can work together to address SLM investment challenges in LVB;

ii. National policies, legislations and strategies; and particular agriculture and forest reforms took place in most of EAC Partner States, although not harmonised but are basis to guide EAC Partner States to address all challenges above by implementing and enforcing them;

iii. All countries have investment boards responsible for national investments; what is required is coordination lobby boards to put LVB as one of priority areas;

iv. LVEMP II project provides supports to undertake investments on land management and other conservation related investments within CDD projects under component three;

v. Research institutions are available to provided viable areas for investments; and

vi. LVB has potential examples on agriculture and other land management investments that can play as a model for adoption.

## 3.5 CLIMATE CHANGE AND VARIABILITY AND EMERGING ISSUES

### a) Challenges

The following are key SLM challenges caused by climate change and variability facing the investments in the SLM in the LVB:

i. Climate change and variability is real and has severe impacts on SLM and hence influences how land management and farming systems are carried out as Climate change adaptation and mitigation measures;

ii. Climate change have impact on environment, human health, food security, human settlements, economic activities, natural resources, and physical infrastructure which are key factors for human development;

iii. Human actions is implicated in today's climate change. It is certain that increased greenhouse gas emissions from the burning of fossil fuels and from land use change lead to a warming of climate, and it is very likely that these greenhouse gases are the dominant cause of the global warming that has been taking place since the industrial revolution;

iv. Climate change primarily manifests itself in terms of temperature increase, variability of precipitation patterns, and change in the frequency and intensity of extreme events and sea level rise. Rainfall and temperature are

the main driving forces that trigger productivity in agriculture and of ecosystems; and

v. Climatic variability and extremes are a great concern for East African countries where the link between climate and livelihood is very strong; and hence frustrate poverty eradication programmes in the Partner States;

**b) Opportunities:**

To address the lake Victoria Basin climate change and variability challenges to SLM, the following are opportunities identified:

i. National policies, legislations and strategies have been/ are being put in place to address all challenges above by implementing and enforcing them;

ii. Several interventions have been undertaken by Partner States, and some are ongoing, ranging from reforestation and afforestation projects, rehabilitation of degraded areas, water harvesting, conservation of ecosystems to demonstration of cleaner production technologies and techniques (sustainable production, particularly in industries), and energy efficiency and energy conservation;

iii. Environment and natural resources management are amongst areas of cooperation identified under Articles 111 and 112 of the Treaty for the Establishment of the EAC. Article 100 of the Treaty on Meteorological Services seeks to promote collection, dissemination and of meteorological information to facilitate efficient early warning and extreme and adverse weather and climatic phenomenon including climate change;

iv. The EAC has developed a Protocol on Environment and Natural Resources Management which was signed in 2006. One of the areas covered by the Protocol include; climate change, desertification and droughts, depletion of ozone layer, biosafety and biotechnology, hazardous waste chemical and pollution control and environmental disaster preparedness and management; and

v. The EAC Climate Change Policy was prepared in response to the growing concern about the increasing threats of the negative Climate Change

impacts. The Goal of the Policy is to contribute to sustainable development through harmonized and coordinated regional strategies, programmes and actions to address Climate Change and guide Partner States and other stakeholders on the preparation and implementation of collective measures to address Climate Change in the region.

## 3.6 CONCLUSIONS

The Strategy provides a sustainable framework for policy integration and coherent development of the Lake Victoria Basin. It sets out priority actions to address key SLM challenges above.

The thrusts of the SLM Strategy are:

(i) Enhancing productivity by supporting yield increases;

(ii) Improving land quality and sustainability (soil health; water availability; vegetation cover, soil carbon targets, ecosystem services);

(iii) Improving household welfare (livelihoods, food security, incomes; diversification) ;

(iv) Building sectoral collaboration and synergies in SLM;

(v) Reducing risk exposure (from climate variability and change).

Mainstreaming SLM principles and practices into sector DSIPs (Development Strategy and Investment Plans) and inputs in the NDP (National Development Plan) by Partner States will therefore be necessary.

# CHAPTER 4 -THE BASIN-WIDE SLM STRATEGY

## 4.1 FUTURE SCENARIOS

Although there is no single view of the future that everyone shares or supports, there are emerging critical issues that need to be addressed in terms of the time span of the Strategy. Different groups, governments and individuals have different preferences, based on their experiences and circumstances, values and cultures. "The future" will be determined by these and by events beyond our control and beyond the region over which we have little or no control (such as climate change and variability). Whilst internal and external factors are extremely important, a preference can still be expressed for what would be preferred in the future and what could be done to influence events in order to achieved the preferred future state. In the process of going from the present to a preferred future state, the changes needed in social behaviour, institutional structures, laws and policies, socio-economic development philosophies, strategies and practices should become clear. This includes the changes necessary to environmental and land management regimes and deletarious actions.

Alternative environmental scenarios for the LVB have been proposed by UNEP, (UNEP, 2006). These have been considered in the development of the SLM strategy and have been used as a guide, with modification to suit the crrent situation, bearing in mind that there is much that cannot be predicted with precision, even with advanced technologies and models.

The proposed strategy is aimed at adopting best land management approaches that will make it possible to realize positive economic gains while maintain sustainable ecosystems principles of the Strategy.

This strategy has been designed to provide a mechanism that will address issues and challenges prevalent in the Basin by considering present trends and possible future situations which will impact the management of resources and livelihoods of the Basin's population. This chapter provides the basic precepts to the strategy and fundamental principles which will guide implementation of the strategy. It provides the goal and the immediate SLM objective.

The central pillars of the Strategy are the Key Strategic Areas as clusters of frameworks intended to cover strategic actions and options required to yield needed results. The strategic objectives have been entered into a matrix as Annex 2 for ease of reference.

Given the present challenges to effective SLM and the impending likely changes to the environment, the following principles are promoted in this strategy:

a) **A holistic interdependent approach should be followed, inter-linking physical, ecological, social and economic factors and actions, using appropriate technologies.**

This is necessary as the laws and institutional arrangements for SLM are disjointed and in some case contradictory. SLM actions and activities are often too narrowly based.

b) **Watersheds should be managed in an integrated, ecologically friendly way, maintaining ecological integrity and maximizing ecosystem services.**

Ecosystems and their health and integrity underpin rural livelihoods and biological diversity. Therefore, an ecological approach should be central to SLM management. This recognizes the role that ecosystems services play in not only maintaining the system but also in providing benefits to mankind.

c) **The inherent ability of the biophysical environment to ameliorate adverse impacts and enhance the living conditions of humans and wildlife, with appropriate management, such as through bio-remediation should be recognized**.

The biophysical environment can cope with development externalities and shocks provided these are well managed and systems are not overloaded, destroyed or degraded. The maintenance of wetlands for instance, provides a way of filtering nutrients and sediments and provides a water discharge holding area during times of flood. Healthy papyrus wetlands, which formerly featured

prominently in the Lake Victoria region, can help control the effects of nutrient loads and sedimentation by acting as natural sponges, taking up excess nutrients such as nitrogen and phosphorus into their root structures. However, in recent years, Lake Victoria's wetlands have become increasingly degraded, and their ability to continue providing valuable ecological services is severely threatened.

d) **Co-management of resources should be fostered, empowering local communities to manage resources themselves, with the advice and support of government agencies, NGOs, CBO's and the private sector**.

Conventional development sectors and services, such as agriculture, forestry and nature conservation are severely restricted in their scope and have not coped with rising demands. Self-help is thus perceived as being imperative: costs can be reduced, activities can be undertaken where they are needed and local people can decide on their own priorities and actions. Economic benefits from conventional approaches have not trickled-down and outwards to those not directly involved in the investment decision. Hence, community development has been advocated specifically to enhance the socio-economic position of those most in need and, increasingly, the poorest of the poor.

Resources everywhere are scarce and the capacity to undertake SLM by governments and other agencies are limited. Participatory approaches allow local communities to determine and assess the state and condition of natural and human resources and enable them to be involved in decision-making. This is not only an efficient way to manage the environment, but is also empowering and inclusive of local needs. In this way, the participatory approach fosters the ownership of decisions by stakeholders themselves, contributing to the sustainability of actions.

e) **Traditional knowledge and management systems should be tapped and incorporated into modern SLM approaches, where appropriate**.

Local communities usually have a deep understanding of environmental conditions and resources necessary for survival. They have "local knowledge". In the past, traditional management techniques have enabled communities to manage their environments. However, these systems have broken down and/or been discarded due to socio-economic-political-cultural changes or changes in technologies and human demands. Nevertheless, there are still traditional practices which are relevant today and which should be incorporated into modern management systems.

f) **Integrated soil fertility management in agricultural production (agro-inputs and organic inputs) and development should be encouraged, including enhanced nutrient cycling, using nitrogen fixing plants Low-input resource management/resource development should be and enhance nutrient cycling, using nitrogen fixing plants should be encouraged.**

Agro-inputs use in Partner States is low and has impacted greatly on land degradation and overall land productivity. Resource productivity can usually be enhanced with the addition of inputs, such as fertilizers and the control of pests and avoidance of waste, by the use of pesticides and herbicides. Other practices, such as intensive dairying lead to increased nitrogen and phosphorous loads. These need to be minimized and if possible avoided and at the very least carefully managed.

g) **Specific attention to protecting and enhancing endemic, genetically important biological resources and ecological systems should be fostered**.

Most countries have endemically important resources and all have unique ecosystems. Being unique they are especially important to specific local, regional and sometimes national human and wildlife populations. The Mara-Serengeti catchment of Lake Victoria Basin is an example, providing an internationally significant resource, being part of a world heritage site, and a significant economic asset to both Kenya and Tanzania.

## 4.2 IMPLEMENTATION OF THE STRATEGY

### 4.2.1. The Vision:

The vision of this strategy is: ***A better Basin-wide land management system for the Lake Victoria Basin that optimizes ecosystem services and provides for enhanced livelihoods and benefits for all stakeholders.***

### 4.2.2. The Goal:

The Goal is: ***To achieve increased agricultural productivity, promote investment and encourage private sector participation in land resources management and hence reduce environmental stress in the LVB.***

### 4.2.3. Objective:

Objective is: ***To develop, harmonize and coordinate regional and national approaches and actions to the Sustainable Land Management.***

### 4.2.4. Key Areas

Chapters 2 and 3 have covered the current issues in the land management of the Lake Victoria Basin. The issues highlight the interconnectivity of social, economic, physical and ecological factors in land management and as such they were considered in the development of this SLM strategy. These issues have been collected into clusters that focus on a common goal which is result oriented. Such clusters are areas of intervention and are here named Strategic objectives.

Each strategic objective is built on solid strategic principles that are closely connected with strategic objectives. Further, each of the nine strategic objectives has associated Outputs or Key Interventions and Processes. These are activities that warrant major investment.

Sustainable land management, in the context of environmental management projects such as LVEMP, has been defined by the Global Environmental Facility (GEF) to be a knowledge-based procedure that helps integrate land, water, biodiversity and environmental management (including input and output externalities) to meet rising food and fibre demands while sustaining ecosystem

services and livelihoods, (World Bank, 2006) and this is what this strategy focuses on. In a broad sense, sustainable land management innovations include:

i. Measures to increase the productivity of agricultural and forestry lands such as soil quality and vegetative cover;
ii. Maintaining the provisioning of ecosystem services such as carbon sequestration, water availability, erosion and flood control and drought mitigation;
iii. Protection of genetic resources i.e. crops, livestock and wildlife, (UNDP-GEF).

This overarching Strategy for SLM in the Lake Victoria Basin examines and contextualizes these innovations. The strategy for sustainable land management in the Lake Victoria basin uses a generic model of strategic planning. This is a model that is focused on verifiable results. Therefore the strategic objectives of the strategy are identified first. Nine strategic objectives identified in this model (see Box 2) are necessary and sufficient for the management of the land management in LVB. The strategic objectives are built on a firm foundation of strategic principles. A strategic principle(s) is provided for each strategic objectives and a set of objectives defined for each strategic principle. The sum of the strategic objectives forms an envelope of objectives that are specific to the whole strategy.

The pathway to the implementation of the strategy along the lines of the set objectives is as follows:

i. One or several key performance indicators are identified for each strategic principle, the attainment of which is crucial to assessing the performance of the strategy along the stated objective(s); and

ii. Against each strategic objective and performance indicator, one or several interventions have been identified without which the indicator and hence the objective would not be realized.

Therefore, the model foresees an implementation of several activities for each strategic objective. The rationale of each activity has been argued and the key actors (state and non-state) identified. The rationale which are specific to each

intervention, complement the rationale for the strategy. The strategy has broad and specific objectives that have been rationalized by the design model.

**Box 5:** The Key Areas of the SLM Strategy

**a) Ecosystem Management.**

To promote the importance of the ecosystem approach to SLM.

**Outcome:** Ecosystem management approach adopted in SLM and services realized and enhanced by 2036

b) **Land Tenure, Land Use and Planning**

To promote a land use planning system and land reform that take cognizance of the regional SLMS

**Outcome:** SLM underpinned by land use planning and pro-poor Land tenure systems by 2036

**c) Benefits of SLM (Monetary and non-monetary, including livelihoods development)**

To Enhance the monetary and non-monetary benefits of SLM

**Outcome:** Substantial benefits apparent by 2036

**d) Investment and Implementation**

To Identify sustainable and secure sources and mechanisms to fund the strategy

**Outcome**: A self-financing SLM system is secured by 2036

**e) Legislative and Institutional Support**

To establish a legislative framework of laws and byelaws supported by institutions that are responsive to principles of good governance

**Outcome**: Legislative framework established and operating effectively

and efficiently by 2036; AND Rationalized institutional framework established by 2036

**f) Governance**

To develop SLM system that respond to principles of good governance

**Outcome:** Agreements or MOUs that bind communities, Government and private sector in participating in management of natural resources and sharing benefits equitably according to their respective responsibilities and stakes.

g) **Capacity Building (education, awareness, training and infrastructure)**

To enhance the understanding and capacity of stakeholders to implement the strategy

**Outcome:** Adequate capacity achieved by 2036

**h) Research and Knowledge Management**

To improve access to economically viable and sustainable land management technologies appropriate to the range of conditions available in the Lake Victoria

**Outcome:** Adequate researched information to inform appropriately /best land management practices achieved by 2036.

**i) Monitoring and Evaluation**

To establish an effective system of monitoring and evaluating progress to achieve the objectives of SLM strategy

**Outcome:** A M&E system that meets the needs and objectives of stakeholders by 2036

Strategic Key areas and Strategic Objectives Matrix shown in Annex 2 for ease of reference and quick overview, nine strategic objectives are outlined in tabular form, complete with their strategic objectives, outputs, interventions and actors.

**4.2.4.1. Key Result Area 1: Land Tenure and Land Use improved to promote a land use planning system and land reform to increase production and investment.**

**Rationale for the strategic objective:** Present population pressures arising from high growth rates of about 3.5 percent to 4 percent per annum and increasing needs and demands, coupled with insecure tenures systems and dwindling natural resources already pose a significant threat to Basin ecosystems.

Issues of land ownership are at the root of production and livelihoods systems. These issues were deeply debated in the East African Legislative Assembly (EALA) in 2008/09. The protocol for the EA Common Market clauses discussed by EALA in 2008 contained a clause on "the right to establishment" in EAC countries. The clause was met with a different stance and interpretation when examined with respect to land tenure and land use. At the end of the debate *it was agreed to allow national frameworks guide land access and land use in the EAC Countries.* Yet, this "gentleman's agreement" is likely to pose problems in the future as similar agreement on management of common resources has shown. Already, the Lake Victoria Basin initiatives are experiencing difficulty in managing basin resources sustainably, including its lands, as each country uses its own and hence different policies, laws and strategies.

The agricultural based economy of the region, facing fertile land shortages, needs a framework not only for easy access to land that is honoured by all countries, but also to enable an efficient use of the scarce land resources that is available. Being a basin-wide strategy, an attempt should be made to bring about synergies and linkages in the land tenure systems of the EAC countries or provide a model for countries to internalize.

**Goal:** To promote a land use planning system and land reform that takes cognizance of the regional SLMS

**Outcome:** SLM underpinned by land use planning and pro-poor Land tenure systems by 2036.

**Strategic Principles:**

i. Secured land rights are crucial to the wise use of land and sustainable land management;
ii. The use of land and natural resources has both positive and negative impacts therefore a land use planning system is necessary for the management of the impacts; and
iii. Land reform is enhanced by land markets that are enabled by free access to land information.

**Strategic Objectives:**

i. To promote and support the establishment and/or enhancement of land registry and adjudication systems in all Basin states;
ii. To promote and support the establishment and/or enhancement of land-use planning systems;
iii. To promote the speedy reform of policies and laws pertaining to land titling and adjudication; and
iv. To promote and support the establishment of land information systems.

**Key Performance Indicators (Outputs):**

i. Performing land registries;
ii. Number of District/County level with operational Land-use plans;
iii. Countries with enhanced, harmonized and integrated policies and laws; and
iv. Expanded and accessible data bases and LIS at Regional and District/County levels.

**Key Interventions (Activities)**

i. Identify and document best practices in land tenure systems;
ii. Establish land titling systems;
iii. Issue title to owned land;
iv. Develop land use plans for SLM;
v. Review and implement land management policies;

vi. Adopt integrated soil and water conservation approaches in catchment planning and implementation;
vii. Promote conservation agriculture;
viii. Promote the infrastructure for SML e.g.; irrigation and water supply; and
ix. Promote or provide support infrastructure for land use planning systems.

**4.2.4.2. Key Result Area 2: Ecosystem Management Approach adopted in the LVB to improve management of environment and natural resources.**

**Rationale for the strategic objective:** The definition of SLM implies that not only livelihoods are important but the strategy should also recognize the necessity to maintain ecological integrity of the whole ecosystem, such as management of forests as a carbon sink, water catchments and habitat for wildlife. To address Natural systems, ecosystem management approach plays a significant role in mitigating and addressing all ecosystems management issues holistically.

**Goal:** To promote the importance of the ecosystem approach to SLM

**Outcome:** Ecosystem management approach adopted in SLM, realized and enhanced by 2036

**Strategic Principles**

i. There is an inter-relationship among all living and non living organisms; and
ii. Ecosystems should, as a rule of thumb, be managed holistically to maintain environmental integrity.

**Strategic Objectives**

i. To promote an understanding of the importance of ecosystem management;
ii. To promote holistic natural resource management arrangements;
iii. To promote trans-boundary community based NRM approach; and
iv. To promote trans-boundary research in the ecosystem.

**Key Performance Indicators**

i. Districts per countries adopting holistic ecosystem management system;
ii. Number of water catchments in the districts with improved ecosystem services;

iii. Ha under improved land-use in LVB;
iv. Number of micro-catchment with SLM plans in LVB;
v. Hectares under afforestation in targeted sub-catchments in LVB;
vi. Hectares of degraded wetlands restored and/or rehabilitated by communities in targeted sub-catchments in LVB; and
vii. Improved water quality and reduce soil siltation

**Key Interventions (Activities)**

i. Establish inter-agency and multi-disciplinary teams to undertake SLM planning and implementation of field-based projects activities;
ii. Identify and compile challenges to SLM and propose appropriate interventions;
iii. Establish a framework for co-ordinating implementation of SLM activities at National and Regional level;
iv. Identify and review existing databases and information systems; and
v. Promote the adoption and uptake of bio-remediation methods, using natural systems to ameliorate and absorb negative externalities of development.

#### 4.2.4.3. Key Result Area 3: SLM benefits promoted to provide a greater incentive to Stakeholders to invest and manage land resources sustainably

**Rationale of the strategic objective –** to reduce stress on natural resources.

Maintaining ecosystem functions/services is a prerequisite to sustainable land management (SLM). SLM practices should simultaneously conserve natural resources and increase yields, thus preserving and enhancing ecosystem services in all land use systems, reducing degradation of water, soil and vegetation, as well as gas emissions contributing to climate change. There are many monetary and non-monetary benefits including:

i. **Provisioning Services:** (food, fodder, fibre, fuel and fresh water provision);
ii. **Regulating and supporting services:** (soil and vegetation cover for water, carbon and biodiversity); and
iii. **Benefits for culture and society -** Cultural landscapes embody traditional values, proven knowledge and experience gained over centuries. Cultural and natural landscapes provide cultural identity. Cultural and natural

landscapes have great value as recreational space for humans. The tourism and ecotourism that these sites attract offers the population new economic opportunities, including new opportunities for income that can be used to make investments in the preservation of the natural resource base. SLM helps to: Keep alive cultural and natural landscapes and protect cultural heritage; Valorise indigenous knowledge and production methods; and Enhance ecotourism, (UNCCD)

**Goal:** To enhance the monetary and non-monetary benefits of SLM.

**Outcome:** Substantial benefits apparent by 2036.

**Strategic Principle:** Stakeholders have a greater incentive to manage resources sustainably if they realise substantial monetary and non-monetary benefits.

**Strategic Objective: Establish incentives to** manage land sustainably and realize benefits.

**Key Performance Indicator**

i. Increased land resource productivity by 25 percent; and
ii. Percentage increase of SLM income from lowest (less than one US Dollar per person per day) households monetary by 2 percent (2*5=10 USD per day per household) and non- monetary benefits.

**Key Interventions**

i. Develop alternative income generating activities that reduce pressure on natural resource base (e.g. trade in NTFPs);
ii. Promote appropriate payment for ecosystem services e.g. carbon credits;
iii. Establish and promote resource user groups to develop income generation options;
iv. Determine and demonstrate the monetary value of SLM practices and ecosystem services;
v. Promote Public Private Partnerships to invest in SLM infrastructure (Irrigation systems, water harvesting etc); and

vi. Promote rural resource-based processing industries to add value and create rural employment.

#### 4.2.4.4. Key Result Area 4: SLM Investments promoted to increase funding levels to sustain SLM initiaves (projects and programmes) in LVB

**Rationale of the strategic objective:** Funding is vital to the implementation of the SLM strategy.

**Goal:** To identify sustainable and secure sources and mechanisms to fund the strategy.

**Outcome:** A self-financing SLM system is secured by 2036.
In order to be implemented, a strategy requires secure funds that are sustainable in the long-term.

**Strategic Principle:** Seek long-term sustainable funding and support mechanism.

**Strategic Objective:** Secured funding that is sustainable in the longer term.

**Key Performance Indicators:** Increased annual financial support to SLM by government and Development Partner institutions.

**Key Interventions (activities)**

i. Lobby partners states to prioritise and directly fund SLM activities;
ii. Sensitize decision makers to prioritise more funding to SLM implementing institutions;
iii. Mobilize resources from donor agencies to support SLM programs e.g. carbon credit;
iv. Promote natural resource accounting at all levels to inform decision making in resource allocation and use;
v. Provide credit services for SLM in rural areas;
vi. Promote Public Private Partnership to undertake investment in SLM in rural enterprises and
vii. Finalise and operationalise the Lake Victoria Environmental Trust Fund

**4.2.4.5. Key Result Area 5: SLM related Legislations Harmonised and Institutional capacity improved to support implementation of SLM.**

**Rationale for the strategic objective**: There are a plethora of laws and policy statements that espouse sustainability and integrated decision-making. A protocol has been established but the recognition of its significance and the championing of its importance lacks dynamic support. The protocol on the Environment and Natural Resources was developed and signed in 2006. The intent is good, as the essence of Article 21 is embedded in the environmental policies of the five member states of the EAC, but unfortunately it has not yet been ratified. This delay sends a negative message. The same applies to other laws related to SLM at national levels which require harmonisation. Hence, one of the greatest challenges for the implementation of this SLM strategy how these un-harmonised laws can address trans-boundary SLM issues.

**Goal:** To establish a legislative framework of laws and byelaws supported by institutions those are responsive to principles of good governance.

**Outcome**: Legislative framework established and operating effectively and efficiently by 2036.

**Strategic Principles**

SLM practices and activities need to be grounded in law and supported by appropriate institutional arrangements in order to protect rights and formalize obligations;

**Strategic Objectives**

i. Review and harmonize all laws and policies which relate to SLM; and
ii. Review and harmonize all land management guidelines and policies which relate to SLM.

**Key Performance Indicators**

i. Harmonized Policies and Laws; and
ii. Harmonized Institutional Arrangements.

**Key Interventions**

i. Develop regional and national SLM standards/guidelines;

ii. Sensitize decision-makers, especially central government politicians and officials on SLM; and

iii. Carry out basin-wide SLM analysis using MIS.

#### 4.2.4.6. Key Result Area 6: SLM Governance improved to ensure SLM systems are participatory, equitable, accountable, transparent, responsive, effective and efficient.

**Rationale for the strategic objective:** Land degradation and failure to realize the potentials of the LVB is a manifestation of the lack of adherence to the principles of good governance in the implementation of national policies and strategies and in the use of resources of the Basin.

Good governance should be participatory and consensus oriented embracing principles of accountability, transparency, responsiveness, effectiveness and efficiency, equity and inclusiveness and the rule of law. It should include assurances that corruption is minimized, the views of minorities are taken into account and the voices of the most vulnerable in society are heard in decision-making. It should also be responsive to the present and future needs of society.

**Accountability:** Accountability is a key requirement of good governance. Not only governmental institutions but also the private sector and civil society organizations must be *accountable to the public and to their institutional stakeholders*. Who is accountable to who varies, depending on whether decisions or actions taken are internal or external to an organization or institution. In general, an organization or an institution is accountable to those who will be affected by its decisions or actions. Accountability cannot be enforced without transparency and the rule of law.

**Rule of law:** Good governance requires *fair legal frameworks that are enforced impartially*. It also requires full protection of human rights, particularly those of minorities. Impartial enforcement of laws requires an independent judiciary and an impartial and incorruptible police force.

**Transparency:** Transparency means that *decisions taken and their enforcement are done in a manner that follows rules and regulations*. It also means that information is freely available and directly accessible to those who will be affected by such decisions and their enforcement. It also means that enough information is provided and that it is provided in easily understandable forms and media.

**Participation and Responsiveness:** *Participation by both men and women* is a key cornerstone of good governance. Participation could be either direct or through legitimate intermediate institutions or representatives. Participation needs to be informed and organized. This means freedom of association and expression on the one hand and an organized civil society on the other hand. Furthermore, good governance requires *serving all stakeholders within a reasonable timeframe.*

**Consensus oriented:** There are several actors and as many view points in a given society. Good governance requires mediation of the different interests in society to reach a broad consensus in society on what is in the best interest of the whole community and how this can be achieved. It also requires a broad and long-term perspective on what is needed for sustainable human development and how to achieve the goals of such development. This can only result from an understanding of the historical, cultural and social contexts of a given society or community.

***Equity and inclusiveness:*** A society's well-being depends on ensuring that all its members feel that they have a stake in it and do not feel excluded from the mainstream of society. This requires all groups, but particularly the most vulnerable, have opportunities to improve or maintain their well-being.

**Effectiveness and efficiency*:*** Good governance means that processes and institutions produce results that meet the needs of society while making the best use of resources at their disposal. The concept of efficiency in the context of good governance also covers the sustainable use of natural resources and the protection of the environment. Governance can be used in several contexts such as, Global (international), State (national) and local governance.

**Strategic vision**: Leaders and the public should have a broad and long-term perspective on good governance and human development, along with a sense of what is needed for such development. There is also an understanding of the historical, cultural and social complexities in which that perspective is grounded.

**Goal:** To develop SLM system that respond to principles of good governance

**Outcome:** A system that is inclusive, participatory, equitable, accountable, transparent, responsive, effective and efficient, with a strategic vision.

**Strategic Principle:** Good governance leads to the attainment of the goals of SLM.

**Strategic Objective:** Use the principles of good governance to evaluate the performance and effectiveness of SLM objectives and actions.

**Key Performance Indicators**

i. Established and operational good governance structures at regional, national, county and lower levels; that address good governance on the implementation of SLM, these include benefit sharing and land tenure;
ii. Independent Conflict resolution system; and
iii. M&E processes on the basis of good governance principles.

**Key Interventions (Activities)**

i. Good governance structures established at regional, national, county and lower levels; and
ii. Clear independent conflict resolution system established in each country.

### 4.2.4.7. Key Result Area 7: Capacity building on SLM ehanced to provide appropriate SLM knowledge and skills to implement this strategy

**Rationale for the strategic objective:** Since the launch of the Lake Victoria Environment Management Project LVEMP in 1994 much attention has been placed on building capacity. Indeed, a review of LVEMP I revealed serious limitations in performance. In designing LVEMP II human capacity and institutional capacity building were placed high on the list of priorities and adopted as part of the main activities of the programme. There are several instruments and actions needed to guide the development and management of the LVB the success of which depend on the state of capacity attained. These are: (i) the Protocol for Sustainable Development of Lake Victoria Basin (2004) that places upon LVBC the mandate under Article 33 to promote, facilitate and coordinate activities of different actors towards sustainable development and poverty eradication within the Basin; (ii) the Vision and Strategy Framework for the Management and Development of Lake

Victoria Basin (2004); and (iii) the EAC Development Strategy 2006-2010 and draft strategy 2011 – 2015 soon to replace it. Capacity building is envisaged across all Partner States, in the national focal points and professions related to ecosystem management. It should also be carried out at district/county level and amongst local communities.

Non-point source pollutants are the most difficult to control as they are diffuse, not easily pin-pointed nor recognised. They cannot be adequately controlled by legislative measures or discrete actions such as enforcing environmental standards on commercial operators or requiring land-users to furnish environmental impact assessments (EIA) or reports. Non-statutory best management practices are needed, adopted by stakeholders as part of their everyday livelihood activities. Environmental education, demonstration, research and training is needed to achieve this.

**Goal:** To enhance the understanding and ability of stakeholders to implement the strategy.

**Outcome:** Adequate capacity achieved by 2036.

**Strategic Principles:**

i. Enlightened and skilled persons perform better;
ii. Capacity Building is empowerment of people to manage own resources; and
iii. Institutions (state and non-state) play a crucial role in imparting skills and empowering people.

**Strategic Objectives:**

i. Enhance and upgrade the skills and human capacity of all stakeholders;
ii. Empower stakeholders to manage their own resources;
iii. Support state and non-state actors to build capacity, (from top level to grass-roots institutions); and
iv. Improve research, knowledge management and infrastructure development.

**Key Performance Indicators (outputs):**

Capacities (knowledge, skills and infrastructure) of personnel, institutions and communities improved.

**Key Interventions (Activities):**

i. Strengthen all extension services by providing tools, equipment and facilities;
ii. Promote participatory Monitoring & Evaluation techniques;
iii. Integrate entrepreneurship, group dynamics and business management in the SLM training curriculum;
iv. Support knowledge sharing among stakeholders through tours and exchange visits;
v. Promote entrepreneurship and business management skills at local levels;
vi. Upgraded skills and knowledge of SLM;
vii. Enhance the understanding and ability of stakeholders to implement the strategy;
viii. Empowered stakeholders; and
ix. Include environmental education in school and tertiary institutions curricula.

### 4.2.4.8. Key Result Area 8: Applications of Research, knowledge management and communication promoted to inform appropriately /best land management practices.

**Rationale -** Degradation and unsustainable land use practices are key sources of farmers' poverty, which is associated with a number of inter-related factors including rapid population growth, land degradation, declining human health, low agricultural productivity and poor water quality. To have proper SLM plans, research plays a great role in forming these plans. The research findings must be disseminated to enable proper SLM plans development.

**Goal - To** improves access to economically viable and sustainable land management technologies to both subsistence and the progressive commercialisation of agriculture.

**Outcome:** Adequate researched information to inform appropriately /best land management practices achieved by 2036.

**Objective –** To identify research programmes and develop systematic procedures that will produce appropriate technologies to assist the Basin communities sustainably manage land resources**.**

**Strategic Principles:**

i. Incorporate modern systems of identifying research needs, implementing research programmes, and disseminating research results;
ii. Establish connections with international research partners on SLM, and concentrate domestic research in each Partner State on adaptive SLM experimentation as well as research based on local innovations; and
iii. Focus domestic research resources on high impact areas.

**Strategic Objectives**

i. To recruit more and train existing researchers in SLM
ii. To develop work plans according to demand of the farmers in order to ensure interest in results in SLM;
iii. To increase contact, interaction and other linkages with external and local partners and participatory involvement of the communities in SLM technology development;
iv. To develop formal linkages with farmers and fisher folk through extension and other means; and
v. To effective disseminate research results on SLM.

**Performance Indicators (outputs):**

i. Result and client oriented Researches developed and conducted on SLM;
ii. Regular and routine flow of information established and utilised; and
iii. Production of farmer, fisher folk and extension training material that address SLM problems.

**Key Interventions (Activities):**

i. Priority areas identified and more research staff hired;
ii. Systems of routine consultation with farmers, fisher folk and other stake holders identified;
iii. Procedures for SLM research projects identification established;
iv. Identification of appropriate international and local institutions, contacts made and agreements established;
v. Training of researchers, extension personnel and other stakeholders in SLM participatory techniques;
vi. Identification of equipment requirements appropriate to key SLM research areas;
vii. Routine incorporation of economic analysis into SLM research results;
viii. Establishment of effective routine channels for SLM research results dissemination;
ix. Identification of new sources of resources for SLM research expansion; and
x. Identification of next priority SLM research areas.

**4.2.4.9. Key Result Area 9: SLM Monitoring and Evaluation developed for adaptive land management.**

**Rationale of the strategic objective:** The objective of the monitoring and evaluation in the strategy is to provide management information on the performance of the sector in light of steps taken to manage ecosystems in the Basin. Further, it is the goal of monitoring and evaluation to assess the impact of resources allocated to the implementation process on the achievement of strategic objective for each strategic objective. The strategy to be adopted in the monitoring and evaluation process is twofold:

i. To collect monitoring information and to feed this information into the management and coordination system. A far-reaching strategy such this should be monitored at various levels namely at the District, national, Regional and international levels; and

ii. To empower local communities to undertake participatory M&E of their environment, resources and activities.

**Annual Reviews:** Annual reviews should be held to: assess progress against outputs, identify constrains to progress, review expenditure and identify funding gaps, agree on budgets, share successful experiences, agree on output and work plans for the following year.

**Evaluation** (in consultation with stakeholders): Evaluation of achievements and progress made in the implementation of the strategy should be conducted at three periods namely; at end of medium term, midway in long term, and at the end of long term. The objectives of the evaluation exercise should be to:

i. Assess the strategy from experiences gained;
ii. Identify successful approaches;
iii. Identify weaknesses and remedies thereof;
iv. Review progress on indicators for the period under evaluation;
v. Review the investment plan in terms of achievements; and
vi. Review expenditure and costs.

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The instruments used in the evaluation and review processes of the strategic plan include: routine data collection and reporting, national data collection, sector specific data collection, baseline and follow-up studies on pilot schemes, public education and awareness surveys.

**Goal:** To establish an effective system of monitoring and evaluating progress to achieve the objectives of SLM strategy.

**Outcome:** An SLM regional and national M&E system established and operational by 2036.

**Strategic Principle:**

Continuous monitoring and evaluation is needed in order to establish whether or not goals set by the strategy have been met, for better decision making.

**Strategic Objectives:**

i. Establish and/or enhance data bases;
ii. Promote and support the establishment and/or improvement in government SLM monitoring and evaluation systems; and

iii. Promote and support the establishment and/or improvement of Participatory M&E systems.

**Key Performance Indicator:**

i. Establish Operational SLM M&E system and databases;
ii. Enhanced Government M&E system for SLM; and
iii. Operational participatory M&E established.

**Key Intervention (Activity)**

i. Establish an M&E system for SLM at regional and District/County levels;
ii. Develop an MIS for SLM at regional, national, county and local levels;
iii. Enforce laws and regulations through surveillance for compliance;
iv. Promote village based compliance, through participatory management systems;
v. Develop a basin wide data base and regularly update SLM information;
vi. Coordinate SLM data collection;
vii. Enhance/Establish a Management Information System; and
viii. Establish and enhance a joint research and M&E system.

# CHAPTER 5 -IMPLEMENTATION, INVESTMENT AND FINANCING PLAN FOR THE STRATEGY

This chapter explores the modalities of investment and funding programmes and projects that will be designed to implement the SLM strategy. Various options are discussed but are in no way exhaustive. Other options will come up in preparations to the implementation process.

## 5.1. INSTITUTIONAL ARRANGEMENT

In order for the strategy to be implemented effectively the LVBC will be overall in-charge of coordinating the various activities. In addition a focal lead institution in each EAC Partner State has been identified as follows:

i. Partner States National Environment Management Authorities;
ii. Burundi: PS- Ministry of water, Environment, land and urbanism;
iii. Kenya: PS- Ministry of Agriculture;
iv. Rwanda: PS – Natural Resources;
v. Tanzania: PS- Ministry of Agriculture, Food Security and Cooperative; and
vi. Uganda: PS- Ministry of Agriculture, Animal Industry and Fisheries.

These lead institutions will coordinate the implementation of the Strategy in each country among the relevant ministries and the LVBC

## 5.2. ROAD MAP

The SLM Strategy will be implemented in three pronged approach:

i. First, harmonizing national policies and strategies in conformity to this strategy is the first way. But, to kick start the process, the Partner States need to get together and identify key overseers of the activities in each of the strategic objectives and the subsequent actions. In harmonizing policies and strategies, it is expected that the national instruments of the Partner States will be working towards a common goal;

ii. Secondly, Partner States should come together and draw up programmes of implementation that respond to this Strategy, either singly or together with the coordination of the EAC/LVBC secretariat; and

iii. finally, some of the activities or clusters thereof provided in the activities column of the strategic objectives matrix should be designed as projects. An overall step in the implementation is to identify secure and sustainable sources of funding as discussed in section 4.2 below.

Activities identified in each of the strategic objectives in the strategy have been categorised according to priority: those needing immediate attention, those to be undertaken in the medium term and those for the long term. Within each strategic objectives the prioritization should also be followed by sequencing thereof. The prioritized activities are presented in Annex 4 (Matrix of Prioritised Activities). This prioritization provides a roadmap for the achievement of the strategy. Activities are staged over three periods: Immediate 2011-2018, Medium-term 2019-2025 and Long-term priorities, from 2026-2036.

The roles of the various institutions in the implementation process are shown in Annex 5 (Implementation Guidelines for Regional, National and Local Levels). The responsibilities for numerous activities overlap, suggesting that coordination and joint action is essential.

## 5.3. THE INVESTMENT PLAN

This strategy includes priorities as agreed by key stakeholders. These are immediate, medium and long term priorities.

The investment plan combines ***Annex 1*** (the plan and budget); and ***Annex 4*** (the priority activities, implementation period and responsible agency/ institutions).

The objective of this SLM investment plan is to identifying priority SLM issues and their related funding needs, potential funding sources and mobilizing resources in an integrated and coordinated way.

The following are the potential funding sources:

i. Non-timber Forest Products (NTFPs) are associated with the development of ecosystem services. These include the ability of the

environment to provide for a multiple uses and benefits, such as water and soil conservation values, to act as a carbon sink, to provide food and materials for shelter, potable water supplies, grazing for stock in times of drought, habitats for flora and fauna and socio-cultural values;.

ii. One way to fund the conservation of these ecosystems is to levy payments for the use of some of the resources found therein, payment for ecosystem services. This is a contentious issue: should common property resources be charged for? For instance, access to potable water is usually considered a human right. The poorest of the poor cannot pay. Nevertheless, municipal public water schemes come at a cost and appropriate charges may not be unreasonable, and in fact may stimulate conservation efforts;

iii. Payment for other services may also be considered. For example, users of national parks and reserves have been charged entrance fees and lodge owners charged a rent. The issue is not so much the principle, but how the income so derived should be distributed. This has to be transparent and equitable and give real benefits to stakeholders to encourage them to conserve natural resources. Furthermore, more of the income derived at present needs to be ploughed back into ecosystem management;

iv. Another innovative way to fund conservation efforts has been introduced in the last three years. This is the UN-REDD initiative. Although this system of payments is not without considerable challenges and criticism (The Munden Project, 2011; Holmgren, n.d.) it is nevertheless still worth investigating and evaluating;

v. The private sector too has a role to play in funding the strategy. It is often in their interest to maintain and improve the ecosystems on which they depend;

vi. Tourism operators have a vested interest in maintaining healthy ecosystems. Hence there are opportunities for private-public partnerships and projects that need to be investigated and instigated;

vii. Other possible avenues can be explored include: Contributions by the Partner States towards a common objective; Contributions from

development partners to the EAC programmes; and International conventions and memberships (CBD, UNFCCC, UNCDD) which warrant resource flow to such initiatives. EAC Partner States, as signatories to international treaties and conventions have access to funds to help them fulfil their obligations and to implement activities. These are sometimes 'not followed up to' by the prospective beneficiary countries or programmes. The UN conference on the Least Developed Countries identified resources for these countries. Programmes such as those on MDG and poverty eradication can bring in needed funds (EAC Climate Change Strategy-2011).

i. Lobby partners states to prioritise and directly fund SLM activities;
ii. Sensitize decision makers to prioritise more funding to SLM implementing institutions;
iii. Mobilize resources from donor agencies to support SLM programs e.g. carbon credit;
iv. Promote natural resource accounting at all levels to inform decision making in resource allocation and use;
v. Provide credit services for SLM in rural areas;
vi. Promote Public Private Partnership to undertake investment in SLM in rural enterprises and
vii. Finalise and operationalise the Lake Victoria Environmental Trust Fund

## 5.4. FINANCING PLAN

The strategy can be financed directly and indirectly. Sources of funding can include charges for economic operations undertaken in the basin. There are a number of ways in which this can be attained:

By direct means, governments, donors and others such as NGOs can be requested to finance specific activities identified in the strategy, as outlined in Annex 2. A donors' conference can be convened to identify willing donors to the SLM cause. This is the conventional approach used to raise funds and carry out projects.

However, in the long run, ways should be found to make programmes and activities self-financing

Finally, the SLM strategy need not rely entirely on large financial outlays, if it is participatory. By promoting the participatory approach and the sharing of responsibilities and obligations between governments and communities, costs can be reduced through initiatives such as development of watershed management and joint forest management agreements. However, to be successful, these initiatives should bring real, tangible benefits to communities.

## 5.5. MONITORING AND EVALUATION AND REPORTING

The SLM monitoring will aim at providing a regular overview of the progress of implementation of activities in terms of in-put delivery, work schedules and planned output/targets. It will also involve routine information gathering, analysis and reporting to Partner States, LVBC lead Agencies, development partners, communities and other stakeholders.

Evaluation shall represent a systematic and objective assessment of SLM components or activities in terms of their design, implementation and results. In addition, SLM evaluation will deal with strategic issues such as SLM relevance, effectiveness, efficiency (expected and unexpected) in the line of specified objectives, as well as SLM impact sustainability.

### 5.5.1. Rationale

An M & E framework and strategy will be drawn and agreed upon by the implementing ministries and LVBC in each Partner States at the beginning of implementation of the SLM. The SLM Monitoring and Evaluation will focus on:

i. Promoting accountability for the achievement of SLM objectives through an assessment of actions, results, effectiveness, processes, and performance of the partners involved in SLM activities.

ii. Promoting learning, feedback, and information sharing on results and lessons learned among the SLM implementing partners, as a basis for

decision-making on policies, strategies for SLM implementation and to improve knowledge performance.

The specific objectives for applying a monitoring and evaluation strategy are to;

i. Provide key stakeholders with the information needed to guide the SLM implementation strategy towards achieving its goals and objectives.

ii. Provide early contingency plan for the likely problematic activities and processes that need collective action.

iii. Help empower key and target stakeholders by creating opportunities for them to reflect critically on the SLM direction and interventions.

iv. Provide a basis for systematically collecting and analysing information on the changes arising from SLM activities.

v. Ensuring accountability and value for money (upward accountability to the EAC) and downward accountability to the beneficiary local communities and collaboration partners)

### 5.5.2. M & E implementation modalities and responsibilities

The day to day responsibility for implementing the M & E Strategy will be undertaken by LVBC, in collaboration with the implementing ministries in the Partner States. This task will be assisted by:

i. Beneficiary/participating institutions, Focal persons and M & E Personnel who will be responsible for monitoring the progress of SLM supported interventions and giving feedback to M & E Desk in the lead ministry.

ii. Beneficiary community representatives who shall be responsible for supporting communities in implementing community level monitoring indicators in collaboration with M & E Desk in the lead ministry.

## 5.6. REPORTING AND ACCOUNTABILITY

On a semi-annual basis, LVBC in collaboration with the implementing ministries in Partner States, shall prepare and submit to the EAC progress reports on activities and targets. The second report will be the annual report giving the status report for the concluding year.

**ANNEX 1: COST ESTIMATES FOR THE IMPLEMENTATION OF THE SLM STRATEGY**

| Key Areas | Strategic Principles | Strategic Objectives | Output (or Key Performance Indicator or Intermediate Outcomes) | Budget notes | Proposed Budget (USD) |
|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **6** | **7** |
| 1. **Ecosystem Management**<br><br>**Goal: To promote the** importance of the ecosystem approach to SLM by 2036<br><br>**Ultimate Outcome:** Ecosystem management approach adopted in SLM and services realized and enhanced by 2036 | 1.There is an interrelationship among living and non living organisms<br><br>2.Ecosystems should, as a rule of thumb, be managed holistically to maintain environmental integrity | 1.Promote an understanding of the importance of ecosystem management<br><br>2. Promote holistic natural resource management arrangements | 1. Districts per countries adopting holistic ecosystem management system;<br><br>2. Number of water catchments in the districts with improved ecosystem services<br><br>3. Ha under improved land-use in LVB,<br><br>4. Number of micro-catchment with SLM plans in LVB.<br><br>5. Ha under afforestation in targeted sub-catchments in LVB<br><br>6. hectares of degraded wetlands restored and/or rehabilitated by communities in targeted sub-catchments in LVB<br><br>7. Improved water quality and reduce soil siltation | National teams from different SLM related Ministries develop national SLM plans of implementation;<br><br>(10ppts*5*6days*200USD)<br><br>Facilitation of National leading Institutions identified by this strategy to coordinate implementation of national SLM plans developed<br><br>(5 institutions*100,000USD ) | 60,000.00<br><br>500,000.00 |

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| 2. **Land Tenure, Land Use and Planning**<br>**Goal:** To promote a land use planning system and land reform that take cognizance of the regional SLMS<br>**Ultimate Outcome:** SLM underpinned by land use planning and pro-poor Land tenure systems by 2036 | 1. Secured Land rights are crucial to wise use of land and sustainable land management<br>2.The use of land and natural resources has both positive and negative impacts therefore a land use planning system is necessary to management of the impacts<br>3.Land reform is enhanced by land markets that are enabled by free access to land information | 1.Promote and support the establishment and/or enhancement of land registry and adjudication systems in all Basin states<br>2 Promote and support the establishment and/or enhancement of land-use planning systems<br>3 Promote the speedy reform of policies and laws pertaining to land titling and adjudication<br>4 Promote and support the establishment of land information systems | 1. Performing land registries;<br>2. Number of District/County level with operational Land-use plans<br>3. Countries with enhanced, harmonized and integrated policies and laws;<br>4. Expanded and accessible data bases and LIS at Regional and District/County levels. | Support Ministry of land to undertake land registrations and land use planning.<br>(5*400,000USD) | 2,000,000.00 |
| **3. Benefits of SLM (Monetary and non-monetary, including livelihoods development)**<br>**Goal:** To enhance the monetary and non-monetary benefits of SLM | 1.Ecosystems provide monetary and non-monetary service of benefit to humans and for the survival of ecological and | 1.Stakeholders to manage land sustainably and realize benefits<br>2. Maximise the benefits provided by ecosystem services | 1. Increased land resource productivity by 25% and<br>2. Percentage increase of SLM income from lowest (less than | Facilitate land users to get and apply knowledge and skills on SLM related to food security and income generating activities (Soil and water conservation measures)<br>(5*1000,000 land users* 100USD) | 500,000,000 |

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| **Ultimate Outcome:** Substantial benefits apparent by 2036 | other systems 2.Stakeholders have a greater incentive to manage resources sustainably if they realise substantial monetary and non-monetary benefits | | one US Dollar per person per day) households monetary by 2% (2*5=10 USD per day per household) and non-monetary benefits | | |
| **4. Investment and Implementation Goal:** To identify sustainable and secure sources and mechanisms to fund the strategy **Ultimate Outcome:** A self-financing SLM system is secured by 2036 | 1. In order to be implemented, a strategy requires secure funds that are sustainable in the long-term | 1.Seek long-term sustainable funding and support mechanism | 1. Secured Funding that is sustainable in the longer term<br>2. Increased annual financial support to SLM by government and Development Partner institutions. | Establish and operationalisation of lake Victoria Environmental Trust fund | 1,000,000 |
| **5. Legislative and Institutional Support Goal:** To establish a legislative framework of laws and byelaws supported by institutions that are responsive to principles of good governance **Ultimate Outcome**: Legislative framework | 1. SLM practices and activities need to be grounded in law and supported by appropriate institutional arrangements in order to protect rights and formalize obligations | 1 Review and harmonise all laws and policies which relate to SLM<br>2. Review and harmonise all land management guidelines and policies which relate to SLM | 1. Harmonized Policies and Laws<br>2. 2.Harmonized Institutional Arrangements | Harmonisation of SLM policies and laws | 600,000 |

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| established and operating effectively and efficiently by 2036.<br>A rationalized institutional framework established by 2036 | | | | | |
| **6. Governance**<br>**Goal: To develop a SLM system that responds to the principles of good governance**<br>**Ultimate Outcome:**<br>A system that is inclusive, participatory, equitable accountable, transparent, responsive, effective and efficient | 1.Good governance leads to the attainment of the goals of SLM | 1.Use the principles of good governance to evaluate the performance and effectiveness of SLM objectives and actions | 1. Established and operational good governance structures at regional, national, county and lower levels; that address good governance on the implementation of SLM, these include benefit sharing and land tenure;<br>2. Independent Conflict resolution system; and<br>3. M&E to monitor good governance principles. | Reviewing and harmonise national agriculture financing cooperative development policy and legal framework to<br>i. Improve capacity for marketing agricultural inputs and produce<br>ii. Enhance access to agricultural credit<br>iii. Promote value addition<br>iv. Promote internal and external trade<br>v. Improve governance and management.<br>(5*120,000USD) | 600,000 |
| **7.Capacity Building (education, awareness, training and research)**<br>**Goal:** To enhance the understanding and | 1.Enlightened and skilled persons perform better that the ignorant<br>2.Capacity | 1.Enhance and upgrade the skills and human capacity of all stakeholders<br>2.Empower | 1.Upgraded skills and knowledge of SLM<br>2.Empowered stakeholders<br>3.Enabled institutions | i. Strengthening SLM research, extension and training<br>ii. Promote regional innovative extension | 1,500,000 |

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| ability of stakeholders to implement the strategy<br>**Ultimate Outcome:** Adequate capacity achieved by 2036 | Building is empowerment of people to manage own resources<br>3. Institutions (state and non-state) play a crucial role in imparting skills and empowering people? | stakeholders to manage their own resources<br>3. Support state and non-state actors to build capacity, (from top level to grass-roots institutions) | | services and those that emphasize aspects of value addition and market orientation<br><br>(5*300,000USD) | |
| **8.Monitoring and Evaluation**<br>**Goal:** Establish an effective system of monitoring and evaluating progress to achieving the objectives of SLM strategy<br>**Ultimate Outcome:** A M&E system that meets the needs and objectives of stakeholders by 2036 | 1. Continuous monitoring and evaluation is needed in order to establish whether or not goals set by the strategy have been met, for better decision making. | 1.Establish and/or enhance data bases<br>2. Promote and support the establishment and/or improvement in government SLM monitoring and evaluation systems.<br>3. Promote and support the establishment and/or improvement of Participatory M&E systems | 1.M&E databases<br>2.Enhanced Government M&E system for SLM<br>3.Participatory M&E systems and Activities | Enhance monitoring units to ensure proper and systematic data collection, analysis and adoptive management on SLM (5*100,000USD) | 500,000 |
| | | | | | **505,765,000** |

**ANNEX 2. STRATEGIC OBJECTIVES AND INTERVENTIONS**

| Key Areas | Strategic Principles | Strategic Objectives | Output (or Key Performance Indicator or Intermediate Outcomes) | Key Interventions | Rationale |
|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **7** |
| 1. **Ecosystem Management**<br><br>**Goal: To promote the** importance of the ecosystem approach to SLM by 2036<br><br>**Ultimate Outcome:** Ecosystem management approach adopted in SLM and services realized and enhanced by 2036 | i. There is an interrelationship among living and non living organisms<br><br>ii. Ecosystems should, as a rule of thumb, be managed holistically to maintain environmental integrity | i. Promote an understanding of the importance of ecosystem management<br><br>ii. Promote holistic natural resource management arrangements | i. Holistic ecosystem management system<br><br>ii. Integrated NRM System | i. Establish inter-agency and multi-disciplinary teams to undertake SLM planning and implementation of field-based projects activities<br><br>ii. Identify and compile challenges to SLM and propose appropriate interventions.<br><br>iii. Establish a framework for coordinating implementation of SLM activities at National and Regional level.<br><br>iv. Identify and review existing databases and information systems<br><br>v. Compile an inventory of Indigenous knowledge about SLM<br><br>vi. Develop an MIS for SLM at regional, national, district/county and local levels<br><br>vii. Promote the adoption and | Relevant Ministries in Partner States, including all sectors dealing with conservation and development |

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| | | | | uptake of bio-remediation methods, using natural systems to ameliorate and absorb negative externalities of development<br><br>viii. Draw specific attention to protect and enhance endemic, genetically important biological resources and traditional use and management of them | |

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| 2. **Land Tenure, Land Use and Planning**<br>**Goal:** To promote a land use planning system and land reform that take cognizance of the regional SLMS<br>**Ultimate Outcome:** SLM underpinned by land use planning and pro-poor Land tenure systems by 2036 | (i) Secured Land rights are crucial to wise use of land and sustainable land management<br>(ii) The use of land and natural resources has both positive and negative impacts therefore a land use planning system is necessary to management of the impacts<br>(iii) Land reform is enhanced by land markets that are enabled by free access to land information | i. Promote and support the establishment and/or enhancement of land registry and adjudication systems in all Basin states<br>ii. Promote and support the establishment and/or enhancement of land-use planning systems<br>iii. Promote the speedy reform of policies and laws pertaining to land titling and adjudication<br>iv. Promote and support the establishment of land information systems | i. Performing land registries<br>ii. Land-use planning systems at District/County level<br>iii. Enhanced harmonized and integrated policies and laws<br>iv. Expanded and accessible data bases and LIS at Regional and District/County levels | i. Identify and document best practices in land tenure systems<br>ii. Issue titles to owned land.<br>iii. Develop land use plans for SLM<br>iv. Review, update and implement land management policies<br>v. Adopt integrated soil and water conservation approaches in catchment planning and implement | i. About 80% of households in the lake Victoria basin live off the land by practicing crop and livestock farming.<br>ii. The land distribution pattern is not conducive to populations' meeting their daily livelihoods needs.<br>iii. Research shows that households are gradually having less land for their needs in all countries of the basin.<br>iv. In terms of SLM each piece of land should have a known owner, with guaranteed tenure security to enable investment and good custodian of the land.<br>v. 5. SLM calls for a basin-wide land reform. | Relevant Ministries in Partner States |

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| **3. Benefits of SLM (Monetary and non-monetary, including livelihoods development)** **Goal:** To enhance the monetary and non-monetary benefits of SLM **Ultimate Outcome:** Substantial benefits apparent by 2036 | i. Ecosystems provide monetary and non-monetary service of benefit to humans and for the survival of ecological and other systems<br>ii. Stakeholders have a greater incentive to manage resources sustainably if they realise substantial monetary and non-monetary benefits | i. Stakeholders to manage land sustainably and realize benefits<br>ii. Maximise the benefits provided by ecosystem services | i. Monetary and non-monetary benefits to stakeholders<br>ii. Maximized Ecosystem Services and benefits | i. Develop alternative income generating activities that reduce pressure on natural resource base (e.g. trade in NTFPs)<br>ii. Promote appropriate payment for ecosystem services e.g. carbon credit<br>iii. Establish and Promote resource user groups to develop income generation options<br>iv. Determine and demonstrate the monetary value of SLM practices and ecosystem services<br>v. Promote Public Private Partnerships to invest in SLM infrastructure (Irrigation, water harvesting etc)<br>vi. Promote rural | i. Alternative income generating activities are urgently needed as Basin countries are poor<br>ii. Maintaining ecosystem functions/services is a prerequisite to SLM.<br>iii. SLM practices should simultaneously conserve natural resources and increase yields | Relevant Ministries in Partner States |

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| | | | | resource-based processing industries to add value and create rural employment | | |
| **4. Investment and Implementation Goal:** To identify sustainable and secure sources and mechanisms to fund the strategy **Ultimate Outcome:** A self-financing SLM system is secured by 2036 | In order to be implemented, a strategy requires secure funds that are sustainable in the long-term | Seek long-term sustainable funding and support mechanism | Secured Funding that is sustainable in the longer term | i. Increase financial support to SLM by government, and development partners institutions<br>ii. Lobby partners states to prioritise and directly fund SLM activities<br>iii. Sensitize decision makers to avail more funding to SLM implementing institutions<br>iv. Mobilize resources from donor agencies to support SLM programs e.g. Carbon credit<br>v. Promote natural resource accounting at all levels to inform decision making in resource allocation and | 1. Basin countries are heavily dependent on foreign aid to fund SLM projects. When this funding ends, activities flounder.<br>2.More sustainable funding options and arrangements are needed | Relevant Ministries in Partner States |

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| | | | | use<br>vi. Provide credit services for SLM in rural areas.<br>vii. Promote Public Private Partnership to undertake investment in SLM in rural enterprises | | |
| **5. Legislative and Institutional Support**<br>**Goal:** To establish a legislative framework of laws and byelaws supported by institutions that are responsive to principles of good governance<br>**Ultimate Outcome**: Legislative framework established and operating effectively and efficiently by 2036. A rationalized institutional framework established by 2036 | SLM practices and activities need to be grounded in law and supported by appropriate institutional arrangements in order to protect rights and formalize obligations | i. Review and harmonise all laws and policies which relate to SLM<br>ii. Review and harmonise all land management guidelines and policies which relate to SLM | i. Harmonized Policies and Laws<br>ii. Harmonized Institutional Arrangements | i. Review, consolidate, harmonize and enact land resource management legislation, and byelaws, rules and regulations (including the consideration and incorporation of traditional laws as appropriate)<br>ii. Enforce laws and regulations through surveillance for compliance.<br>iii. Develop regional and national SLM standards/guidelines<br>iv. Sensitize decision-makers, | i. There are a plethora of laws and policy statements that espouse sustainability and integrated decision-making.<br>ii. A framework has been established, but the recognition of its significance and the championing of its importance lacks dynamic support.<br>iii. There are numerous laws covering sectors, such as forestry, agriculture and the environment but there are no unified resource management laws | i. Relevant Ministries in Partner States<br>ii. UN/UNDP –<br>iii. Secretariats for Climate Change,<br>iv. Biodiversity Conservation and<br>v. Desertification and Drought |

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| | | | | especially central government politicians and officials on SLM.<br>v. Review, consolidate, harmonize and establish institutional arrangements for implementation of SLM<br>vi. Mainstream environmental management policies into all institutions (government and non-government agencies)<br>vii. Promote and strengthen inter-agency cooperation and use of multi-disciplinary teams in undertaking SLM activities<br>viii. Carry out basin-wide SLM analysis using MIS | iv. Institutions tend to act sectorally and do not adopt an integrative approach.<br>v. UN agencies for Climate Change, Biodiversity and Desertification also overlap and duplicate effort | |
| **6. Governance Goal: To develop a SLM system that responds to** | Good governance leads to the attainment of the goals of SLM | Use the principles of good governance to evaluate the performance and | i. Activity Implementation processes meet good governance | i. Good governance structures established at regional, | i. Land degradation and failure to realize the potentials of the | i. Relevant Ministries in Partner States |

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| **the principles of good governance Ultimate Outcome:** A system that is inclusive, participatory, equitable accountable, transparent, responsive, effective and efficient | | effectiveness of SLM objectives and actions | needs<br>ii. Independent Conflict resolution system<br>iii. M&E processes on the basis of good governance principles | national, county and lower levels<br>ii. Clear independent conflict resolution system established in each country<br>iii. Establish and promote specific programmes and activities for marginalised groups, women and youths | LVB is a manifestation of laxity to the principles of good governance in implementing national policies and in the use of resources of the basin.<br>ii. The attainment of good governance principles facilitate sound SLM practice | i. EAC/LVBC |
| **7.Capacity Building (education, awareness, training and research)** **Goal:** To enhance the understanding and ability of stakeholders to implement the strategy **Ultimate Outcome:** Adequate capacity achieved by 2036 | i. Enlightened and skilled persons perform better that the ignorant<br>ii. Capacity Building is empowerment of people to manage own resources<br>iii. Institutions (state and non-state) play a crucial role in imparting skills and empowering people? | i. Enhance and upgrade the skills and human capacity of all stakeholders<br>ii. Empower stakeholders to manage their own resources<br>iii. Support state and non-state actors to build capacity, (from top level to grass-roots institutions) | i. Upgraded skills and knowledge of SLM<br>ii. Empowered stakeholders<br>iii. Enabled institutions | i. Strengthen all extension services by providing tools, equipment and facilities<br>ii. Promote participatory Monitoring & Evaluation techniques<br>iii. Integrate entrepreneurship, group dynamics and business management in the SLM training curriculum.<br>iv. Support knowledge | A review of LVEMP I revealed serious limitations in performance. In designing LVEMP II therefore human capacity and institutional capacity building were placed high on the list of priorities and adopted as part of the main activities of the programme. | i. Relevant Ministries in Partner States,<br>ii. NGOs and CBOs |

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| | | | | sharing among stakeholders through tours and exchange visits.<br>v. Promote environmental education campaigns<br>vi. Promote and support the formation of environmental clubs/organizations starting at village level<br>vii. Promote entrepreneurship and business management skills at local levels<br>viii. Include SLM education in school and tertiary institutions curricula<br>ix. Coordinate research on SLM and build up a digitally networked dbase of research findings | | |
| **8.Monitoring and** | Continuous | i. Establish and/or | i. M&E databases | i. Establish an | i. Data bases and | i. Relevant |

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| **Evaluation Goal:** Establish an effective system of monitoring and evaluating progress to achieving the objectives of SLM strategy<br>**Ultimate Outcome:** A M&E system that meets the needs and objectives of stakeholders by 2036 | monitoring and evaluation is needed in order to establish whether or not goals set by the strategy have been met, for better decision making. | enhance data bases Promote and support the establishment and/or improvement in government SLM monitoring and evaluation systems.<br>ii. Promote and support the establishment and/or improvement of Participatory M&E systems | ii. Enhanced Government M&E system for SLM<br>iii. Participatory M&E systems and Activities | M&E system for SLM at regional and District/County levels<br>ii. Develop an MIS for SLM at regional, national, county and local levels<br>iii. Enforce laws and regulations through surveillance for compliance.<br>iv. Promote village based compliance, through participatory management systems<br>v. Develop a basin wide database and regularly update SLM information<br>vi. Coordinate SLM data collection<br>vii. Enhance/Establish a Management Information System | regular, updated information are limited and inadequate.<br>ii. Sound managements depend on comprehensive data and information and access to both.<br>iii. Participatory M&E established at the grassroots level<br>iv. Management Information System established | Ministries in Partner States.<br>ii. District/county administrations<br>iii. LVBC |

**ANNEX 3: CONSOLIDATED REGIONAL ACTIONS/INVESTMENT OPTIONS**

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| **Understanding Multi-dimensional nature of SLM** | i. Promote holistic and multi-sectoral approach for rural conservation and development. Promote the establishment of inter-agency and multi-disciplinary teams to undertake SLM planning and implementation of field-based projects and activities<br>ii. Adopt ecosystems approach as underlying methodology<br>iii. Promote the adoption and uptake of bio-remediation methods, using natural systems to ameliorate and absorb negative externalities of development<br>iv. Draw specific attention to protect and enhance endemic, genetically important biological resources and traditional use and management of them. Promote holistic and multi-sectoral approach for rural conservation and development.<br>v. Promote the establishment of inter-agency and multi-disciplinary teams to undertake SLM planning and implementation of field-based projects and activities<br>vi. Adopt ecosystems approach as underlying methodology<br>vii. Promote the adoption and uptake of bio-remediation methods, using natural systems to ameliorate and absorb | Integrated SLM planning and implementation promoted by year 2018 | LVBC Secretariat |
| | | An inter-agency and multi-disciplinary team to coordinate and implement SLM interventions established by year 2018 | Partner States |
| | | Endemic species, and genetically important resources protected (Implementation of the CBD ongoing) | Partner States |
| | | Indigenous and knowledge in SLM promoted by year 2018 | Partner States |

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| | negative externalities of development<br>viii. Draw specific attention to protect and enhance endemic, genetically important biological resources and traditional use and management of them. Develop integrated approach for SLM (Adopt ecosystems approach as underlying methodology)<br>ix. Establish a framework for coordinating implementation of SLM activities at National and Regional level.<br>x. Identify and compile challenges to SLM and propose appropriate interventions.<br>xi. Integrate scientific/conventional and indigenous/local knowledge in conservation of land resources and biodiversity<br>xii. Promote integrated planning and implementation of SLM interventions<br>xiii. Establish inter agency and multi-disciplinary team to implement and coordinate SLM interventions<br>xiv. redundant in view of the a redundant in view of the above<br>xv. Protect endemic species, and genetically important resources.<br>xvi. Promote indigenous traditional knowledge in SLM | | |

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| **Political good will in SLM** | Sensitize decision-makers, especially central government politicians and officials on SLM. | Decision-makers, especially central government politicians and officials sensitized on SLM by year 2018 and subsequently through the life of the SLM strategy. | Partner States and LVBC Secretariat |
| **Land titling, tenure and land-use planning** | i. Support the implementation of appropriate land ownerships and tenure systems.<br>ii. Support land use planning for SLM and associated enforcement. Redundant in view of the above<br>iii. Strengthen and implement land ownership/tenure security systems.<br>iv. Develop and implement appropriate land use plans<br>v. review / update /Develop and implement land management policies<br>vi. romote and Strengthen best practices in land tenure systems in Partner States<br>vii. Develop and Implement land management plans and by-laws for rangeland, farmland and settlements.<br>viii. Develop and implement action plans to operationalize the land use plans | Implementation of appropriate land ownerships and tenure systems supported by year 2018 | Partner States |
| | | Land use planning for SLM and associated enforcement supported | Partner States |
| **Population policies** | Support population planning | Population plans in place by year 2018 | Partner States |
| **Integrated Conservation and Development Measures** | Support the adoption of integrated soil and water conservation approaches in catchment planning and implementation under SLM | Adoption of integrated soil and water conservation approaches in catchment planning and implementation under SLM supported | Partner States |
| **Pollution control from industrial, municipal and** | (Covered under SLM above) Promotion of appropriate solid waste management and cleaner production | | |

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| **settlement areas** | | | |
| **Energy** | Promote alternative energy to bio-mass energy; promote energy saving technologies, Redundant- taken care in SLM | Alternative energy to bio-mass energy; promote energy saving technologies promoted by year 2018 | Partner States |
| **Legislative Support** | i. Support the Review, consolidation and harmonization of environment and natural resource management legislation,<br>ii. Review, consolidate, harmonise and enact land resource management legislation, ordinance and byelaws, ( including the consideration and incorporation of traditional laws as appropriate)<br>iii. Review and harmonise rules and regulations | The Review, consolidation and harmonization of environment and natural resource management legislation done | Partner States |
| **Institutional Arrangements** Inter-agency and inter-departmental linkages Institutionalisation of SLM | i. Support Review, consolidation and harmonization of institutional arrangements in the region for SLM<br>ii. Review, consolidate harmonise and establish institutional arrangements for implementation of SLM<br>iii. Mainstream environmental management policies into all government agencies | Review, consolidation and harmonization of institutional arrangements in the region for SLM done | Partner States |
| **Benefits of SLM Monetary and non-monetary, including livelihoods development** | i. Develop other alternative income generating activities that reduce pressure on natural resource base | Alternative income generating activities that reduce pressure on natural resource base developed | Partner States |
| | ii. Promote payment for ecosystem services e.g. carbon credit<br>iii. Determine and demonstrate the monetary value of SLM practices<br>iv. Promote incentives (monetary and non | Payment for ecosystem services e.g. carbon credit promoted | LVBC Secretariat and Partner States |

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| | monetary) to SLM – e.g. Payment of Environmental Services<br>v. Promote alternative sources of livelihood (e.g. trade in NTFPs )<br>vi. Engage with the private sector to undertake investments in SLM<br>vii. Covered under political good will<br>iii. Promote PPP to invest in SLM infrastructure (Irrigation, water harvesting etc)<br>ix. Establish and Promote resource user groups to develop income generation options<br>**x.** Promote rural resource-based processing industries to add value and create rural | PPP to invest in SLM infrastructure (Irrigation, water harvesting etc) in place | Partner States |
| **Funding** | i. Increase financial support to SLM by government, and development partners institutions<br>ii. redundant it's a mechanism to get funding<br>iii. Lobby partners states to prioritise and directly fund SLM activities<br>iv. Possibility of establishing a regional SLM trust fund<br>v. Improve credit services in rural areas<br>vi. Sensitize decision makers to avail more funding to SLM implementing institutions<br>vii. Provide credit services in rural areas.<br>iii. Establish revolving credit schemes in rural areas to support the marginalized<br>ix. Mobilize resources from donor agencies to support SLM programs e.g. Carbon credit<br>x. Promote natural resource accounting at all | Financial support to SLM by government, and development partners institutions increased | LVBC Secretariat |

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| | levels to inform decision making in resource allocation and use<br>**xi.** Promote Public Private Partnership to undertake investment in rural enterprises | | |
| **Capacity Building** | i. Support capacity building at all levels<br>ii. Build capacity at all levels and provide requisite facilitation.<br>iii. Promote exposure visits/exchanges and sharing of experiences at local, national and regional levels .<br>iv. Integrate entrepreneurship, group dynamics and business management in the SLM training curriculum.<br>v. Strengthen all extension services by providing tools, equipment and facilities<br>vi. Support knowledge sharing among stakeholders through tours and exchange visits.<br>vii. Establish and promote specific programmes and activities for marginalised groups, women and youths<br>iii. Promote participatory Monitoring & Evaluation techniques<br>**ix.** Promote entrepreneurship and business management skills at local levels | Capacity built at all levels | LVBC Secretariat and Partner States |
| **Environmental Education & awareness** | i. Promote sensitisation and awareness creation programmes at national and local level.<br>ii. Promote environmental education campaigns<br>iii. Integrate environmental education in schools and tertiary institutions | | |

| Issue/Concern | Action | Expected results | Responsible party |
|---|---|---|---|
| | **iv.** Promote and support the formation of environmental clubs/organizations starting at village level | | |
| **Data management** | i. Develop an MIS for SLM at regional, national, county and local levels<br>ii. Develop a basin wide data base<br>iii. Coordination of SLM data collection<br>iv. Enhance /Establish Management Information System | An MIS for SLM at regional, national, county and local levels developed | LVBC Secretariat and Partner States |
| **Monitoring and Evaluation** | i. Establish an M&E System for SLM at regional, national, county and local levels<br>**ii.** Set up Participatory M&E Systems | An M&E System for SLM at regional, national, county and local levels established | LVBC Secretariat and Partner States |
| **Best SLM Practices** | Support the documentation and dissemination of SLM best practices | SLM best practices disseminated | Partner States |
| **Compliance with codes, policies and guidelines** | i. Enforce laws and regulations through surveillance for compliance.<br>ii. Promote village based compliance, through participatory management systems<br>iii. Develop regional and national SLM standard/guidelines | | |
| **Governance** | Mainstream SLM into existing good governance structures at regional, national, county and lower levels | SLM mainstreamed into existing good governance structures at regional, national, county and lower levels | LVBC Secretariat and Partner States |

**Annex 4. Matrix of Prioritised Activities**

| Strategic Objectives | Immediate Priorities 2011-2018 | Medium-term Priorities 2019-2025 | Long-term Priorities 2026-2036+ | Responsibility by Agency |
|---|---|---|---|---|
| 1. **Ecosystem Management** | (i) Establish inter-agency and multi-disciplinary teams to undertake SLM planning and implementation of field-based projects activities<br>(ii) Identify and compile challenges to SLM and propose appropriate interventions.<br>(iii) Establish a framework for coordinating implementation of SLM activities at National and Regional level<br>(iv) Identify and review existing databases and information systems<br>(v) Compile an inventory of Indigenous knowledge about SLM<br>(vi) Develop an MIS for SLM at regional, national, county and local levels<br>(vii) Promote the adoption and uptake of bio-remediation methods, using natural systems to ameliorate and absorb negative externalities of development<br>(viii) Draw specific attention to protect and enhance endemic, genetically important biological resources and traditional use and management of them | | | Partner States National Environment Management Authorities |
| 2. **Land Tenure, Land Use and Planning** | (i) Identify and document best practices in land tenure systems in Partner States | (i) Strengthen and implement land ownership/tenure | (i) Issuing of land titles completed<br>(ii) Integrated soil and | (iii) States National Environment Management |

| Strategic Objectives | Immediate Priorities 2011-2018 | Medium-term Priorities 2019-2025 | Long-term Priorities 2026-2036+ | Responsibility by Agency |
|---|---|---|---|---|
| | (ii) Initiate the implementation of appropriate land ownerships and tenure systems.<br>(iii) Issue land titles<br>(iv) Develop land use plans for SLM<br>(v) Review, update and implement land management policies<br>(vi) Develop and implement action plans to operationalize the land use plans<br>(vii) Adopt integrated soil and water conservation approaches in catchment planning and implement | security systems.<br>(ii) Review and implement land management policies<br>(iii) Continue to issue land titles<br>(iv) Adopt integrated soil and water conservation approaches in catchment planning and implement | water conservation approaches in catchment planning implemented | Authorities<br>(iv) Burundi: PS-Ministry of water, Environment, land and urbanism<br>(v) Kenya: PS- Ministry of land<br>(vi) Rwanda: PS – Natural Resources<br>(vii) Tanzania: PS-Ministry of Land and Executive Director National Land Use Planning Commission<br>(viii) Uganda: PS-Ministry of Lands, Housing and Urban development |
| **3. Benefits of SLM** | Develop alternative income generating activities that reduce pressure on natural resource base (e.g. trade in NTFPs<br>Establish and Promote resource user groups to develop income generation options | (i) Continue to promote resource user groups to develop income generation options<br>(ii) Determine and demonstrate the monetary value of SLM practices and ecosystem service<br>(iii) Promote appropriate payment for ecosystem services e.g. carbon credit | Continue to promote resource user groups to develop income generation options | Partner States National Environment Management Authorities |

| Strategic Objectives | Immediate Priorities 2011-2018 | Medium-term Priorities 2019-2025 | Long-term Priorities 2026-2036+ | Responsibility by Agency |
|---|---|---|---|---|
| | | (iv) Promote Public Private Partnerships to invest in SLM infrastructure (Irrigation, water harvesting etc)<br>(v) Promote rural resource-based processing industries to add value and create rural employment | | |
| **4. Investment and Implementation** | (i) Increase financial support to SLM by government, and development partners institutions<br>(ii) Lobby partners states to prioritise and directly fund SLM activities<br>(iii) Sensitize decision makers to avail more funding to SLM implementing institutions<br>(iv) Mobilize resources from donor agencies to support SLM programs e.g. Carbon credit<br>(v) Promote natural resource accounting at all levels to inform decision making in resource allocation and use | (i) Provide credit services for SLM in rural areas<br>(ii) Promote Public Private Partnership to undertake investment in SLM in rural enterprises | (i) Establishing a regional SLM trust fund<br>(ii) Establish revolving credit schemes in rural areas to support SLM and the marginalized | Partner States Ministries of Finance |
| **5. Legislative and Institutional Support** | (i) Review, consolidate, harmonise and enact land resource management legislation, and byelaws, rules and regulations (including the consideration and incorporation of traditional laws as | i) Continue to enforce laws and regulations through surveillance for compliance | (i) Continue to enforce laws and regulations through surveillance for compliance<br>(ii) Continue to sensitize decision-makers, | Partner States National Environment Management Authorities; Law ministries |

| Strategic Objectives | Immediate Priorities 2011-2018 | Medium-term Priorities 2019-2025 | Long-term Priorities 2026-2036+ | Responsibility by Agency |
|---|---|---|---|---|
| | appropriate<br>(ii) Enforce laws and regulations through surveillance for compliance<br>(iii) Develop regional and national SLM standards/guidelines<br>(iv) Sensitize decision-makers, especially central government politicians and officials on SLM<br>(v) Review, consolidate, harmonise and establish institutional arrangements for implementation of SLM<br>(vi) Mainstream environmental management policies into all institutions (government and non-government agencies<br>(vii) Promote and strengthen inter-agency cooperation and use of multi-disciplinary teams in undertaking SLM activities<br>(viii) Carry out basin-wide SLM analysis using MIS | ii) Continue to sensitize decision-makers, especially central government politicians and officials on SLM<br>iii) Promote and strengthen inter-agency cooperation and use of multi-disciplinary teams in undertaking SLM activities<br>iv) Continue to carry out basin-wide SLM analysis using MIS | especially central government politicians and officials on SLM<br>(iii) Review and harmonise rules and regulations<br>(iv) Continue to carry y out basin-wide SLM analysis using MIS | |
| **6.Governance** | (i) Good governance structures established at regional, national, county and lower levels<br>(ii) Clear independent conflict resolution system established in each country<br>(iii) Establish and promote specific programmes and activities for marginalised groups, women and youths | | | Partner States National Environment Management Authorities Line ministries |

| Strategic Objectives | Immediate Priorities 2011-2018 | Medium-term Priorities 2019-2025 | Long-term Priorities 2026-2036+ | Responsibility by Agency |
|---|---|---|---|---|
| **7.Capacity Building inc Education, Research, Training and Awareness** | (i) Strengthen all extension services by providing tools, equipment and facilities<br>(ii) Build capacity at all levels and provide requisite facilitation.<br>(iii) Promote participatory Monitoring & Evaluation techniques<br>(iv) Promote exposure visits/exchanges and sharing of experiences at local, national and regional levels.<br>(v) Promote sensitisation and awareness creation programmes at national and local level.<br>(vi) Promote environmental education campaigns<br>(vii) Promote and support the formation of environmental clubs/organizations starting at village level<br>(viii) Promote Applied Research and Development; Knowledge management and Communications<br>(ix) Coordinate research on SLM and build up a digitally networked dbase of research findings | (i) Integrate entrepreneurship, group dynamics and business management in the SLM training curriculum.<br>(ii) Support knowledge sharing among stakeholders through tours and exchange visits.<br>(iii) Continue to promote sensitisation and awareness creation programmes at national and local level.<br>(iv) Promote entrepreneurship and business management skills at local levels<br>(v) Continue to promote and support the formation of environmental clubs/organizations starting at village level | Continue to promote sensitisation and awareness creation programmes at national and local level. | Line ministries in Partner States |

| Strategic Objectives | Immediate Priorities 2011-2018 | Medium-term Priorities 2019-2025 | Long-term Priorities 2026-2036+ | Responsibility by Agency |
|---|---|---|---|---|
| **8.Monitoring and Evaluation** | (i) Establish an M&E system for SLM at regional and District/County level<br>(ii) Develop an MIS for SLM at regional, national, county and local levels<br>(iii) Enforce laws and regulations through surveillance for compliance<br>(iv) Promote village based compliance, through participatory management systems<br>(v) Develop a basin wide data base and regularly update SLM information<br>(vi) Coordinate SLM data collection<br>(vii) Enhance/Establish a Management Information System | (i) Monitor the surveillance for compliance of laws and regulations<br>(ii) Support village based compliance, through participatory management systems<br>(iii) Regularly update SLM information data base | (i) Monitor the surveillance for compliance of laws and regulations<br>(ii) Continue to support village based compliance, through participatory management systems<br>(iii) Regularly update SLM information data base | Line ministries in Partner States |

**ANNEX 5. IMPLEMENTATION GUIDELINES FOR REGIONAL, NATIONAL AND LOCAL LEVELS**

| | **Administrative Levels** | | |
|---|---|---|---|
| **Strategic objectives** | **Regional (LVBC)** | **National** | **Local** |
| **1. Ecosystem Management** | Identify and compile challenges to SLM and propose appropriate interventions<br><br>Establish a framework for coordinating implementation of SLM activities at National and Regional level<br><br>Identify and review existing databases and information systems<br><br>Develop an MIS for SLM at regional, national, county and local levels | Identify and compile challenges to SLM and propose appropriate interventions<br><br>Establish inter-agency and multi-disciplinary teams to undertake SLM planning and implementation of field-based projects activities<br><br>Establish a framework for coordinating implementation of SLM activities at National and Regional level<br><br>Develop an MIS for SLM at regional, national, county and local levels<br><br>Promote the adoption and uptake of bio-remediation methods, using natural systems to ameliorate and absorb negative externalities of development<br><br>Draw specific attention to protect and enhance endemic, genetically important biological resources and traditional use and management of them | Identify and compile challenges to SLM and propose appropriate interventions<br><br>Identify and review existing databases and information systems<br><br>Compile an inventory of Indigenous knowledge about SLM<br><br>Develop an MIS for SLM at regional, national, county and local levels<br><br>Promote the adoption and uptake of bio-remediation methods, using natural systems to ameliorate and absorb negative externalities of development |
| **2.Land Tenure, Land Use and Planning** | | Identify and document best practices in land tenure systems<br><br>Issue titles to owned land | Review best practices in land tenure systems<br><br>Develop land use plans for SLM |

| | Administrative Levels | | |
|---|---|---|---|
| **Strategic objectives** | **Regional (LVBC)** | **National** | **Local** |
| | | Develop land use plans for SLM<br><br>Review, update and implement land management policies<br><br>Adopt integrated soil and water conservation approaches in catchment planning and implement | Adopt integrated soil and water conservation approaches in catchment planning and implement |
| **3.Benefits of SLM** | Determine and demonstrate the monetary value of SLM practices and ecosystem services | Promote appropriate payment for ecosystem services e.g. carbon credit<br><br>Determine and demonstrate the monetary value of SLM practices and ecosystem services<br><br>Promote Public Private Partnerships to invest in SLM infrastructure (Irrigation, water harvesting etc)<br><br>Promote rural resource-based processing industries to add value and create rural employment | Promote appropriate payment for ecosystem services e.g. carbon credit<br><br>Determine and demonstrate the monetary value of SLM practices and ecosystem services<br><br>Develop alternative income generating activities that reduce pressure on natural resource base (e.g. trade in NTFPs)<br><br>Establish and Promote resource user groups to develop income generation options<br><br>Promote Public Private Partnerships to invest in SLM infrastructure (Irrigation, water harvesting |

| | Administrative Levels | | |
|---|---|---|---|
| **Strategic objectives** | **Regional (LVBC)** | **National** | **Local** |
| | | | etc)<br><br>Promote rural resource-based processing industries to add value and create rural employment |
| **4.Investment and Implementation** | Increase financial support to SLM by government, and development partners institutions<br><br>Lobby partners states to prioritise and directly fund SLM activities<br><br>Sensitize decision makers to avail more funding to SLM implementing institutions<br><br>Mobilize resources from donor agencies to support SLM programs e.g. Carbon credit<br><br>Promote natural resource accounting at all levels to inform decision making in resource allocation and use<br><br>Promote natural resource accounting at all levels to inform decision making in | Increase financial support to SLM by government, and development partners institutions<br><br>Sensitize decision makers to avail more funding to SLM implementing institutions<br><br>Mobilize resources from donor agencies to support SLM programs e.g. Carbon credit<br><br>Promote natural resource accounting at all levels to inform decision making in resource allocation and use<br><br>Promote Public Private Partnership to undertake investment in SLM in rural enterprises<br><br>Promote natural resource accounting at all levels to inform decision making in resource allocation and use | Sensitize decision makers to avail more funding to SLM implementing institutions<br><br>Promote natural resource accounting at all levels to inform decision making in resource allocation and use<br><br>Provide credit services for SLM in rural areas<br><br>Promote Public Private Partnership to undertake investment in SLM in rural enterprises<br><br>Promote natural resource accounting at all levels to inform decision making in resource allocation and use |

| | Administrative Levels | | |
|---|---|---|---|
| **Strategic objectives** | **Regional (LVBC)** | **National** | **Local** |
| | resource allocation and use | | |
| **5.Legislative and Institutional Support** | Develop regional and national SLM standards/guidelines<br><br>Sensitize decision-makers, especially central government politicians and officials on SLM<br><br>Carry out basin-wide SLM analysis using MIS | Review, consolidate, harmonise and enact land resource management legislation, and byelaws, rules and regulations (including the consideration and incorporation of traditional laws as appropriate)<br><br>Enforce laws and regulations through surveillance for compliance.<br><br>Develop regional and national SLM standards/guidelines<br><br>Sensitize decision-makers, especially central government politicians and officials on SLM.<br><br>Review, consolidate, harmonise and establish institutional arrangements for implementation of SLM<br><br>Mainstream environmental management policies into all institutions (government and non-government agencies)<br><br>Promote and strengthen inter-agency cooperation and use of multi-disciplinary teams in undertaking SLM activities | Enforce laws and regulations through surveillance for compliance<br><br>Promote and strengthen inter-agency cooperation and use of multi-disciplinary teams in undertaking SLM activities |

| | Administrative Levels | | |
|---|---|---|---|
| **Strategic objectives** | **Regional (LVBC)** | **National** | **Local** |
| **6.Governance** | Good governance structures established at regional, national, county and lower levels | Good governance structures established at regional, national, county and lower levels<br><br>Clear independent conflict resolution system established in each country | Good governance structures established at regional, national, county and lower levels |
| **7.Capacity Building (education, awareness, research and training)** | Support knowledge sharing among stakeholders through tours and exchange visits<br><br>Coordinate research on SLM and build up a digitally networked dbase of research findings | Strengthen all extension services by providing tools, equipment and facilities<br><br>Promote participatory Monitoring & Evaluation techniques<br><br>Integrate entrepreneurship, group dynamics and business management in the SLM training curriculum<br><br>Promote Applied Research and Development; Knowledge management and Communications<br><br>Support knowledge sharing among stakeholders through tours and exchange visits<br><br>Promote environmental education campaigns<br><br>Include environmental education in school and tertiary institutions curricula | Strengthen all extension services by providing tools, equipment and facilities<br><br>Promote participatory Monitoring & Evaluation techniques<br><br>Support knowledge sharing among stakeholders through tours and exchange visits<br><br>Promote environmental education campaigns<br><br>Promote and support the formation of environmental clubs/organizations starting at village level<br><br>Promote entrepreneurship and business management skills at local levels |

| | Administrative Levels | | |
|---|---|---|---|
| **Strategic objectives** | **Regional (LVBC)** | **National** | **Local** |
| **8. Monitoring and Evaluation** | Establish an M&E system for SLM at regional and District/County levels<br><br>Develop an MIS for SLM at regional, national, county and local levels<br><br>Develop a basin wide data base and regularly update SLM information<br><br>Coordinate SLM data collection<br><br>Enhance/Establish a Management Information System | Establish an M&E system for SLM at regional and District/County levels<br><br>Develop an MIS for SLM at regional, national, county and local levels<br><br>Enforce laws and regulations through surveillance for compliance<br><br>Coordinate SLM data collection<br><br>Enhance/Establish a Management Information System | Establish an M&E system for SLM at regional and District/County levels<br><br>Develop an MIS for SLM at regional, national, county and local levels<br><br>Enforce laws and regulations through surveillance for compliance<br><br>Promote village based compliance, through participatory management systems |

***a) International Agreements, Conventions and Protocols***

(i) United Nations Convention on Biological Diversity (UNCBD);
(ii) Convention on Wetlands (RAMSAR);
(iii) United Nations Framework Convention on Climate Change (UNFCC);
(iv) Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes;
(v) United Nations Convention to Combat Desertification and Drought (UNCCD);
(vi) Convention on the Conservation of Migratory Species;
(vii) MDG – Millennium Development Goals;
(viii) The Vienna Convention on the Protection of Ozone Layer.
(ix) The Montreal Protocol on Substances that Deplete the Ozone Layer;
(x) UN- Agenda 21 On Sustainable Development at the Earth Summit in Rio de Janeiro;
(xi) Kyoto Protocol Concerning with Reduction in Emissions that Cause Climate Change;
(xii) Cartagena Treaty Concerning with Safe Biotechnology for Conserving the Environment.

**b) Regional (EAC) Policy Framework**

(i) Vision and Mission of the EAC;
(ii) Vision and Mission of the LVBC;
(iii) Treaty for the Establishment of the East African Community;
(iv) The EAC Development Strategy;
(v) Shared Vision and Strategy Framework for Management and Development of Lake Victoria Basin;
(vi) Protocol on Environment and Natural Resources Management;
(vii) Protocol for Sustainable Development of Lake Victoria Basin;
(viii) LVBC Draft Strategic Plan (2010-2016);

**c) National Policies and Strategies (with a common focus on SLM)**

(i) NAP - National Action Plan

(ii) NAPA – National Adaptation Plan of Action;
(iii) NBSAP – National Biodiversity Strategy and Action Plan;
(iv) PRSP – Poverty Reduction Strategy Paper;
(v) Partner States National Development Visions.

Commitment to international conventions, regional protocols and national strategies and policies anchor this basin-wide strategy on sustainable land management and provide a framework for future action and the development of specific programmes and projects.

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