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MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES

Lake Victoria Environmental Management Project II Preparation

FINAL REPORT



Natural Resources Interventions and Investments for the Lake Victoria Basin

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Fig. 1 The Lake Victoria Basin



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ABBREVIATIONS AND ACRONYMS USED

Abbreviations

AEP	Agricultural Extension Program
AEZ	Agro-Ecological Zones
AGOA	African Growth Opportunity Act
ASCA	Accumulating Savings and Credit Associations
BMU	Beach Management Units
°C	Degrees Celsius
CAP	Community Action Plan
CBOs	Community Based Organizations
CBS	Central Bureau of Statistics
CDD	Community Driven Development
CDF	Constituency Development Fund
CFA	Community Forest Association
CIGs	Common Interest Groups
COMESA	Common Market for Eastern and Southern Africa
CSOs	Civil Society Organizations
Danida	Danish International Development Agency
EARC	East African Railways Corporation
EA	East Africa
EAC	East African Community
EMCA	Environmental Management and Coordination Act
ERS	Economic Recovery Strategy for Wealth and Employment Creation
EIA	Environmental Impact Assessment
EU	European Union
FBOs	Faith Based Organizations
FY	Fiscal Year
FTC	Farmers' Training Center
GEF	Global Environment Facility
GDP	Gross Domestic Product
GoK	Government of Kenya
Has	Hectares
HIV/Aids	Human-Immune Virus/Acquired Immune Deficiency Syndrome
IDA	International Development Agency
ICIPE	International Center for Insect Physiology and Ecology
ICRAF	International Center for Research on Agro-forestry
IFAD	International Fund for Agricultural Development
ILO	International Labor Organization
IRs	Intermediate Results
JICA	Japan International Cooperating Agency
KARI	Kenya Agricultural Research Institute
KAM	Kenya Association of Manufacturers
KATO	Kenya Association of Tour Operators
KECFLOT	Kenya Ecumenical Church Loan Fund
KEFRI	Kenya Forestry Research Institute
KMFRI	Kenya Marine and Fisheries Research Institute
KENGEN	Kenya Electricity Generating Company

KIFCON	Kenya Indigenous Forest Conservation Project
RIAT	Ramogi Institute of Advanced Technology
Kg.	Kilogram
KIC-K	Kisumu Innovative Center-Kenya
KIRDI	Kenya Industrial Research and Development Institute
KIPI	Kenya Innovation and Patenting Institute
K-REP	Kenya Rural Enterprise Bank
KMAP	Kenya Management Assistance Program
Km ²	Square Kilometer
KPC	Kenya Pipeline Corporation
KR	Kenya Railways
KRC	Kenya Railways Corporation
KTN	Kenya Television Network
KTDA	Kenya Tea Development Agency
KVDA	Kerio Valley Development Authority
KWFT	Kenya Women Finance Trust
KWS	Kenya Wildlife Service
LFA	Logical Framework Analysis
LATF	Local Authority Transfer Fund
LBDA	Land Basin Development Authority
LVB	Lake Victoria Basin
LV	Lake Victoria
LVEMP	Lake Victoria Environmental Management Project
LVFO	Lake Victoria Fisheries Organization
Masl	Meters above sea level
M ²	Square Meters
M ³	Cubic Meters
M&E	Monitoring and Evaluation
M&GD	Mines and Geological Department
MENR	Ministry of Environment and Natural Resources
MFI	Micro Finance Institutions
Mm	Millimeters
MSE	Micro and Small Enterprises
MOU	Memorandum of Understanding
MV	Motor Vehicle
NCTI	Northern Corridor Transport Improvement
NDP	National Development Plan
NFSI	Non-Financial Support Institutions
NALEP	National Agriculture and Livestock Extension Program
NEMA	National Environmental Management Authority
NGOs	Non Governmental Organizations
NPEC	National Poverty Eradication Plan
NMT	Non-Motorized Technology
NMIMT	Non-Motorized and Intermediate Means of Transport
PMU	Project Management Unit
REE	Rare Earth Element
PRSP	Poverty Reduction Strategy Paper
PRA	Participatory Rural Appraisal
PMC	Program Management Committee

ROSCAs	Rotational Savings and Credit Associations
SAGA	Saga Thrift and Enterprise Ltd.
SACCO	Savings and Credit Cooperative
SES	Small Scale Sector
SMS	Short Message Service
SMEP	Small and Micro Enterprise Program
TEU	Twenty Equivalence Units
TEMAK	Teenage Mothers and Girls Association of Kenya
WMS	Welfare Monitoring Survey
WEUCO	Western University College
WTO	World Tourism Organization
UG	Republic of Uganda
USA	United States of America
USD	United States Dollars
UNEP	United Nations Environment Program
TZ	United Republic of Tanzania

Acronyms used

Boda Boda	Bicycle Transport
Landing Bandas	Fish Landing Structures/Beaches
Jua Kali	Informal Sector
Matatus	Mini Bus transport
Mukokoteni	Hand pulled or pushed cart
Mitumba	Used Clothes (Recycled Textiles)
Tuk Tuk	Van looking motorcycles for transport hire

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EXECUTIVE SUMMARY

OVERVIEW

The Lake Victoria Environmental Management Project Phase I

The Lake Victoria Environmental Management Project Phase I (LVEMP I) was implemented in Kenya, Uganda and Tanzania since July 1997. The Project was executed by the National Secretariats under the auspices of the East African Community. The International Development Agency (IDA), the Global Environment Facility (GEF) and the three East African Community Partner States (Republics of Kenya and Uganda and the United Republic of Tanzania) funded the Project.

The Lake Victoria Basin is rich in natural resources including fishery, which is a major economic resource for the three riparian states. It is estimated that 30 million people live within the Basin with 3 million depending directly on the fisheries resources. On the Kenyan side, the LVEMP I geographically covered the whole of Nyanza and Western Provinces and twelve districts of the Rift Valley Province.

The objectives of the project were to:

- Maximize sustainable benefits of the riparian communities by using resources within the Basin to generate food, employment and incomes, supply safe water and sustain a disease free environment;
- Conserve biodiversity and genetic resources for the benefit of the riparian states and the global community;
- Harmonize national and regional management programs in order to achieve, to the maximum extent possible, the reversal of environmental degradation; and
- Promote regional cooperation.

Phase I of the Project operated within the policy framework of each of the three Partner States. The Project implemented components of catchment afforestation, land use management, management of wetlands, water hyacinth control, management of industrial and municipal waste, water quality control, integrated soil and water conservation, fisheries research and management, capacity building and micro projects. Some of the critical issues that affected effective and efficient management of the project include; lack of clear understanding by the implementing partners on the overall objective and expected impact of the Project, lack of clear logical frameworks prior to project implementation, lack of a thorough needs assessment, lack of baseline information, inadequate gender sensitivity, conflict in coordination, convoluted procurement procedures, and lack of adequate knowledge on financial management procedures.

Key lessons learned included: (i) a comprehensive Lake Basin perspective is necessary for tackling environmental degradation of the Lake Victoria; (ii) applied research is critical for generating knowledge of the Lake Victoria basin ecosystem, developing technological responses, and guiding management decisions, but must be targeted and practical; (iii) communication of research findings and pilot results to policy makers, managers, and stakeholders in a language that they do not understand impedes taking management decisions; (iv) knowledge must be complemented by strong institutions, policies, and regulatory framework for coordination and sustainable management of transboundary natural resources, and addressing the associated environmental concerns; (v) project outcomes/results cannot be captured in the absence of a robust M&E system, based on a clearly defined logical framework; (vi) involvement of communities in the watershed management is a prerequisite to successful control of non-point sources of pollution; and (vii) uncoordinated interventions of multiple donors raise costs of development assistance and

dissipate impact. Some of these lessons were derived from disappointments as well as successes occurring during the first phase.

The goal of the second phase (LVEMP II) will be to enhance sustainable management of the Basin's natural resources endowment as a way of improving riparian communities' livelihoods and provision of quality environmental services. LVEMP II is to contribute towards the achievement of the regional (EAC) Lake Victoria Development Vision of having: "a prosperous population living in a healthy and sustainably managed environment providing equitable opportunities and benefits to the riparian communities." The development objectives of the proposed LVEMP II are to: (i) Strengthen regional and national institutions in coordination of sustainable management of the transboundary Lake Victoria basin resources; (ii) Facilitate environmentally friendly investments in the Lake Victoria Basin; and (iii) Enhance conservation of biodiversity and genetic resources of targeted fish species.

The Basin is rich in natural resources and could be developed further with viable interventions and good management. There are many factors that threaten biodiversity and natural resources, thus hindering their valuable ecological role and utilization for sustainable development in the region. The threats include poor land use practices, catchment deforestation, poor agricultural patterns and practices, destruction of wetlands, increasing pollution loading from industries and municipalities, fishing malpractices and the presence of invasive exotic species especially the water hyacinth. The effects of these factors include rampant land degradation, deterioration of water quality and quantity, erosion and loss of biodiversity, unsustainable use of resources, increased poor health, food insecurity and increasing levels of poverty amongst the riparian communities.

Potential interventions to reverse the aforementioned trends abound. This report provides development prospects in the major economic fields and support services that could transform the region from poverty ridden with marked environmental degradation to a population living in a stable and ambient environment. Proper formulation of the proposed interventions in the realm of natural resources presents an avenue that would promote the goal and the objectives of LVEMP II.

Introduction

The thrust of the "**Economic Development: Natural Resources Interventions and Investments for the Lake Victoria Basin**" study was to identify priority investments and interventions in the Lake Victoria Basin. The sectors examined included agriculture and livestock, forestry, fisheries, eco-tourism, mines and minerals, transport and communications and the role of micro-finance institutions in the development of small and medium scale enterprises in the Basin. Assessed also was the impact of environmental legislation and the capacity of the various institutions to enforce compliance. Strategies adopted were to use a Community Driven Development approaches. Indicative budget estimates were developed for implementation of the recommended interventions.

The tasks were grouped into two categories. The first category focused on interventions and investments in the development oriented sectors, while the second one focused on support service sectors. Agriculture and livestock, forestry, fisheries, eco-tourism and mining fall under the first category. Investments in the medium and micro enterprises and micro-finance, transport and communications, environmental legislation and stakeholder participation were categorized as support interventions that have the potential to create enabling environment for enhanced development and economic growth.

The study was carried out in a participatory manner, which included consultations with key informants and stakeholders, field visits and extensive literature review. Discussions were held

during stakeholder workshops. The consultative workshops were aimed at enhancing ownership of the preparation process of LVEMP II, enriching the list priority interventions and proposed investments, and sharpening the focus and content of the draft reports (Inception, Mid-term and Final).

Background

Lake Victoria is the second largest fresh water lake in the World and Africa's largest. The Lake straddles the common borders of the three East African Community partner states. Six percent of the area of the Lake falls on the Kenyan side while Tanzania and Uganda command 52% and 42% of the total area respectively. The Republic of Rwanda is also within the Lake catchment area through River Kagera and its tributaries such as Ruvubu. Major urban centers on the shores of the Lake include Kisumu, Jinja, Kampala, Entebbe, Bukoba, Mwanza, and Musoma.

The Lake is a global center for aquatic biodiversity and for the socio-economic fabric of the people living around it. The Basin has immense ecological value being a source of food, potable water, biodiversity, transportation, and irrigation water. The Lake has the potential to generate hydroelectric power and contribute to eco-tourism development. Appropriate utilization of resources within the Lake, the shoreline and the Basin would enhance the development of the region. In view of the severity of some of the rapid changes, there is the need to assess the potential of the region and formulate remedial strategies that would conserve the environment while, at the same time, fostering economic development and growth in the region. The region has been designated an economic growth zone by the riparian states.

The economic potential of the Basin is founded on the rich agricultural soils, abundant rainfall, significant mineral deposits, potential for tourism growth, rich fisheries resources whose extraction annually is estimated at 400,000 metric tons with an approximate value of USD500 million.

About 70% of the land area is classified as either high or medium agricultural potential. Soil conditions are generally favorable for crop production, although some soil types require fertilizers and some require drainage. Rainfall is reliable for most parts of the Basin and the weather is suitable for a wide range of cash and subsistence crops and livestock production.

The main economic activity of this region is rain-fed, subsistence farming. Where this economic regime dominates, poverty is rampant due to poor returns associated with the agriculture sector. The region's average population density is quite high, at 280 persons per Km², compared to a national average of 37 persons per Km². According to the Welfare Monitoring Survey - II, 1994, monthly per capita income stood at about Kshs. 1,260 (US\$16.8) compared to the national average of Kshs. 1,370 (US\$18.3)¹. This relatively low per capita income, coupled with a high population growth rate and low levels of industrial development, illustrates the general poverty levels within the Basin.

Constraints to the Development of the Region

There are various development challenges that the Basin faces as it struggles to meet the Millennium Development Goals (MDGs) and national development objectives such as food self-sufficiency, employment creation, and environmental and ecological sustainability. The problems range from high population growth rates to the distribution of resources, *inter alia*. The problems include but not limited to:

¹ Assuming an exchange rate of Kshs.75.0 to a US\$

Demographic Trends

The rapidly growing population is a constraint to development. The population density is quite high in some districts, ranging from 835 persons per Km² in Kisii to 1,000 per Km² in Vihiga. These trends are manifested in natural resources conflict resulting in drastic reduction in vegetation and forest cover as forest lands are in demand for both a source of fuel wood as well as for human settlement.

The demographic characteristics of the population and the population pyramid demonstrate that the population is still young. The share of the population under 15 years is 50% male and 48% female; those aged between 15 and 64 constitute 49%; and those above 65 years make up 3% of the total population. The dependency ratio is therefore high and pressure to invest in education and other social services becomes overwhelming.

Distribution of Water Resources

The Basin consists of large catchments that receive heavy rain resulting in large volumes of surface water runoff flowing into the rivers. Rivers such as Sio-Malaba, Nzoia, Yala, Nyando, Sondu Miriu, S Awach and N. Awach originate from mountainous terrain with high rainfall. As the river courses approach Lake Victoria where the altitude is relatively low with a flat topography, flashfloods inundate large tracks of land, carrying sediment loads that are deposited in the lake. Ground water is abundantly available and it is drilled to supplement areas of water deficit.

Areas such as Budalang'i and the lower Nyando basin are prone to occasional floods while others experience extended droughts. Flooding has been aggravated by massive deforestation and the conversion of formerly wooded areas such as the Cherangani hills into human settlements. Although the region has vast water resources with potential to generate power, irrigate crops and provide water for domestic and livestock use, lack of protection of water catchment areas and poor water quality constrain sustainable utilization of the resource.

Poor Soils

The region has large areas where soils are infertile. This has been attributed to high human and livestock populations resulting into additional agricultural activities and deforestation that has led to soil erosion. Most soil types require fertilizers to produce a crop. Fertilization can only be achieved mainly through the use of organic manure or industrial fertilizers, which are expensive and out of the reach of many small-scale farmers.

Public Health Conditions

Environmental conditions such as flash floods tend to promote communicable diseases such as malaria and diarrhea. High rates of poverty exacerbated by high prevalence of the HIV/AIDS pandemic are a major stumbling block to the development of the region. HIV/AIDS prevalence in Nyanza for example, is 15% while the national average is 6%. Local statistics indicate that some districts record higher death rates compared to birth- rates.

Development Institutions

The Basin has numerous institutions that could act as locomotives for development of the region. Such institutions include regional development authorities, universities, various research centers, sugar factories, industrial concerns, commercial banks and NGO/CBOs. Inadequate resources, poor planning and slow pace of project implementation have constrained faster development in the region.

Business Development

Poor business acumen and poor commercial environment, occasioned by poor infrastructure in the rural areas, are major constraints to the development of small and medium-size enterprises. Lack of credit support services and low value addition make business expansion quite difficult. In addition, inadequate markets and poor competitiveness for locally produced materials is a constraint to the development of the agriculture sector.

Interventions and Investments

The Basin resources need to be mobilized to address the short and long-term constraints afflicting the region. Activities that require attention in the short run include capacity building of the institutions and civil service organizations, NGOs and CBOs, improvement of infrastructure in the region and province of credit and loan facilities to catapult development to high levels. In the long-run programs in the field of environmental preservation, ecological management and biodiversity conservation become the main agenda for development. Specific short and long-term activities are included in the logical framework. LVEMP II funds will be used to provide direct support to projects while other funds will be made available inform of loans.

Budget Estimate

To complement the local resources available in the region, a budget of Kshs. 1.2 billion (USD. 17.1 million) has been proposed. The bulk of this budget goes to natural resources interventions and investments; infrastructure; as well as for loans/credit to foster business oriented undertakings. Other funds are required to support community driven initiatives and activities to enhance value addition.

Investments in transport, communications, industry, tourism and mining are not envisaged, apart from policy and regulatory review watch and possibly some small financial support.

A holistic development approach of the region should be the main objective of all the development actors in the region. The macroeconomic situation of the country and the manner in which local resources are distributed and utilized, will, to a large extent, determine the socio-economic future of the Basin.

Country Profile

Kenya has been pursuing economic policies aimed at improving the standard of living of her people. Macroeconomic policies are being implemented with the objective of maintaining growth and stability. The main goal of macroeconomic policies is to maintain a stable exchange rate, keep inflation and interest rates low. Gross Domestic Product has experienced fluctuations over the last four decades. GDP grew at a rate of 5.2%, 4.1% and 2.5% in 1970s, 1980s and 1990s respectively. In year 2001 the GDP growth rate plummeted to 0.6 percent. In year 2003, a favorable trend is observed with the economy growing at 3% in 2003 and 4.9% in 2004. This declining trend improved in year 2000 and 2005 when GDP growth rate registered a 4.5% and 5.8% respectively.

During this period, Kenya was implementing structural reforms in most sectors of the economy with a view to revitalizing the economy and reducing poverty levels. Policy prescriptions that included the Economic Management for Renewed Growth (1986), Social Dimensions to Development (1990), and Poverty Reduction Strategy (1999) were designed to improve economic performance. In spite of these efforts, the per capita income of the people declined progressively. GDP per capita remained low at USD 275 in 1995 but has improved to USD 587 in year 2005. Nevertheless, high-income disparities in the country make this national average unnoticeable by

the majority of Kenyans particularly within the Lake Victoria Basin where income per capita is less than USD18.00.

Kenya has currently an estimated 33 million people. About 56% of the population lives below the poverty line. There are regional disparities with some provinces recording over 60% of their people living on less than a dollar a day.

In 2003, the NARC Government launched a recovery program under the banner of “Economic Recovery Strategy for Wealth and Employment Creation” (ERS). ERS pays special emphasis to revitalizing agriculture as an engine of economic growth. This paper emphasizes the transformation of the agricultural sector into a profitable economic activity capable of attracting private sector investment and providing gainful employment.

The sector contributes 26% of GDP and 60% of export earnings. Moreover, through links with the manufacturing sector, it indirectly contributes a further 27% to GDP. The sector recorded improved performance in 2005 compared to 2004. The sector’s Gross Value Added grew by 6.9% in 2005 from a depressed 1.7% in 2004.

The economy relies heavily on the natural resources both as food provider and as a contributor to national income. The exploitation and competition of the limited natural resources continues to jeopardize the state of the environment mainly due to unsustainable and unplanned utilization. This calls for improved management and protection of biodiversity to sustain human and wildlife. Forests are critical in the conservation of water catchment areas and as natural habitat for wildlife as well as building materials, fuel and other forms of economic use. The GOK therefore intends to revitalize the sector by planting trees in gazetted forests and supporting similar initiatives.

In order to manage fishery resources sustainably, the government intends to embark on wider consultation with stakeholders over the development of a National Fisheries Policy.

Production in the mining industry has increased by 28% from Kshs. 5.13 billion (USD 0.07 billion) in 2004 to Kshs. 6.8 billion (USD 0.09) in 2005.

Growth in the tourist sector continued on an upward trend in 2005 due to concerted marketing campaign by the Kenya Tourist Board, the sector earned Kshs. 48.9 billion (USD 0.652) in 2005.

The government is therefore instituting reforms in all the sectors of the economy in order to sustain and surpass the current growth rate. Targeting of investment, accountability and transparency in the management of public and private sector resources is being given high priority. Increased growth is expected to translate into improved standard of living of the people.

Constraints to National Development

Kenya’s development is constrained by the interplay of local, regional and international factors. First, Kenya’s revenue base is low with budgetary requirements exceeding the available resources. This necessitates the country to look for external assistance in form of loans and grants. Most of GoK funds are tied up in non-discretionary expenditures such as salaries for public servants and other recurrent expenditures such as servicing loans, providing free primary education and maintaining law and order. Inadequate resources are therefore allocated to the development budget.

Second, lack of transparency and accountability in the utilization of public resources is a major stumbling block to the development of the country. Corruption and inefficiencies are estimated to cost the Kenyan economy about Kshs. 85 billion (USD 1.13 billion) annually.

Third, in the past, prioritization of development projects did not allocate resources in areas where maximum benefits were expected. Public investments had little impact on economic growth and improved standards of living. Critical sectors of the economy such as Agriculture and Infrastructure, *inter alia*, were neglected and continued to receive meager resources. This contributed to lack of competitiveness of agricultural products.

On the external side, Kenya's imports exceed exports. Oil prices are very high; industrial goods such as vehicles, plant and equipment make the country's terms of trade unfavorable.

Potential to enhanced Economic Growth

In order to enhance development and economic growth, the available resources should be properly planned for and utilized. Policies should be formulated to ensure that all the sectors of the economy grow. Investment climate should be improved to promote private sector investment various industries, tourism mining, and agriculture. Farm inputs should be made available to farmers at affordable prices. If due diligence prevails, the economy could grow and jobs could be created jobs resulting in increased incomes.

1.0 ENVIRONMENTAL MANAGEMENT LEGISLATION IN KENYA

1.1 Overview

Kenya has many statutes that were enacted to regulate the management of the various environmental issues. These statutes include the Fisheries Act; the Agriculture Act; the Mining Act, the Water Act, the Forest Act, the proposed New Mining Code and the Environmental Management and Coordination Act. Conflicts occur during the implementation of these Acts.

Kenya has traditionally taken a piece meal approach to legislating on environmental management matters. Most of the statutes are sectoral in terms of the natural resource such as fisheries, water, and forestry. Others can be classified under functional sectors such as public health, agriculture or mining. Standard-setting has essentially taken a sectoral approach and cross-sectoral issues have not been addressed taking into account the dynamics of land use, which often results in land degradation and the complexity, and interconnectedness of the various components of the environment. The existence of sectoral agencies and institutions established to implement and enforce the laws under each of the statutes has often led to regulatory competition and overlapping mandates. Kenya's institutional arrangement for environmental management has also been largely centralized.

The Environmental Management and Coordination Act, (EMCA, 1999) attempts to integrate environmental imperatives into development planning and management. Its' objective was to harmonize sectoral laws through the enactment of a national umbrella environmental legislation. The Act covers diverse environmental issues, which require a holistic and coordinated approach to facilitate protection, conservation and preservation.

1.2 The Fisheries Act (Chapter 378)

1.2.1 Overview

The Fisheries Act applies to both marine and inland fisheries. Its objective is to provide for the development, management, exploitation, utilization and conservation of fisheries. The Director of Fisheries is empowered to implement measures appropriate for the proper management of fisheries including *inter alia* seasonal fishing requirements; regulation of gears by season or ecological area; size of fish which may be caught; landing and landing site requirements; and zones or ecological areas where fishing is prohibited. The Director can also impose limits on the number of persons or vessels and nets for the proper management of fisheries. The Director of Fisheries is the principal implementing officer under the Act for both marine and inland fisheries.

All vessels fishing in Kenyan waters have to be registered by the Director who shall issue an appropriate certificate and keep a register of all licenses. All persons engaged in fishing, except those fishing for home consumption are required to be registered under the Act. The general fishing license shall apply to specific species of fish, types of gear, and methods of fishing and area of fishing. Those who fish in violation of these provisions are guilty of an offence.

The Director of Fisheries may revoke or suspend a license issued for a local fishing vessel if the holder is convicted of any offence under the Act or if the action is essential for better management of fisheries. For example, if the total allowable catch as originally estimated is found to be inaccurate.

To promote the development of the fishing industry, the Minister may prepare a scheme of loans for Kenyan fishermen, subject to the approval by the Treasury. The Minister has additional powers to promulgate regulations for better implementation of the Act.

Under The Fisheries (General) Regulations; fish processing is prohibited in Kenya without a valid fish-processing license. These regulations though do not apply to the icing of fish; sun-drying or smoking of fish without using electric power or motorized plant machinery or catering institutions selling or serving fish already prepared as food for eating by their patrons. This regulation enables small-scale fishermen to engage in fish processing activities without too much bureaucratic interference.

Trawling is a prohibited fishing method within five nautical miles from any point on the entire shoreline of Kenya, waters of Lake Victoria and within the Nyanza Gulf as well as other areas not relevant to this report.

Gill nets with mesh sizes measurements that are less than 127mm diagonally when stretched are prohibited fishing gear in all Kenya waters of Lakes Victoria and Turkana. It is also prohibited to land fish from Lakes Victoria and Turkana whose standing and length is less than 25 centimeters.

1.2.2 The Fisheries Act and Lake Victoria Basin

Fisheries production has grown in the last 20 years, the emphasis has been towards large-scale exploitation and intensification breaking away from artisanal small-scale production that has sustained communities for generations.

Excessive and destructive fishing pressure exerted by the use of under sized meshes, beach seines, poison and dynamite is a reality in Lake Victoria.¹ The unsustainable number of fishermen is also a contributing factor, exacerbated by purely commercial considerations, lack of a sense of ownership of fishery because of the “open access policy” syndrome and insufficient research information on fish stocks. Excessive fishing pressure degrades the environmental and the biological resource base for fisheries including spawning, nursery and feeding grounds and habitats leading to a decline in fish stocks.

The inefficient enforcement of fisheries regulations has had a detrimental effect on indigenous species and may have also contributed to the recent decline in Nile Perch catches. High demand for Nile Perch and Nile Tilapia fillets by the export factories and sardines for poultry meal has led to pressure in the fisheries sector. Commercial fishing operators are able to use efficient fishing techniques (including illegal trawlers) thereby increasing pressure on the fisheries. Poor fishermen who cannot afford efficient fishing gear concentrate on catching juvenile and other smaller fish species. Local small-scale fishermen are increasingly resorting to catching *omena*, a tiny fish since they are not able to catch the bigger fish. The Fisheries Act technically prohibits the catching of small fish (delinquent Nile Perch), though paradoxically the local markets are flooded with *omena* that forms the staple protein diet for most of the local inhabitants.

Fishing in the Tilapia spawning areas has also increased as a consequence to the declining fish stocks in Lake Victoria. The implications of these activities are that, if Tilapia spawning areas are disturbed, the Tilapia will not return to these areas undermining the survival of the species.

The impact of large-scale fishing on the livelihoods of artisanal fishermen has had a profound effect. The Fisheries Act does not distinguish between small-scale artisanal fishermen and large-scale commercial fishing operations, the latter having significantly impacted on fish stocks in the Lake. The only distinction is between those fishing purely for home consumption and consequently not required to be licensed and those fishing for commercial gain. The Fisheries Act needs to differentiate between the two categories of fishing operations in order to create more opportunities for artisanal fishermen. The discrepancy between the provisions of the Fisheries Act and the reality in the fisheries sector is evident. The fisheries provisions appear unable to regulate fishing activities and have not succeeded in curbing destructive fishing behavior and the breach of other fishery

management regulations even at the national level. With the establishment of the Beach Management Units (BMUs), it is important that their involvement and actual exploitation of the fisheries resources is provided for under the Act.

The Fisheries Act does not adequately address the needs of artisanal fishermen. Over the years their participation in this sector has diminished commensurate with dwindling fish stocks. Over-fishing is attributed to commercialization, illegal fishing and lack of effective polices to ensure sustainable productivity. Fisheries development plans have tended to favor capital-intensive fisheries ignoring small-scale subsistence fisheries. It is imperative for the Act to make a clear distinction between large-scale commercial fishing operations and artisanal fishermen and then go further by providing mechanisms and initiatives, which enable local communities to maintain sustainable livelihoods.

The imposition of a centralized fishery management system concerned with law enforcement and revenue collection has effectively emasculated the legitimacy and loyalty of the traditional clan elders.³ This has also resulted in an attitude of irresponsibility and passivity amongst the local community fishermen towards the Lake's resources. Fisheries resources are considered to belong to the government because of the manner in which the fisheries officers and fish scouts exercise their powers leading to the belief that it is the government's role and responsibility to manage the fisheries.

1.3 The Agriculture Act (Chapter 318)

1.3.1 Overview

The Agriculture Act is the principal land use statute covering *inter alia* soil conservation, and agricultural land use and conservation issues such as the preservation of soil fertility.

The Minister of Agriculture is vested with extensive powers by virtue of Part IV entitled, The Preservation of the Soil and its Fertility. For the purpose of conserving soil; protecting dams or water catchments; and preventing soil erosion or protecting soil fertility, the Minister after consultation with the Central Agricultural Board may make rules prohibiting, regulating or controlling clearing of land for cultivation, grazing, or watering of livestock or cleaning or vegetation. He may also make rules requiring, regulating or controlling the afforestation or re-afforestation of land; protection of slopes and catchment areas; or the drainage of lands. The Minister may also make rules for the maintenance of water in a body of water within the meaning of the Water Act.

The Agriculture (Basic Land Usage) Rules issued in 1964 prohibit certain land use practices likely to intensify soil erosion. They prohibit cutting down or destroying vegetation or de-pasturing of livestock on any land of which the slope is 35%, except if the activity is done within the conditions sanctioned by an agricultural officer. Authorized agricultural offices, may in writing, prohibit the cultivation, cutting down or destruction of vegetation on any land of which the slope exceeds 20%. The rules stipulate strict regulations on the cultivation of any land whose slope is between 12 and 35% when the soil is not properly protected from erosion. Water courses and land abutting these areas are also protected under the rules. Cultivation, destruction of soil, cutting down of vegetation, or de-pasturing of livestock on land within two meters of a watercourse is permissible only if done with a written consent of an authorized officer.

1.3.2 The Agriculture Act and the Lake Victoria Basin

The limitation of the Act appears to be its inability to slow down or reverse rampant land degradation, thereby limiting entry points for diversification of agriculture activities. It is unfortunate that soil degradation persists in Kenya given the stringent laws and regulations as

under this Act. These rules have not managed to check the land degradation occurring in the Lake Victoria Basin. The consequences for artisanal farmers have been profound, problems such as unsustainable utilization and conversion of floodplain and fringing wetland buffers still persist. Poor farming methods and forestry practices have implications for eutrophication of the Lake and correspondingly on livelihoods. The catchments have also been severely degraded through excessive resource use by a rapidly rising human population.

Along the River Nzoia local communities are prohibited from setting fish traps between the natural riverbank and the bottom of the dykes. These communities are prosecuted for setting traps because the traps are said to undermine the dykes. This measure has serious consequences for fishing activities during the floods. The impact of this prohibition is also a social issue because women traditionally excluded from fishing are permitted to fish with traps during the floods.

Part IV makes extensive provisions for the preservation of soil fertility without considering the impacts of agricultural inputs i.e. fertilizers and their incorrect application. Herbicides and pesticides form part of the sediment load and pollute the aquatic environment. Poor farming methods (both crop and livestock) as well as excessive clearing and conversion of wetland and fringing forest cover have also contributed to soil erosion. These human activities promote eventual siltation and enrichment of the Lake ecosystem with nutrient and pollutants from the catchments. General run-off from urban centers and Lakeside settlements through the release of untreated or insufficiently treated municipal sewage and industrial effluents have also contributed to the Lake's eutrophication.

The Agriculture Act appears to be hampered by an inadequate compliance and enforcement mechanism. The rules are broad, giving the Director powers to promulgate regulations for the protection of land against soil erosion or the deposit thereon of sand stone or gravel and for the maintenance of water in a body of water within the meaning of the Water Act. The application of these rules appears to be discretionary, meaning that they cannot be applied consistently and do not consider the implications of farming and fishing between riverbanks. Flood control measures are not mentioned explicitly either.

1.4 The Water Act 2002

1.4.1 Overview

Defined as “An Act of Parliament to provide for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services and for related purposes.”

The Water Act 2002 has four salient features that delineate responsibilities and mandates in the management and utilization of water resources. The Act separates the management of water resources from the provision of water services; policy making from day to day administration and regulation; decentralization of functions to lower level state organs and the involvement of non-governmental entities in the management of water resources and in the provision of water services.

Under the Act, water is recognized as an economic good and indicates that consumers are willing to pay for on the basis of the ‘user pays principle’. The government also commits to supporting private sector participation in the management of water.

Part III of the Act deals with water resource management, while Part IV is devoted to the provision of water and sewerage services. Two autonomous public agencies are established, one to regulate the management of water resources and the other to regulate provision of water and sewerage services.

The Water Resource Management Authority (the Authority) is established under section 7 and is vested with the regulatory function concerning the management of water resources. In addition to other functions, the Authority is responsible for the allocation of water resources through a permit system. Regulatory functions relating to the provision of water and sewerage services are vested in another public body: The Water Services Regulatory Board (the Regulatory Board), which is created under section 46. The Regulatory Board is mandated to license all providers of water and sewerage services who supply water services to more than twenty households. Community managed water systems therefore need to obtain a license from the Regulatory Board to continue providing water to their members. Previously community water systems, operated without a license.

Section 14 of the Act provides that the Authority may designate catchment areas, defined as areas from which rainwater flows into a watercourse. The Authority shall formulate for each catchment area “a catchment area management strategy” which shall be consistent with the national water resources management strategy.

Section 51 of the Act concerns the provision of water and sewerage services by establishing a Water Services Board responsible for the provision of water and sewerage services within its area of coverage, and for this purpose it must obtain a license from the Regulatory Board.

The Act envisages the appointment of private individuals to the boards of both the Authority and the Regulatory Board. Significantly the Act provides a role for community groups, organized as water user’s associations, in the management of water resources. Section 53(2) stipulates that water services shall only be provided by a water service provider, which is defined as “a company, non-governmental organization or other person providing water services under and in accordance with an agreement with a licensee” [the water services board]. Community self-help groups providing water services may therefore qualify as water services providers. Since private sector water services providers in the rural areas are scarce, the role of community self-help groups in the provision of water services is likely to remain significant, despite the new legal framework. The role of non-governmental entities in the management of water resources and in provision of water services is recognized.

Part II concerns the ownership and control of water. Section 3 vests “every water resource” in the State. “Water resource” is defined to mean “any lake, pond, swamp, marsh, stream, watercourse, estuary, aquifer, artesian basin or other body of flowing or standing water, whether above or below ground” This provision therefore vests ownership of all water resources in Kenya in the State.

The control of water resources is also vested in the Minister and the right to use water is subjected to a permit requirement. This provision has far reaching implications for the management of water resources and provision of water services to the rural poor who have only limited access to state based systems.

1.4.2 The Water Act and the Lake Victoria Basin

Water is the most important resource base for Lake Victoria ecosystems, without water all other aquatic resources cease to exist. The declining water quality and quantity of the lake has been a source for concern regarding sustainability of fish production and other economic activities. The main causes of catchments degradation of water resources in the Lake Victoria ecosystem include poor farming methods, which promote eventual siltation and enrichment of the lake ecosystem with nutrient and pollutants from the catchments. Run-off from urban centers and lakeside settlements, in addition to the release of untreated or insufficiently treated municipal sewage and industrial effluents, are major contributors to the lake’s eutrophication. Atmospheric deposition is also one of the most important sources of phosphorus and nitrogen of the total loads entering Lake Victoria ecosystem.

Fig. 2 Inappropriate land use



Lake Victoria wetlands are also undergoing serious degradation. The sources of degradation of emergent wetlands include excessive resource harvesting, over grazing and conversion for agriculture and industrial development; dairy and rice farming and vegetable gardening. Degradation of the role of wetlands, through over-loading with municipal sewage and industrial effluents, is likely to occur as sewage input outstrips the ‘treatment’ capacity of the wetlands.

The Water Act (2002) like its predecessor does not recognize the existence in Kenya of a pluralistic legal framework. Kenya’s rural poor,

typically live within a normative framework in which state based law is no more applicable and effective than customary and traditional norms. The Water Act, however, ignores this reality.

The implementation of the Water Act is handicapped by administrative, financial and technical constraints, which prevent rural households from deriving full benefits from its provisions.

By way of the water permit system, water rights are privatized to a small section of the community, essentially property owners who are able to acquire and use water resource permits. Poor rural communities are subsequently marginalized from the formal statutory framework since they are unable to meet the requirements for obtaining a permit principally through land ownership. Section 34 requires that a permit must specify the particular portion of any land to which the permit is appurtenant. This provision reinforces the predominance of landowners with regard to the use of water resources. It is premised on a land tenure system, which prioritizes documented individual or corporate ownership of land over communal systems of access to land and land use, which do not require documented title. The Act therefore marginalizes collectivities, such as poor rural community groups in the acquisition and exercise of the right to use water resources. This could potentially undermine the ability of poor rural communities in Kenya effectively to utilize water resources in economically productive activities such as irrigation and commercial livestock rearing.

The provision of water services is also subject to licensing requirements, which is likely to have far reaching implications for member based rural water supplies, given the requirement for technical and financial competence, as a precondition to obtaining a license. Many such groups will likely have great difficulty demonstrating such competence and this may result in water service agreements being granted only to well establish community groups.

The law, which is premised exclusively on a formal statutory legal system is likely to be inappropriate to the needs and circumstances of Kenyan rural poor. It is vital to make the link between water services provision and economic benefit to particular community members. These people have not been integrated into the private land tenure and other formal regimes upon which the Water Act 2002 is premised. They depend largely on land rights arising from customary practices, which have been systematically undermined over the years by the statutory provisions governing land rights, which are not recognized by the Water Act 2002.

1.5 The Forests Act (2005)

1.5.1 Overview

The main objective of the Act is to provide for the development and sustainable management (including conservation and rational utilization) of forest resources for the socio-economic development of the country. The implementation of governance structures to enhance participatory forest management in Kenya in addition to the establishment of the Kenya Forest Service (KFS) as an implementing institution is also provided. The Act also envisages the establishment of decentralized Forest Conservancy Areas and Committees.

The Act is informed by the recognition that forests play a vital role in the stabilization of soils and ground water thereby supporting the conduct of reliable agricultural activity. Forests also play a crucial role in protecting water catchments in Kenya and moderating climate by absorbing green house gases. Key productive sectors, e.g., agriculture and tourism are dependent of forestry.

The KFS is to be responsible for the protection, conservation and sustainable management of forests in Kenya. The KFS has powers to formulate policies and guidelines regarding the management, conservation and utilization of all types of forests in Kenya and to enforce conditions and regulations pertaining to logging, charcoal making and other forest utilization activities. The institution is also mandated to promote the empowerment of associations and communities in the control and management of forests; manage forests on water catchments areas primarily for purposes of water and soil conservation, carbon sequestration and other environmental services as well as enforcing the provisions of the Act and any forestry or land use rules and regulations made under this Act or any other written law.

All forests, other than private and local authority forests are vested in the State unless otherwise stated either by user rights or by any written law where the same may vest in any other person. The Act provides conditions for creating different categories of forests such as state and local authority forests, private and farm forests.

A local authority or private forest can be declared a provisional forest when the board is of the view that a particular local authority forest or private forest is being mismanaged or neglected; it may recommend to the Minister who shall by order published in the Gazette notice declare such a forest, a provisional forest. The declaration order shall be made only, *inter alia*, where the forest is an important catchment area or a source of water springs, supports an important industry and is a source of livelihood for the surrounding forest communities. The Director is required to issue a notice requiring the local authority or private owner to undertake specific silvicultural practices to improve the forest.

Subject to conditions as may be prescribed, any member of a forest community may take such forest produce, as it has been the custom of that community, as long as such produce is not for sale.

A Forest Management Conservation Fund is established to be used for, *inter alia*, the maintenance and conservation of indigenous forests, the promotion of community-based forest projects, the establishment of arboreta and botanical gardens and the establishment of nurseries and production of seedlings.

A notice proposing variation of boundary or cessation of a state or local authority forest shall only be published on the recommendation of the Service. It is a requirement for effective public participation that the Service or relevant local authority publishes a notice in relation to the proposal to vary the boundary or cessation of the forest in the Gazette in at least two national newspapers.

Nature reserves can be established where there is a recommendation of the Service and the Minister in consultation with the Minister responsible for local authorities puts a Gazette notice declaring any forest area or woodland of significance to be a nature reserve for the purposes of preserving its biodiversity and natural amenities. Activities like cutting, grazing, removal of forest produce, hunting, and fishing should not be allowed within the nature reserve unless they are meant to enhance the reserve's ecological integrity and such permission shall be granted by the Director in consultation with other conservation agencies.

The KFB shall only grant its consent for mining and quarrying operations in a forest area where the area does not contain rare, threatened or endangered species, the forest does not have any cultural importance or does not contain sacred trees or groves and an independent environmental impact assessment has been carried out. Mining and quarrying may be carried out in a state or local authority forest under the authority of a license issued by the Service and the local authority.

The Act also provides a framework for community participation in sustainable management of forests in Kenya. Community Forest Associations (CFA) are to be established to confer user rights to local communities in respect to access and control of forest resources. A CFA, through a management agreement with the Director, may confer on the association all or any of the following forest user rights: harvesting of honey; harvesting of timber or fuel wood; collection of forest produce for community based industries; eco-tourism and recreational activities and development of community wood and non-wood forest based industries.

The Act also provides a framework for enforcement and offences relating thereto. Those introducing invasive alien species or dumping shall be guilty of an offence.

1.5.2 The Forests Act and the Lake Victoria Basin

Historically, the Lake shores were fringed by extensive papyrus (*Cyperus papyrus*) dominated wetlands. Dense forest patches of tropical rain forests characterized many of the Islands as well as large sections of the catchments. Much of the forest cover and the wetlands, especially on the mainland catchments, have been severely degraded through excessive resource use by a rapidly rising population. Degradation of the catchment area is due to the excessive clearing and conversion of wetland buffers and fringing forest cover due to poor farming practices.

Lake eutrophication management envisages control of nutrient enrichment from land use through prudent agriculture, forestry, animal husbandry and wise use of wetland buffers. Close collaboration and co-ordination with many sectors including crop agriculture, animal husbandry, fisheries forestry, industry, local government and National Water and Sewage Corporation is also required.

Forestry as a sector corresponds largely to wildlife, fisheries and mining. Close scrutiny should be undertaken to ascertain the suitability of these related activities and their impacts on the forestry sector.

The forests and its resources need to be sustainably managed in order to offer viable livelihoods to the local communities. The Act emphasizes community participation in forest management and the application of EIA as provided for under EMCA to control major changes in land use.

1.6 The Mining Act (Cap 306)

1.6.1 Overview

The Mining Act (Cap 306) was originally adopted in 1948 and most recently revised in 1987. Its primary objective is to consolidate the law relating to commercial mining operations. It is chiefly concerned with large-scale commercial mining operations; artisanal miners do not appear to have been in the minds of the drafters. The contractual arrangements for the exploitation of the natural resources such as prospecting rights; exclusive prospective licenses and leases are enumerated under this Act.

The Act declares that all un-extracted minerals (other than common minerals) on or underground are vested in the Government subject to rights being granted in respect of minerals. This provision does not however preclude any citizen of Kenya subject to conditions may be prescribed from taking iron, salt or soda from lands that fall outside land granted for a mining lease or location if such an undertaking has been customary to the community that the citizen belongs to.

All persons wishing to deal in minerals must be registered as dealers and must have been issued with a mineral dealer's license by the Commissioner. The exception to this provision is if such a person holds a valid mining title and is actually involved in the production and disposal of the mineral for which he is licensed to mine. Mineral dealers are required to maintain proper registers denoting quantity and quality bought, sold bartered or exported and have to make these registers available for inspection. There are fees for obtaining a mineral dealers license, which are prescribed by the Minister by notice in the Gazette.

The Commissioner or an officer duly authorized by him/her has the power to refuse to issue a prospecting right to any person who, in his opinion, is unable to understand the provisions of this Act and the regulations.

An exclusive prospecting license may be granted to any person who holds a prospecting right or to a company or body of persons or partnerships whose agent is the holder of a prospecting right issued to him as an agent. To be granted such a license, the Commissioner has to be satisfied that the applicant has sufficient capital to ensure proper prospecting by methods approved by the Commissioner relating to the area for which the application is made.

Applications for leases are also provided for under this Act. The applications are to be made in the prescribed form and manner and need to be accompanied by payment of one year's rent in advance at the rate prescribed. The applicant is required to demonstrate to the Commissioner's satisfaction that he has access to or will to have access to, within twelve months, sufficient working capital to ensure development of and working of the mining operations.

The Minister is empowered to make regulations pertaining to the manner in which applications for any right license, location or lease, which may be granted under this Act, shall be made and the forms to be used.

1.6.2 The Mining Act and Lake Victoria Basin

Land declared to be excluded from prospecting and mining include the islands in Lake Victoria situated in Nyanza Province. Water Areas Nos. 53, 54, 55, 56 and 57 (5) comprising the area of Lake Victoria which lies within Nyanza Province as delineated on a plan kept in the office of the Commissioner are also precluded from prospecting or mining operations.

From the generality of the foregoing it is evident that the Mining Act does not facilitate the participation of small-scale mining operations. The Mining provisions conversely seem designed to preclude small-scale mining activity. The powers granted therein to the Commissioner are draconian and can potentially be exercised arbitrarily; having to demonstrate an understanding of the Act is particularly burdensome, especially given the absence of an objective standard.

The Mining Act is defined as an Act to consolidate the law relating to mining. In the interpretation section mining refers “intentionally to win minerals and includes any operations necessary for this purpose.” Minerals include all minerals and mineral substances but *exclude* clay, murrum, limestone, sandstone or other stone or such. Furthermore substances declared not to be minerals include, *inter alia*, gravel, building dimension stone, constructional stones for ballast and ornamental stone, sodium and potassium compounds except sodium compounds forming part of the Lake Magadi saline deposit. This Act therefore excludes a significant portion of the mining sector from its sphere of operation.

1.6.3 The Proposed Mining Code

A new Mining code has been drafted to address some of the shortcomings of the current Mining Act. The new code is modern, forward-looking and comprehensive in scope. It recognizes that small-scale mines require assistance in their efforts to operate in an economically and environmentally sustainable manner. Rights and interests in minerals of all kinds, including commonly found minerals are regulated. A standardized licensing system is also established with the principal legal and administrative arrangements enshrined in the mining code. Standardization enables minerals operations to be conducted on a level playing field and investment decisions to be based on factors that can be predicted and planned for. It also enhances the capacity of the mining authority to administer the system efficiently and transparently.

The Mineral licensing system applies to all classes of minerals including common minerals such as sand, salt and quarry stones.

Small-scale operations are distinguished from other operations, by reserving them for Kenyans. This policy has been designed to assist the government in targeting programs to support the development of the small-scale mining sector. The code also provides for timely, effective and transparent procedures for the assessment and approval of applications.

The new Mining Code recognizes that small-scale artisanal miners require assistance in their efforts to operate in an economically and environmentally sustainable manner. Standardization enables mineral operations to be conducted on a level playing field and investment decisions based on factors that are predictable.

1.7 The Environmental Management and Co-ordination Act (1999)

1.7.1 Overview

The Environmental Management and Coordination Act (EMCA 1999) is a framework convention, which provides an appropriate legal and institutional framework for managing the environment. EMCA is the chief environmental legislation governing environmental management in Kenya. Its objective is to coordinate environmental activities under an umbrella institution, the National Environmental Management Authority (NEMA). NEMA is also the principle organ for implementing all policies relating to the environment. The National Environment Council, another administrative body, is mandated to formulate policies, set national goals and promote cooperation among stakeholders. The standards and Enforcement Review Committee, a sub-committee of NEMA, will recommend standards in the fields of water quality, air quality and waste management.

The National Environmental Tribunal is an administrative mechanism for alternative dispute resolution.

The Act covers diverse environmental issues requiring a holistic and coordinated approach for their protection and preservation. It affirms the new generation environmental principles such as sustainable development; the precautionary principle; the polluter pays principle and intergenerational equity i.e. each generation is required to use and develop its natural and cultural heritage in such a manner that it can be passed on to future generations in no worse conditions than it was received. EMCA provides for a legal regime to regulate, manage, protect and conserve biological diversity resources and access to genetic resources, wetlands, forests, marine and freshwater resources and the ozone layer.

EMCA expands the legal principle of *locus standi* i.e. the capacity to 'go to law' or standing in court proceedings. A person wishing to bring an environmental matter before the court is no longer required to demonstrate that the defendants act or omission has caused or is likely to cause him any personal loss or injury. Public access to information is improved by providing that any person may have access to information transmitted to NEMA unless confidentiality considerations prevail.

Project proponents are required to conduct an Environmental Impact Assessment through a participatory process to determine whether proposed developments are likely to have adverse impacts on the environment and to pre-plan measures for mitigation of impacts identified. The Act also provides for a continuous, systematic, objective evaluation to ascertain how well the environment is managed. Environmental audits are also provided for.

EMCA has provisions relating to enhanced penalties and incentives under the Act. Failure to conduct an EIA attracts a penalty of up to 24 months in prison or Kshs. 2 million (USD 0.03 million) fine or both. Tax and fiscal incentives are also envisaged to encourage or compel sound environmental management.

EMCA provisions are primarily aimed at large-scale project proponents and not small-scale economic activities. The second schedule lists projects which are required to undergo EIA, these include: an activity out of character with its surrounding; any structure of a scale not in keeping with its surrounding; major changes in land use; mining; including quarrying and open cast extraction of dolomite, stone, slate aggregates, sand gravel and clay; large-scale agriculture; use of pesticides and fertilizers; introduction of new crops and animals; various processing and manufacturing industries and fish processing plants; storage dams, barrages, piers and flood control schemes

Anyone without written approval from the Director-General given after an environmental impact assessment in relation to a river, lake or wetland is precluded from carrying out various activities which include erecting structures, excavating, introducing alien species; depositing anything into the lake and blocking or draining the lake. In addition, the Minister has the power by notice in the Gazette to declare a lake-shore wetland, coastal zone or river bank to be a protected area and *to impose such restrictions as he may consider necessary*. Taking into account the geographical size and the interests of the community residing in the locality, the Minister may issue general and specific orders, regulations, or standards for the management of river banks, lakes shores, wetlands or coastal zones.

The Authority has the power to, in consultation with the relevant lead agencies, to issue guidelines for the management of the environment of lakes and rivers. Any person contravening these orders shall be guilty of an offence. The interests of the local communities are deemed to be protected interests.

NEMA is mandated to issue guidelines and to prescribe measures for the sustainable management and utilization of genetic resources for the benefit of Kenyans. The guidelines specify appropriate arrangements for the access to genetic resources by non-citizens including the issue of licenses and fees to be paid for that access. The Authority also prescribes Biosafety measures necessary to regulate biotechnology. This provision is aimed at safeguarding the interests of local communities against bio-piracy and to facilitate access to and benefit sharing on mutually agreed terms.

The Minister can declare by Gazette any area of land, sea, lake or river to be a protected natural environment for the purpose of promoting and preserving specific ecological processes, natural environment systems, natural beauty or species of indigenous wildlife or the preservation of biological diversity.

Under the EMCA, the Finance Minister may upon the recommendation of the council, propose to the government tax and other fiscal incentives, disincentives or fees to induce or promote proper management of the environment. The tax and fiscal incentives, disincentives or fees may include customs and excise waiver in respect of imported capital goods; tax rebates to industries or other establishments that invest in plants equipment; and tax disincentives to deter bad environmental behavior, among others.

The standards and enforcement review committee, in consultation with the relevant lead agencies, shall prepare and submit to the Authority draft standards for the concentration of pesticides residues in raw agricultural commodities, processed foods and animal feed and also raw agricultural commodities including fresh or frozen fruit and vegetables in their raw state, grains nuts, eggs, raw milk meat and other agricultural produce.

1.7.2 EMCA and the Lake Victoria Basin

Nile perch and water hyacinth are two alien species that have had considerable impacts on the ecology and socio-economic interests of Lake Victoria. Both organisms have become a permanent resource in Lake Victoria requiring appropriate management for ecosystem sustainability. NEMA has a mandate to issue guidelines aimed at prohibiting and controlling the introduction of alien species into the natural habitat.

The Kisumu municipality discharges raw, untreated human waste and agri-chemical run off into Lake Victoria, which kills fish and supports water hyacinth proliferation. Affluent polluters; those who own cars or fishing processing companies, are not penalized while 'poor polluters' mainly bathers from poor neighborhoods are dealt with by authorities harshly.

NEMA has the mandate to take the lead in addressing and coordinating environmental management issues in Kenya. NEMA can address policies which have detrimental consequences for the livelihoods of local communities in the Lake Victoria Basin such as the issue of fish traps and eutrophication of the Lake.

Fiscal incentives and disincentives are again targeted at large-scale commercial operations and not at small-scale economic activities. They do not facilitate the participation of local communities into the business sector. The objective of the environmental planning provision is to encourage the formal business sector to incorporate environmental requirements into their planning and operational processes.

Although EMCA for the most part is concerned with regulating and controlling activities pertaining to large-scale development projects, local community interests must be taken into account when conducting such activities. EMCA provides for the consideration of local community interests during policy development, therefore creating an opportunity for detrimental policy provisions which impact negatively on these communities to be remedied.

Non-compliance and enforcement of environmental management legislation has in the past been attributed to the lack of institutional capacity to implement and monitor environmental policies, laws and programs. Implementing agencies have lacked institutional linkages, adequate infrastructure, human capital and sufficient legal authority and political autonomy. The EMCA through NEMA was conceived to address these anomalies. NEMA has the mandate to coordinate the various environmental management activities being undertaken by the lead agencies and to ensure that natural resource activities are conducted in an efficient and coordinated manner.

1.8 Implications of Environmental Law to the Lake Basin

Amend the agriculture and fisheries Act so that inadequate, inconsistent provisions can be addressed and harmonized with the EMCA.

Wetlands surrounding Lake Victoria are extensively used for agricultural production and livestock where an inflow of chemicals and pesticides used by farmers upstream contribute significantly to its pollution. Despite this, the Agriculture Act is silent on pollution from point sources even though it is widely accepted that eutrophication has had a devastating impact on the fisheries industry in the Lake Victoria. This scenario has obvious implications for diversifying livelihoods in the Lake Basin.

Soil and water degradation threaten the sustainability of basin's agriculture sector. The Agriculture Act needs to be amended to reflect the current trends of an 'ecosystem approach' and also in order to be compatible with the relevant provisions of EMCA.

The Fisheries Act meanwhile does not mention alien species despite their evident impacts on the livelihoods of local communities while EMCA is quite explicit about the introduction of alien species. The presence of the predator Nile perch has seriously affected the diversity and abundance of other native fishes.

Conflicting gaps and inconsistencies in the legislation mentioned above have already been justified by the outdated approach to legislating for environmental matters. It is necessary to harmonize these sectoral laws in addition to institutional mandates to create an enabling environment, which will favor small-scale economic activity in the Lake Victoria Basin. Economic activity is reliant on the natural resource base, which therefore needs to be managed in a sustainable manner in order to reap maximum benefits for all stakeholders and provide for catchment area and wetland protection.

Enact into law the draft mining code.

The Mining Code should be enacted into law since it is comprehensive and progressive. The Mining Act by its very nature excludes small-scale economic activity and is outdated. This omission may have been deliberate to perhaps limit the number of participants in the sector especially those without economic influence. It also prohibits mining operations in large parts of the Lake.

Enhanced Local community participation in policy development and decentralization of natural resource management.

Stakeholders are inadequately involved in the formulation and implementation of policy and therefore do not have an opportunity to participate in policy refinement through sharing of experiences and information. Laws are tools for policy implementation and they generally need to reflect the intent of the policy otherwise resource-based conflicts will continue unabated. Institutions therefore need to include both formal and traditionally decentralized mechanisms.

Strengthening the capacity at NEMA for implementation compliance and enforcement of environmental management regulations.

The obvious solution would appear to reside in proposing supplementary legislation to mitigate the deficient and often conflicting legislation already in place. Because NEMA has a broad over reaching mandate in terms of supervision and coordination of natural resource management, priority should be on strengthening its capacity to properly carry out its functions. The majority of issues highlighted can be remedied with an efficiently functioning NEMA thereby nullifying the need for subsidiary legislation.

Political will

Where adequate laws exist, the key issue is how to enhance implementation of agreed actions and enforcement of laws. Implementing legislation demands considerable political will and new and innovative forms of institutional arrangements, which are still missing under the sectoral laws. Without a concerted effort to put the economic interests of the local communities first, legislation will contribute little to create economic opportunities and enhance livelihoods. The success of sector-specific investments and initiatives in areas such as fisheries and agriculture is also dependent on policy changes and political will. The challenge is to find suitable structures so as to coordinate policy development and implementation.

The foregoing will have a negative impact on the implementation of projects in the basin. Poor enforcement of law, conflicting laws and lack of resources to enforce compliance need support from the project. The pending legislation, the mining law and the already enacted forest Act provide an enabling environment for the project to undertake mining and conservation activities in the Basin. Implementation of projects and programs in the basin will largely depend on the interrelationships between environmental law and the communities living there.

2.0 THE LAKE VICTORIA BASIN: SITUATIONAL ANALYSES

2.1 Background

Lake Victoria is the second largest fresh water lake in the World and Africa's largest lake. The Lake straddles the common borders of the three East African Community partner states of Kenya, Tanzania and Uganda. Six percent of the area of the Lake falls on the Kenyan side while Tanzania and Uganda command 52% and 42% of the total area respectively. The Republics of Burundi and Rwanda are also within the Lakes' catchment area through river Kagera and its tributaries such as Ruvubu. Major urban centers on the shores of the Lake include Kisumu, Jinja, Kampala, Entebbe, Bukoba, Mwanza, and Musoma. The entire Lake catchment is estimated to have about 30 million people.

The Lake is the main physical feature in the Basin. It is located at 0:21° North of the Equator and 3:00° South of the Equator, with a total length of 3,440 Kms. and 240 Kms. wide from East to West. The Lake is 1,134 meters above sea level. Its surface area is 68,870 Km² and is surrounded by about 180,950 Km² of catchment area. The Lake is generally shallow with a maximum depth of 84 meters and mean depth of 40 meters. There are many archipelagos and numerous reefs within the Lake. In Kenya, the Basin has an area of 38,913 Km² and consists of Nyanza and Western Provinces and twelve districts of the Rift Valley Province².

Fig. 3 The once rich wetland Papyrus of Lake Victoria shores



Historically, the Lake Victoria shores were fringed by extensive papyrus dominated wetlands, and dense forest patches of tropical rain forests. Much of the forest cover and the wetlands, especially on mainland catchments, have been severely degraded through excessive over-utilization of resources by a rapidly growing human population.

The Lake is a global center for aquatic biodiversity and forms the socio-economic fabric for the people living around it. The Basin has immense ecological value being a

source of food, potable water, transportation, and irrigation water. The Lake has potential to generate hydro-electric power and contribute to eco-tourism expansion. Appropriate utilization of resources within the Lake, the shore and the Basin would enhance the development of the region. In view of the severity of some of the rapid changes, there is a need to assess the potential of the region and formulate remedial strategies that would conserve the environment while, at the same time, foster economic development and growth in the region. The region has been designated an economic growth zone by the riparian states.

The economic potential of the Basin is founded on the rich agricultural soils, abundant rainfall, significant mineral deposits, potential for tourism development, rich and diverse fish resources that are currently, estimated at 400,000 metric tons per year. About 70 percent of the land area is

² The districts in the Rift Valley are: Bureti, Kericho, TransMara, Nandi South, Nandi North, Nakuru, Trans Nzoia, Uasin Gishu, Bomet, West Pokot, Keiyo and Marakwet.

classified as either high or medium agricultural potential. Soil conditions are generally favorable for crop production, although some soil types require fertilization and intensive drainage. Rainfall within most parts of the basin is reliable and able to support agriculture.

The Lake features the world's largest fresh water fishery uptake with significant local consumption and exports particularly to the European Union. The gross economic product of the Lake is estimated at US\$3–4 billion annually with combined annual fish export earnings estimated at US\$600 million, of which US\$240–480 million is paid directly to the fishermen.

The majority of the people get their livelihood and employment mainly from agriculture, livestock, fishery, and small-scale enterprises. Formal employment in the service sector such as trade and schools, and employment in towns contribute significantly to the economy of the region. Remittances in form of income transfers from relatives working outside the region are also significant.

Agricultural activities dominate the economy of the Basin with subsistence farming being the most dominant. Crops that are grown include maize, beans, millets, and root crops. On the other hand, cash crops include sugarcane, paddy rice, tea and coffee. Cotton used to perform quite well in the marginal areas but problems within the industry discouraged farmers from engaging in this enterprise.

Livestock is kept in the region as a store of wealth and as a fallback during times when money is needed for special expenditures such as medical or education. But this traditional paradigm is rapidly changing. Dairy herds of pure breed and crosses are increasing. Nevertheless, the main type of livestock is still the local zebu cattle. Districts in the Rift Valley and the larger Kisii have significant numbers of high breeds and crosses. The small East African goat, sheep and poultry also play a major economic role. Enterprises associated with livestock such as hides and skins, marketing of raw milk and milk products, egg and meat production for the local market are prevalent. Bee-keeping is carried out in the marginal areas and in valley bottoms of the high potential areas.

Fishing is one of the main economic activities in the region. Fishing does not only provide financial benefits to the people but also acts as a source of food for the majority of the poor living around the Basin. The sale of *omena* and Nile Perch skeletons (*Mgongo Wazi*) is popular. Nile perch is a vital resource for export for the riparian states, while the other fishery resources have ready regional markets. The Nile perch is also exported to the Middle Eastern countries, Japan, Australia, and North and South America.

The Lake has the potential to become one of the major unifying factors of the riparian states. But the Basin is confronted with numerous development challenges that are categorized as natural, technological, institutional and human. These constraints need focused approaches to ameliorate them.

2.1.1 Topography and Climate

The Lake Basin is characterized by high ridges and escarpments with few mountain peaks and open plains except for occasional inselbergs and hills. The elevation varies from as low as 1,134 masl on the shores of the Lake and as high as 3,950 masl in Mt. Elgon. The climate is generally mild with minimal monthly variations in temperatures of between 19°C and 25°C throughout the year. Daily temperatures, however, fluctuate more widely, ranging from 15°C to 33°C. Rainfall is governed by a modified equatorial climate characterized by long and short rains, which occur between March to June and September to December respectively. The presence of Lake Victoria and other relief features comprise key factors that influence rainfall patterns in the region. Average annual rainfall ranges from 750mm on the southern shores of the Lake to over 2,100mm in the highlands.

The Kisii districts receive annual rainfall ranging from 1,200mm to 2,100mm while the rest of Nyanza Province receives an average annual rainfall of 750mm to 1,800mm. Annual rainfall in Western province ranges from 900mm to 2,000mm while Rift Valley districts have a mean rainfall ranging from 1,000mm to 2,000mm. This is an indication that rainfall is not only reliable but also well distributed. There are, however, pockets particularly along the Lakeshore that receive poor rains especially Bondo, Karungu Bay and Rusinga Island.

2.1.2 Agro-Ecological Zones (AEZ)

These are zones that are defined by their agro-climatic factors and differentiated by soil patterns. They provide a framework for ecological (natural) land use potential. The main AEZ are Tropical Alpine Zones with annual mean temperature of 2-10°C, Upper Highland Zone (10-15°C), Lower Highland Zone (15-18°C), Upper Midland Zone (18-21°C), Lower Midland Zone (21-24°C), Lowland Zones with annual mean temperature of more than 24°C with a maximum of 31°C, and a Coastal Zone Lowland with annual mean of between 24 and 31°C. These zones determine land use patterns and the type of crops and vegetation prevalent in the region. Evidently, most parts of the Basin are endowed not only with high annual rainfall but also with good soils.

In Nyanza Province, the dominant AEZ³ are LH1, tea-dairy zone. In addition to tea and dairy enterprises, maize, potatoes, vegetables, pasture for livestock are common in this zone. In the Upper midland zone (UM1), the potential for coffee and tea is high. The lower midland zone (LM2) is suitable for sugarcane, maize while LH2 zone is suitable for wheat, maize and pyrethrum. This area also supports sorghum, millets, soy beans, fruits, and yams. LM3 and LM4 support cotton, sorghum, beans, green grams chick-pea and millets. (Karungu, Bondo,) LM5 zones are marginal and ideal for livestock keeping.

In the Western part of the Basin, two AEZ dominate the area. These are LM1 and LM2 that support sugarcane production and UM4 that supports maize, cotton, sunflower and other crops. The Busia stretch has an area categorized as a marginal cotton zone. But there are areas particularly in Mt. Elgon and Kakamega districts that are classified as moor lands and forest reserves.

The Rift Valley districts are characterized by tea-coffee, tea-dairy and wheat-maize-barley zones that are classified as UM1, LH1 and LH3 respectively (FM Handbook).

2.1.3 Population Distribution

According to the 1999 National population census, the Basin had 11 million people. Nyanza Province had 4.4 million, Western Province 3.4 million and the Rift Valley part of the Basin had 3.3 million people (GOK, Population Census 1999). Using an intercensal growth rate of 3 %, the population is projected at 12.8 million people for the year 2005 and thus representing about 40% of the country's total population. The percentage distribution of the population in Nyanza is about 15.3%, Western 11.2% and Rift Valley part of the Basin 11.4 percent respectively. The three provinces exhibited different intercensal growth rates of 2.3% for Nyanza, 2.5% for Western and 3.5% for the Rift Valley province. Western and Nyanza provinces experienced declines mainly because of out migration and increased mortality. The increased mortality could partially be explained by HIV/AIDS related deaths. (Republic of Kenya, 2001, 1999 Population and Housing Census). Overall, the population of women was more than that of men, at a ratio of 51:49.

³ AEZ Abbreviations: TA –Tropical Alpine Zone, UH-Upper Highland Zone, LH-Lower Highland Zone, UM-Upper Midland, LM-Lower Midland, L-Lowland Zones, IL-Inner Lowland and CL Coastal Lowland Zone. 1 stands for humid, 2-sub-humid, 3-semi humid, 4-transitional, 5-semi arid, 6-Arid and 7-Peraid.

2.1.4 Poverty Profiles in the Basin

The main economic activity of this region is subsistence farming. Where this economic regime dominates, poverty is usually rampant due to poor economic returns associated with the agriculture sector. The region's population density is quite high, at 280 persons per Km² compared to a national average of 37 persons per Km². According to the Welfare Monitoring Survey Two, (WMS II, 1994), monthly per capita income within the Basin stood at Kshs. 1,260 compared to the national average of Kshs. 1,370. This low per capita income, coupled with a high population growth rate and low levels of industrial development, illustrates the general poverty levels within the Basin.

To address poverty, the Government drew up a Poverty Reduction Strategy Paper (PRSP) in 1999, which consists of sector priorities for agriculture and rural development; human resources development; physical infrastructure; trade, tourism and industry; public safety; law and order; national security; public administration and information technology. The PRSP was followed by the formulation of the National Poverty Eradication Plan (NPEP). The NPEP recognized that all citizens have a role to play in society as a basic right, and should participate fully in its affairs as regards decision-making on matters, that directly affect their material and social standing. The NPEP emphasized understanding of the special circumstances of poor rural women, range of livelihood, commitment to the family, agriculture, other natural resource activities and farm jobs as a foundation from which rural poverty eradication planning must proceed. The Economic Recovery Strategy for Wealth and Employment Creation also recognized the need to create employment in all the sectors of the economy.

According to the recent Geographic Dimensions of Well-being in Kenya, the percentage of people living below the poverty line is 56 per cent (GOK, 2005). In Nyanza Province, 65% of the people live below the poverty line while the levels for Western Province and the Rift Valley are 61% and 48 per cent respectively. Poverty is entrenched in some areas. For example, Kuria Constituency in Nyanza has a poverty level of 81 percent while Kabete in Central Province has an incidence of 17 percent.

Poverty Levels in Selected Constituencies within the Lake Basin.

Table 1: People Living below Poverty Line in Selected Constituencies

Province	Name of Constituency	Poverty (%)
Western Province (61%)	Ikolomani	72
	Butula	70
	Funyula	70
	Bundalangi	70
	Bumula	52
	Amangoro	50
	Mt Elgon	55
Nyanza Province (65%)	Kuria	81
	Kasipul Kabondo	72
	Karachuoyo	72
	Rangwe	72
	Bunchari	74
	Mugirago Barabu	71
	Rongo	44
	Migori	47
	Uriri	49
	Bondo	70
Ugenya	61	
Rift Valley Province (48%)	Bomet	52
	Bureti	49
	Kipkelion	46
	Kilgoris	59
	Ainamoi	45
	Sotik	49

Source: CBS 2005: *Geographic Dimensions of Well-being in Kenya. Where are the Poor? Volume I*

2.2 Constraints to the Development of the Region

There are various development challenges that the Basin faces as it struggles to meet the Millennium Development Goals (MDGs) and national development objectives such as food self-sufficiency, employment creation, and environmental and ecological sustainability. The problems range from high population growth rates to the distribution of resources, *inter alia*. The problems include but not limited to:

2.2.1 Demographic Trends

A rapidly growing population, given the current level of technology in the region, is a constraint to any form of development. The population density is quite high in some districts, ranging from 835 persons per Km² in Kisii to 1,000 per Km² in Vihiga. These trends are manifested in natural resources conflict. Forest lands are demanded not only as a source of fuel wood but also for human settlement.

The demographic characteristics of the population show that there are more persons in the younger groups than in the older cohort for both sexes. The share of the population under 15 years is 50% male and 48% female, those aged between 15 and 64 constitute 49% and those above 65 years make up 3% of the total population. The population pyramid demonstrates that the population is still young. The dependency ratio is therefore high and pressure to invest in education and other social services becomes overwhelming.

2.2.2 Distribution of Water Resources

The Basin consists of large catchments that receive heavy rains resulting in large volumes of surface runoff flowing into the rivers. Rivers such as Sio-Malaba, Nzoia, Yala, Nyando, Sondu Miriu, S Awach and N. Awach originate from mountainous agro-ecological zones. As the river courses approach Lake Victoria where the altitude is relatively low with a flat topography, flashfloods inundate tracks of land, carry soil loads that are deposited into the lake. Ground water is abundantly available and it is drilled to supplement areas of water deficit. The Basin waters enter the Lake and its continued use is dependent on the abstraction technology used and the profitability of the enterprises using the water.

Areas such as Budalang'i and Nyando are prone to occasional floods while others experience extended droughts. Flooding has been aggravated by massive deforestation and the conversion of formerly wooded areas such as the Cherangani hills into human settlements. Although the region has vast water resources with potential to generate power, irrigate crops and provide water for domestic and livestock use, lack of protection of water catchment areas and hydrological information including capacity building in water management and poor water quality constrain sustainable utilization of the resource.

2.2.3 Poor Soils

The region has large areas where soils are infertile. This has been attributed to high human and livestock populations resulting into additional agricultural activities and deforestation that lead to soil erosion. Most soil types require fertilization to produce a substantial crop. Fertilization can only be achieved mainly through the use of organic manure or industrial fertilizers. These farm inputs are normally expenses and out of reach to many small-scale farmers.

2.2.4 Public Health Conditions

Environmental conditions such as flash floods tend to promote communicable and vector diseases such as malaria and diarrhea. High rates of poverty exacerbated by high prevalence of HIV/AIDS pandemic are a major stumbling block to the development of the region. HIV/AIDS prevalence in Nyanza for example, is 15% while the national average is 6%. Local statistics indicate that some districts record higher death rates compared to birth- rates.

2.2.5 Development Institutions

The Basin has numerous institutions that could act as locomotives for development of the region. Such institutions include regional development authorities, universities, various research centers, sugar factories, industrial concerns such as Webuye Pan Paper, commercial banks and NGO/CBOs, just to list a few. Inadequate resources, poor planning and slow pace of project implementation have constrained faster development in the region.

2.2.6 Business Orientation

Poor business acumen and commercial environment, occasioned by poor infrastructure in the rural areas, and lack of versatile business shrewdness are major constraints to the development of small and medium-size enterprises. Lack of credit support services and low value addition make business expansion quite difficult. In addition, inadequate markets and poor competitiveness for locally produced materials is a constraint to the development of the agriculture sector.

The parameters that are highlighted in this section will have impact, positive or negative, to the development of agriculture, livestock and fisheries in the region. Demographic trends, the nature of the soil and devastating impact of climate change cannot be overlooked when planning for an agricultural project.

3.0 AGRICULTURE AND LIVESTOCK DEVELOPMENT

3.1 The Thrust of the Assignment

The objective of this section is to assess the potential for agricultural production in the Lake Basin. The assessment includes livestock associated products and enterprises, including non-traditional export crops. In addition, the assessment identifies appropriate technologies for processing and packaging that could add value to the products of the region. Suggestions on how to attain market improvements are also included.

Land is the most important resource in agricultural production. Limited availability of productive land is a major constraint to increased agricultural production. Notwithstanding this, the government in its Economic Recovery Strategy for Wealth and Employment Creation, identifies agriculture as an important tool and vehicle for employment creation and poverty reduction. The agricultural sector is still the backbone of the economy, contributing 26% of GDP and 60% of export earnings. Further, through links with manufacturing, distribution and service related sectors, agriculture indirectly contributes an additional 27% to the country's GDP. In the last two decades, the overall economy barely grew following a sharp and an abrupt decline in growth in the agriculture sector. The sector is therefore crucial to Kenya's overall economic growth and social development. Source: Strategy for revitalizing Agriculture 2004-2014, CBS: Economic Survey 2006.

The objective of the sector is to achieve food security and commercialization of agriculture to ensure surpluses at the farm level and increased incomes for farmers. In the Lake Basin, this objective can be attained through increased production of food and cash crops, improved post harvest handling and value addition on various crops. Agriculture can contribute significantly to employment creation in the Basin since about 80% of the population resides in the rural areas. Achievements on this front would enhance national development goals in the sector.

3.2 The East African Regional Perspective to Agriculture

Perspective to agriculture

The view of the East African Community is that national agricultural policies of the Partner States have largely influenced the direction of the development of agriculture within the Basin. The overall policy is to:-

- Attain self-sufficiency in food production;
- Achieve adequate levels of strategic food reserves; and
- Generate additional surplus for export.

Positive movement in achieving the above policy objectives has the effect of increasing people's incomes and reducing levels of poverty. These achievements would also contribute enormously to the national macroeconomic goals.

Macroeconomic Direction

All the Partner States place great emphasis in ensuring accelerated agricultural growth and development, and maintenance of macroeconomic stability, achievement of robust economic growth and a stable exchange rate. The states emphasize good fiscal policies aimed at improving budgetary efficiency while keeping inflation low. They, further, consider the need to implement structural reforms in agriculture. The Secretariat affirms that the promotion of agriculture in the Basin would perform better if viewed and managed on a regional context. In this regard, the role of EAC will be to facilitate the provision of incentive structures through harmonization of regional

macro-economic policies including redrafting of harmonized laws and regulations in order to encourage the private sector to venture into agricultural activities. The regional office in Arusha, Tanzania, provided a perspective and strategies that must be devised to design programs that adequately address issues such as intensification of land use; adoption of high-yielding technology; and use of improved seeds.

Gender Consideration

Women are the primary producers in the agriculture and livestock sectors. They provide most of the labour but reap minimum pecuniary benefits from their efforts. In Western Province, land ownership is vested in men. Women have no collateral and therefore they cannot increase production through borrowing unless men agree to their proposals. In the Luhya culture, tradition ensures land ownership is vested in men. The Luo and the Kisii culture is less pronounced but still quite significant.

In order to put gender into proper perspective, extension workers should be trained in gender analysis. This analysis would look at issues such as women and men labour profiles, households headed by females and their capacity to acquire and manage resources, marketing and handling of various agricultural technologies, potential for control and access to property, women's reproductive roles vis a vis their economic contribution and share of accrued benefits. Men's labour profiles often show that most of them cannot account for numerous hours in a day or a week. Afternoons are traditionally set aside for walks, talks or recreation.

Environmental degradation

Environmental degradation is a major threat to the Lake ecosystem. Strategies to reduce and control pollution from land use activities, industrial effluent and waste, and urban sewage and waste should be addressed. Pollution arising from untreated sewage from urban centers, agricultural chemical run-off, industrial effluents and atmospheric sources are major pollutants and threat to natural resources and the environment. A pollution "hot spots" study carried out under LVEMP-I addressing both point and non-point sources of pollution found that industrial effluents are characterized by substances, which include organic wastes from food processing industries and inorganic wastes, textile and leather industries, timber industries, paper manufacturers, printing and publishing. The major non-point pollution source is run-off from urban centers that constitutes nearly 80% of the load entering the Lake from the catchments.

Source: EAC Reports.

Lessons learnt

During the implementation of LVEMP I, the project learned invaluable lessons in the field of capacity building, sustainable development and various thematic issues such as water hyacinth, community involvement in development, micro projects and integrated soil and water conservation. In capacity building, the following lessons were learnt:-

- The region has technical and infrastructure capacity to undertake similar or greater tasks;
- Local community members can successfully implement and manage development projects if they are facilitated in capacity building and derive tangible benefits from such ventures;
- Environmental resources can be well managed if their status is understood;
- The most successful projects are those that the community can foresee tangible benefits; and *inter alia*
- If local environmental resources are utilized sustainably, they can improve the livelihood of the people;

The micro-project component was initiated with the goal of providing incentives to the local communities around the Lake and its catchments to participate in components of the project across the board, while addressing concerns directly related to environmental management. It was also intended to act as a safety net that would cushion vulnerable groups against restricted access to natural resources. Use of Common Interest Groups, Community Action Plans, and use of Participatory Approaches such as the participatory rural appraisals in the micro-catchments and in National Agriculture and Livestock Extension Project (NALEP) focal areas have particularly been helpful.

Constraints to Agricultural Development

To assess the potential for agriculture and livestock development in the Basin, it is imperative that the report identifies specific sector constraints that hinder the intended objectives of the sector. Specific constraints that have negative impact on crop and livestock production and marketing of agricultural outputs have been identified. Other constraints are in the realm of infrastructure and the capacity of the population to coordinate and undertake complex development activities. These constraints include:

Constraints to crop production include;

- Inadequate extension service;
- Poor land-use practices;
- Environmental degradation;
- Limited availability of agricultural inputs;
- Low adoption of high-yielding technology and use of improved seeds;
- Poor research and extension linkages;
- Inadequate credit to finance inputs and capital investments;
- Lack of incentives resulting to low profitability of farm products;
- Inadequate infrastructure facilities;
- Inadequate storage facilities and
- High post harvest losses.

Constraints to livestock production

- Inadequate high quality fodder due to small land sizes;
- Unreliable breeding services that lead to either long calving intervals or degrading by use of poor quality bulls;
- High cost of dairy cows and concentrate feeds; and inter alia
- Low value addition.

Marketing Constraints include;

- Poor marketing systems;
- Poor marketing facilities;
- Inadequate commercial information; and
- Inadequate and poorly developed local raw material markets for industrialization.

Low Capacity to undertake development activities

- Low institutional capacity to undertake sustainable development; and
- Inadequate capacity of the people to undertake natural resources activities sustainably.

The above constraints, together with the general poverty of the area, require strategic approaches to reduce negative impact on the people and the environment.

3.3 Potential for Socio-economic Development

This assessment clearly shows that there is substantial potential for development in the agriculture and livestock sectors. The economy of the Basin is based on farming and livestock production. Any development strategy aiming at uplifting the standards of living of the people must be based on agriculture. But there are some natural and institutional factors that can enhance agricultural development in the Basin such as:

Climatic conditions and productivity

The climate of the Basin is quite reliable and favorable for most food and cash crops. Under these conditions, the Basin has the potential to grow food crops. Crops that should be introduced are horticulture, palm oil and amarantha. The drier pockets that experience reduced rains have the potential to increase the production of cotton, cassava, sweet potatoes, maize, sorghum, onions, sunflower and finger millets. Despite the enabling rainfall regime, the region experiences high poverty levels as indicated in Table 1. Annual maize production in Nyanza Province, for example was 4.5 million bags in year 2005, while annual consumption was estimated at 6.6 million bags, registering a deficit of 2.1 million bags. A similar trend characterizes the Western Province.

During the same period, Rift Valley Province produced a total of 17.9 million bags of maize valued at Kshs. 2.14 billion with the Basin districts producing about 16.5 million bags. This is over 94 % of the total maize production in the province. The districts also produce 3.1 million bags of wheat out of a total provincial production level of 3.7 bags. Over 50% of the beans are produced in the area. Clearly the Lake Victoria Basin districts are quite important in contributing to food security in the country in general and the region, in particular.

Potential for Irrigation: The River Catchments

The region is endowed with numerous rivers and tributaries that discharge water into the Lake. The sources of these rivers are the highlands of the Cherangani, Kisii, Mt. Elgon and the Mau escarpment. Western Province has about 100 permanent rivers and streams with potential for irrigation, however, the practice requires irrigable soils as well as knowledge to carry out irrigation processes. There are 180,000 ha of potential land for irrigation as shown in Table 2 below.

Table 2: Potential for Irrigation in the Basin

Basin	Location	Potential area (Has)
Nzoia	Middle/Lower	65,000
Yala	Yala Swamp	15,000
Nyando/Sondu	Kano Plain	60,000
Kuja/Migori	Lower	25,000
Others	Lakeshore	15,000
Total		180,000

Source: LBDA Strategic Plan

Currently, 12,450 hectares are under irrigation along the lakeshore. In Nyanza province, 920 hectares of land are under irrigation. If the entire land potential for irrigation were optimally utilized, the increase in the production of numerous cash and food crops would be phenomenal.

Proper exploitation of these resources could make the province a food breadbasket of the country. But most of the land is under sugarcane production, an enterprise that does not currently give farmers adequate returns, although improvement in the payment system is being realized.

Moreover, productivity from these lands depend on numerous factors, such as the soil type, type of crop, management levels and the market price of the commodity.

Land Suitability

The Basin has land with fertile soils. But excessive erosion is turning these lands into wastelands. Most of the agricultural land is grossly under-utilized. Productivity is low because of inappropriate farming practices. The Table 3 shows how land is utilized in the Nyanza Province.

Table 3: Land utilization data: Nyanza Province

Land Type	Km ²
Total land area	15,482
Area under water	3,291
Potential agricultural land	9,745
Exploited agricultural land	4,902
Irrigated land	920
Average farm size in hectares	2.2

Source: Provincial Annual Reports

Fig. 4 Land Degradation in Cherangani Hills



Similarly, Western Province, with a land area of 8,465 Km², has potential agricultural land of 6,670 Km² but only 3,600 Km² (54%) is utilized for crop production. But expansion of agricultural land does not necessarily translate into increased productivity. Production of selected crops for the period 2002 to 2005 is shown in the table 4 below:

Table 4: Production of major Crops: Nyanza Province-Unit – Bags

	Selected Crops	2002	2003	2004	2005
1	Maize	4,980,839	4,983,981	4,690,006	4,499,172
2	Beans	704,439	741,061	726,728	
3	Sorghum	773,300	751,726	462,928	751,826
4	Finger Millet	144,149	157,069		
5	Rice	36,100	39,480	142,554	39,480
6	Green Grams	9,761	14,678	16,313	14,678
7	Cowpeas	12,040	27,269	25,424	27,269
Metric Tons					
8	Tea	110,224	102,872	104,810	151,549
9	Coffee	18,417	22,682	26,825	10,747
10	Pyrethrum	689	541	171	76
11	Cotton	1,916	3,737	3,818	3,225
12	Sugar Cane		1,045,000	1,907,319	2,323,098
13	Tobacco	8,967	6,783	5,912	12,684

Source: Provincial annual reports

There is potential to increase the productivity in Western Kenya on the existing land. This would contribute significantly to food security, increased incomes and poverty reduction.

Livestock Production

The livestock industry contributes about 10 percent of the GDP of the country. The real proportion of this sub sector's contribution is likely to be higher if consideration is made of unrecorded slaughter and home consumption. About 50 percent of livestock is found in the ASAL areas. The country, on average, produces adequate livestock products mainly milk and meat. In the year 2004, milk production was 2,598 million liters while demand was 2,250 million liters. Demand for meat was higher than the production. The re-opening of the Kenya Meat Commission in 2006 provides an additional marketing channel for beef producing farmers.

During year 2005, Nyanza province, with a dairy cattle population of 197,133, produced 167.6 million liters of milk. In addition, 11.7 million kilograms of beef were produced. Nyanza has a beef cattle population of 1.5 million. The other parts of the Basin also produce similar quantities of beef with the Rift Valley excelling in milk production.

The major livestock kept in the region are the indigenous cattle and the high breed. Districts in the Rift Valley, Kisii and a few selected ones in Nyanza and Western provinces keep dairy cattle. Sheep and goats are also kept but in small numbers. Exotic poultry (chicken) and bee keeping play a role in the economy of the region. A few isolated farmers keep pigs while others keep poultry.

The ruminant feeding resource base consists of natural pastures and established forages such as napier grass. More emphasis is being put on expanding the existing napier acreage so as to ensure adequate Dry Matter Intake by the ruminants. Other feed resources include agricultural by-products such as sweet potato vines, banana pseudo stems, maize stovers and fodder trees. Some farmers use concentrates and leguminous shrubs as supplements to napier grass. Artificial insemination remains the biggest problem to farmers after it was privatized.

Except the RV and Kisii districts, livestock productivity is generally low in terms of milk and meat. Activities are included in the logical framework to promote productivity of the local zebu cattle. Other programs should be introduced to promote the dual-purpose goat and poultry production. Specific activities include up-grading of indigenous cattle breeds, introduction of dual purpose goat, promotion of poultry production; cross-breeding of the zebu cattle and improved management and training of staff, and farmers on livestock feeding and disease control.

The enormous potential in this sub-sector should be exploited to provide employment and incomes to the people of the region. This result should be achieved through proper livestock management practices and value addition.

Potential for Increased Agricultural Productivity

Fig. 5 Cattle fattening in Mwanza using Mashulu



The human and social capital in the region if properly harnessed could be used as a basis for enhancing productivity per unit of land. This is possible through the adoption and use of appropriate technology and the reversal in land degradation. This reversal can be achieved by using the recommended crop production techniques and proper conservation and tillage methods such as soil and water conservation, conservation tillage, soil fertility management and carrying out a proper farming systems approach that integrates crops, livestock and forestry farming systems. Crops that need to be promoted are:

Horticulture Crops

Horticulture is practiced in small-scale in the region. The prevailing climatic patterns can adequately support this type of farming. In spite of this, Kenya is unable to meet demand of cut flowers in the European market. But challenges are evident in the horticulture field. This is a private sector led activity and entrepreneurs should be given incentives to invest in the region. The incentives could be in form of tax waivers, foreign exchange retention accounts and provision of improved infrastructure such as roads to the connecting airports.

The inevitable use of chemicals poses increased environmental threat to the Basin. Their proper use should be promoted to avoid chemical discharge into rivers and the Lake. Since the main markets for flowers and fruits are outside the region, and in most cases in overseas locations, the presence of Eldoret International Airport and the Kisumu Airport adds value to this underdeveloped enterprise.

Sugarcane

The Basin is renowned for its sugarcane growing particularly in Western Province, Kisumu, Nyando, Migori, Gucha, parts of Homa Bay and Siaya districts. The crop has recently been introduced in Kuria District. Western province has currently 92,000 hectares under sugarcane while Nyanza has 53,715 hectares under the crop. The sugarcane production level edged 4.7 million tonnes in 2004 and 4.8 million tonnes in 2005 earning the country Kshs. 8.3 billion and Kshs. 9.2 billion respectively (Source: CBS, Economic Survey 2006). Sugar processing companies provide inputs and extension service to the farmers. The cost of the inputs is deducted from the farmer's proceeds. While payment to farmers has improved in the recent past, farmers still divert and sell some of the inputs mainly fertilizers to farmers outside their provinces. Sugarcane plantations, just like those of tea, perform well in preserving the environment. Proper management of this industry can increase income levels of farmers and contribute to the overall development of the country.

Palm Oil

Western Kenya, with insufficient funds, is in the process of introducing palm oil in the region. The Ministry of Agriculture has worked out the returns from this crop. The project should verify these returns. The province has currently about 22,000 seedlings against a demand of 300,000 seedlings. This crop has the potential to produce soap as a value added item, generate income and provide Vitamin A that boosts the body immune system. The private sector could be involved in the value addition venture. The Dominion Group of Companies investing in extensive irrigation in the Yala Swamp is spearheading oil palm production although for their own use.

Tea

Tea is currently grown in Kericho, Bomet, Bureti, Nandi and the Kisii districts and in smaller quantities in other Basin districts. In Kisii for example, during the year 2005, 22.9 million Kg. of green leaf were delivered to factories compared to 18.9 million Kg. delivered in year 2004. The growing of tea in the Basin has overtaken that of coffee. Tea growing provides employment to several households. The introduction of tea picking machines, currently a source of controversy, is likely to reduce employment levels in the industry. Districts such as Mt. Elgon could grow

substantial amounts of tea. The erosion that emanates from this mountainous region could be reduced significantly if the area is put under tea.

Cotton Production

The GOK is currently reviving the cotton industry. During financial year 2005/06, it appropriated funds to the Basin for cotton revival. An assessment of the Nambale Cooperative Union indicated that farmers are willing to revert to this crop as incentives are being given. Even under difficult revival environment, farmers were able to realize 975,000 Kg. in one season. (Source: Focused Group Discussions with the Management Committee). But the members of this Union face numerous constraints. The most critical one being lack of funds to assist them to buy inputs such as fertilizers, chemicals and sprayers. Funds are also required to pay farmers on delivery of their crop. It is therefore recommended that the possibility to provide loans to the Union be explored. Loan could provide fund for farm inputs and produce buying while grants could be given to upgrade some ginneries in the region. The management of the Nambale Union stated that it could add value to raw cotton by extracting oil from the seed, producing animal feed, and spinning the lint into threads and making clothes and blankets. This value addition would enable the union to pay farmers more for their deliveries than is the case now. But to achieve this mission, the management of the societies, the Union and the Cotton ginneries must improve significantly. Cotton seed (*Mashulu*) is being used in some parts of the Republic of Tanzania to fatten cattle so as to attract higher market prices.

Tobacco

This crop is grown in Migori, and Kuria districts. Attempts to introduce it in other districts were marred by protests from tobacco lobbyists who are against it on health grounds. The major cigarette manufacturers propel the growing of the crop. Farmers are contracted to grow the plant in their farms with the companies providing extension service and inputs. In 2005, the region produced 12,684 tonnes of the leaf valued at Kshs. 640 million.

Amaranthus

This crop is rich in various types of minerals and can be used to produce popcorns. The waste is ideal for feeding small stock. SAGA, a local NGO has been working closely with a marketer in providing support to farmers to grow the crop in Migori district. The marketer provides the seeds and technical support to selected farmers. SAGA provides the necessary finance for farm inputs and land preparation. The crop is also grown in Bondo district where farmers received loans from the Poverty Eradication Commission. LVEMP II could look into the possibility of promoting this crop subject to availability of assured market outlets with prices that guarantee reasonable economic and commercial returns.

Value Addition

With regard to value addition particularly in the cash crop sub-sector, middlemen or large organizations process some of the products. Sugarcanes are processed and packaged into sugar, tea leaves are processed and packaged into finished tea ready for the market. But the involvement of farmers, commercially or in terms of reaping the value chain benefits, is doubtful. The chain usually ends once delivery and payment of raw products is accomplished. Similar scenario obtains in the livestock sub-sector. Live-animals are sold, hides and skins removed, dried and exported by traders without adding value to them. Some value addition occurs in hides and skins as some local factories tan the skins into leather and produce shoes.

Current Value Addition Efforts

Value addition is minimally carried at various levels. Milk is pasteurized and packaged for ease of marketing. But processing milk into cheese is rarely done. Turning excess milk to power milk

requires high capital outlays and it is non-existent in the region. Milk is left to the New Kenya Cooperative Creameries and commercial dairies that pasteurize it and repackage it for local and regional markets.

Most farmers sell the hides and skins to retailers who dry the items and sell them in that state, sometimes to tanneries outside the region. Firms located as far as Nairobi and Thika, more than 400 Kms. away, add value to these products. Honey is usually semi-processed into pure honey that is sold to supermarkets. Beeswax is also extracted and most of it goes into waste.

Value addition in the cotton enterprise is minimal. First, growing of the plant is being revived while the management of cotton growing by societies is weak. Farmers could add value by extracting oil from the seed, producing animal feed and spinning the lint into threads and making clothes and linen. Value addition in palm oil can take the form of soap production and the provision of Vitamin A that boosts the immune system. Other crops such as sunflower, safflower and groundnuts can be used to extract oil and create additional employment and income for the farmers. Chips can be made from sweet potatoes, Irish potatoes and cassava.

Value addition in maize is quite low. Apart from milling the cereal into flour, and sometimes roasting for direct consumption at marketplaces, there is no additional processing done. Packaging of the flour is not even done at the Basin level. Sugarcane production has the potential to generate electricity for local use and molasses for livestock. The market for these commodities is vast, at least in the medium term.

Adding value to the products from the region should be one of the main objectives of the stakeholders in the Basin. The required investment could be shared among the development agents in the region. The agents include locally available funds such as the Constituency Development Fund and the Local Authority Transfer Fund, among others. Local resources should be utilized to create employment and wealth and should therefore be internalized in the development agenda of the Basin. Table 5 below gives the potential for value addition in some selected products

Table 5: Potential for value addition for some elected products

No.	Crop/Product	Value addition Possibilities
1.	Fruits	Canned fruit juices
2.	Sugarcanes	Sugar processing, Molasses for Livestock and Generation of Electricity (Power Alcohol)
3.	Vegetables	Dried for longer Shelf Life
4.	Maize	Maize Meal and Maize roast for direct Consumption
5.	Sweet Potatoes	Potato Chips
6.	Irish Potatoes	Potato Chips (French Fries)
7.	Cassava	Cassava Flour, Cassava Chips
8.	Ground nuts, Sunflower and safflower	Cooking Oil Extraction
9.	Palm Oil	Soap Production
10.	Cotton	Cooking Oil Extraction, Production of Animal Feeds, Spinning of Lint and Making Clothes
11.	Amaranthus	Popcorns, Medicinal Powder, Animal Feed
12.	Milk	Pasteurization of Milk, Making of Cheese, Yogurt and Powder Milk
13.	Hides and Skins	Tanning into Leather, Making of Shoes and other leather products such as Handbags and Belts
14.	Honey	Bottle Pure Honey, and Beeswax

The project should join farmers and other stakeholders in the private sector to look for markets for the value added products. Super market chains and other retail outlets could provide reliable market opportunities for the farmers value added produce.

4.0 FOREST RESOURCES

4.1 Overview

The first forest policy in Kenya was written in 1957. The policy covered preservation protection of the forest estate and sustainable exploitation of forests. Afforestation and conservation of forests in “African areas” were to be encouraged as well as management of privately owned forests. The value of forests for public amenity and wildlife was recognized. This policy was revised in 1968. In the year 2005, a Sessional Paper on Forest Policy was concluded.. The broad objective of this policy is to provide continuous guidance on sustainable management of forests. The policy takes into account other existing policies relating to land and land use, tenure, agriculture, energy, environment, mining, wildlife and water. The policy emphasizes greater cooperation and linkage among resource owners, users, and resource planners.

The goal of this policy is to enhance the contribution of the forest sector in the provision of economic, social and environmental goods and services.

Specific objectives of the policy are to:

- Contribute to poverty reduction, employment creation and improvement of livelihoods through sustainable use, conservation and management of forests and trees;
- Contribute to sustainable land use through soil, water and biodiversity conservation, and tree planting through sustainable management of forests and trees;
- Promote the participation of the private sector, communities and other stakeholders in forest management to conserve water catchment areas, create employment, reduce poverty and ensure the sustainability of the forest sector;
- Promote farm forestry to produce timber, woodfuel and other forest products;
- Promote dryland forestry to produce woodfuel and to supply wood and non-wood forest products;
- Promote forest extension to enable farmers and other forest stakeholders to benefit from forest management approaches and technologies; and
- Promote forest research, training and education to ensure a vibrant forest sector.

While this policy was assented in November 2005, its’ implementation along the lines outlined in the objectives require concerted efforts from all the stakeholders. Its success will largely be dependent on what educational programs and awareness creation the government will have to inform the users of forest resources.

Kenya’s forest cover is by far below the internationally recommended level of 10% of the land mass. It is estimated that forest cover has sunk as low as 1.7% of total land surface. (Understanding the New Forest Policy and Forest Act, 2005). In a country the size of Kenya, this forest cover is quite minimal by all standards. Although forest resources provide incomes to the people, commercial overexploitation has depleted the resource drastically. Poor conservation of fauna and flora has added to this catastrophe. Deforestation of forestlands and increased cultivation on steep lands due to population pressure has exacerbated soil erosion problem in highland areas. Challenges that arise from this trend include lack of awareness on environmental and management issues related to natural resources.

The Economic Survey also states that acquisition of land for human settlement continued. The average Kenyan household continued to utilize forest products, namely firewood and charcoal as their main sources of fuel. The government, however, banned the exploitation of timber since 1999. The ban did not cover the areas under Pan Paper Mills and Raiply, who are the manufacturers of

paper and wood products. The two firms are located within the Basin and consume considerable forest resources.

Importance of Forestry

Forests are critical in the conservation of water catchments areas and as natural habitat for wildlife, building materials, fuel and other forms of usage. Under the forest plantation program, Kenya had 132,300 hectares of forest in both 2004 and 2005. In 2001, the area under plantation program was 120,000 hectares. Comparison between 2001 and 2005 shows that the government effectively stopped further excision of new areas. Apart from the forest plantation program, the country has gazetted forests, indigenous trees and private forest plantations including agro-forestry. Contribution of forestry resources and products to the national economy is aggregated with agriculture. It is therefore difficult to discern its contribution from the national statistics.

Forest Products and Industries

Timber and Wood Products

The forest policy underscores the functions of forests especially those managed for commercial utilization. Subsistence needs, especially those associated with domestic energy supplies, shelter and fodder are seen as priority. A considerable portion of woodfuel, including charcoal is obtained from indigenous trees some of which are from the arid and semi arid areas. In terms of quantity, the most important forest product is wood energy. But most of the consumption is for subsistence use and its contribution to the economy is not known. The production and transportation of charcoal has remained unregulated yet large quantities are consumed locally.

Non-wood Forest Products

Non-wood forest products are critical to the livelihood of the rural communities and in some cases they account for a significant share of the household incomes. Non wood-products include gums, resins, honey, essential oils, frankincense, myrrh, fibres, medicinal and aromatic plants, dyeing and tanning materials. Some indigenous tree species such as *Prunus africana* and Aloe have the potential to earn the country money from international markets. To ensure continuous supply of these products and community support, there is need to promote sustainable production and utilization of wood and non-wood forest products.

4.2 Forest Resources in the Basin

The Lake Basin has about 461,000 hectares of forest cover that are distributed as follows:

Mt. Elgon	73,000
Cherangani Hills	53,000
Kakamega Forest	23,000
Nandi Forest	30,000
Tinderet-Mau	210,000
Ilkerin-Lolgorian	60,000
Gwasi Hills	12,000 (of ungazetted forest).

Over the last ten years or so, the forest cover has been dwindling at an alarming rate. Research carried out by KIFCON (1992–1994) revealed that the loss of gazetted forest per year was 500ha. But some of the illegally allocated areas are in the process of being reclaimed. The Basin has large areas where shrubs are dominant.

Catchment afforestation was designed as a pilot project in LVEMP I under the land use and wetland management component. Its objective was to protect vital parts of the catchment by planting trees, increasing awareness among communities on catchment protection and tree

farming, developing local seed sources, improving management of existing forest reserves and creating new reserves, including the conservation of biodiversity.

In traditional societies the role of forests as a source of timber for construction and to some extent, fuel wood supplies was minor compared to the wide range of forest products such as medicines, grazing pastures, hunting grounds and security habitats. With the modernization of the society, demand for timber and other wood products have been on the increase. This trend necessitated the government to regulate forestry management. Forest Acts have been the vehicle through which efforts to manage forests sustainably have been carried out.

4.3 Constraints to Sustainable Conservation of Forests

Excision of land for settlements and development

In the past, there has been a practice for the authorities to allocate land in gazetted catchments for settlement and farming. Government efforts to resettle people in forest areas have continued to undermine the ecological integrity of the forest ecosystems. Extensive excisions were instituted in late 1980s and early 1990s. Most affected forest ecosystems included the Mau Complex, Mt. Kenya and the Cherengani Hills.

Time series data on excisions in the whole country is treated as confidential. This is because most excisions were done illegally. The current government is trying to reverse the process but this will take time to achieve due to legal battles and political interferences. Rehabilitation of the areas will also require resources in terms of money and time.

Between 1963 and 2001, 229,596 hectares of land were excised in various parts of the country. The Lake Victoria Basin lost 90,568 hectares, which is 39% of the excision. Most of the land was used for settlements. Districts in the Rift Valley lost most the land. All the legal excisions are backed by a gazette notice.

Table 6 Excision of Land, Lake Victoria Basin 1963-2001

No.	Forest	District	Excision Has	Purpose
1	Kitale	Tran Nzoia	3	Reason not known
2	Lembus	Koibatek	946	Sigoro settlement
3	Lembus	Koibatek	781	Tinet settlement
4	Lembus	Koibatek	4,601	Torogo settlement
5	Kiptaberr/Kapkonya	Marakwet/W. Pokot	23,487	Settlement
6	Londiani	Nakuru	211	Settlement
7	Londiani	Nakuru	45	Settlement
8	North Nandi	North Nandi	27	Settlement
9	North Nandi	North Nandi	34	Settlement
10	North Nandi	North Nandi	52	Settlement
11	North Nandi	North Nandi	13	Settlement
12	North Nandi	North Nandi	36	Settlement
13	North Nandi	North Nandi	12	Settlement
14	North Nandi	North Nandi	144	Settlement
15	North Nandi	North Nandi	66	Settlement
16	South Nandi	Nandi S	254	
17	South Nandi	Nandi S	25	
18	Ururu	Nandi S	45	
19	Ururu	Nandi S	84	
20	Kapchemutwa	Keiyo	7	

No.	Forest	District	Excision Has	Purpose
21	Kapchemutwa	Keiyo	35	
22	Kapchemutwa	Keiyo	60	
23	Kapchemutwa	Keiyo	8	
24	Kapchemutwa	Keiyo	77	
25	Kapchemutwa	Keiyo	55	
26	Kapchemutwa	Keiyo	5	Singore Girls
27	South Western Mau	Kericho	3,798	Embobomos sett.
28	South Western Mau	Nakuru	0.85	Farming
29	Western Mau	Kericho	8	Farming
30	Western Mau	Kericho	57	Addition to S W.Mau Frst
31	Western Mau	Kericho	8	Farming
32	Turbo	Lugari	4.6	Railway realignment
33	Mount Elgon	Bungoma	3,686	Settlement of Elgonyi
34	North Tinderet	Kericho	4	School
35	Eldoret	Uasin Gishu	1	Land exchange
36	South Western Mau	Kericho	128.	Tea Research institute
37	Malaba	Kakamega	4.4	School
38	North Nandi	Nandi	17	
39	North Nandi	Nandi	943	Settlement
40	North Nandi	Nandi	943	Settlement
41	Kakamega	Kakamega	3,985	National Reserve
42	Kisere	Kakamega	485	Kakamega National Reserve
43	Kitalale	Trans Nzoia	313	Exchange with 372.3 ha added to Mt. Elgon
44	Lembus	Koibatek	3,936	Settlement
45	Katimok		7	Exchange with an individual land used by a school
46	South Western Mau		8	Individual allotment
47	Western Mau	Kericho	552	Excising correct area for Sambret Tea Estate
48	South Western Mau	Kericho	137	Excising correct area for Sambret Tea Estate
49	Kitalale	Trans Nzoia	189	For farming
50	Chepalungu	Bomet	5,210	Settlement
	Kaptagat	Marakwet	161	For a school & other amenities
27	N. Tinderet	Nandi	34	For Sochoi Sec.
28	Kachemutwa	Marakwet	5,606	For farming
29	N. Tinderet	Uasin Gishu	20	Sawmill
30	S.W. Mau	Kericho	159	Tea Research
	South Nandi	Nandi	1542	Settlement
	Kaptagat	Keiyo	17	Settlement
	South Nandi	Nandi	11	Settlement
	Kapsaret	Uasin Gishu	1194	Settlement
	Nabkoi	Uasin Gishu	38	School
	Mt. Londiani	Koibatek	125	extension of Kibunja Township
	Molo East	Nakuru	902	Settlement
	Northern Tinderet	Uasin Gishu	788	Settlement
	SW Mau & W. Mau	Nakuru & Buret	24,109	Settlement
	Western Mau	Kericho	324	Settlement
	Total Hectares		90,568	

Demand for wood products

The increasing demand for timber, building/fencing poles and other wood products has exerted a lot of pressure on forest resources. There are big companies in the region that exploit forest resources. While these resources are necessary for an economy to grow, it is imperative that sustainable exploitation be taken into account. With increasing poverty levels, there is greater tendency for communities to rely more on forest resources to satisfy household needs for woody products.

Demand for fuelwood

A vast majority of the urban and rural population depend on woodfuel as the main source of energy for cooking and heating. It is estimated that about 80% of the energy needs are met through the use of wood. People in these areas use charcoal and firewood to prepare meals. Charcoal is also produced as a source of income. The harvesting of forests for charcoal burning is characterized by poor technologies that waste the resource. Traditional jikos require too much wood or charcoal to prepare a meal. The maendeleo jiko is the way for the future since it conserves heat.

Inappropriate land management practices

Extensive clearing of trees and bushes to grow crops and graze livestock has also led to the current state of deforestation. Poor land management practices have resulted to destruction of trees, and reduction of pasture cover in the catchments. Poor use and disposal of pesticide residuals on farms have had negative impact on the ecosystem. Bush-fires are applied as a means of clearing large tracks of land therefore leaving the land exposed to vagaries of weather.

Land sub-division

Subdivision of land in freehold areas has contributed to the destruction of woodlots in homesteads. Moreover, overstocking of livestock has led to overgrazing of the limited pastures and contributed to increased loss of biomass.

Inadequate use of economic Instruments

Kenya has traditionally relied on non-economic methods to enhance, preserve and manage forests and trees. Economic incentives to encourage private tree nurseries, private tree planting and better management of trees have not been applied. But these traditional methods have not instilled reasonable culture of tree planting and management in most communities. A strategic choice should be made to provide financial support to individuals and organizations that propagate seedlings for sale to the market. In addition, a proclamation that any individual who plants and takes care of a predetermined number of trees would be recognized, either with a monetary reward or an award such as a medal or a certificate would increase the number of trees in Kenya considerable. This would help in tackling the challenges of climate change.

4.4 Measures to Sustainably Conserve Forest Resources

Improving Management of Forest Reserves

The mandate to manage gazetted forests and forest reserves is vested in the Forest Department. Activities that improve the capacity of the staff and any contribution to strengthen the institution would contribute to better management of forests. The forest extension service should be strengthened to meet the challenges as envisaged in the Forest Act. While expenditures on this activity seem to be recurrent, the department should be enabled financially to restore the deforested areas. Restoration of forests would entail expenditures in wages of casuals, transport of seedlings and supervision.

Promotion of Agro-forestry

Because of the small size of land in most of the region, it is necessary that agro-forestry techniques are promoted. Land sizes are small, 0.6 ha in Kisii, 2.2 ha in Nyanza and sometimes less in some districts. Agro-forestry would ensure that a certain degree of tree cover is included in the farming system. But the farmers should be made aware on the most viable tree species and how to take care of them as sometimes pests interfere with their root growth. Financial support should be given to farmers willing to establish commercial tree nurseries.

Collaboration with other Programs

There are numerous organizations that are involved in catchment afforestation that are operating within the Basin. These organizations include IFAD and DANIDA and other projects involved in agro-forestry, soil and water conservation, capacity building and the promotion of sustainable land use practices in Trans Nzoia, Kisumu and Nyando districts. The LBDA and KVDA are involved in the production of tree and fruit tree seedlings in the Kerio Valley and the Lake Basin areas. In addition, the Green Belt Movement is a key player in the Basin. This collaboration would need to be coordination in order to reap benefits of synergy in the programs. Collaboration could also take the form of joint financing of projects activities.

Social Responsibility by Major Stakeholders

As part of their corporate social responsibility, major commercial and public institutions in the Basin should be encouraged to support afforestation initiatives. Some of the institutions are the Sondu Miriu Hydropower Plant, Webuye Paper Mills, the molasses plant and the sugar factories, just to mention a few.

Woody Biomass Sub-sector Development:

The overall wood and other biomass supply exceeds demand. However, some densely populated regions are experiencing shortages. With the population growing rapidly, demand for biomass will continue to increase. The entire policy framework for forestry production must be reviewed with a view to encouraging private tree planting and private forestry expansion. This would greatly promote the production of woody biomass as a cost-effective and sustainable national resource. It would also increase agricultural productivity.

In terms of biomass demand and supply, the Basin runs a huge deficit. The table below depicts this situation:

Table 7: Biomass Balances Situation in the Basin-Tonnes Year (2000)

Province	Demand /Consumption	Wood Biomass Supply	Crop Residual	Wood Waste Supply	Total Supply	%
Nyanza	5,394,571	1,098,395	408,394	120	1,506,910	-72
Western	4,171,217	696,791	344,218	162	3,130,047	-75
Rift Valley	8,649,465	4,440,500	767,612	9,961	5,218,074	-39

Source: Study on Kenya's Demand, Supply and Policy Strategy for Household, Small Scale Industries and Service Establishments-Kamfor Company Ltd.

The above table shows the severity of biomass deficit in the region. This situation indicates the pressure that the region is apt to face if significant measures are not put in place to improve the tree cover of the region.

Provision of alternative sources of energy

The development thrust of the region should be geared to making available alternative sources of energy supply. Although the cost of electricity in Kenya is prohibitive to the poor urban dwellers and the rural people, its availability has the potential to reduce the amount of charcoal and wood used for cooking. The region has the potential to produce additional capacity for hydro-power from Nzoia, Yala and to some extent, Nyando and Kuja/Migori rivers. The use of solar energy should also be explored. Prices charged on these forms of energy will determine the effectiveness of these sources on the environment.

Creation of Awareness

Tree planting has been hampered by inadequate diligence on the importance of maintaining a sound ecosystem. People who are far from the Lake such as those who live in Kericho/ Nandi and Cherangani Hills axis might not be aware of the detrimental effects of their inappropriate land use practices. In the circumstances, awareness on the role that trees, shrubs and other biomass resources play in environmental management should be discussed with the people living within the catchments and mitigating activities agreed upon and implemented.

Indigenous knowledge and skills such as conservation of shade trees, medicinal trees, and shifting cultivation are useful in the management of soil and water and the striga weed. River bank cultivation is also traditionally prohibited and this helps to conserve river -banks. It is therefore imperative that pupils and students are taught the importance of tree planting and management during their nascent years of life. An environment tailored course should be incorporated in the school's curriculum.

Lack of proper environmental management is detrimental to the ecosystem and the Lake at large. Erosion from the catchments reduces soil fertility with detrimental effects on crop production; lack of trees impacts negatively on the fuel situation of most of the rural poor who have no access to alternative sources of energy; The Lake suffers from excessive silt loads thereby affecting fishery catches with punitive consequences to the fisherfolk. Integrated and well-coordinated approaches should be built in the design phase to ensure that all the components support and strive to achieve similar results as outlined by LVEMP-II's goal and objectives.

Other options to promote forestry conservation:

- There are other non-conventional methodologies that could be developed and tried in the effort to conserve the environment. These methods include charging for forest ecosystem services and carbon trading which are being tried in other countries. This desire should be treated with caution as it might introduce radical changes in the forestry sector that could be resisted by the players.
- Promotion of forest based enterprises, use of efficient technologies in processing forest products is highly recommended.
- The program may consider providing incentives to the private sector, Non-governmental organizations and private individuals to undertake tree-planting activities. The incentives could take various forms such as training, provision of equipment and technical assistance.

5.0 FISHERIES RESOURCES

5.1 Overview

The Kenyan economy benefits significantly from the Lake and its' marine resources. Kenya has a coastline of 680 Kms, yet marine fishing has not matched inland catches. This is due to overexploitation of the inshore fish potential and the inability to exploit the offshore fish stocks (Republic of Kenya, 1997-2001). Annual marine fish catch landed from inshore waters (Indian Ocean) fluctuate between 5,000 metric tons to 7,000 tons per year. The full potential of the Exclusive Economic Zone is yet to be exploited. Total fish landed in the country in year 2004 and 2005 was 135,578 tonnes and 143,274 tonnes respectively. The value of the fish was Kshs. 7.76 billion (USD 0.103) and Kshs. 7.795 (USD 0.104) billion (Republic of Kenya, 2006).

In the East African context, the Nile perch is a vital foreign exchange earner for the riparian states. The demand for fish places considerable pressure on the fishery resources of Lake Victoria. For example, fish fillet export revenues in Tanzania dropped from \$161.6 million in 2004 to \$152 million in 2005; In the same period, export of Nile Perch fillet was 71,000 tons but fell to 63,000 tons in 2005. This declining trend is characteristic for all the riparian states.

Fish landed from Lake Victoria accounts for 98% of production from inland Lakes and about 93% of all the fish landed in the country. But due to its labor-intensive nature, the fisheries industry offers considerable potential for employment and income creation to small-scale fishermen and fish traders.

The status of the fishery industry in the Lake before 1997 was marked by an ever-increasing population pressure and increased socio-economic activities due to changes in land use patterns, water quality, biodiversity, and wetlands. In the 1980s and the '90s, the Nile perch industry was established as a commercial venture with markets mainly in the European Union. Suddenly the demand for Nile perch that had been shunned by the local communities sprung up. At its peak in the late 1990s, there was a total of eleven fish processing plants dealing specifically with the Nile perch in the country. The handling and processing conditions that characterized the industry both at the landing sites and at the factories did not conform to the required standards prescribed for the industry. At the landing sites there were very few sanitary facilities, no potable water and the use of ice was almost non-existent. At the factories, the handling procedures were especially wanting and the observance of good manufacturing practices was not assured. Consequently, the Department of Fisheries moved to form an inspection service to address the anomalies.

5.2 Government Policy

The policy of the government in this sector is to make a deliberate effort to encourage sustainable exploitation of fisheries (Republic of Kenya, 1997-2001). This would be achieved through paying special attention to more value adding industries. The government also aims to strengthen the enforcement of rules and regulations within the Kenyan fishing waters with special emphasis on Lake Victoria. The is a deliberate policy to encourage the private sector to play a more proactive role in processing activities and invest in fish filleting, fish canning, smoked fish, fish meat, skin tannery and other fish by-products. In regard to Lake Victoria, the government undertook to support:

- Fish farming surveys;
- Control efforts of water hyacinth in all the lakes;
- Fisheries applied research especially on capture and culture fisheries, production of fish feed and seed, and restocking programs;

- Stock assessment surveys in order to improve the country's fishery database;
- Development of infrastructure in and around landing points. This would include the construction and maintenance of access roads, landing sites, cold storage and ice-making plants, rural electrification and the provision of social services and amenities;
- Introduction of fish breeding farms for restocking depleted areas and for supplying fish farms and ponds; and
- Provision of credit to fishermen through co-operatives and other lending institutions to enable them to acquire better fishing gear, transport and storage facilities and for fish processing and marketing.

In spite of these policy pronouncements, the fishing community confronts the same problems.

5.3 Historical Trends of the Fishery Industry

The traditional Lake Victoria fishery was exploited by simple fishing gears such as basket traps, hooks and seine netting made out of papyrus. Fishing pressure was minimal until the demand for fish was stimulated by the development of urban centers along the Lake-shore and the arrival of the East African Railways at the Nyanza gulf in 1908. The introduction of flax gillnets and later, of beach seines, probably made of flax webbing produced localized and generalized over fishing during the late 1920 and 1940's.

The introduction of the more efficient gillnets made out of synthetic fibers and the outboard engine the following year significantly increased the fishing pressure and the fishing range, but fish yield increased only marginally. In response to declining catches, fishermen shifted from the recommended fishing gear mesh sizes of 127mm (for gillnets) to smaller meshes. More destructive fish gears and methods including the use of beach seines and fishing at river mouths, where gravid *L. victorianus* migrating up-river spawn, were intensified in search for fish. The net effect was a serious decline in the catches of the traditionally cherished fisheries.

The species composition in the Lake has drastically changed over time. It is believed by the scientific community that fish stocks of Lake Victoria consisted of more than 500 species (HEST, 1996). The environmental and exploitation methods and predation by the Nile perch, the use of wrong fishing gears have contributed to the dramatic loss of fish biodiversity in Lake Victoria (Ochumba and Manyala, 1992). The Nile perch, Tilapia and Omena have established themselves to the extent that they dominate commercial fisheries of the Lake.

Inundation of shoreline by vegetation effectively increased the littoral zone and hence the spawning nursery and feeding grounds of fishes especially the tilapias. The high Lake levels did not give rise to increased performance of the indigenous species.

The fishery resources of the Lake have high historical value as a source of protein and employment opportunities for the Lakeside communities. Artisanal fishermen spend most of their time fishing for home consumption, local trade and for sale to commercial processors. Fishing in the Lake can be tricky since the fishermen do not know territorial boundaries of their countries and hence are severally arrested when their boats stray away. The East African countries should therefore make efforts to harmonized laws governing the Lake.

Fish Processing Chain

The introduction of the Nile perch, while ecologically catastrophic, has been of short-term benefit to large fishing companies around the Lake. The long-term benefit is at stake as over-fishing reduces its population. In 2004 there were 14 fish processing and exporting companies around the Lake. But due to diminishing fish resources, only 6 factories are operational. The factories

operating by 2006 are: the East African Sea Foods Limited, Prinsal Enterprises Ltd., Fish Processing (2000) Ltd., Peche Foods Ltd., W.E Tilley Ltd., and Capital Fish Ltd. Some of the factories relocated to Uganda where there is more fish catches.

The fish industry has a chain of stakeholders who include the artisanal fishermen, agents and sub-agents, and processors. The fish market has a structure that categorizes traders focusing on the internal market and others dealing with the international market. The later market requires high fish handling standards of Nile perch fillets that are exported to various countries.

Production of fish in the Lake Victoria Basin

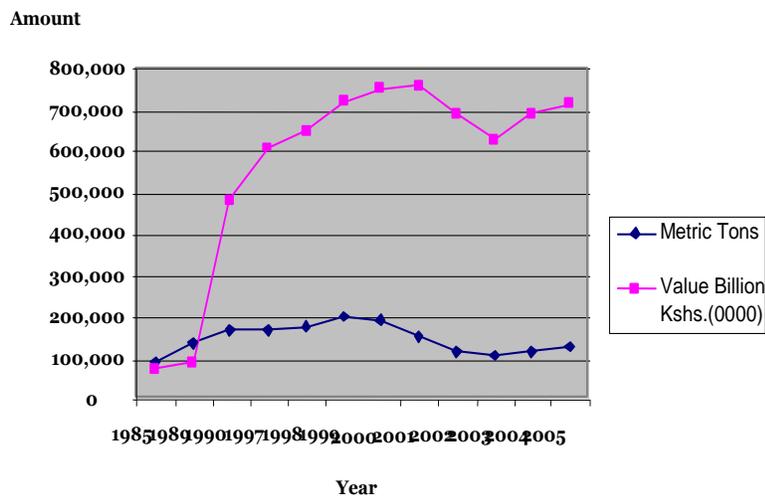
The Table 5 below shows fish production in quantities and value between 1985 and 2005.

Table 8 Total Fish Landed and Value 1985-2005

Year	Metric Tons	Value Billion Kshs.(000)	Value Billion Kshs.
1985	89,000	75,000	0.75
1989	135,400	91,000	0.91
1990	166,800	481,000	4.81
1997	166,640	610,000	6.1
1998	176,579	650,000	6.5
1999	200,159	720,000	7.2
2000	192,740	750,000	7.5
2001	151,804	760,000	7.6
2002	114,812	690,000	6.9
2003	105,866	630,000	6.3
2004	115,757	690,000	6.9
2005	124,625	714,000	7.14

Source: LBDA Strategic Plan 1985-2000, and Economic Survey 2006

Fig. 6 Graphic depiction of Fish landed and value (1985-2005)



It should be noted that fish landed in 1989, 135,400 metric tons, was more than the quantity landed in year 2005 (124,625 mts). Also the volume of fish landed reached what appeared to be maxima in year 1999, but a declining trend followed until 2005. Production for fiscal year 2004 and 2005 shows some notable increase.

5.4 Constraints to Fish Production

There are numerous constraints and bottlenecks that hinder the development of the fishery industry in Kenya. These include:

Reduction in Species

The introduction of the Nile perch and tilapia had a negative impact on the indigenous fish species. The Nile perch, the tilapia and omena currently dominate the Lake. During stock assessment survey carried out between 1997 and 2000, it was found that the Nile perch contributed 85% of the total catch in the entire Lake. The survey also found that this fish species is highly over exploited. (Source: Research papers by the EAC)

Inappropriate Fishing Methods

In order to exploit this resource sustainably, fishing gear specifications were determined. But the fishermen use illegal and destructive gears especially undersized gillnets and beach seines. The under-sized fishing gear contributes to overexploitation by catching the undersize fishes. This practice definitely contributes to sharp declines in the mature fish population at some point in time.

Fig. 7 Fisherman repairing fishing net



Artisanal Exploitation

For a long time, the fishery resources existed in harmony with the resource users. (Geheb, 1995). The first fish catches in the Lake were for subsistence purposes. Fishing gears made out of local materials such as traditional traps and spears operated from simple rafts or dugout boats, kept fishing pressure and intensity in check (Graham, 1929; Jackson, 1971). These fisheries were restricted to areas close to the shore and had little impact on fish stocks. This harmony was destroyed when transport became more efficient opening fresh areas for fish supply. This advancement led to commercial fisheries and introduction of more efficient fishing gears.

Fig. 8 Over-exploitation of fish in the Lake

Inadequate enforcement of legislation

While legislation was put in place to facilitate proper management of these resources, there is inadequate machinery to enforce the laws. As a consequence, unsustainable modes of exploitation are witnessed across the board. It is therefore imperative that the authorities consider investing more in surveillance and law enforcement to save the Lake from economic and ecological collapse.

The presence of the water hyacinth

The presence of weed obstruction makes it difficult for the fishermen to navigate freely into the affected areas. The control of this weed has enabled boats to access the waters previous



covered and allowed people to access water for domestic use and for livestock.

Lack of adequate and timely data

Large amounts of data have been collected but have not been translated into analytical outputs that could be used for project prioritization and decision-making. Lack of prioritization in research has led to a large output of activities and papers that, in some cases, duplicates already known work and does not lead to overall strategic conclusions about where the focus should be.

Health issues

The centrality of the Lake to the lives of the communities in the Basin cannot be gainsaid. The Lake presents both opportunities and threats to the existence of these communities. Its resources have not been optimally utilized while the fishing industry has created HIV/AIDS ravaged communities threatened with extinction. Sub-cultures of casual, careless and commercial sex have emerged amongst the fisherfolk communities.

Other constraints include:

- Poor Infrastructure
- Inadequate Research Which Is Relevant
- Inadequate Extension Efforts
- Markets Or Marketing Information

Fishery Processing and Marketing

Despite the fact that fish stocks continue to dwindle, artisanal fisherfolk face difficulties in marketing fish. Lack of cold storage and ice-making plants obligate them to sell their catch to middlemen at low prices. Men further exploit women, as they demand sexual favors, sometimes, as a condition to sell fish to them. This is one of the reasons that explain the prevalence of high rates of HIV/AIDS among the fisherfolk. Given the low quantities of fish on the Kenyan part of the Lake, the available processing capacity is adequate, at least in the medium-term, before the stocks are replenished.

But to ensure that the fishery community continues to prosper within the Lake and the industry, a constant supply of fish is important. But the myriads of problem that the sector faces must be addressed appropriately. On the top of the list are the non-point pollution from the various catchments and the point pollution from municipal wastes and industrial discharges evident in major towns such as Kisumu and Homa Bay.

5.5 Development Potential

In order to increase fishery stocks, there are areas where corrective measures could be taken to mitigate this negative effect. The measures include the enforcement of the Fisheries Act, and the promotion of aquaculture that would increase fish stocks in the region. It is estimated that the Basin has a total of 342,000 persons directly deriving their livelihood from this sector. An additional number is engaged in fish marketing, transportation and processing. The LBDA estimated that the total number of stakeholders in this industry is about 500,000, the majority of whom are traditional fish eaters. The fishery enterprise has the potential to give impetus to the building, operation and maintenance of wagon vessels, ferries, boats, cruise ships and other means of water transport. (Source: LBDA Strategic Plan 2005-2010.)

Control of Pollution and Waste Management

The overall fishery development in the Basin relies heavily on a few but nevertheless major institutional and attitudinal dimensions. Disposal of wastes, some of which is toxic and discharge

of effluents should be the focus of clean environment. The pollution from the entire Lake catchment threatens to put to an end the aquatic life of the Lake with its resultant socio economic impact. The riparian communities should change their attitudes towards environmental management. But the pollution element in this equation is nevertheless quite complex. The riparian population must be aware of the magnitude of the problem if corrective measures are to be urgently and collectively instituted to forestall menace and save the Lake and its ecosystem from collapse. Thus, project activities should be formulated to mitigate discharge of untreated sewage, industrial wastes that are usually toxic, oil spills from garages, agricultural chemicals and acaricides, and solid waste.

Enforcement of Fishing Statutes

While plans for implementing environmental programs in the Lake are necessary, the combined force of the law would bring about changes in environmental management and utilization faster. It is therefore recommended that LVEMP-II should support the arms of government that enforce environmental regulations. This support could be in the form of funds for use in review of the existing legislation and material support to the fishery communities.

Community Management of Fishery Resources

The community within the basin benefit marginally from the proceeds of fishery operations. In this regard, community involvement in the management of the chain should be promoted. The role of Beach Management Committees should be supported. Finances from the investment fund could be loaned to the fisherfolk to undertake fish related activities. This aspect will enable them to understand the complex nature of the industry and appreciate the measures that are required to sustain their livelihood. Over utilization of the resource should be curbed by devising measures to address the problem, some of which are in the realm of legislation and awareness.

Improvement of Infrastructure

The requisite infrastructure that has the potential to improve the fishery industry are:

- The improvement of the road network leading to the beaches;
- Financing of cold storage facilities;
- Rehabilitation of fishing gears e.g. boats, nets;
- Upgrading fish landing bandas; and
- Abating poor fishing methods.

Value Addition

Value addition to fish and fish products will guarantee high incomes to the fisherfolks. But this can only happen when the fisherfolks start playing much more significant role in the industry. The current industrial structure is skewed towards the processors to the detriment of the people and the environment.

6.0 ECO-TOURISM DEVELOPMENT

6.1 Overview

Kenya described as “the land of contrasts” is endowed with unique tourist attractions, comprising tropical beaches, and abundant wildlife in natural habitats, scenic beauty, and a geographically diverse landscape. It has a remarkable diverse flora and world famous wildlife heritage.

Tourism contributes about 10 per cent of the GDP, making it the third largest contributor to GDP after agriculture and manufacturing. It is also Kenya’s third largest foreign exchange earner after tea and horticulture. Earnings from Tourism increased from Kshs. 38.5 billion in 2004 to Kshs. 48.9 billion in 2005 (Republic of Kenya, Economic Survey 2006). The tourism sector has been identified as one of the sectors that can contribute positively towards poverty alleviation as set out in the government’s Economic Recovery Strategy Paper for Wealth and Employment Creation 2003-2007.

In addition, tourism is a major source of employment in both formal and informal sectors. The sector is also a major source of government revenue and contributes to the payment of taxes, duties; license fees and entry fee, while the spatial distribution of tourist attractions contribute to equitable distribution of economic and infrastructure development. Tourism, through its multiplier effect, has the potential and the capacity to promote regional development, create new commercial and industrial enterprises, and stimulate demand for locally produced goods and services and provide a market for agricultural products.

However, while tourism has positive contribution to the national economy, it has also negative impact on the country’s socio-economic and environmental landscape. The impact includes increased competition with local citizens for scarce resources such as water, energy and foodstuff resulting in price inflation, ecological disturbances and noise pollution from vehicles and aircrafts. Tourism also adulterates the local cultures and is partially blamed for high moral degradation such as prostitution, drug abuse and other anti-social behaviors.

Performance of the industry has fluctuated over the previous decades. After impressive growth rates in the 1960s to 1980s, Kenya’s tourism sector experienced an unprecedented decline in the 1990s due to internal and external factors, such as land clashes, insecurity, terrorist attacks and negative travel advisories. The decline resulted in low bed occupancy and shortfalls in revenues leading to partial or full closures of hotels and other tourist accommodation establishments especially at the Coast. This also resulted into loss of jobs in the sector. But, performance improved drastically in the year 2004 as a result of aggressive marketing strategy promoting Kenya as a tourist destination. Visitor arrivals increased from 1,146,200 in 2003 to 1,360,700 in 2004. The arrivals for 2005 are 1,479,000. (*Republic of Kenya, 2006*)

According to Kenya Tourism Board, the key tourist markets are: -

- The United Kingdom cluster composed of United Kingdom, Italy, Spain and the Scandinavian countries;
- The German market cluster composed of Germany, France, Switzerland, Austria, Belgium and Eastern Europe;
- The North America cluster composed of the USA and Canada;
- Emerging market composed of the Far East, the Middle East, India and Arabia; and
- Domestic and regional markets.

Diversification of tourist markets will ensure that the enterprise continues to receive visitors through out the year.

6.2 National Tourism Policy

A National Tourism Policy was prepared in 2005. The overall policy goal is to ***“ensure that tourism retains its position as leading export and that it becomes a major vehicle for job creation, poverty reduction and wealth creation for Kenyans in the future and whose practices are closely harmonized with key national policies and laws pertaining to wildlife conservation, land ownership and physical planning”***

The guiding principles of the policy are:

- Mechanisms for sharing of benefits from tourism, and reducing leakages of tourism earnings outside Kenya are in place;
- Tourism shall be based on sustainable development of tourism products, supported by effective promotion and marketing;
- The commercial sector, including community-based enterprises, shall play a major role in the industry’s development with government providing an enabling and regulatory environment conducive for investment;
- An institutional framework is in place to make local neighborhood communities ***de facto*** stakeholders and primary conflict resolution agents; and
- Local communities should receive benefits from such programs and have representation in decisions pertaining to conservation and environmental management.

The policy comprehensively covers the following areas:-

- Environment, resource base and sustainable development;
- Community participation;
- Conflict resolution and land-use planning;
- Safety and security;
- Product development and diversification; and
- Infrastructure, transport and communications.

The overall growth objective of the industry is to double the existing number of tourist arrivals over the next decade. Tourism revenues are projected to grow at even faster rates as Kenya seeks to move away from high volume, low value tourism, to higher spending visitors. Gross earnings are projected to increase to at least Kshs 100 billion by 2020. The international and regional markets, and domestic tourism is expected to contribute to this growth.

The image of Kenya’s tourism comprises solely of nature especially the wildlife. The image of the Big Five, (Lion, Elephant, Rhino, Buffalo and Giraffe), wildlife safaris, beaches and the Maasai culture dominate the tourism market. Western Kenya is therefore regarded as an agricultural region with insignificant tourist interest. In spite of this, in year 2005, tourism in Nyanza and Western grew by 17.3 % and 27 % respectively (CBS: Economic Survey 2006).

Although Kenya has many tourist attractions, tourism has not developed as expected due to several factors, which include:

- Actual and perceived concerns regarding safety and security with resultant negative publicity in the international and local media;
- Negative travel advisories against travel to Kenya issued by the governments and international source markets and sometimes suspension of scheduled and charter flights;
- Deterioration and near collapse of infrastructure in some parts of Kenya which affected access to tourist attractions;

- Lack of harmonization between national policies on land-use, wildlife and tourism resulting in perverse land use and human-wildlife conflicts affecting conservation, settlement, agriculture and pastoralism;
- Lack of a system to ensure equitable sharing of benefits and opportunities of tourism with local communities;
- Unplanned expansion of accommodation at the Coast resulting in an over supply of accommodation compared to demand, pressure for low contract rates from foreign tour operators, little or no surplus for re-investment in improvement and deterioration of the product;
- Lack of affordable finance for upgrading accommodation and other facilities;
- Inadequate funding for sustained tourism marketing and promotion;
- Lack of product and market diversification such as over reliance on wildlife safaris and beach vacations to the exclusion of other potentially viable products and over-reliance on traditional source markets in Europe and North America, while ignoring or failing to effectively promote other potential overseas markets, and relative neglect of domestic and regional tourism;
- Lack of adequate training, examination, central and licensing of tour guides/driver guides;
- Relatively high cost and erratic supply of utilities such as electricity and telecommunication services, and
- Cumbersome visitor entry formalities.

The government and the stakeholders in the sector are addressing the above constraints with a view to making Kenya a preferred destination to many visitors.

6.3 Tourism in the Lake Basin

The Lake Basin is endowed with great geographic, cultural and natural diversity as tourist attraction. The potential for tourism in Western Kenya was identified in 1993/94 when the Japan International Corporation Agency (JICA) funded tourism Master Plan study reported total arrivals of 115,000 tourists. The study also indicated that the average length of stay in the region was 4.0 nights, a shorter length of stay compared to that of other regions like the Coast. Some of the factors identified as major hindrances to the growth of tourism in the region include: -

- Lack of awareness of tourism potential by the local communities; and
- Lack of technical knowledge to promote the industry;

Over 90 per cent of foreign visitors and their destinations are handled through tour operators and the Kenya Association of Tourist Operators (KATO). By the year 2000, Kenya had 2,500 licensed tour operators, but only 250 were members of KATO. The cartel controls 90 per cent of the tourist traffic.

By tradition, most tour operators are specialized in selling package tours of wildlife safaris inclusive of the Big Five and Beach. Tour operators do not seem interested in new products. They not only want to keep to the business they know best, but also believe that the “Big Five and Beach” are here to stay.

The majority of foreign tourists prefer to stay in classified hotels. The Lake Basin has only a few classified hotels in any one town. The towns are long distances apart. Kitale town, for instance, has no classified hotels while Eldoret, which is 100 Kms. away, has four classified hotels.

People in the Basin lack awareness and knowledge on tourism related business. They also lack proper organizations for promoting and marketing the diverse cultural products that are available. In addition, rural access roads leading to tourism destinations are poorly maintained and

inadequate. The passenger train service is confined to Nairobi–Kisumu only. Water transportation on the Lake is poorly developed. Water supply, waste disposal and power supply services are unsatisfactory.

6.3.1 Western Tourism Circuit

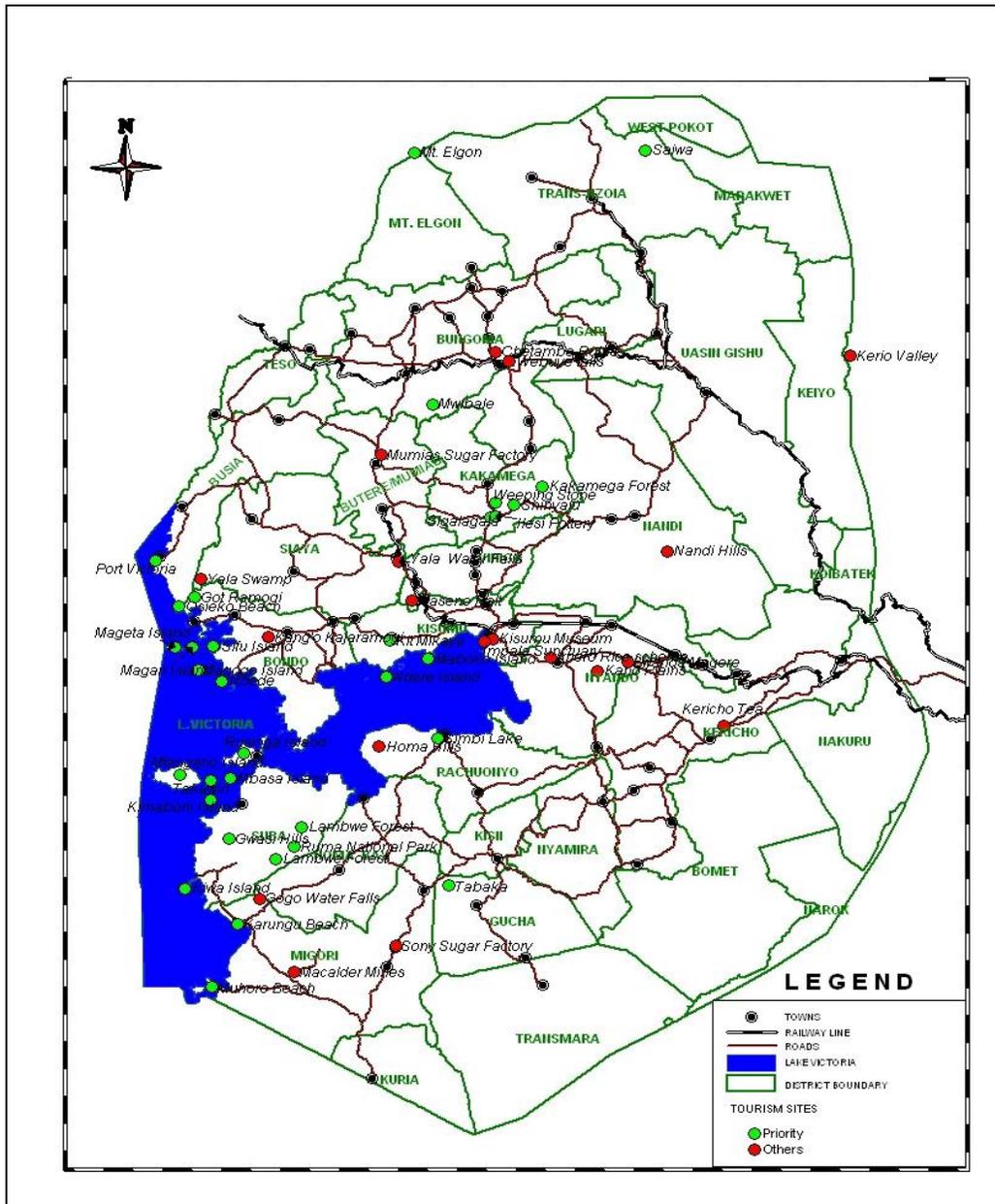
As part of a strategy to overcome the constraints and develop tourism industry in the Basin, the government, working together with the Kenya Tourism Board, launched a new Western Tourist Circuit in 2002. This circuit aims to make Kenya keep pace with the demands of the international tourism market and offer a diversified range of destinations.

Due to aggressive marketing, tourist arrivals to the region showed a steady increase. Mt. Elgon, for example, realized a steady increase of tourist arrivals with 4,500 visitors in 2003, an increase of 27% from the previous year. Kakamega forest, the only tropical forest in East Africa, recorded a total of 15,005 visitors in 2003 out of whom, 19% were non-residents. The Nyanza and Western Kenya zones recorded rising business activity in 2004 with a total of 268,500 bed nights occupied during the year, an increase of 34% from 2003.

Tourist Attraction

Most tourist attractions are marketed as new and unknown destinations promising the tourist the thrill of real discovery and exploration and rewarding the visitors with new and unexpected experiences, sights and sounds. These sites are shown in the map below:

Fig. 9 Tourism Sites



6.3.2 Proposed Tourist Circuits

The proposed tourist circuits in Nyanza and Western provinces aim to create diverse experiences and diversity in tourism products as indicated below.

Nyanza Province

The following tourist routes are proposed:-

- The city tour: Dunga Westland, Impala National Park and Kisumu Museum;
- The island tour: Ndere and Maboko;
- Agro tourism Tour: Ahero Rice Scheme and Kericho tea factory;
- The complete lake tour: Lake Victoria loop road;
- The forest tour: Kakamega forest and Ilesi pottery;

- Cultural tour: Kit Mikayi, Got Ramogi, Jaramogi Oginga Museum;
- Watching and Wildlife Tour: Yala Swamp and Got Ramogi;
- Botanical Tour: Maseno Botanical Gardens, Equator, Ndano Waterfalls;
- Lake Birds Tour: Mbassa Islands, Takawiri Island;
- Bird Watching and Savannah Game Drive: Ruma National Park;
- Archaeological and Wildlife Trip: Nyamgondho, Rusinga Island and Ruma National Park;
- Artifacts Tour: Kisii stone–Tabaka;
- South West Tour; Thim Lich Ohinga, Gogo Waterfall, Sori Boat ride;
- The ultimate Wildlife Tour: Serengeti National Park in Tanzania;
- A Kenyan Highlight Safari: Trans Mara in Narok District;
- Remote Islands Tour: (Aluru, Migongo, Kiwa etc)–Lake Victoria; and
- The Sweet Experience: Sony Sugar Factory.

Western Province

The following tourist circuits are proposed:

- Weeping stone: and Ilesi pottery and Shinyalu Gardens;
- Forest Walking Tour–Kakamega Forest Reserve;
- The ultimate Forest Experience: Kakamega Forest and Reserve Tour;
- Chetambe Ruins and Elijah Masinde Shrine and Falls;
- Birds Experience: Yala Swamp, Sio, Lake Victoria;
- Bungoma Cultural Extravaganza and Mwibale;
- Mt. Elgon Transboundary Excursion into Uganda, and
- Caves at Mt. Elgon.

There are numerous other opportunities for circuits that can be explored once there is increased market demand.

Hotel Accommodation

Lack of adequate classified hotels is one of the impediments to the development of western region. According to the Kenya Gazette notice, the number of classified hotels in 2004 was fifteen with 2,560 bed capacity.

Table 9: Classified Hotel Outlay in the Basin.

Region	1		2		3		4		5		Total	
	No of Hotels	No of Beds	No of Hotels	No of Beds	No of Hotels	No of Beds	No of Hotels	No of Beds	No of Hotels	No of Beds	No of Hotels	No of Beds
Kisii	1	80	1	140	2	250					1	80
Kisumu	2	160	1	77	1	210					5	350
Kericho	1	130	2	159							2	207
Kitale	1	24									1	24
Eldoret	1	154									3	364
Webuye	1	50									1	50
Kakamega	1										2	159
Total	8	1984	4	376	3	460					15	2,560

Table 10: Hotel Bed – Nights in the Lake Basin

ZONE	1999	2000	2001	2002	2003
Nyanza	110.1	87.3	94.4	103.7	127.9
Western	69.2	72.4	91.3	96.9	97.2
Total Occupied	179.3	159.7	185.7	199.6	221.1

6.4 Impact of Eco-tourism

While tourism is the largest and a fast growing industry, it has major impact on people and nature. Its' effects can be positive as well as negative. Inappropriate tourism development and practice can degrade the environment and landscapes, deplete natural resources and generate waste and pollution. On the contrary, responsible tourism can help to generate awareness of and support for conservation and local culture and create economic opportunities for countries and communities.

In cognizance of the possible negative and positive impacts of tourism, the Kenya Tourism policy states that the government shall encourage the formation of local and regional tourism development association and local community based organization that can manage viable tourism enterprises and perform effective lobbying to advance the tourism interest of their communities. . It shall also encourage private sector stakeholders and NGOs to play leading roles in enhancing participation in the tourism sector. NGOs adjacent to national parks, national game reserves, forest reserves, inland waterways and unique eco-systems shall be accorded priority in decision-making.

The government shall provide incentives to attract investors willing to undertake tourism enterprises with local partners in previously neglected regions. The incentives should include the provision of appropriate infrastructure and tax holidays. Strategies for tourism development in the region should embrace the eco-tourism approach.

The international eco-tourism society defines eco-tourism as “responsible travel to natural areas that conserves the environment and sustains the well-being of local people”. The characteristics of eco-tourism identified by UNEP and World Tourism Organization (WTO) include:

- Involving appreciation not only of nature but also of indigenous cultures prevailing in natural areas as part of visitor experience;
- Containing education and interpretation as part of the tourist offer;
- Minimizing negative impacts on the natural and socio-culture environment;
- Supporting the protection of natural areas by generating economic benefits for the managers of natural areas;
- Providing alternative income and employment for local communities; and
- Increasing local and visitor awareness of conservation.

The process involved in eco-tourism includes all aspects of planning, developing, marketing and managing resources and facilities. Visitors provision includes access to natural areas and cultural heritage, guiding and interpretation services, accommodation catering, sales of produce, handicrafts and transport.

Appropriate recreational and special interest activities such as trail making, photography and participatory conservation, hunting and fishing may be included as appropriate activities provided that they are carefully researched and controlled with a management plan that supports conservation.

6.5 Proposed Development Strategies

Tourism development in the region will be based on its geographic, cultural and natural diversity, aimed at offering diversified range of product mix, different from the traditionally overexploited coastal beaches and the Big Five wildlife. In addition, this type of tourism should minimize the negative impact on people's lives and the environment.

Tourism development plans should embrace sustainable tourism principles to ensure that tourism in the area actively contributes to the conservation of natural and cultural heritage. Local communities will be included and participate actively in its planning, development and operation, contributing to their well-being. Sustainable eco-tourism strategies include:-

- Consideration for the potential conservation gain. There should be a clear understanding of the relationship between local communities and conservation and how this can be improved through their involvement;
- Providing a more suitable form of livelihoods for local communities;
- Encouraging communities to be more directly involved in conservation;
- Generating more good will towards local benefit from conservation measures;
- Checking the preconditions for eco-tourism to avoid raising expectations in circumstances that are unlikely to succeed and carry out feasibility assessments to ensure reasonable conditions are met;
- Ensuring that there are effective structures to enable the community to influence, manage and benefit from eco-tourism development;
- Gender issues should be considered especially in providing opportunities for women to participate;
- Eco-tourism initiatives should be centered on a clear strategy agreed and understood by the local community and all other stakeholders with an interest in tourism and conservation. This strategy will enable a comprehensive understanding of the needs and opportunities in the area so that a range of complementary actions can be taken;
- Ensuring environmental and cultural integrity. The level and type of tourism planned and developed must be appropriate for the area's natural resources and cultural heritage and consistent with the community's wishes and expectations;
- Ensuring market realism and effective promotion. Eco-tourism projects must be based on an understanding of market demand and consumer expectation and how to place the product offer effectively in the market;
- Put forward a quality product. All community based eco-tourism products should offer a high quality of visitor experience and be subject to a vigorous business plan;
- Managing impacts: Specific steps should be taken within the community to minimize the environmental impact and maximize the local benefit;
- Provide technical support in form of capacity building for providing skills in the development and management of the tourist business e.g. handling visitors-customer care, hospitality, skills, environmental management negotiation, legal issues and financial control, marketing and communications;
- Obtain support of visitors and tour operators to raise awareness of conservation and community issues; and
- Monitor performance and ensure sustainability of eco-tourism projects.

6.6 Potential Eco-tourism Enterprises

There are unique business opportunities that could be developed as a result of the tourist sites that are mentioned below:

- Mt Elgon and its environs;
- Kakamega Forest and its environs;
- Lake Victoria and its environs; and
- Other eco-tourism areas;

Mt Elgon forest covers parts of Trans Nzoia district including the Mt Elgon National Park. It has endemic vegetation, caves containing salt licks and species of wildlife especially the elephant. Saiwa swamp, the habitat for the Sitatanga antelopes is in close proximity.



Fig. 10 Mt. Elgon Forest

The enterprises include curio shops, traditional wares, and cafeterias.

Kakamega forest and its environs

The Kakamega forest reserve is remnant forests linked to the great Equatorial forests of the Congo and is home to unique and endangered species. The forest had resident populations of primates including the rare red tailed monkey, butterflies, chameleons, snakes and stunning giant blue Turaco.

Fig 11 presents the Sigalagala and Shinyalu Bull Fighting, the Illesi pottery and the weeping stones.



Fig. 11 Bull Fighting in Shinyalu

Lake Victoria and its Environs

The Lake has hippopotamus, crocodiles and numerous species of birds. It has about sixteen islands including Rusinga, Mufangano Mageto, Takawiri, Mbasa:-

Fig: 12: Lake Victoria



Ruma National Park

Ruma National Park, formerly Lambwe Valley National Reserve, was established in 1966, mainly to protect the Roan antelopes that are only found in this part of the country. Other wildlife includes Oribi, Jacksons hartebeest, Rothschild giraffe, cheetah and leopard.

Fig. 13 The Roan antelopes in Ruma National Park



Fig. 14 Kit Mikayi Rock



Kit Mikayi

It is envisaged that funds for tourist development will partly come from the proposed investment fund and partly from the private sector. The other key stakeholders expected to play an active role in funding tourist activities include the Tourist Trust Fund, the Kenya Tourist Development Corporation and government funds such as the Constituency Development Funds.

Development in the tourism sector is quite encouraging. Recent reports state that tourism registered a growth of 12.5% in earnings to Kshs. 27 billion in the first quarter of 2006 compared to Kshs. 24 billion in the same period last year. Total arrivals for the first six months of 2006 were 824,000 compared to 728,000 over the same period in 2005, an increase of 13%. Source: Daily Nation, July 29, 2006

7.0 MINERAL MINING AND MINERAL PROCESSING

7.1 Overview

Appraisal of the potential for minerals in the Basin has been a subject of study for quite sometime. Some of the studies have focuses on the region while other information concerns the whole country. In all these studies, value addition was never given any emphasis. Numerous changes have taken place in the thinking around the mining sector. This justifies the need for such work.

The Lake Basin has probably the largest share of cratonic rocks in Kenya. These rocks are similar to those found in Tanzania and Uganda in which some major mineral deposits especially gold has been discovered and developed. Although this analysis places more emphasis on gold, other mineral and natural resources, with potential for development, are also given appreciable attention.

7.2 Current State of Mining Law

The Mining Act Cap 306 (1940) Laws of Kenya and the Trading in Unwrought Precious Metals Ordinance Cap 309 (1940) is outdated and out of step with the country. The Mining Act completely excludes provisions for artisan mining in the country. Many naturally occurring materials are also excluded from the mining law. It is praiseworthy that the proposed Mining Act is currently addressing these omissions. The Mines and Geological Department has given high priority to the process of preparing a law. A consultant's discussion draft has already been completed and a bill on mining policy and mining code will soon be tabled in Parliament.

The essence of the draft is the recognition and accommodation of artisan miners and the provision of level playing ground for mining in the private sector. The proposed Act also contains elements that are harmonized with existing environmental legislations, more specifically the EMCA Act, 1999.

An interesting feature of the proposal is the definition of mineral, which will bring many more commodities under the administration of the mining and mineral law and thus bring additional revenue to the Government. This will effect a healthy change in the institutional arrangement that currently exists. For example, quarrying activities for building material will be under the Commissioner of Mines and Geology and therefore easily monitored. It is hoped that the law will be enacted possibly between 2006 and 2007 to pave way for reforms in the industry.

7.3 Situation Analysis

Official records indicate that mining currently contributes less than 1% to the Gross Domestic Product. Republic of Kenya, Source: NDP 1997-2001. But, this is not the real position as it is an underestimation of the value that mineral resources provide to the national economy. It is evident that official estimates do not include building and construction materials used locally and for national construction. Over the years, mining activities have been shrouded with mystery. In many cases, proper accounting is not captured.

Annual statistics

Tables 7 and 8 below show the kind of statistics maintained by Mines and Geological Department on mineral production for processing exportation. The figures do indicate that industrial minerals make a great contribution to the total export. It is believed that if the value of locally used material were included, the contribution to the total value mined and used in Kenyan would increase drastically.

Table 11: Mineral Production for the Years 2001 – 2005

QUANTITY AND VALUE (IN KSHS '000) OF THE MINERAL PRODUCTION FOR THE PERIOD 2001-2005													
Mineral	Unit	2000		2001		2002		2003		2004		2005*	
		Quantity	Value										
Soda Ash	MT	238,190	1,955,500	297,780	2,716,000	304,110	2,729,113	352,560	3,100,169	353,835	3,462,707	360,161	3,782,249
Fluospar**	MT	100,102	627,860	118,850	727,000	85,015	632,829	80,201	503,630	117,986	999,129	109,594	1,061,908
Crushed refined soda	MT	382,556	2,179,100	207,647	2,836,000	474,014	2,664,909	576,146	3,151,287	605,948	3,594,033	640,291	3,287,710
Salt (Magadi)	MT	16,359	51,740	5,664	99,000	18,848	61,388	21,119	61,105	31,139	124,450	26,595	110,382
carbon Dioxide gas	MT	7,744	34,920	5,645	37,000	5,662	54,297	4,614	43,300	5,982	52,180	8,723	63,310
Diatomite**	MT	448	10,040	441	19,000	1,333	46,234	353	14,281	330	13,883	243	9,865
Gold**	KGS	1,234	791,508	1,545	1,016,000	1,477	1,132,607	1,543	1,290,288	567	577,343	616	653,399
Gemstones	KGS			5,887	117,440	3,063	40,503	2,313	5,384	2,688	22,944	5,035	101,501
Green Garnet		20	700	25	440	20	940						
Ruby corundum		5,896	94,840	5,863	117,000	3,043	39,563						
Total			5,777,808		7,684,880		7,402,383		8,169,444		8,846,669		9,070,324

* Provisional
 ** Export Figures
 SOURCE: RECORDS OF MINES AND GEOLOGICAL DEPARTMENT

Fig. 15 Mineral Production for the Years 2001 - 2005

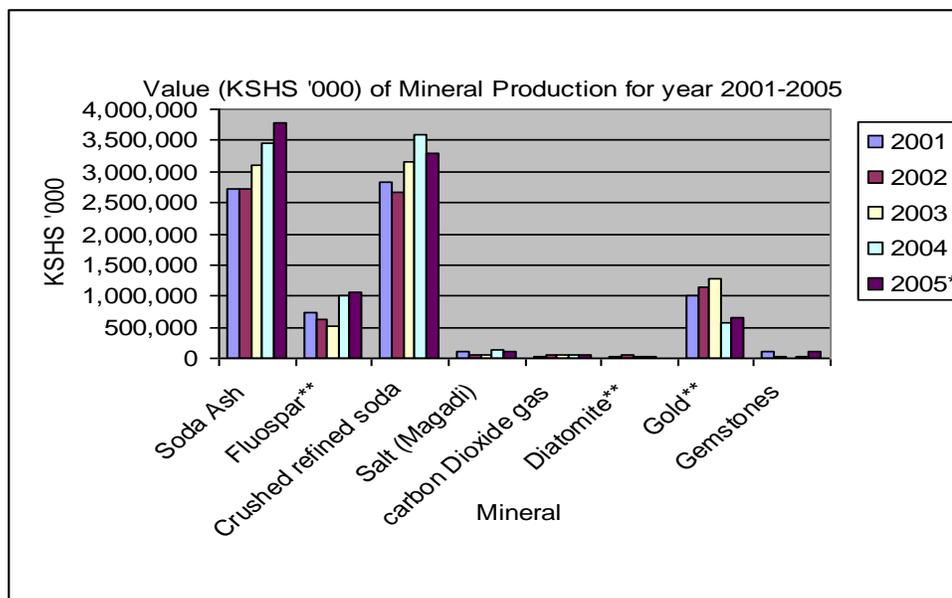


Table 12: Mineral Exports for the Years 2001 – 2005

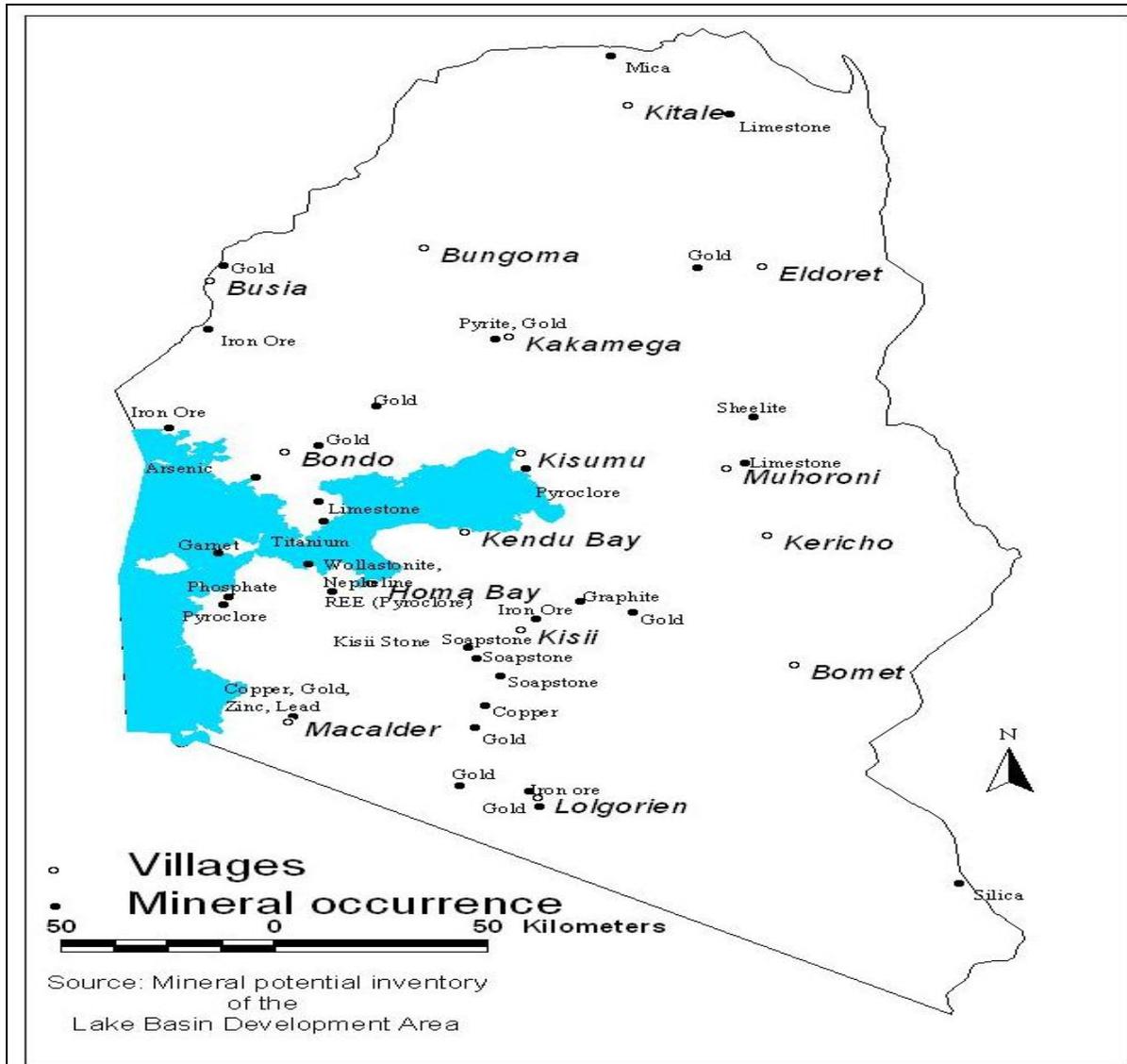
QUANTITY AND VALUE (IN KSHS '000) OF THE MINERAL EXPORTS FOR THE PERIOD 2001-2005											
Mineral	Unit	2001		2002		2003		2004		2005*	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Soda Ash	MT	244,073	2,295,076,000	288,208	2,682,262,000	331,038	2,998,681,800	318,550	3,165,963,000	321,429	3,858,117,000
Gold	GMS	1,549,031	1,018,615,747	1,476,972	1,132,606,769	1,543,012	1,290,287,778	567,000	577,343,000	616,156	653,398,888
Fluospar	MT	118,850	726,875,537	85,015	632,828,810	80,201	503,630,460	117,986	999,129,340	109,594	1,061,907,940
Diatomite	MT	441	19,159,977	203	8,734,820	353	14,280,525	330	13,882,626	243	9,865,390
Crushed refined soda	MT	2,996	20,320,000	5,114	33,359,000	4,283	25,297,700	4,613	34,514,286	3,293	24,017,000
Salt (Magadi)	MT	74	562,000	9	71,000	90	698,000	2,240	2,275,500	72	1,300,800
Gemstones	GMS	109,681,047	431,774,025	74,483,319	391,779,030	103,182,321	256,337,196	148,860,752	299,648,155	68,405	340,157,980
Other Minerals	MT	3,155	11,411,260	12	1,073,912	2,015	9,611,500	2,459	11,256,740	58,260	179,594,065
Total			4,523,794,546		4,882,715,341		5,098,824,959		5,104,012,647		6,128,359,063

* Provisional
 ** Export Figures
 SOURCE: RECORDS OF MINES AND GEOLOGICAL DEPARTMENT

Mineral potential

The Basin is endowed with mineral occurrences. Figure 1 below is an indication of some of the recorded occurrences of economic potential as compiled from various sources. These occurrences include gold, copper, base metals, rare earth elements, Kisii stone, carbonate, phosphate, sulfur, Wollastonite and nephelinite, manganese, tin, kaolin, clay, feldspar, iron ore, graphite, sheltie, diatomaceous soil, and building material (granite, brick clay, sand, tuffs, marrum and material for ballast). Diamond search has been an ongoing process, with results not being readily available. These resources up to now wait to be studied and exploited for the benefit of the communities and the country in general. Existing and future works on mineral exploration should be readily accessible to interested parties so that repetition of work can be replaced with advancing and building upon what has been done.

Fig. 16 Mineral occurrence map of Lake Basin Region



(Adapted from re-engineered Mineral Occurrence Database of Kenya -under development and other sources).

Current mining activities

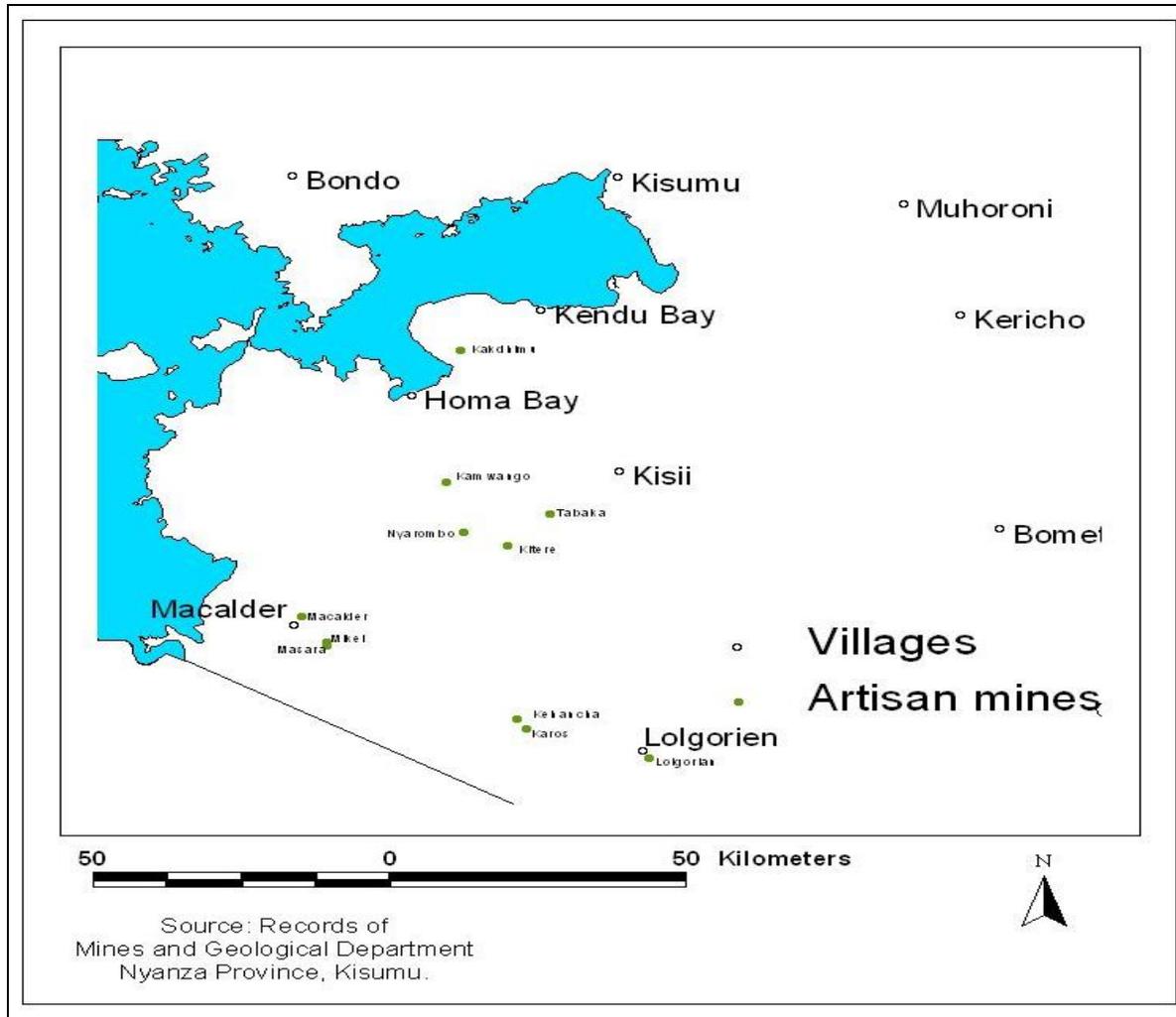
Despite exploitation of mines commencing in early 1930's with gold workings, organized development has more or less stagnated except for exploration activities. Local and foreign companies have continued to prospect in the area. The companies are:

- AfriOre: Exploring in the former San Martin license area that covers Nyanza and Western provinces. AfriOre is currently drill sampling;
- Sinai: Carrying out exploration in mid-Migori license area. Sinai is currently doing drilling;
- Sebum: Working in the Lolgorien area. The company is carrying out exploration; and
- Homa Lime Co. Ltd.: Carrying out limestone mining and production of lime and feedstock.

These companies are given special licenses to prospect over large areas, which in most cases, overlap with areas where artisans work. This is due to none recognition of artisan miners. Conflicts occur because of this overlap. Gold production by artisan miners has, however, continued to

provide livelihood to a large number of families. Women and children are often employed in the process in order to increase family incomes. For example, Figure 13 shows the locations of artisan mines in the Southern Nyanza area, where Mines and Geological Department has started gathering data on such activities.

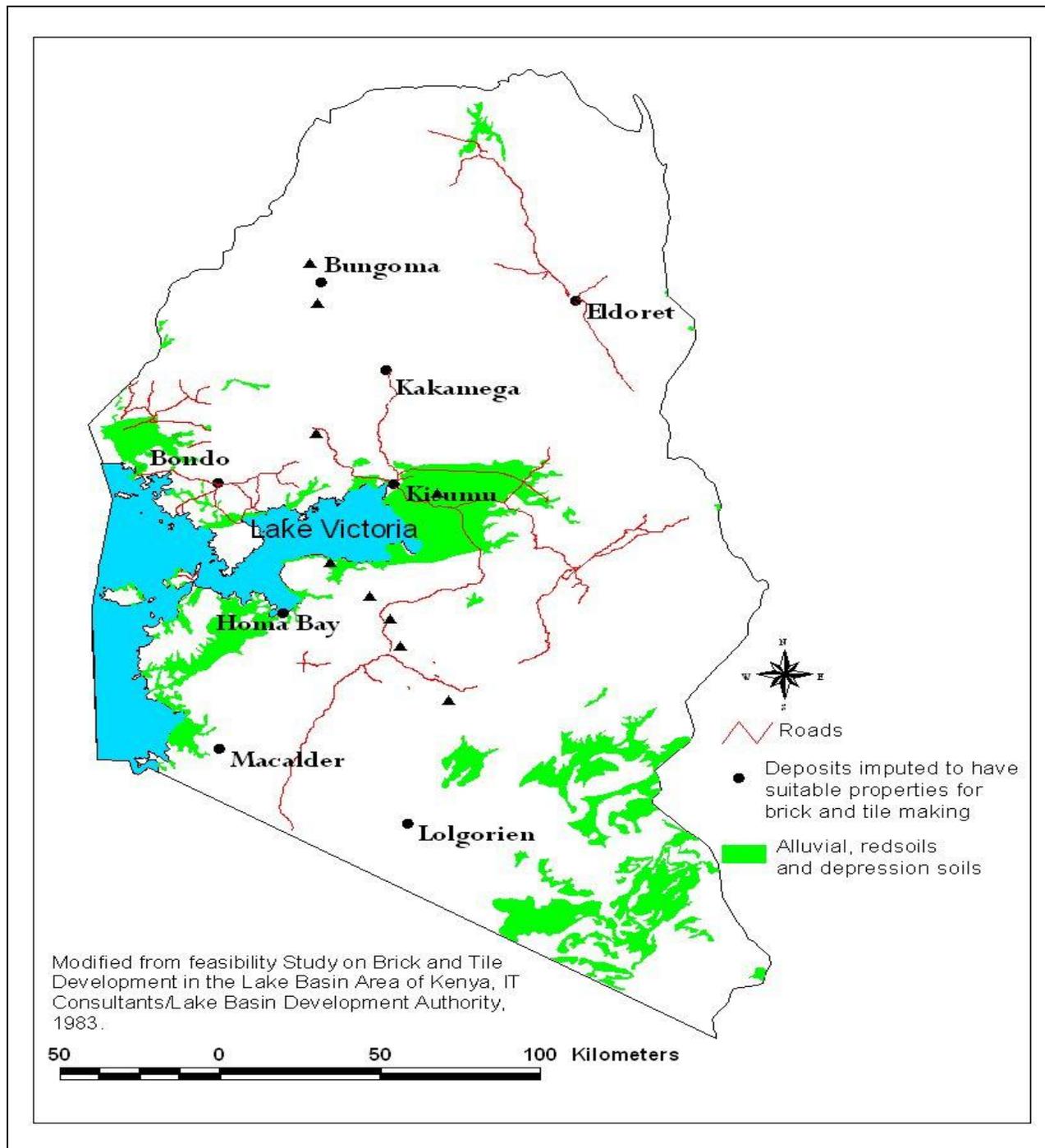
Fig. 17 Locations of inventorized artisan workings in Southern Nyanza region



Source: Mines and Geological Department, Nyanza Province.

Another major artisan activity is the extraction of building material. Granite, brick clay, sand, tuffs, murrum and materials for ballast are exploited by artisans for local consumption, albeit using hard labor and flouting all environmental provisions. The number of people involved in this activity has increased in the recent past and includes women and children who break boulders or make clay bricks.

Fig. 18 General locations of some deposits of alluvial clay and brown soil suitable for brick and tile making:



Modified from feasibility study on brick and tile development in the lake basin area of Kenya, Ital Consultants/ LBDA

Fig. 19 Distribution of sandy soils in the region

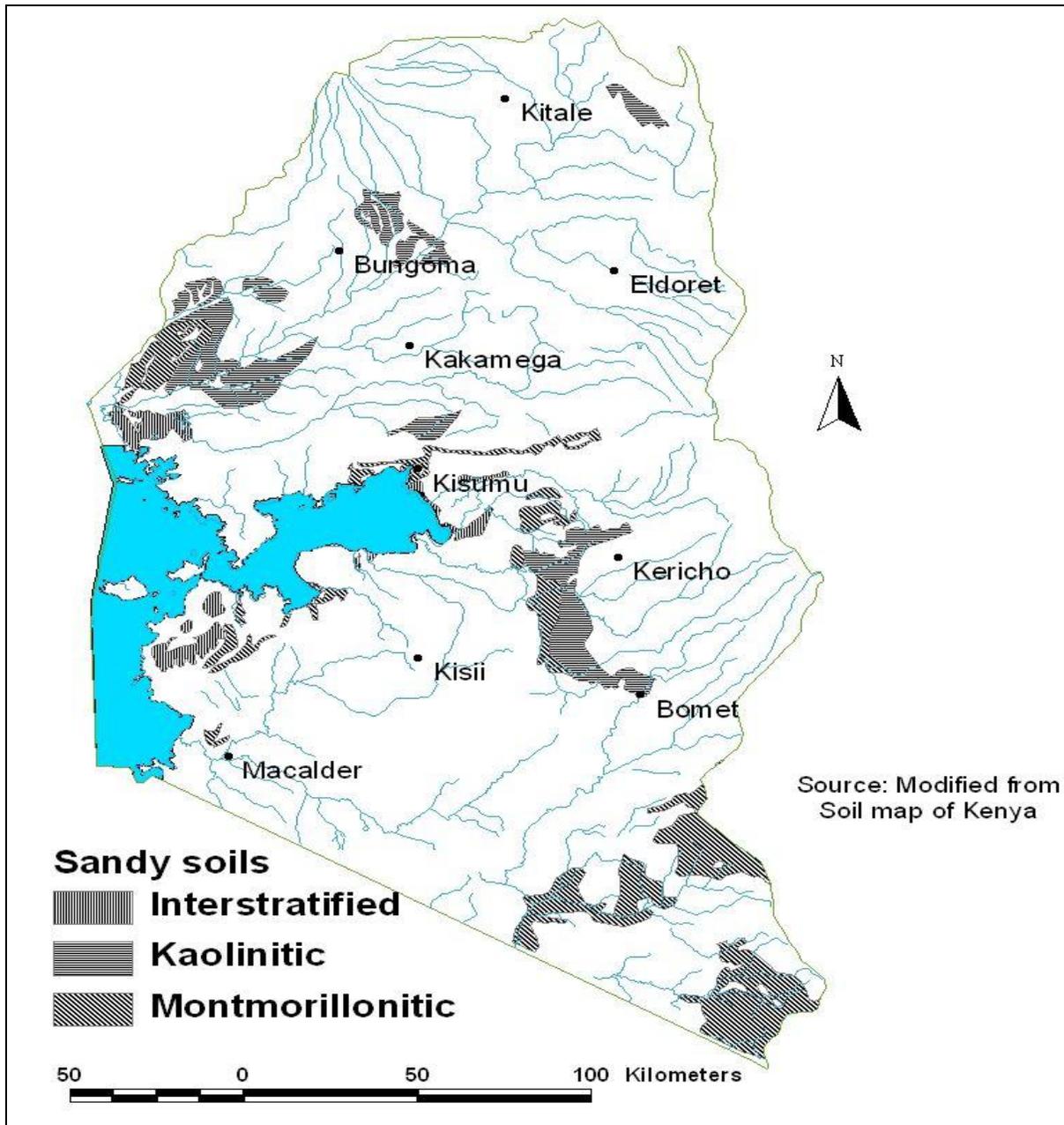
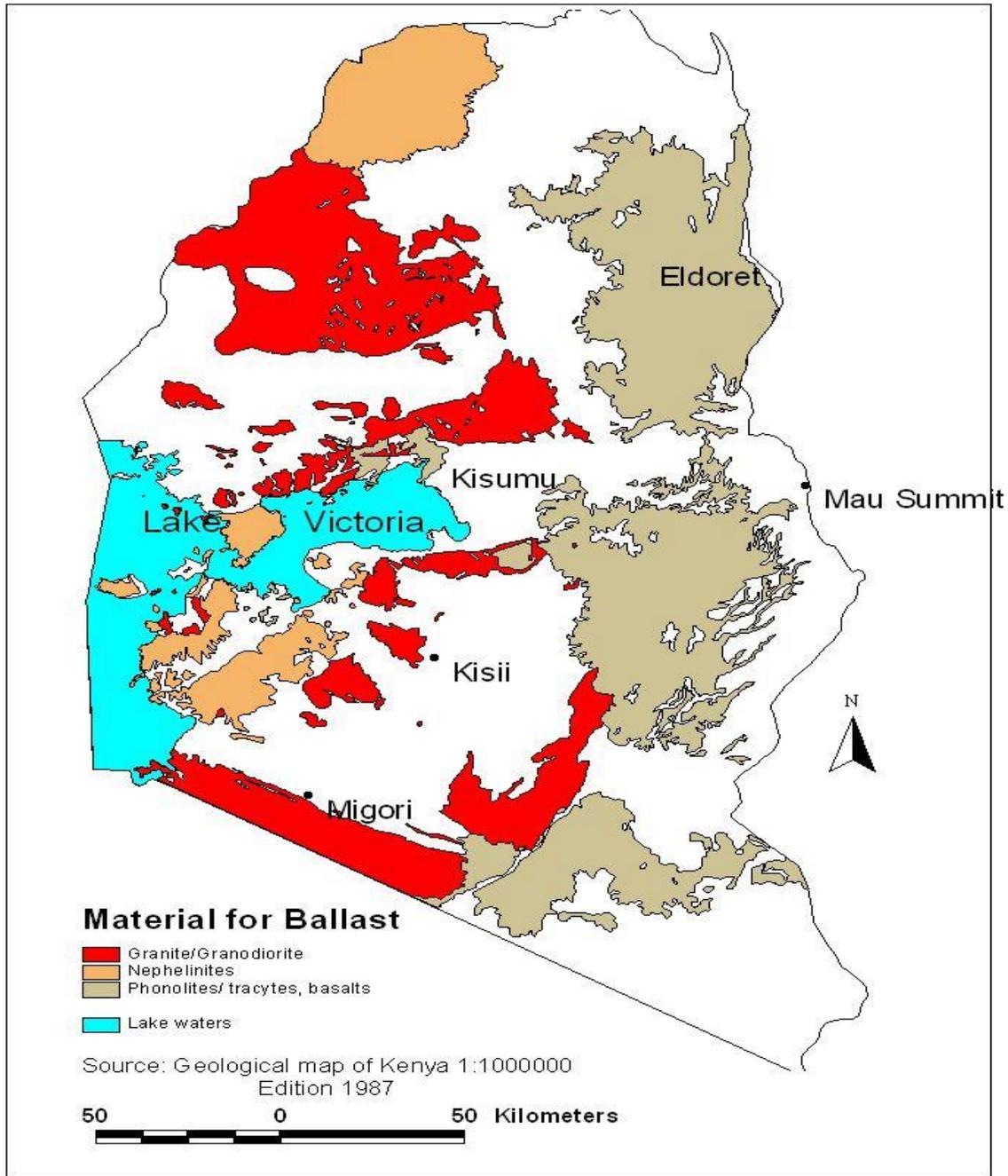


Fig. 20 Distribution of material used for ballast for construction purposes



Processing for value addition

In most cases, minerals and metals are sold in their raw form. Processing for value addition is generally lacking. But Homa Lime Co. Ltd and ballast quarries have established a mineral resource processing plant. On the other hand, gold from the area and other materials are usually sold to dealers, users or sent to factories outside the region, thereby denying the Basin the much-needed economic benefits linked to value addition processes and activities. There is therefore need to direct development towards value addition of raw mineral materials from the region.

Organization

Artisan mining organization and approaches, with special reference to gold, varies from place to place, but in most cases, it is based on work groups. In such groups, men do the actual mining and women carry out the processing; the latter involvement being due to gender and cultural aspects. Sharing of the benefits is not based on the final gold produced, but the ore produced, either before or after milling.

Organized and registered groups are not common but in instances where groups and co-operative societies were established, they have long collapsed due to mismanagement. Society officials take advantage of ignorant and largely uneducated or uninformed members. Examples of organized groups include the Lakeside Mining Co-operative Society in Migori District, a community based organization whose activities are aimed at ensuring that local miners benefit from mining activities through investment in development projects. The group, based at Mikei center, had a good vision that could be strengthened and replicated.

Co-operatives were formed to market products abroad such as the Kisii stone. But most of them have failed due to misappropriation of funds resulting into discontent of the members. There is therefore need for proper organization of groups across the mining sector in the region to manage mineral resources.

Access to Resources – e.g. capital and know-how

Access to capital and technical know is a major setback to the mining industry. There is lack of proper equipment, monitoring strategies, control of activities and product quality standards.

Activities of Mines and Geological Department

The Mines and Geological Department is gearing up for a new era. A program of increased mining activities has been developed. The objectives of the program were initially to develop good relationship between the department and the miners and to collect reliable information on the artisan mining activities. The information includes quantities of minerals produced, organizational structures, areas requiring assistance, processes and technologies used, environmental and health issues including HIV/AIDS. The department should provide advice on safety issues to minimize loss of life. Occupational health and safety in mining, technology, and gender issues and child labor should be addressed.

7.4 Constraints to Mining Development

The development of the sector is hindered by inadequacy in the capacity of the relevant statutory bodies to carry out their mandates effectively. Well-trained geoscientist and financial resources to help generate public information that can accelerate growth of the sector is lacking. There is need to strengthen research and support in the industry. Basic Information on ore reserves should be accessible to the public. There is also need for more geologist, exploration scientist, mining engineers, miners, environmentalists, civil engineers and environmental lawyers to practice in the sector.

The main limitation to the gold enterprise is the mining law, which categorizes gold as a mineral and hence subject to its control. Most other minerals are currently not under the Mining Act and are administered by other statutory bodies. However, no clear policies exist on their exploitation. This is manifested in the chaotic manner in which exploitation is carried out specially leading to environmental degradation. Metal mining such as rare earth metals and radioactive material generate much international politics that require international consultations.

Artisan miners in all the areas lack investment capability to modernize their activities. The mining of gold, for example, requires underground mine construction and informed mining. Most mine areas are abandoned due to water logging.

There is need to harmonize the existing laws and statutory rules so that there are clear procedures for investing in the industry. Mostly one has to acquire more than one permit to complete his/her operation. This bureaucratic process is costly and time consuming. Lack of value addition and marketing makes the use of locally produced material minimal. Addressing these constraints will result in accelerated growth of the industry.

7.5 Development Potential and Prospects

Based on the data presented on minerals, and what is locally consumed, there is development potential for minerals in the Basin.

Gold

Gold is common and is a source of income for the artisan miners in the Basin. Gold is used to make jewellery and other precious items. Communities use simple methods to obtain the ore. Exploration and research began as early as the late 1800s, with more intensive work beginning with a minor gold rush in 1922-23 in the former greater Southern Nyanza area. To the North of the Basin, and in the current Western Province, intensive work in gold began around 1927, with discovery of deposits in 1931. This called for an expansion of exploration activities. By 1939, there were 53 operating mills treating lodes, with the greatest recorded depth reaching 180m. It has been observed that abandoned productive mines, as well as artisan sites, are located in parts of the Basin. Following the abandonment of most mines, the government should provide incentives for both medium scale and artisan mining to continue.

Copper

Traces of copper have been found in many areas. But only two places, Macalder and Kitere are known to contain copper deposits of significant quantities. An extensive copper deposit has been known at Macalder mine. The body containing 1.3% copper was estimated at 600,000 tons with the start up of the mining operations. But mining of copper was given very little attention and was mainly as a by-product of gold mining operations.

Geochemical anomalies indicate that there may be a large area with potential copper mineralization in the Macalder area, since only small concentrates were produced before it was declared exhausted. At Kitere, north east of Macalder mine, copper occurrences are known to exist around granite mass and up to 5.87 % copper has been assayed in samples from vein outcrops. But, the mineralization is rather sporadic. Exploration should be carried out to ascertain copper deposits in line with gold exploration especially in the banded iron formations occurring in the region.

Base metals

In addition to gold and copper, there are also occurrences of silver, arsenic, iron sulphide (pyrite), zinc and cobalt. These deposits occur in association, and together with the gold-copper deposits. Silver, for example, has been in the past mined together with gold. This too was the case for the

Kakamega goldfields. In the 1950's, comparatively higher quantity of silver than that of gold (c. p. 3,000 oz. of gold and 4,100 oz. of silver per year) was recovered from the Macalder mine.

In the estimated ore reserve of 500,000 tons, the contents of the base metals have been assayed as follows; copper 1.3%, lead 0.8%, arsenic 52%, antimony 0.03%, zinc 4.5%, manganese 0.185%, cobalt 0.26% and iron occurring as FeS₂, 32.2%. In some cases, the zinc ore mineral makes up to 30% of the ore deposit.

Arsenic ore mineral (arsenopyrite), which is quite limited in content, has often presented problems in the extraction of gold, as a result arsenic had to be separated using special techniques. To avoid unnecessary wastage and expenditure in the separation, the mineral (arsenopyrite) can be used for the production of arsenic oxide.

Rare Earth Elements (REEs)

The Mines and Geological Department, with assistance from JICA, conducted a 3-Phase mineral exploration program for REE targeting the Rangwe, Buru, Ruri (north and south (1.6 km²)), Homa and Kuge Carbonatites. Figure 17 below.

The regional phase of this survey identified four (4) small carbonatite outcrops, which were followed up by detailed geological survey and geochemical work as well as diamond exploratory drilling (17 holes, 100m in total length).

From this two-year exploration work, Buru and Kuge Carbonatites were delineated as the most promising. The other radioactive mineral center is Sokolo. At Buru Hill, radioactive elements are in the amounts of REE 2.9%, Th 0.10% and Cb 0.50%. In the carbonatite centers, the average content of radioactive elements is found to be REE + Th 0.06% and Nb 0.10%. Localized vast quantities of a Columbian mineral (perovskite) containing approximately 0.50 per cent Nb₂O₅ are also present in the Rangwe area.

Kisii stone

The Kisii stone is widespread around Tabaka in Kisii District. It is also found at Got Chaki and Bosinage. Soapstone has good properties suitable for ceramic manufacture at temperatures of over 1000°C. The resource, however, suffers one set back in that it lacks uniformity, hence requiring selective quarrying. Apart from use as a refractory material, the stone can be used in the manufacture of plastics, paper, rubber, laboratory tables, sinks, sanitary appliances, acid tanks and insulations *inter alia*. Currently the main use of the soapstone is in the making of carvings, but the wastes are occasionally collected for use in factories in Nairobi.

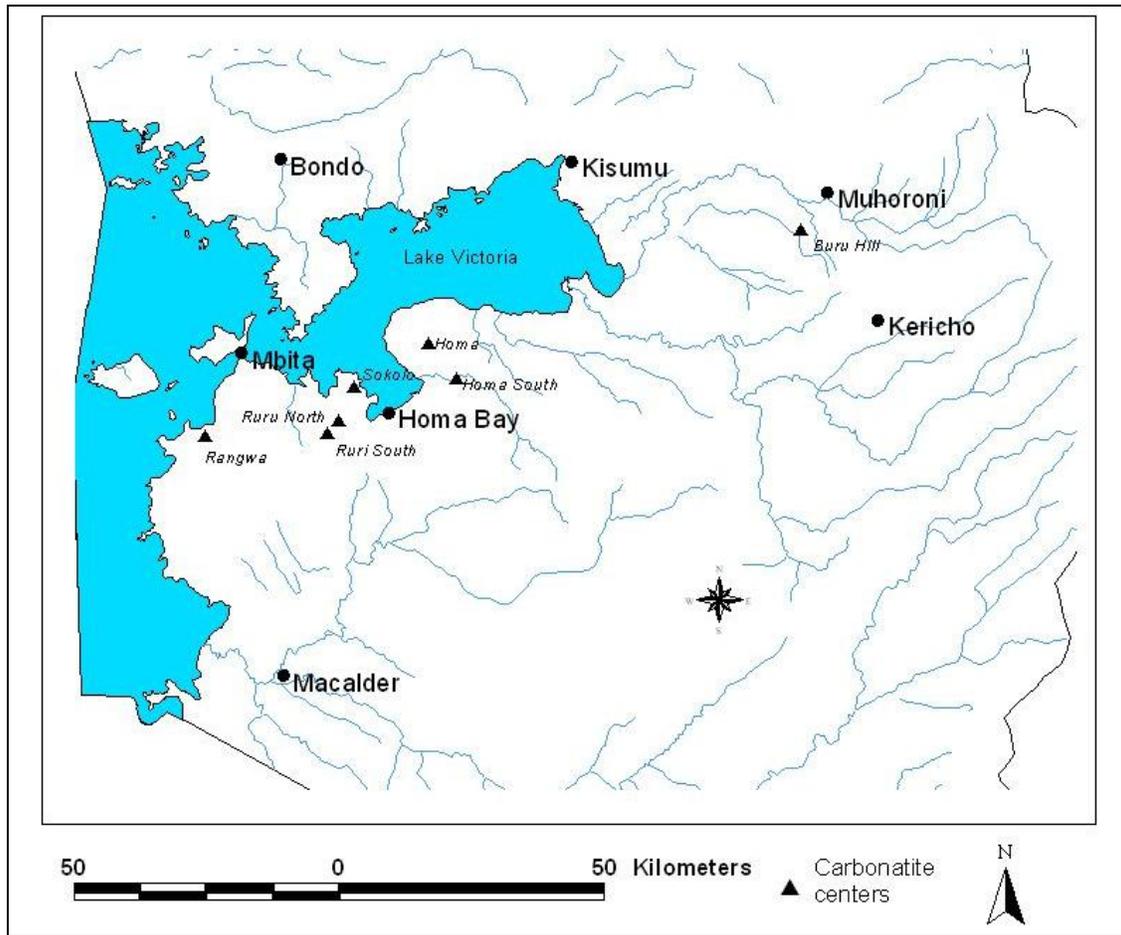
Carbonates

Carbonates are used in the making of three products vizly, cement, lime and stock feed. Lime is used for steel fluxing, water treatment, production of non ferrous metals, pulp and paper, refractory as well as in soil stabilization, sewage and wastewater treatment and in the chemical and glass manufacture industry. The limestone deposits at Koru and Songhor, with an estimated total reserve of 73 million tones (65 and 8 million tones for Koru and Songor respectively), show that there is potential for manufacturing of cement in the region. Other deposits associated with Carbonatites at Ruri, Sokolo and Tuige (Ruri Hills) and Homa hills can be used for manufacture of lime. The latter reserves have not been estimated.

Phosphates

Calcium phosphate is suspected to occur in the alluvial fans around the carbonatite complexes. Once found this could provide raw material for the manufacture of fertilizers.

Fig. 21 Distribution of Carbonatite centers



Sulphur

Sulphur is obtainable from deposits of pyrite, which occurs at Bukura in Kakamega as massive sulphide deposits in the Nyanzian system rocks. Other occurrences of massive sulphides occur at Oyugis, Siaya and Kakamega.

Kaolin, Clays, Quartz, Feldspars and their Compounds

Kaolin, clays, quartz and feldspar minerals and their compounds are normally used in the manufacture of ceramics. As regards, potassium feldspars deposit is found at the boundary of andesite and greywacke formations near the bridge where the Bondo-Siaya road crosses the Yala River.

Iron ore

Iron ores are found in limited occurrences as banded ironstones transformed by weathering processes in many places within the Lake Victoria Basin. However, very little attention has been given to these deposits. Potential deposits are known to occur at Ndere Island, in the area south of Kisii town, in the Macalder-Lolgorien belt, at the Lugulu Hill, in the vicinity of Kendu Bay and at Bala. Bala deposits are the most important in the Basin area as they have been estimated to contain some 80,000 tons of iron ore with a Fe content of 50-60 per cent. North of the Winam Gulf, iron ore (titaniferous magnetite) deposits occur in the Uyoma peninsula, and a pyritic lode (Fe content of 30% and sulfur 35 %), estimated at 170,000 tons is found at Bukura. More iron deposits are

found close to Kenya-Uganda border (Fig. 11) and near Kibuswa on the western side of Moiben River (iron mineralization reported (Sanders, 1963).

Iron oxides near Kibuswa are found to be impregnated and veined within sheared and lined quartzite and they contain a high proportion of manganese i.e. up to 21.04 per cent.

Manganese

An occurrence of manganese is noted at Moiben Bridge in Trans Nzoia district and Buru Hill near Muhoroni in Nyando district. Lateritic capping over the Nyanzian system rocks indicates manganese enrichment that could be of potential value.

Graphite

Rocks containing graphite are known to occur in the Mozambique belt; formerly the Basement system and occurrences of graphite have been reported from the southern slopes of Cherangani hills. The latter quantity has not yet been assessed to determine its potential.

Diamond

The assessment of the potential for diamond has been attempted, but the sharing of information is hindered by other factors. Early gold prospectors indicated occasional diamonds in the alluvials. Consequently, both the Mines and Geological Department and private companies have undertaken the search for diamond at different levels. In this regard, Kimberlites have been proven, but diamonds have not been found. As such, further research with open results should be carried out and information shared to help build more knowledge on the Kimberlites and their diamond potential.

Scheelite

Scheelite has been found as an accessory mineral in a few of the gold-bearing veins of Nyanza. It is probably present in large quantities, but has remained undetermined. Scheelite is a source of tungsten.

Building and Construction Material

Granite, brick clay, sand, ballast, dimension stone and marrum are used locally in the building and construction industry. Massive granite bodies and lesser intrusive units are exposed in the area. They are used as dimensional stones and for tile making. Granite has much potential for growth locally in making wall and floor tiles. This potential is indicated by the increased use of artificially manufactured tiles that are now commonly used in residential and non-residential houses in Western Kenya and the increased interest by modern developers and investors in the area.

Brick clay is a common element that is being exploited at the artisan level. The bricks make low quality and cheap building materials for tiles, pipes and related products, which are essential for construction. As such, their contribution to the regional economy is insignificant.

It can however, be said that research to improve the quality of bricks, product costing and diversity, as well as the associated environmental issues need to be undertaken. A research study under Lake Basin Development Authority shows the presence of large quantities of clay and tile manufacture.

Sand is one of the resources whose exploitation has steadily been on the increase. This is manifested in the many sites from which sandy soil suitable for building can be found. Sand can be found around Kisumu and along river and stream courses and at river mouths entering Lake Victoria i.e. River Awach, River Nyamasaria, River Nyando, Dunga Swamp and along Usoma beach. Deposits are also found at Kendu Bay. Along beaches such as Kamariga in Uyoma, sand is exploited. The receding lake level is exposing more areas with suitable accumulation of sand. Dunga beach is threatened by unplanned sand harvesting as residents build inroads to access the

sand. Environmental issues have been of concern to NEMA. NEMA is trying to enforce some order to minimize environmental degradation, with some good results in many areas.

Sand harvesting needs to be checked and carried out in an organized manner. Licensing sand harvesters, with incentives to those who invest in cleaning processes of the poor quality sand. Maximum benefit will then be derived from the available resources.

Exposures of granites, basalts, phonolites and nephelinites are used for various construction purposes. Company quarries are found at Kisumu, Kisian, Awasi, Eldoret and Kisii, among others. In many places such as Seme, Kisii and the Nyakach plateau, residents work the boulder by hand and hammer to break various rock types into chips for hardcore or concrete mixtures.

Poor thermally altered sediments near Homa carbonatite and pyroclastic near volcanic centers at Nyakach and Mt. Elgon have been used for dimensions stone. Also blocks of lateritic ironstone have been frequently used. Around Kisumu town, murrum is harvested at Mamboleo and at St. Paul's School just off Kisumu-Kakamega road. The potential for murrum exists in other places especially where lateritic soils have developed.

7.6 Recommended Activities

7.6.1 Short-term Measures

In the short-term, the project will need to prepare actions plans. This timeframe is between now and the time the proposed mining law is in force. This is because wide-ranging changes are expected once the new mining law is enacted. Actions in the short-term can only be formulated based on the provisions of the existing laws and mandates. For this reason, the following measures are suggested:

Up-scaling activities of Mines and Geological Department

Activities under the Mining and Geological Department should be increased by using funding from external sources and in collaboration with regional development agencies, NGO's and NEMA. This would enable the department to collect reliable information on the Artisan mining activities. A preliminary evaluation of resources and how they benefit the community is essential. Research activities on suitability of local raw materials for various industries and manufacturing works should be core for the Mines and Geological Department and Lake Basin Development Authority. On environmental and occupational health issues, simple technologies should be disseminated with more vigor than has been done by M&GD and LBDA.

An advisory center to educate artisans on the anticipated changes, legal implications and how this impacts on their ways of operation is necessary. This will then be upscaled into long-term goals once a new Act is put in place. In this regard, it is most desirable that a Regional Mining and Mineral Bureau be established in the area for purposes of information and demonstration on the technical aspects of mineral mining and processing (Value Addition). This facility will, amongst other things, assist the sector in areas such as mineral identification and quality control in processing.

Promotion of artisan organizations

LVEMP II should encourage communities to be organized around mineral resources such as gold, bricks, ballast, and sand. These organizations should pave the way for financial and technical assistance. This move should be undertaken immediately the new law is in place. Mineral and metal mining and processing industries that depend on nearby markets should be established. The LBDA should particularly front such work.

Business Development and Marketing

Provide access to micro-lending program for the sector. This may need to be done with development partners. Such lending should be for buying or hiring equipment. Legislation to check on unfair competition from imports and dumping should be enacted.

7.6.2 Long-term Measures

Long-term measures are intended to bring more permanent changes in the sector.

Upscale activities of Mines and Geological Department

A long-term program to upscale activities and introduce new ones will be offered by the introduction of new laws. More comprehensive studies and exploration programs to ascertain quantities of reserves need be done for the purposes of long-term measures of improving the sector. An advisory center could provide demonstrations and training on mining, use of explosives, and financial assistance.

Support measures for the industry mining

It is recommended that large companies with interest in mining should be established in the long-run to take advantage of heavy industrial mining like cement production.

Appropriate technologies for processing

Having established near markets for minerals and metals in the region, the next step would be to set up integrated mineral industries in the region. To increase environmental benefits, old tailings should be recycled and better managed. This will require special incentives.

Business development and marketing

Access to credit, electricity, land compensation, markets e.g. COMESA, protection from imports and dumping.

8.0 TRANSPORTATION, COMMUNICATION AND STORAGE FACILITIES

8.1 Overview

Road transport is the most significant mode of transportation within Lake Victoria Basin. Rail, pipeline and air transport are used to link the Basin with the rest of the country. Water transport plays a major role in cross border transport between Kenya, Tanzania and Uganda. Combined, rail-water; road-water and pipeline-water were significant in the past cross-border transport and still have significant potential for development.

Kenya is a net exporter to most of the countries in the Great Lakes Region. Most of this export takes place over the road network. Inland water transport currently plays a minor role in this trade largely due to poor multi-modal coordination and poor physical condition of the railway transport system.

The critical importance of inland water transport in the Lake is underlined by its link with the multi-modal transport network converging at Kisumu. Kisumu is the hub from where road, railway, pipeline and air transport have direct connections to other destination in Kenya as well as with all countries in the Great Lakes Region through Tanzania and Uganda. This convergence is supported by the existence of a road belt around the entire Lake connecting ports in Kenya, Uganda and Tanzania. The strategically located town of Kisumu has a railway station, an inland port, a container depot; an airport; and numerous inland waterways. Thus, through inland water transport, Kisumu is linked to seven main ports around the Lake namely: Musoma, Mwanza, Bukoba, and Kemono Bay in Tanzania; and Port Bell and Jinja in Uganda. The strategic position of Kisumu gives navigation on the Lake a major role in serving the entire Basin. Furthermore, Bungoma has two airstrips and two railway stations, and Eldoret on the fringes of the Basin, has an international airport. Along with Kisumu, the airports can serve as cornerstones for future development of the region.

All the transportation sectors, particularly road and rail are in need of increased investment for better maintenance and expansion. For example, the roads around the Nyanza Gulf are in extremely poor condition. Even the main road connecting Kisumu port with the Kisumu railway station and the city center are in poor condition. In addition, most ports and piers along the lakeshore lack accessibility to the hinterland due to the poor condition of the minor roads connecting them to the main roads, rendering inter-modal connectivity very costly and awkward.

In addition, the low capacity of the Nakuru-Kisumu railway track makes the route unsuitable for transit goods to Uganda and other land-locked countries. The rail-track from Nakuru to Kisumu, although an important link connecting Kenya to Uganda and Tanzania as well as to the Great Lakes Region via water transport cannot carry large trains. The gross tonnage is limited to a maximum haulage by an 87 Class locomotive whose traction is only 480 tons or 37 20 ft equivalent units.

There is therefore, a critical need for coordinated planning of all littoral transport modes and storage facilities to enhance their complementarities and to enable adequate market access for agricultural produce, fisheries and livestock products as well as for produce from mines, quarries and the tourism industry.

An efficient and safe inland water transport on LV, efficiently integrated with all other transport modes can become a catalyst to the opening up of Western Kenya as an important tourist destination. The Lake currently attracts some tourist activities in a number of areas. This includes pleasure fishing and bird watching on the sandy beaches of Mfang'ano, Rusinga and Gakawiri Islands. Tourists from Masai Mara often fly to these islands attracted by the beautiful physical

features. Other attractions include Oyamo Bay, the legendary 'Kit Mikayi; and Simbi Nyaima, which merit development and inclusion on the tourist circuits. The Lake has definite potential for the establishment of a floating hotel and/or a cruise ship plying various ports in Kenya, Tanzania and Uganda. Good roads around the Lake and a variety of transport options to and from the Basin would enhance consumer choice and promote inter-modal connectivity.

The overall approach to development of the railway component of the Lake transport systems would be to carry the heaviest cargo. This should be accomplished by effectively reducing the rate per ton compared to rates charged by road haulers. This would remove the heavy trucks from the main road network thereby reducing the overall maintenance costs to the road network. It may even spur interest in investment in small capacity goods vehicles and promote growth in the other sectors.

Rural transport is a major facilitator in the movement of passengers and goods within rural areas to markets within and outside the Basin. Rural areas are the major production zones, producing field staple crops, horticulture, livestock keeping and fishing supporting 65% of the population of which 98% do not own private vehicles. Over 85% of rural movement occurs, off-road using tracks and foot-paths. This mobility facilitates the supply of rural areas with production inputs and services while also enabling the marketing of primary goods.

There is a strong link between physical movement and telecommunications. Use of various modes of communication contributes towards saving in time and energy/effort; less time wasted on non-productive travel; deals can be sealed much faster and supply tracked until delivery. The key to giving communications preference is the reduced cost of conducting business through communication rather than through physical movement. Cheap modes of communication through Short Message Service (SMS) and e-mail have now become available and are spreading rapidly. This has encouraged giving preference to the various forms of telecommunications. There is need to expand the communications networks throughout the Basin hinterland, beyond Kisumu. Expansion throughout the Basin will serve to encourage production even for smallholders.

The importance of transport and communications to the development of the Lake region in general and in particular their importance in enhancing the effectiveness of new incoming investment cannot be overstated. Marketing and commerce all depend on modern, functioning transport and communication systems. They enable access to local and regional markets; decrease in costs and reduction in prices of produce as well as better access to education and health facilities.

Improving the transport and communications systems contributes and forms the basis for establishing an enabling environment for development enhancing the numerable features of the Lake Basin that are conducive to sustainable development. These include an attractive climate allowing a variety of crops; good agricultural land; access to water through shallow aquifers and the many perennial rivers; and extensive human resource base and cultural practices that support agricultural, livestock and fisheries production; major urban centers providing marketing and hosting services; extensive bio-diversity making it attractive to tourism and eco-tourism. Thus, the Basin could become a model of integrated development with Kisumu becoming a regional transport hub by making use of its central geographical location; the fresh water in the adjacent Lake; the northern corridor road; the numerous tourist attractions; the airport; and the widespread use of boda boda, for business transport.

However, any development would have to take into account the known hazards such as perennial flooding; malaria; HIV/AIDS; and poor soil structure consisting of dispersive clays, which make it difficult to sustain embankment or dyke construction.

8.2 Road Transport

8.2.1 Current State of Road Transport

Kenya has an extensive 63,572 Kilometer classified road network, of which about 8,900 kilometers are paved (Republic of Kenya, Economic Survey 2006). The Roads Department in the Ministry of Roads and Public Works is responsible for the classified roads. The unclassified rural roads, which carry the bulk of local village and township travel demand is the responsibility of the local authorities. The Kenya Wildlife Service is charged with 8,900 Kms of roads in the National Parks and Game Reserves, while the Ministry of Local government through various local authorities has responsibility for 14,500 Kms of urban roads and 124,000 Kms of rural roads. The Forest Department in the Ministry of Environment and Natural Resources is responsible for about 5,000 Kms of forest roads.

The Kenya Roads Board has a mandate to oversee the entire road network and coordinate its development, rehabilitation and maintenance. The table below presents an inventory of roads in the Basin.

Table 13: Inventory of roads in Lake Victoria Basin

Province	District	Tarmac	Gravel	Earth	Total
Western	Kakamega	76.5	543.1	141.3	760.9
	Vihiga	116.0	262.0	423.0	801.0
	Teso	15.5	225.8	84.7	326.0
	Lugari				442.0
	Mt. Elgon				345.5
	Bungoma	165.6	669.6	323.2	1158.4
	Butere-Mumias	62.4	103.8	268.6	434.8
	Busia	58.6	377.5	147.0	583.1
	Total roads in Province		286.6	1150.9	738.8
Nyanza	Bondo	45.8	308.9	199.7	554.4
	Siaya	90.9	400.6	300.6	792.1
	Kisumu	133.6	263.6	60.0	457.2
	Nyamira	32.1	387.7	188.3	608.1
	Nyando	25.5	128.8	818.4	972.7
	Kuria	16.0	69.5	795.5	881.0
	Total roads in province		343.9	1,559.1	2,362.5
South Nyanza	Migori	98.2	512.5	672.0	1282.7
	Kisii	73.0	409.0		482.0
	Homa Bay	58.0	186.4	262.5	506.9
	Suba	86.2	72.1	321.0	479.3
	Gucha	34.0	179.7	436.3	650.0
	Rachuonyo	180	726	910.4	1816.4
	Total roads in province		529.4	2085.7	1930.2
TOTAL ROADS		1,160	4,796	5,032	14,335

Source: District Development Plans

Road Network in the Victoria Basin

Of the roughly 14,500 kilometers of roads in the Basin, only about 1,200 Kms. are paved (8%). These roads carry more than 80% of passenger and freight traffic. However, serious under-investment and lack of commitments to maintenance have left the road network in a poor state of

repair. This poor condition contributes to an appalling rate of road accidents and deaths as well as to extensive economic losses in maintenance and repair of vehicles. Road safety is further reduced by the operation of *matatus*, which comprise close to 78 % of the public transport system.

8.2.2 Freight Transport

Most of the containers and other imported goods leaving the port of Mombasa for Nairobi and the Lake Basin are hauled on trucks. A combination of poor maintenance, lack of enforcement of truck and axle weight regulation, and the El Nino storms of 1997 created a near crisis for Kenyan road travelers. Pot-holed, rutted, and washed-out roads increased transit time for freight and passengers alike. Damage to vehicles and discomfort to drivers and passengers forced the government to enact and enforce axle weight restrictions and began road resurfacing. Since small but keenly competitive firms, whose profit margins are slim, often own trucks, there is an economic incentive to overload. Trucks having 30 to 40 ton cargo are common and many do not always have sufficient axles to spread the weight of the load. More weigh stations, increased spot highway checks, and increased fines are having some impact on reducing road damage. Low-paid and poorly supervised officials undermine the enforcement effort.

8.2.3 Potential for Development

Current funding for roads is fragmented among the following organizations/ institutions:

- Fuel Levy Fund implemented through the Kenya Roads Board;
- Local Authority Transfer Fund (LATF) in the Ministry of Local Government and the Ministry of Finance;
- The National Parks and Reserves Levy Fund controlled by the Kenya Wildlife Service (KWS);
- Tea Cess controlled by the Kenya Tea Development Authority (KTDA);
- Sugar Levy controlled by the sugar industry; and
- Central Government allocations and donor assistance through the Ministry of Roads and Public Works.

This results at times in allocations that appear to be arbitrary and usually inadequate. There is urgency to integrate road transport infrastructure planning with overall funding sources for roads as well as with the overall economic planning of the Basin. A better classification of roads by their social and economic function and importance to the community is required. This must take into account the changing regional economic activities, cross-border transport of imported, exported goods and goods in transit as well as changing population patterns.

It is also necessary to establish an optimum balance in the development of road infrastructure to achieve harmonized but mutually complementary and competitive road infrastructure development on a sustainable basis. With road construction materials abundant, there is extensive potential for labor-based road construction, which may have an impact on employment in the region. However, this requires better planning and utilization of the available human and material resources and the fielding of experienced roads engineers at the district offices.

Development plans

The government and development partners have prioritized the rehabilitation of the road infrastructure as a key part of the country's development strategy. Recommendations are to take the 'Corridor Development Approach'. The northern corridors are relevant to the Lake Victoria Basin and include connecting Mombasa through Nairobi, Nakuru. From Nakuru, two routes are recommended for preference:

- Nakuru - Eldoret to Malaba at the Kenya/Uganda border; and the

- Nakuru - Mau Summit through Kericho-Kisumu to Busia at the Kenya/Uganda border.

The development of these links and access to them can enhance internal and regional mobility while facilitating movement of farm produce to markets and services to rural areas. Furthermore, the roads would facilitate accessibility to health, education and services offered at administrative centers, as well as access to markets to the rural areas adjoining the corridors.

Various factors influence investment in the provision of transport services for passengers and freight. These include mainly the ease of entry and exit into the transport business and lack of better alternative investments. Furthermore, many join the Boda Boda transport business due to lack of employment opportunities and poor earnings from agriculture. The freight business gives opportunities mainly in transporting unprocessed tea and sugarcane to other areas. In addition there are opportunities for transport of processed products from outside.

8.3 Railway Transport

8.3.1 Current State of Railway Transport

Kenya's railroad system has about 2,778 kilometers of narrow-gauge, one-meter track. The main route links Uganda through Malaba, Eldoret, Nakuru, and Nairobi with the sea port of Mombasa. There are branch tracks connecting the mainline to Nanyuki, Nyahururu, Solai, Kitale, Kisumu and Taveta. The system has 150 stations, and a fleet of 156 diesel locomotives and some 7,000 coaches and wagons, including container-carrying Railtrainers. Most of the railway system is a 100 years old. The system, managed, by the Kenya Railway Corporation (KRC), serves both Kenya and the land-locked countries in the East African region.

The main lines linking Lake Victoria Basin include:

- The main line connecting the Port of Mombasa with Uganda through Nairobi-Nakuru-Eldoret-Kitale through Malaba to Uganda;
- The branch connecting Nakuru with Kisumu: This line was intended to integrate inland lake transport; moving goods to the port of Kisumu and by vessels to the various ports in Uganda and Tanzania.

The entire railway system carries an average of 2.3 million tons of freight and 4.8 million passengers per year. The Mombasa-Nairobi-Ugandan track carries considerable amount of cargo due to demand from the Great Lake countries.

The Kenyan railroad has worked out a smooth clearance system with the Mombasa port and the border at Kampala reducing the total transit time from 28 days to 4-5 days. Nevertheless, the track from Nakuru to Kisumu, although an important link, cannot carry large trains. The gross tonnage is limited to a maximum of only 480 tons. With a high gradient of 2.2% and a light rail (only 60 pounds per yard) and inadequate structure strength, haulage capacity on the Nakuru-Kisumu line compares un-favorably with those of Nairobi-Mombasa; Nairobi-Nakuru; Nakuru-Eldoret or Eldoret-Malaba lines, which can accommodate all classes of locomotives with a maximum tonnage of 760-1,000 tonnes. The low capacity of the Nakuru-Kisumu railway track therefore makes the route unsuitable for transit goods to Uganda and other land-locked countries.

The legal and institutional environment in which the KR operates is not conducive to proper corporate governance. Its operation under the Kenya Railways Corporation Act and the State Corporation Act inhibits decision-making process as it receives directives from various government agencies including the Office of the President, the Treasury, the Ministry of Transport and Communications, and the Inspectorate of State Corporations. It

has to receive approvals for financing of major capital works and procurement. Further, the government appoints the Board of Directors, without necessarily due regard to relevance of qualifications and experience or competence of the appointees.

The Kenyan government has recently concessioned the railroad. The railroad could not operate without a subsidy since the only profitable line is the Mombasa-Kampala line. Without government subsidies, several branch lines and passenger service (10 % of traffic) would have been discontinued. According to the Economic Survey 2006, performance of the railway transport sub-sector remained depressed during year 2005.

The government and EAC undertook background studies on the ongoing restructuring and privatization initiatives. These initiatives should be harmonized with the region's anticipated economic development in the context of national and regional development programs under East African Community. Kenya and Uganda have already agreed with a concessionaire to operate and invest in their rail networks for the next 25 years.

8.3.2 Constraints to and Potential for Development

There is an urgent need to upgrade the Nakuru-Kisumu track taking into consideration the potential benefits from integrating railway and inland water transport with road transport in the context of promoting trade in the Great Lakes Region. A holistic long-term view should be taken for the regional railway system with special view on the interest in the regional links with the EA community as well as with the Great Lakes Region and its land-locked countries. This should be viewed towards preparing a modern railway system, which is cost effective for transport of bulk freight and passengers over long and short distances. Environmental considerations too tend to give preference to railway systems. A key-limiting factor to railway development is the high cost of infrastructure.

Development plans

For many years the KR has not undertaken any major developments either by way of rehabilitation or upgrading of its infrastructure, construction of new lines, or through modernization. Indeed it has accumulated a backlog of investments in rehabilitation and upgrading of its infrastructure. Besides the track being operated as a single line, it has not been expanded despite its limited coverage. Considering the plans to develop agriculture, fisheries and mining operations in the Basin and the changes that have occurred over the last generation, there is a need to review the railway connections using a system-wide approach taking into account the options for multi-modal transport potential in the lake Basin, road-railway, road-air, as well as railway-inland marine transport. In this regard, it is of importance to ensure efficient complementarity with all existing modes of transport and storage. For example, there are abandoned lines to sugar factories and other industries in Kisumu, which could be rehabilitated to make the links more effective.

8.4 Inland Water Transport

8.4.1 Current State of Inland Water Transport Services

Lake Victoria provides a huge water mass for the inland water transport. The Lake is served with appropriate ports and piers with docking facilities and experienced service providers. The Kenyan portion of the lake consists mainly of the Nyanza Gulf, which is the most heavily populated area around the Lake with an estimated $\frac{1}{3}$ of the lakeside population. The critical importance of inland water transport is underlined by its link with the multi-modal transport network converging at Kisumu. The strategic position of Kisumu gives navigation a major role in serving the Basin and the region.

The KRC and its' predecessors (East African Railways and Harbors and the East African Railways Corporation) have been operating marine services on the Lake on a continuous basis since 1907, soon after the Mombasa-Kisumu railway line reached Kisumu in 1901. It operates ferry services to link Ugandan and Tanzanian locations with Kisumu, Kenya's third largest town and a once bustling port. The ferry supplements interstate rail and road traffic. In addition, the KRC has two freight tugs, nine lighter barges, and three passenger vessels on the Lake.

The KR has a fleet of about 5 vessels for the transportation of both passengers and cargo on LV. The largest vessel owned by KR is the MV Uhuru, a wagon ferry with a cargo capacity of 1,200 tons (equivalent to 22 wagons), which is usually operating the international trading routes. It carries export/import and transit cargo in rail wagons between Kisumu and Port Bell in Uganda and between Kisumu and Mwanza in Tanzania. The other four vessels transport mainly passengers and goods for the domestic market.

Kenya, which used to host the marine services headquarters in Kisumu, currently compares unfavorably with Tanzania and Uganda in terms of the number of vessels operating on the Lake. Tanzania has 11 vessels including one wagon ferry and Uganda has four, while Kenya has only one, the MV Uhuru. Four Kenyan vessels (SS Nyanza; MV Peeda; SS Usonga; and MV Kavirondo) are out of service, some of them having been sold.

The Lake Victoria Ferries

Available information shows low vessel capacity utilization due to poor scheduling; poor vessel maintenance; increased competition from roads transport; lack of information on scheduling indicating vessel departure and arrival times; low vessel capacities. The receding waters of the lake interfere with docking of ships since the wharfs are separated from the docking areas. Ships get stuck in mud as they try to dock. A receding lake also interferes with the existing shipping routes. This has cost implications to the shipping companies.

8.4.2 Kisumu Port Infrastructure

Inland infrastructure on Lake Victoria comprises port facilities at Kisumu and in ancillary ports. The port infrastructure at Kisumu includes:

- A 260m long main cargo quay equipped with four berths and two marginal wharves;
- A cargo shed (go-down) covering a total area of 400 m² with a rail each side
- A passenger quay 100 m in length;
- An 18 m wide platform (terminal) for wagon ferries with a span bridge measuring 28 m which links the rail wagon ferries to the land-based railway system; it serves both local and regional marine vessels;
- A total fenced area measuring 6,400 m² allocated to shipyard activities;
- A repair workshop;
- Dredging equipment–non operational;
- Two slipways, one measuring 100 m and the other 60 m;
- A 220 m long oil jetty 10 m wide and 5 m deep; and
- An administration building and customs warehouses.

The port is about 100 years old and has antiquated equipment although still functional. A railway network for maneuvering and wagon shunting occupies most of the area. Eighteen lines totaling 4,200 m of track in the port area are linked to the adjacent railway Kisumu Station, which further connects them to the Main Kisumu-Nakuru line with a maximum capacity of 400 conventional wagons.

The port workshop and dockyard facilities provided for the maintenance of all vessels in East Africa until 1977. It is currently underutilized and no longer services vessels from Uganda and Tanzania since both have established similar and more efficient infrastructure at Kemono Bay, Mwanza and Bukoba ports in Tanzania and Port Bell in Uganda.

The oil terminal operated by the Kenya Pipeline Company Ltd and served by the oil jetty, is located 12 Kms. away from the port making the transfer of fuel between the two terminals cumbersome and unsafe. There is a chronic lack of fire-fighting equipment. Tanzanian vessels dominate the transportation of bulk oil to Musoma, Mwanza and Bukoba since Kenya has no suitable vessels for this purpose.

Kisumu port is connected to several local piers with small go-downs along the Nyanza Gulf. This includes: Kendo Bay, Homa Bay, Homa Lime, Lowuor, and Asembo Bay. Some of these have cold-storage facilities serving the fish industry.

8.4.3 Potential for and Constraints To Development

Constraints to transport to and from the land-locked countries in the Great Lakes region through water transport include:

- Inadequate legal framework;
- Marine safety;
- Navigation charts;
- Up-to-date meteorological information;
- Search and rescue facilities;
- Environmental issues (oil spills);
- Receding lake levels; and
- Poor condition of access roads.

Across Kenya, Uganda and Tanzania, the effects of Lake Victoria' low water levels are being felt. Cargo and passenger ships plying the lake are making huge loses because jetties and piers in major ports have become muddy as the water recedes. The Kisumu port is losing business because of the low water levels, levels that have dropped by 1-2 meters. The turn-around time of ships shuttling between Kisumu, Mwanza and Port Bell is inordinately long because of the long time it takes to dock. A number of ships using the Kisumu jetty have on several occasions got stuck in the muddy and shallow waters as they try to dock. This has forced some private steamers and oil ferries to avoid Kisumu, resulting in loss of revenue. The shrinking Lake waters have highly affected operations of ships and smaller boats whose owners are losing business. The most affected beaches are around Nyakach, Rachuonyo, Uyoma in Bondo and Mbita.

8.4.4 Development Strategy and Development Plans

The EAC community is currently promoting a number of initiatives. The relevant ones include the:

- Lake Victoria Basin Commission;
- Lake Victoria Safety of Navigation Project; and the
- Draft Lake Victoria Transport Bill.

The Draft Lake Victoria Transport Bill intended to create a comprehensive and modern legal regime for shipping in the lake including matters relating to safety, vessel and personnel registration, search and rescue operations, vessel construction standards, pollution control and mitigation, carriage of dangerous goods, training of seafarers, wreck and salvage, insurance, certification, survey and related matters. The bill takes into account the development of international shipping law through conventions and similar multilateral instruments.

The development strategy, as detailed in the Integrated National Transport Policy of 2004, is as follows:

- To promote the development of a vibrant inland water transport on LV by developing a seamless integrated multi-modal transport system in the Northern Corridor to facilitate Kenya's trade with the EAC partner states and with the land-locked countries in the Great Lakes Region;
- To promote the exploitation of the full potential of the Lake Basin in Kenya and its resources in agriculture, industry, and tourism as part of the government's development goals for wealth and employment creation;
- To promote the efficient use of inland water transport in providing a cheap transport mode for the movement of passengers and goods within the Nyanza Gulf in order to stimulate domestic and international trade;
- To encourage investment in the provision of water transport services;
- To increase the tourist potential in the lake Basin;
- To promote private sector participation in the provision of inland water transport services,
- To ensure safety of passengers and goods, and
- To promote environmental safety policies.

With increased economic integration in the Community, the lake transport is expected to handle higher volumes of cargo and passengers; and with the liberalization of the sector, the following areas will increasingly require investment:

- Building, operating and maintaining wagon vessels, ferries, boats, cruise ships and other means of water transport;
- Investment in livestock transport to boost trade in livestock between the partner states;
- Building and maintaining ports and landing beaches;
- Involvement of private sector investors in the provision of ports, infrastructure and facilities;
- Privatizing ports' service to ensure full utilization of the facilities;
- Developing capacity in prevention and control of spills in the harbors and port areas;
- Provision of water safety measures;
- Maintenance of navigational aids and other equipment including carrying out nautical cartography; and
- Installation of signals and telecommunication network facilities across the Lake.

8.5 Inland Air Transport

8.5.1 Current State of Inland Air Transport

Kenya has more than 200 airports and airfields, of which 15 have paved runways, including four with runways longer than 3,000 meters. About 35 airfields can be considered commercial. Three airports handle international flights, Nairobi's Jomo Kenyatta International Airport, Mombasa's Moi International Airport, and Eldoret International Airport. Other airports are Wilson in Nairobi, Malindi, Lokichokio, and Kisumu, in the Lake Basin. There are numerous airstrips throughout the country.

The Basin has been designated by the EAC as "a regional economic growth zone" (EA Development Strategy, 2001-2005). As such, the development of air transport for local passengers and tourist platform will be among the factors contributing to an improved communication system. Kenya Airways, the East Africa Airline and other private airlines operate air transport in the Lake Victoria Basin.

8.5.2 Constraints to and Potential for Development

The potential for strengthening air transport linkages is mainly for enhancing the Western Circuit for tourism development opening up destination on Lake Victoria as well as additional inland destinations. There is an identified need to improve air transport as a quicker mode of transport to enable transport for perishable produce such as fish and cut flowers; better security for the transport of precious stones as well as for tourists. Major development plans include the proposed expansion of Kisumu airport and facilities.

8.6 Pipeline Transport

8.6.1 Current State of Pipeline Transport

Petroleum accounts for 80% of commercial energy in Kenya. The pipeline transport system plays a significant role in the economy since over 90% of petroleum products consumed in the country are transported through the pipeline. The transport sector consumes about 2/3 of all petroleum fuels imported, accounting to about 20% of the total imports.

The Kenya Pipeline Company Ltd. (KPC) is responsible for the management and operation of the only oil pipeline transport system in Kenya. KPC operates the pipeline running from Mombasa through Nairobi and Nakuru to Kisumu and Eldoret terminals. It transports refined petroleum products that include motor spirit, automotive gas oil, illuminating kerosene, light diesel oil, and jet fuel for aircraft. The pipeline system includes pumping stations and fuel storage tanks. The company has a total storage capacity of about 5 million cubic meters. It provides truck-loading services at Nakuru, Kisumu and Eldoret depots. Pipeline transport represents an efficient, safe, and environmentally friendly alternative mode of transport to road, railway and water transport. It contributes to reduced damage to roads by heavy goods vehicles, fuel tankers and eliminates the incidence of diversion and dumping of petroleum fuel oils on transit to the Great Lakes Region into the local market.

A second pipeline stretches from Eldoret to Kisumu in the west of the country, and a recent project is to extend the pipeline from Eldoret to Kampala in Uganda under the auspices of the East African Community. The Eldoret and the Kisumu extensions through Nakuru were commissioned in 1992 and 1994 respectively. The Company is the dominant player in the regional energy sector, exporting to Uganda, Tanzania, Rwanda, Burundi, the Democratic Republic of Congo, and the Sudan. The pipeline capacity however, requires upgrading of diameters. This is currently being done.

Despite the relatively recent extensions of the pipeline to Eldoret and Kisumu, there has been an upsurge in the number of tankers conveying petroleum from Mombasa. This may be due to the mandatory requirement by KPC to oil companies to maintain minimum stock levels equivalent to 2,400 m³, which has limited the companies access to newly formed small companies. These have resorted to transporting their fuels by road. The fact that some companies still find it cheaper to transport petroleum products by road reflects a pricing discrepancy that should be researched and resolved.

Furthermore, Eldoret and Kisumu have lower consumer prices for fuel products notwithstanding their distance from the port of Mombasa. This is attributed to the existence of common-user truck loading facilities. The efficiency, safety and environmental sustainability of the storage tanks and truck loading facilities in Kisumu cannot be assured.

Pipeline safety and security has been adequate although there have been a few cases of vandalism. These included attempts to puncture the pipeline and to siphon petroleum products. There have been no major spills reported throughout the operational history of the pipeline.

8.6.2 Constraints to and Potential for Development

The design of the loading facilities at both Kisumu and Eldoret depots are incompatible with the configuration of railway wagons, leading to relatively lower intakes by the railway wagons than could be achieved by the available capacity. The gradient of the railway line leading to the Eldoret depot permits the loading of only 2 wagons at a time, although KPC's loading capacity is 20 wagons. It appears that the design of the depots did not take into account the gradient and configuration of railway wagons.

There is potential for establishing economic partnerships between the pipeline and other modes of transport. For example, an additional outlet in Kericho to serve Nandi, the sugar belt and the tea zone could contribute positively to the efficiency of these industries. Furthermore, it would contribute to stopping vandalism of the pipeline.

Development plans

Plans are underway to improve the monitoring of pipeline integrity through the installation of an integrated system. This will strengthen the current centrally controlled Supervisory Control and Data Acquisition system that requires minimum human intervention in the operation of the pipeline. There are plans for transporting additional products such as Liquefied Petroleum Gas (LPG), fuel oils, and industrial diesel oil.

Contribution of pipeline transport to small-scale producers

Pipeline transport contributes to small-scale producers by reducing local fuel costs thus, contributing to lower passenger/km and ton/km rates; lower road maintenance costs; and reduced negative environmental impact. Thus, pipeline transport contributes to reduced rates for supply of farm inputs, marketing of produce as well as eco-tourism.

8.7 Non-motorized and Intermediate Means of Transport (NMIMT)

8.7.1 Current State of NMIMT

Rural transport is a major facilitator in the movement of passengers and goods within rural areas and to markets within and outside the region. Rural areas are major production zones and the majority of the people do not own private vehicles. Over 85% of rural movement occurs off-road using tracks and foot-paths for non-motorized means of transport (NMT). This mobility facilitates the supply of rural areas with production inputs and services while also enabling the marketing of goods produced there.

Non-motorized means of transport includes walking, head shoulder or back loading, use of wheelbarrows, human-drawn-carts (mikokoteni), animal transport (donkey and ox-carts, and hand carts), bicycles, tricycles, motor cycles to transport passenger and freight. Intermediate means of transport broadly refer to low-cost transport innovations that increase the load carrying capacity beyond head, shoulder or back loading and /or increase travel speeds beyond walking. They include low engine capacity vehicles such as motorcycles, and tricycles, tuk tuks, and sidecars or trailers.

Despite the country's elaborate road network, the Kenyan rural transport scene is still characterized by walking and head or back loading, mainly by women and children. In many areas, public transport is unaffordable by many people. The loads carried by walking persons usually do not exceed 40 Kgs. Distances covered on foot may range as far as 10 Kms. or more.

Due to widespread poverty, the use of motor vehicles is generally limited. This mode of transport has started taking root in the Lake Basin. From there it has spread to other parts of the country. A prime example is the boda-boda urban bicycle taxis in Busia, Kisumu, Kakamega, Bungoma and Eldoret. Hundreds of boda-boda taxis operate in those towns dominating most of the traffic there.

The boda-boda carries loads of up to 100 Kgs. filling an identified gap in local transport and enabling a direct link to the development of agriculture, and local trade. The boda-boda enable faster door-to-door deliveries where cars are either unavailable or roads are in disrepair. It also keeps money dedicated to transport within the local economy and contributes to rural security. Time and money saved by opting for boda-boda transport rather than car or head-carrying could be dedicated to production.

8.7.2 Constraints to and Potential for Development

Constraints to intermediary modes of transport include:

- Lack of infrastructure on main classified roads consisting of separate lanes for bicycle and other intermediary transport to minimize accidents;
- Poor road conditions, especially the unidentified road networks, which are under the county councils;
- Poor route network planning, routes were planned for motor vehicle transport and not for low cost modes of transport;
- Poor road conditions make accessibility to public transport, which is the next affordable mode, expensive in terms of time to reach it;
- Low, vulnerable technology requiring protection through legislation;
- Animal-drawn transport requires encouragement of better animal health care; and
- Insecurity a threat to these modes.

Women perform most of the household social and economic activities walking and head or back loading at household and community levels. Introduction of various forms of non-motorized modes of transport may reduce some of the load currently borne by them. Moreover, in some areas there may be cultural objections to women traveling at the back of a boda-boda taxied by a man.

Non-motorized and intermediary forms of transport are not fully recognized by law and therefore do not qualify for technical and financial support. Recognition of this may raise various issues regarding safety, communal biases, lack of and industry producing appropriate vehicles.

The Integrated National Transport Policy (2004) recommends encouraging the development of NMIMTs:

- As part of an integrated transport system that meets basic needs of low-income households; and
- To increase access to transport facilities at the community and household levels.

There is currently no separate physical infrastructure for NMIMT. The existing road space is shared by NMIMT and motorized vehicles resulting in traffic congestion and serious danger to road safety. Many workers could afford bicycles but they fear using them due to the high risk of accidents under the prevailing conditions. They are therefore forced to meet their transport need by walking to work. Plans may be developed to separate bicycle and other NMIMT traffic from motorized traffic by grading and paving separate 1-2 m wide paths. This will encourage many bicycle owners to use NMIMT.

One attraction of the NMIMT is that the potential for investment is relatively easy. The Boda Boda industry may definitely be encouraged. But it needs some level of regulation as in road use to ensure competent operators. A major stakeholder would be the private sector, which may be encouraged to set up bicycle assembling plants in the Lake region.

8.8 Telecommunications

8.8.1 Current State of Telecommunications

In 2005 Kenya's telephone landlines numbered 300,000. The number of landlines in the lake Victoria Basin is minimal. The generally unreliable system has seen little modernization except for service to businesses.

The use of mobile cellular phone is expanding rapidly with the number of users climbing from 1.6 million in mid-2003 to 2.5 million in mid-2004. The current estimate is 6.06 million subscribers. Two license holders, Safaricom Ltd and Celtel Kenya, operate the cellular phone system. Internet use has expanded rapidly, reaching approx. one million people by 2005. The country had eight television broadcast stations in 2002 and more than three dozen radio stations. In 1997 television sets numbered 730,000 and radios, 3 million.

There is a strong link between physical movement and telecommunications. Use of various modes of communications contributes towards:

- Saving time and energy/effort;
- Less time wasted on non-productive travel; and
- Deals can be sealed much faster and supply tracked until delivery.

The key to giving communications preference is the reduced cost of conducting business affairs through communications rather than through physical movement. There is need to expand the networks throughout the Lake basin hinterland, beyond Kisumu town. Expansion throughout the basin will serve to encourage production even for smallholders.

8.9 Storage Facilities in the Region

8.9.1 Current State of Storage Facilities

Table 14: Storage of farm produce in Lake Victoria Basin

Province	District	On-farm Storage	Off-farm storage	
Western	Kakamega	Grains & legume stores	NCPB stores	
	Vihiga	Granaries	NCPB stores	
	Teso	Traditional granaries, improved stores	NCPB stores	
	Lugari	Traditional stores	NCPB stores	
	Mt. Elgon	Coffee factory stores Honey refinery centre Grain stores Potato stores	NCPB store	
	Bungoma	Cribs	NCPB silos	
	Butere-mumias	Maize cribs	NCPB stores	
	Busia	Granaries & stores	NCPB stores	
	Nyanza	Bondo	sacks in houses, cribs outside houses	NCPB stores
		Siaya	In living houses & granaries	NCPB stores
Kisumu		Traditional granary; Gunny bags, cribs & hay barns	NCPB silos within market	
Nyamira		Bags, Improved cribs	NCPB silos	
Nyando		Traditional stores	Improved stores, silos	
Kuria		Storage bins, granaries	NCPB depot	
South Nyanza		Migori	Cribs & stores	NCPB depots
		Kisii	Traditional granaries	NCPB stores
	Homa Bay	Granaries: Sacks in houses	1 NCPB stores	
	Suba	Traditional granaries	Traditional granaries	
	Gucha	Granaries	NCPB stores	
	Rachuonyo	Stores	Silos	

Bondo fisheries cold-storage - Nyangoma chill room (ongoing project)

9.0 DEVELOPMENT OF MICRO-FINANCE INSTITUTIONS

9.1 Overview

This section focuses on the micro and small enterprise (MSE) sector and the micro finance institutions (MFI) in Kenya and specifically, the Lake Victoria region. The micro and small enterprise cuts across all sectors of the economy and provides a strong breeding ground for the medium and large industries. In the rural areas, where the majority of the poor lives, the MSEs provide vital goods and services against many impediments. Agriculture, which ranks the topmost activity in rural Kenya, suffers from lack of capital and access to affordable credit, *inter alia*. Availability of credit would provide opportunity to increase productivity, access market information, technology and networks. From strategy point of view, the MSE sector is identified as a key vehicle towards industrialization by 2020. The growth and development of MFIs is discussed as they provide a way around the rigorous commercial banking sector. MFIs have evolved as key partners in MSE growth, providing vital financial services to the “un-bankable” individual and enterprises.

In order to incorporate MFIs into the development of the Lake Basin, an investment fund is proposed. Factors that are apt to affect the investment fund and the ability of MFIs to extend financial services to MSEs are discussed. Finally, proposals on how LVEMP II should move forward are laid out in a Log frame.

The consultant gathered information from various reports, journals, articles and interviews. It is acknowledged that information is dynamic and therefore an assessment of this nature cannot be exhaustive. More information needs to be gathered on the socio cultural dynamics of societies that can improve the performance of the micro and small enterprises. The MSE sector, in which the micro projects fit, requires holistic support, which no single agency can undertake. It is therefore suggested that LVEMP II should collaborate quite closely with other institutions within the region. The success of the project is also the success of the communities, which fall within its area of its operations and for this reason, the linkages with these communities need to be strengthened.

9.2 Policy Environment

The Government’s commitment to foster the growth and the development of MSEs can be traced back to 1986 Sessional Paper on *Economic Management for Renewed Growth*. Although previous policy papers referred to development in broader contexts, it is in 1986 that the government acknowledged the existence of the informal sector and embraced it in the country’s development strategies. In 1989, there was further reference in the National Development Plan, “The strategy for Small Enterprise Development in Kenya-Towards the Year 2000” that set out the mechanisms for removing constraints to growth of the sector. Sessional Paper No. 2 of 1992-Small Enterprises and Jua Kali Development in Kenya is the most comprehensive paper outlining the initiatives necessary for the development of the MSE sector.

These sessional papers manifest government commitment to the growth of the sector. Consecutive papers reiterated the governments desire to engage the MSEs for wealth creation and industrialization. In spite of these statements, most MSEs remain locked out of the much-needed financial services. Government policies were sincere and the most comprehensive effort was the Sessional Paper No I of 1992. Some of the proposed programs outlined in this paper were never implemented and this may be one of the reasons why the MSE sector has not performed as envisioned. Arising from this, there has been consistent duplication of effort, inefficiencies in the use of scarce resources, and poor implementation, monitoring and evaluation of policies.

New policy orientation on financial services suggests that the government intends to promote the development of the financial services sector. The government will attract savings and investments

and the development of venture capital. It will also establish a Micro Finance Trust Fund from which MFIs will be able to borrow for on lending. Insurance schemes will be established to underwrite risks of MFIs. The government will encourage commercial banks to develop appropriate risk classification systems governing loan collateral, documentation and inspection risk for the MSE sector whose aim is to encourage commercial banks to open up lending to MSEs.

The Micro Finance Act will strengthen the Micro Finance Unit of the Central Bank of Kenya. The Act will harmonize and incorporate micro finance institutions into the country's financial system, and synchronize their operations with those of the mainstream financial establishments. The Co-operative Act will similarly be reviewed to provide effective supervision to Savings and Credit Cooperative Societies (SACCOs).

9.3 The Micro and Small Enterprises Sector

The development of micro and small enterprises as important economic entities can be traced back to 1972 when the International Labor Organization reported on their contribution to employment and wealth creation in developing countries. The report made reference to the “*Informal Sector*” mainly because many of the enterprises operated outside the legal structures of their economies. MSEs employ between one and fifty people per enterprise. The enterprises may be formal (registered) or informal (not registered). The MSEs sector has been variously referred to as the “*informal sector*”, the “*Jua Kali*” and /or the “small enterprise sector (SES)”. Figure 13 outlines the divisions within the MSE sector. A typical informal enterprise employs one person and engages in activities for subsistence purposes with minimal value addition. The main activities in the sector include trade, service provision and manufacturing. The sector has continued to record growth in employment at an average growth rate of 7% per year (ed. Kiiru 2005). In 1999, the sector employed 2.4 million persons progressing to 5.5 million persons by 2003. Out of the 458,900 jobs created in the manufacturing sector in year 2005, the Jua Kali sector created 414,400 jobs (Republic of Kenya, Economic Survey, 2006). Certainly, this is an important sector of the economy.

The MSE has the capacity to create most of the 500,000 jobs per year planned for by the current government. Although entry into the sector is not restrictive, failure rates beyond the initial two years has been high, at almost 20 percent. This is because of poor enterprise selection, inadequate capital and depressed returns. It is the concern of the government and development partners that enterprises should not only start, but also flourish and provide sustainable employment. These are the issues that this report addresses with specific focus on accessibility of financial services.

Fig. 22 A typical micro enterprise activity



Photo: Odhiambo has been weaving fish baskets for over nine years under a tree in his compound at the shores of the Lake.

9.4 Rationale for Supporting MSEs

The main reasons for supporting the sector is grouped into five thematic categories namely; poverty alleviation, employment creation, vulnerable groups, reduction in inequalities and industrialization.

- **Poverty alleviation** through income-generation at subsistence level. MSEs support household economic activities as a strategy for their survival and lack of alternative employment;
- **Employment Creation:** MSEs provide an avenue to utilize “excess” labor that is not absorbed by the agricultural, formal and the public sector. The sector provides ease of entry and opportunities in both rural and urban environments;
- **Reduction of inequality:** MSEs provide a springboard for people not favored by mainstream economic growth strategies particularly in the rural areas. The reasons may be because they have limited access to formal education and training;
- **Vulnerable groups:** Enterprises owned by women are generally smaller, less likely to grow, less profitable, and begin with less capital investment than those owned by men. Women dominate in the sectors such as food processing, hairdressing, retail of second hand clothing and dressmaking. Women prefer managing their small enterprises from home. On finance, women are more likely to belong to a merry go round and rely on informal sources of credit to start and operate their businesses; and
- **Industrialization:** Encouraging innovation and flexibility through self-employment and self-reliance, the MSE sector provides a vital breeding ground for small and medium enterprises.

9.5 MSE Activities Within the Lake Basin

Fishing is the main economic activity for the Lake region. Agriculture and livestock enterprises are also pursued by most of the people. Within the towns and market places, MSEs engage in trade, repair and service delivery. Some of these activities are cross cutting such as food kiosks, second hand clothes “*mitumba*” trade, transport (“*matatu*”, “*tuk tuk*”, boat, “*boda boda*”, bicycle, hand cart), bicycle and vehicle repair and general merchandise. The enterprises engage in wood and metal furniture, shoes and leather products, garments, construction of buildings, and brick making. Informal sector activities include the making of baskets, pots, charcoal burning and selling, quarrying, stone carving and roadside food selling kiosks.

Recent developments have encouraged many MSE entrepreneurs to collaborate for the improvement of their businesses. As a result, nearly all economically viable micro enterprise initiatives are driven by cooperatives, CBOs or NGOs with the aim of accessing financial assistance.

Wetland Products

Wetland products are important to this region because they evolved over a long period of time and are thus part of the people’s culture. People use simple technology and locally available raw materials. The products also provide a source of livelihood particularly for women. Many of the products were entwined with cultural significance particularly in times of birth, death, marriage and circumcision. Overtime, production has reduced and the culture lost with the products. With this loss, the people are denied a sense of cultural belonging and a cheaper source of livelihood such as the use of pots in cooking tasty fat free cultural dishes. A survey conducted in 1998 focusing on three product categories namely clay, plant and fish established that production was

concentrated between the months of July and September. In the plant category, it also established that wetland products were essentially derived from two plant species namely *Cyperus papyrus* and *Phoenix reticulata*. From these plants, baskets, chairs, containers, food trays, floor mats, sleeping mats, food containers and other gift items are produced. Most of these products are locally consumed but there is potential for export.

Clay is used for house construction, brick-making and domestic use. Clay pots are used in food storage, water transportation and cooking. The more recent decorative function of pots and their use as flowerpots is not yet exploited. There is an opportunity to expand the consumption of pots by exploiting other uses and encouraging or promoting its continued traditional uses. Closely associated with clay products is the world-renowned Kisii stone that provides a source of livelihood to the rural people living around Tabaka area of Kisii. There is potential for expanding the Kisii stone market by adding value, developing other uses and improving on the technology.

The potential for wetland products to sustain a healthy community cannot be underscored in that they provide food, shelter and products with minimal financial burden on the local consumers. Expert designers and marketers have an opportunity to develop these products.

Wetland production systems

Production of Wetland items is concentrated in points that are determined by availability of raw materials. The technology used in the production of these products is very simple and labor intensive. Basket weaving used to be undertaken by women as they perform their household chores while men wove Marachi chairs in the afternoons. Clay pot making was an activity that was undertaken over a couple of days because it was not a priority economic activity. With decreased activity in the farms and fishing, there is some opportunity for the people to engage in the production of wetland products.

Start up funds for MSEs

MSEs require various types of financial assistance at various stages of their enterprise development. Start up stage is the most critical time for micro enterprises because without any savings, the enterprises do not have finance to commence operations. At start up, the enterprises require capital to purchase inputs, registration, pay for rent and hire personnel. Within the Lake Basin, agriculture based enterprises procure funds from various institutions. Within the sugar belt, small-scale farmers can depend on sugar factories to provide all the farm inputs required. This includes seed, farm preparation, fertilizer and personnel. The other agricultural activities that could receive similar support include tobacco, cotton and sunflower. The sugar factories harvest farm produce with the objective of minimizing costs to the farmers. The factories deduct the costs from farmer's proceeds. However, small-scale farmers in crop and livestock production are dissatisfied with the management of their farms:

- **Sugarcane:** Sugarcane farmers are not satisfied with the sugar processing factories due to delayed services and payments. In Busia, the farmers would like to complement sugar cane farming with cotton. Cotton farming is amiable to other crops and can be inter-cropped with maize and other types of crops. Cotton can be planted three times a year, thus giving a higher turnover and better yields;
- **Tobacco:** Tobacco farmers in Migori and Kuria receive substantial support from the tobacco companies. But they are dissatisfied with tobacco farming for various reasons such as health effect on farms. Women and children carry out the harvesting and curing of tobacco and this affects their health. The farms used for tobacco cannot be used for any other crop. When they are used, the crops do not perform well; and

- **Livestock:** Many farmers have adapted dairy farming. But, there has been problems related to drought, milk collection and distribution, veterinary services, and recently napier grass that is infected.

SAGA Thrift and Promotion Limited, in conjunction with a marketing company, has introduced “Amaranth” farming in Migori. The farmers participating in this project are enthusiastic because they are provided with seed, farm inputs and some training. SAGA provides financing for those who need it.

9.6 Non-financial Support Services

Effective financial services are often complemented by non-financial support services that include technical skills, information, management, capacity building and marketing. Training institutions, NGOs, research institutions, individuals and public institutions carry out research. The public institutions in the Basin are Moi, Egerton, and Maseno universities and Western University College (WEUCO). The Kisumu Polytechnic, Moi Institute of Technology (MIT), Ramogi Institute of Applied Technology (RIAT) is of the some technical schools in the region. There are many Vocational Training Centers such as the Farmers Training Center in Homa Bay.

MSEs are not completely aware of government policy or other policies that affect their operations. The MSE department in the Ministry of Labor has information on the operations of MSE including legal requirements that affect their operations, but MSEs are not aware of the existence of this resource. There is therefore need for information to be provided to them. Government organs such as the Kenya Industrial Research and Development Institute (KIRDI), the Kenya Innovation and Patenting Institute (KIPI) and, the Kenya Agricultural Research Institute (KARI) are repositories of knowledge and information that should be imparted to them. Complementing these initiatives are specific institutions such as the Lake Basin Development Authority (LBDA) and the Fisheries Department.

Research centers such as the International Center for Insect Physiology and Ecology (ICIPE) at Mbita Point, and OSIENALA have carried out extensive research that focuses on food security, improvement of agricultural practices and fishing practices. This type of information is important for the development of micro and small enterprises.

The Kenya Association of Manufacturers (KAM) has recently opened an office in Kisumu with the aim to expand its services to the region. To support its implementation strategy of driving the industrialization process, the KAM has developed specific programs for the small enterprise sector. One of the areas that KAM seeks to explore is sub contracting and building linkages.

There are small agencies that provide specific innovative assistance to specific target groups such as Kisumu Innovative Center–Kenya (KIC-K) and Teenage Mothers and Girls’ Association of Kenya (TEMAK Ministries). Enhancement of non-financial support to MSEs can be a strong vehicle in their development. And, the Lake region is endowed with institutions that can provide this service to the sector. The issue will be to identify specific MSE needs and the best-placed institution to provide the service.

9.7 Factors Impeding Lending to MSEs

MSEs find it difficult to access financial services because of lack of collateral, poor record keeping and lack of business history. On the other hand, commercial banks have stringent collateral requirements, do not lend in small volumes and prefer more formal business activities. Whereas this is a general scenario, MSEs within the Lake Basin have a much more difficult task trying to access financial services because of negative signals as a result of high poverty levels, high rate of deaths due to malaria and HIV/AIDS prevalence and un-favorable political environment. Fishing is

the main economic activity and fishermen need credit to buy nets, motor boats, build cold storages, and develop related economic services such as transport. However, they have specific constraints to accessing finance that includes absence of saving culture, lack of collateral, poor management of cooperatives, and absence of suitable credit products.

- **Absence of a saving culture:** The fishermen earn most of their money on a daily basis and are not accustomed to saving. They therefore spend their earnings without much planning. Typically, the fishermen are paid on landing fish catches in the early hours of morning and proceed to rest at the beaches ready to go back into the Lake in the evening.
- They **lack collateral to present as security:** Fishing business is volatile in that fish is highly a perishable commodity, the fishermen move freely between beaches and therefore are not sedentary; and
- **Poor management:** Management of the few existing cooperative societies is poor and this discourages members and non-members from subscribing to them. In addition, there are inter-clan hostilities, leadership politics and observed low levels of education.

Commercial banks have impediments such as corporate policy, lack of information on the fishermen and the absence of suitable products for the fishermen.

- **Bank Policy** does not favor fishing activities. Commercial banks have no specific products for the fishermen and most of their activities fall outside their terms of operations. However, under special programs, commercial banks such as the Kenya Commercial Bank have credit schemes specifically for fishermen;
- **Information** on which banks can base lending decision is scanty. It is observed that fishermen are not consistently cohesive and therefore it is difficult to collect relevant information to appraise their loan applications; and
- **Suitable Products** are not always available. Matching the fishermen's financial needs with banking requirements is difficult. It therefore appears to the bank community that these enterprises pose great risks.

From the issues outlined above, it is clear that it is difficult to get banks to lend to the fishermen just as it is for fishermen to approach banks for loans. Moreover, most banks are situated in major towns and fishermen have little time to go to the centers. This leaves them to seek financial services from other credit providers such as MFIs and Village banks that operate at the beaches and that understand their lifestyles.

9.8 Available Financial Services

The Banking sector was until recently dominated by a few large commercial banks namely; the Kenya Commercial Bank, Barclays Bank of Kenya, the Standard Chartered Bank and the National Bank of Kenya. Together they accounted for over sixty 60% of the commercial bank deposits and credit volume (GOK 1992) in the country. A report by K-MAP estimated that the bank lending to small enterprise sector was at 3% of overall total bank lending. Commercial Banks are the largest source of financial services in spite of their conservative nature. And, as at 2004/05 commercial banks and other financial institutions were experiencing excess liquidity, (Kodhek 2004) amounting to 30 per cent.

Since 2002, there has been tremendous growth in the financial sector that has facilitated the development of competitive products specifically aimed at those left out of the formal banking system. Commercial banks have also responded by expanding their financial products to attract more people. MFIs such as K-Rep leaped forward to venture into full banking operations by

creating the K-Rep Bank. SACCOs have expanded their operations to provide banking services. NGOs have also filled the financial gaps left by the formal banking system. As a result, more people have access to some form of financial services.

At the informal sector level, financial services are provided by NGOs, and CBOs. Micro finance is provided through Rotational Savings and Credit Associations (ROSCAs), Accumulating Savings and Credit Associations (ASCAs) or similar associations that rely heavily on group guarantee systems for loans. Individuals who are outside these systems borrow from merry-go-rounds, family or friends.

9.8.1 Micro Finance Institutions

Interest in the MFIs in Kenya can be traced back to the 1970s from the ILO Informal Sector Report on employment that identified the informal sector as a strong vehicle for employment and economic growth in the developing countries. In the 1970s, the main organizations providing credit to the informal sector were church based organizations such as the National Council of Churches of Kenya (NCCCK) and other smaller church based NGOs. The programs were heavily subsidized and were often ad-hoc additions to other social outreach initiatives offered to the poor. In the 1980s, other specialized organizations began operations such as K-Rep and Kenya Women Finance Trust (KWFT). By 1990s, interest and knowledge on MFIs had grown substantially and approach began to be more focused and sustainability oriented. Most MFIs developed from the Grameen bank approach to credit. The most prominent MFIs, in addition to K-REP and the KWFT are, PRIDE, FAULU and CARE_WEDCO. Most of these institutions continue to rely heavily on donor funding.

9.8.2 Sources of Funds for MFIs

Grants and loans

MFIs do not have a large financial resource base compared to commercial banks. Most of them depend on grants and loans from donors. Commercial banks have enormous financial resources but have limitations in reaching the MSEs particularly in the rural areas. For this reason, MFIs should attract funds from commercial banks and donors for on-lending.

Interest on loans

MFIs act as buffers, borrowing from banks and other agencies at reasonable rates and on lending to MSEs at affordable interest rates. MFIs therefore make money from interest levied on loans. The operational structure of commercial banks does not endear them to MSEs that require small loans. MFIs on the other hand work very closely with MSEs to encourage them to form cohesive groups. Interest rates must cover the cost of lending otherwise there will be no incentive to lend.

NGO agendas

NGOs are the major sources of funds for MSEs. They provide grants and loans to MFIs to further their specific agendas. The KWFT attracts funds to on-lend to women entrepreneurs. Moreover, there are MFIs that are quite experienced in MSE affairs such as K-Rep whom NGOs collaborate with.

9.8.3 Capacity of MFIs to Lend

In order to establish the ability of MFIs to provide financial services, there are issues that need to be highlighted. The issues include:

- **Sustainability:** There is increasing pressure from donors and supporting institutions for MFIs to be financially self-sustaining. This implies that they cannot charge low interest rates on loans. As a result, support from donors is shifting away from funding to capacity building of the institutions;

- **Legislation and Regulation:** Commercial banks and other financial institutions operate under the Banking Act. The Act discourages MFIs from taking deposits unless they were organized into cooperative societies. The pending MFI Bill will streamline their registration and provide legal framework for their operations. The implementation of the Bill still remains controversial with MFIs preferring self-regulation as opposed to regulation by the government;
- **Lack of Capital:** Some MFIs lack sufficient capital to loan out. Moreover, they cannot mobilize domestic savings for lending;
- **Mismanagement:** A number of small banks have been liquidated and unable to refund member's savings and shares. Thousands of Kenyans risk losing money if an MFI is mismanaged. Capital adequacy, ownership and governance, lending policies and risk analysis, auditing and reporting audit findings, and qualifications of management boards are some areas where regulation is needed;
- **Enterprise creation and poverty alleviation:** With the shift towards financial sustainability, MFIs have had to re-examine their clientele and most of them are addressing the "enterprise poor" rather than the poor in society. So their support is aimed at enterprise creation rather than poverty alleviation; and
- **Trends:** The micro-finance institutions that have the largest and long-term impact are the financially sustainable. This means that they are able to cover their costs, including operational expenses, the costs of funds, and loan losses. They should be able to generate a modest surplus for reinvestment in new products, delivery systems, and technology. The emphasis on sustainability promotes economic efficiency, decreases dependency on external resources, and creates the positive incentives for savers to deposit their funds and borrowers to repay their loans.

Capacity of MFIs within the Lake Basin

The capacity of MFIs within the Lake Basin to lend to MSEs can be looked at in terms of institutional capacity, outreach/network, penetration to rural MSEs and credit for women and other vulnerable groups.

- **Capacity:** K-Rep Bank has the best capacity in terms of knowledge, research, finance and practice in micro lending in Kenya. It has recently opened a branch in Kisumu and plans are underway to expand its services to other regions. However, K-Rep Bank has investments in other NGOs such as KWFT, WEDCO and SAGA that operate in various regions of the Lake Basin. Equity Bank recently opened a branch in Kisumu and targets small traders. The bank intends to expand its services by purchasing mobile banks with which to reach rural areas. Equity Bank is developing programs for fishermen and women. Other non-financial institutions within the MSE sector in the Lake region are Family Finance and Post Bank Limited. This category of MFIs can host investment funds for on lending;
- **Outreach:** Post Bank Limited has the widest outreach in terms of number of branches within the Lake Basin. Most of the MFIs are relatively new and operate mainly in the major town centers. Equity Bank is in the process of purchasing mobile banks to expand their outreach;
- **Outreach in MSE numbers in rural areas.** Smaller MFIs have the capacity to reach the very small informal enterprises. SAGA is best placed within Nyanza Province. There are other MFIs whose capacities can be enhanced based on a preferred model, such as Agricultural Extension Development (AED) in Homa Bay. CBOs based in Migori are eager to develop a Migori specific MFI that will address their specific financial needs; and

- **Women and less vulnerable groups.** There is no specific program for the less vulnerable groups within the financial set up in the region. The KWFT is the only institution targeting women entrepreneurs. These groups are left to NGOs and informal lending sources.

9.9 Current Financial Situation Within the Lake Basin

Until recently there was a decline in the participation of commercial banks in the Lake region. In the 1980s, numerous banks closed operations within the region. The situation is different today and apart from the Kenya Commercial Bank that has the widest outreach, Barclays Bank Limited operates five branches, the National Bank of Kenya-four branches while the Co-operative Bank of Kenya has three branches. Other banks include Victoria Bank, the EABS Bank, Family Finance, PostBank Limited, Equity Bank and K-Rep Bank. Most of these banks operate within the main towns thus leaving out fishermen and rural people.

Kenya Women's Finance Trust (KWFT), Western Development Company (WEDCO) and SAGA Thrift and Enterprise Limited are also providing financial services within the region. NGOs such as Jitegemee Trust, Faulu Kenya Limited, PRIDE Limited, CENT-SACCO, Kenya Ecumenical Church Loan Fund (KECLOF) and Small and Micro Enterprise Program (SMEP) provide financial services to specific groups. Many of these "smaller" financial institutions operate from the major centers.

There are SACCOs such as the Nyanza Teachers' that extend financial services to their members, in nearly all the districts within the Lake Basin. Whereas most SACCOs have devolved from salaried employees pooling their savings, rural SACCOs have evolved from agricultural activities such as coffee, tea, pyrethrum and sugar farming. Again, many SACCOs are town based. Perusing the District Development Plans, many SACCOs are cited as experiencing management problems that have caused some to collapse and other to record poor growth.

At the village level, financial services are provided through small groups such as Accumulating Savings and Credit Associations (ASCAs) managed by SAGA or WATANOs under K-Rep and the Agricultural Extension Program (AEP) that are consolidated into SACCOs primarily to mobilize funds. Through ASCAs, rural people are able to get financial services easily and effectively. The ASCAs are empowered to make some financial decisions and to disburse and collect payments through the Front Office Services Association (FOSA). FOSA is a site office that provides limited financial services to group members. FOSAs are managed by the local communities. This empowers them to make quick on-the-spot decisions on loans. It also allows the group members to deposit their savings without interrupting their everyday schedules.

9.10 Gender Issues in Micro-finance

Access to micro finance has helped to strengthen the status and livelihood of women. In the Lake Basin, women are relatively educated, liberalized, hardworking and sole breadwinners for their families. However, women are unable to mobilize savings because of many reasons such as low business returns. Incomes from their businesses are widely spread to cover school fees, food, shelter, and other basic necessities. And because of impediments to access formal finance, many women rely on merry-go-rounds and other informal sources of finance. CBOs and merry-go-rounds show higher women participation.

Women in the informal sector have relatively lower levels of education, limited capital resources, little knowledge of micro credit programs and are generally lower risk takers. The credit they receive is not sufficient to undertake sustainable investments. Moreover, they have few role models to emulate.

The youth have no collateral, limited capital resources, no knowledge of micro credit programs and no management skills. Most of them are school drop-outs due to lack of fees, being orphaned or displaced. Furthermore, young girls drop out due to pregnancy. These young people find themselves at the lower levels of the MSE sector trying to do anything for subsistence. NGOs such as Teenage Mothers and Girls Association of Kenya assist them by providing skills and limited credit.

Loan Types

Lending to MSEs is considered risky and therefore successful programs have to be laboriously designed with the beneficiaries. Participatory design encourages beneficiaries and reduces the risk of defaulters. When extending credit therefore, loan amounts, terms, interest rates, frequency of payback and loan payback and client progression need careful consideration. Initially, loans are kept relatively small to test the individuals' ability to repay. A first loan should not exceed six months time in repayment. A series of small loans in increasingly larger amounts paid back quickly represents a manageable risk to both the businesses and the financier. The loan payback period should reflect the cash flow cycle of the enterprise and the time frame in which the enterprise is planned. Traditional lending is pegged to monthly repayment based on formal employment and monthly income. To avoid depletion of loan funds, the enterprises should operate in a business-like manner. Progressive enterprises will generally reach a ceiling on borrowing through group guarantee system. The most common type of MFI loans are small business/enterprise, school fees, development, agricultural, and emergency.

- **Small business/enterprise loans:** Within the Lake region, small business/enterprise loans can be accessed from most of the financial institutions. The loan is suitable for small traders and manufacturers. The loan amounts range from Kshs. 50,000 to Kshs. 3 million and attracts an average interest of 25% per annum;
- **Market day loans:** SAGA has a market day loan that is an innovative loan scheme that operates for market specific activities. This loan portfolio is suitable for "fisherwomen" and entrepreneurs who trade on specific market days. Maximum loan is Kshs. 50,000 and attract interest rates of between 2 and 5% and repayable in 5 days; and
- **Agricultural/livestock loans:** These loans are suitable for specific agricultural activities. SAGA has an agricultural loan whose repayment is pegged to harvest time for crops. Agricultural loans are also used to encourage farmers to engage in improved agricultural activities such as upgrading their livestock and introduction of and expansion of activities such as AEP loans.

9.11 The Proposed Investment Fund

A revolving fund is capital raised with a certain purpose that can be made available to the same users more than once. The Fund should be self-sufficient and permanent.

There are at least 4 categories of funds namely credit funds, insurance-type funds, infrastructure funds and capital funds. Revolving funds are established with the intention that they should be self-sufficient and permanent. Temporary funds that are established in support of projects can sometimes be classified as revolving fund although they are better identified as development or aid funds.

9.11.1 Sources of Finance for the Investment Fund

Various institutions and individuals such as the MSEs, NGOs/FBOs, development partners and NFSIs can initiate financial assistance to MSEs.

- **MSEs:** The MSEs know their financial needs and can mobilize resources to meet those needs. This is the case with merry-go-rounds. But these efforts are limited because of various reasons;
- **NGOs/FBOs:** These organizations have capacity to reach out to the MSEs. However, there are many NGOs providing diverse services. There is need to identify those NGOs that have the potential to lend to MSEs. Churches have been quite effective in reaching out to rural communities and are able to finance MSE activities;
- **Development Partners:** Development Partners and well-wishers are important source of capital particularly grants that can provide start up capital. Grants are necessary because MSE lending requires other inputs for successful enterprise development. For example, the vulnerable groups would need training in some basic skills;
- **Non-Financial Support Institutions (NFSI):** Research and Development Institutions such as LBDA, ICIPE or KARI develop new products that they need to disseminate. For this reason, they may twin with the MFIs to provide credit to farmers willing to participate in trials. SAGA has been working closely with a marketer in providing support to farmers to grow “Amaranthus”. The marketer provides the seeds to selected farmers, provides technical support and comes to pick the harvest from the farmers. Apart from providing the pool of farmers with whom the marketer can work with, SAGA provides the necessary finance for farm inputs and land preparation;
- **Private Sector:** The Private Sector is seen as the vehicle to move the country towards industrialization. As such, this sector can provide access of finance to MSEs through the strengthening of sub contracting. In this arrangement, the medium and large industries would identify specific linkages to the MSE sector and finance their activities. In the Lake Basin, some of the strongest linkages exist in the sugar and tobacco industry. Some of the weaker linkages are in cotton and horticulture. Fishing can also benefit from these linkages;
- **Government:** The government through the Constituency Development Fund (CDF) and other levies can finance MSE activities. The District Development Plans outline local projects and district priorities for funding;
- **Individuals:** There are individuals or groups that are able to reinvest with the aim of assisting communities to access finance. This goodwill can enhance the financial assistance to specific MSEs; and
- **Commercial Banks:** Commercial banks can be encouraged to invest a portion of their finances in MSEs.

9.11.2 MSEs Approach to Funding

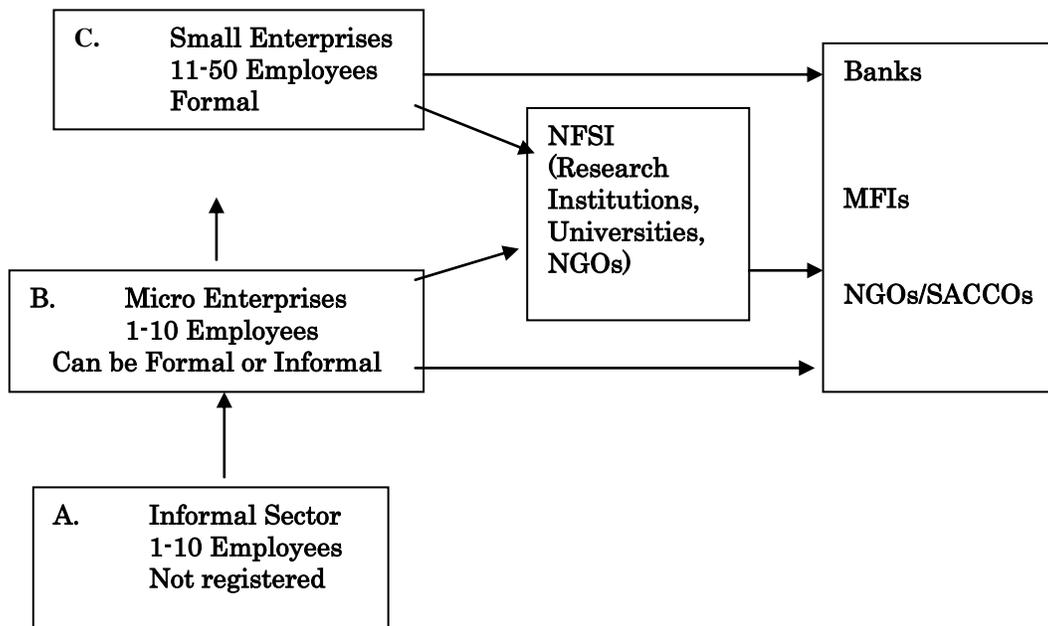
In order to have access of finance from the fund, MSEs need to identify themselves with the type of finance they require. This means that:

- **Groups:** Most of the MSE operators are in some group or groups. These groups may be CBOs/NGOs/SACCOs/FBOs or merry-go-rounds. A register of all the groups needs to be prepared;
- **Districts:** The groups need to be clustered by district and activity. Districts are already delineated and the Lake Basin focus area covers a total of 29 districts. The need is to identify the CBOs/NGOs/FBOs by districts;
- **Clusters** MSEs groups can be clustered into six major categories namely: fisheries, agriculture, livestock, horticulture, trade and services and eco tourism. This classification aims at mainstreaming MSEs into main economic activities of the Basin; and

- **Creation of Industrial/Agricultural Parks:** The fund can support the establishment of industrial/agricultural parks in various centers based upon specific needs of MSEs. The above clusters will facilitate efficient distribution of resources. The parks can take a number of forms such as information and technology (e.g. for traders), agricultural based (e.g. food processing or collection), livestock based (e.g. AI center), Eco tourism (hospitality services and information) or a mix of the above. The purpose of the parks, the type of produce and expected stakeholders should be identified by the MSEs.

It is expected therefore that various clusters will have different paths towards accessing finance. The non-financial support services that they require may also vary as outlined in Figure 14 below.

Fig. 23 Financial Access Linkages for MSEs



9.11.3 Development of Linkages

The MSEs will be clustered into six groups as described above. At the next level, CBOs, NGOs and FBOs will similarly be clustered into the same groupings. Micro projects will be aligned with those groupings and will integrate the existing Project Management Committees (PMC) that were established in LVEMP I. In turn, the NFSI will also be aligned into the six groups. The objective of this linkage is to facilitate intervention and assistance to flow into the MSE sector. This will entail:

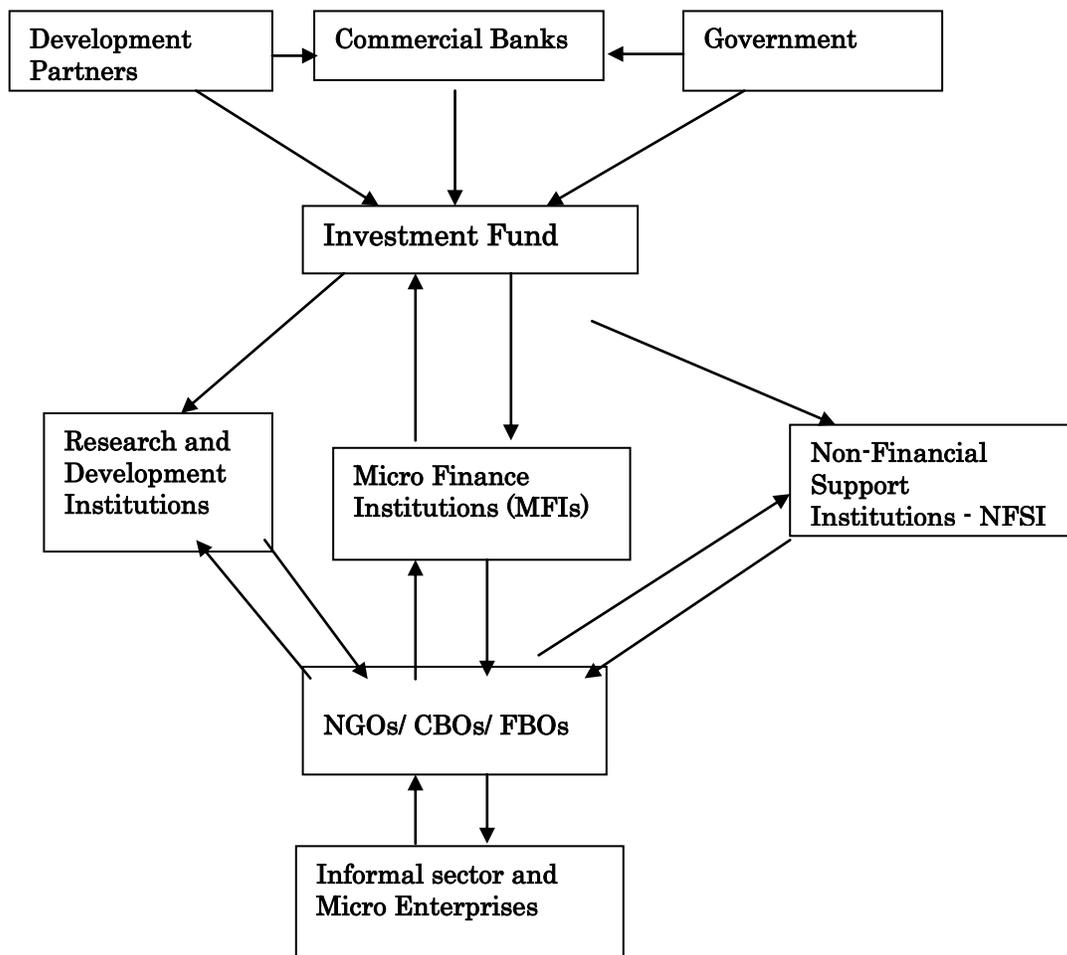
- **Specialization:** The NGOs/CBOs/FBOs developing a certain level of specialization, so that they reduce their involvement in several aspects of the development of their target clients, even where they do not have expertise;
- **Resource Maximization:** Limited resources are directed where they will have maximum economic and social benefit bearing in mind the needs of the MSEs;
- **Marketing:** The linkages between MSEs and CBOs within the same industry will create a market chain where the private sector can direct production from the MSEs so that they produce quality products;
- **Policies:** Policy issues that affect the MSEs in their operations can be put into focus and tackled. The lobbying for improved policy and information related to it should be undertaken by the private sector, CBOs and NGOs;

- **Information:** MSEs can access specialized information on economic trends, laws and regulations, competition, new technologies and new markets through linkages with specific NGOs and CBOs; and
- **Technology Transfer:** The linkages between MSEs and NGOs/CBOs can facilitate effective technology transfer.

9.11.4 Financing the Fund

A fund could be financed by its beneficiaries or by third parties. Contributions may be voluntary or compulsory. Different methods of financing may be used in combination or different funds may be combined. K-Rep is the most experienced institution on matters of micro finance and its expertise can be drawn upon to design the mode, administration and implementation of the fund. Banks and other financial institutions have a good working relationship and are supportive of the establishment of the fund.

Fig. 24 Investment Fund outline



External funding means obtaining contributions from outside the fund’s target group such as donor funds. In developing cooperation, many revolving funds initially draw on donor funds. Dependence on donor funds, however, should be short-term and should be gradually phased out. Participation in the fund should be necessary for many reasons such as “in order to provide a basis for the subsequent establishment of a fund (prior to construction of infrastructure).”

9.11.5 Legality of the Fund

The legal status that is appropriate for the fund depends on the objectives of the project(s). For development funds, (non-revolving), it should be decided on case by case basis. The fund can be set up and provided with legal status as a fund or, it may be attached to existing legal entities such as banks, MFIs and/or cooperatives. The local banks and K-Rep Bank and Equity Bank are prepared to host the fund at their branches within the Lake region. SAGA is supportive of having the fund located within the Lake Basin for ease of accessibility.

9.11.6 Management and Administration of the Fund

Financiers and users have a stake in the management and use of the fund and therefore there are certain obligations of repayments and submission of regular reports. If the revolving fund is to become self-sustaining after an initial period, it is necessary to discuss factors such as interest rates (for lending and/or borrowing), levels of premiums, administrative expenses, payback, defaulters, inflation and other liabilities.

9.11.7 Reserves From the Fund

Profits may be used in:

- Building up a reserve Fund for future redemption obligations;
- Building up a contingency Fund for use in the event of unforeseen losses;
- Increasing the capital of the Fund;
- Paying a dividend to shareholders or users;
- Paying a higher rate of interest on savings deposited with the Fund, or making larger payments in respect of claims;
- Reducing the interest rate for borrowers, or reducing insurance premiums; and
- Benefiting the community in other ways.

Many financial institutions have expressed their willingness to participate in the implementation of the investment fund. And, for various reasons, there is need to channel funds through more than one institution. This will allow for selection based on certain criteria so that there is efficiency in loan processing and approval. Financial institutions can therefore compete for funds from the Fund. Secondly, with more participation from MFIs, MSEs could identify suitable MFIs with whom to work. The spread of funds also translates to spreading of risks, especially those associated with MSE loans.

Hosting: Commercial banks are best placed to host the investment fund because of their financial and management capabilities. However, they should be domiciled within or easily accessible to MFIs within the region. Below is an overview of the Nambale Farmers Cooperative Union and SAGA Thrift and Promotion Limited, Kisumu.

9.12 Community Project, Nambale Farmers Union

Nambale Cotton Ginnery (NCG) has a long history dating back to the colonial era. With assistance from the government and Danish funding, the society has embarked on revamping of cotton growing in the area. Recently the union (of 8 farmers societies) has been trying to revive cotton growing within the region for various reasons. Cotton supports 11,000 farmers grouped into two large societies and six smaller societies. Apart from cotton, the farmers are engaged in crop and

livestock farming. The Union is aware of the African Growth and Opportunity Act (AGOA) and is aware of the benefits from AGOA. Sugarcane growing that had promised a livelihood for the farmers is not able to deliver, cotton is a crop that is grown alongside other crops such as maize. Unlike sugarcane, cotton production can be harvested twice or three times in a year as opposed to the present time where they harvest once a year. The Union owns the Nambale Ginnery and is seeking support to:

- Buy cotton held by farmers at competitive rates;
- Rehabilitate the ginnery;
- Mobilize field officers to provide extension services and support to the farmers;
- Develop cotton farming from one season to three seasons per year;
- Installing electricity at the ginnery; and
- Provide employment to over 700 people.

The long-term goals of the Union are to develop and add value to the cotton by;

- Processing cotton into thread;
- Manufacturing edible oil;
- Manufacturing soap;
- Manufacturing animal feed; and
- Open a garment-making unit.

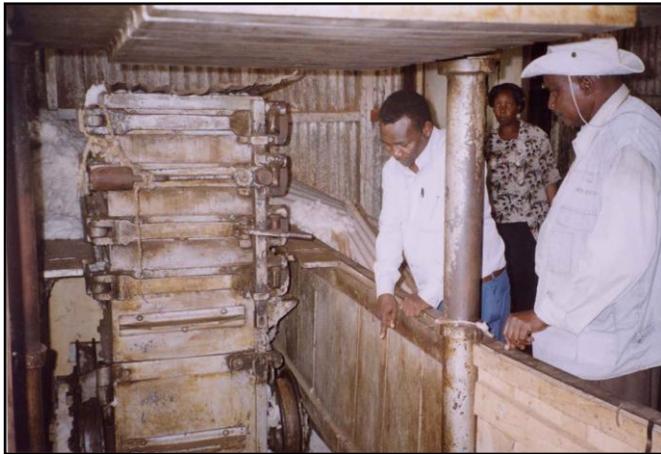


Fig. 25 Tour of Nambale Cotton Ginnery

9.13 SAGA Thrift and Promotion Limited, a rural MFI in Kisumu

SAGA was established in 1995 with the aim of providing financial services to the “unbankable”. SAGA is a rural financial institution established to serve rural people. It has 18 branches spread around the Lake Basin mainly at the beaches and small market centers. Some of the branches operate mobile banking services. SAGA has a participatory approach to service provision. Before getting into an area, it undertakes a market survey and discusses with the community the financial services that could be provided. The community forms groups and selects officers from the community. This makes the community endeared to the services.

SAGA clients are “*small small*” business operators found within market stalls and small farmers. Market day loans are popular with small business operators who take initial loans of about Kshs. 3,000 rising to over 1 million. Farmers take agricultural loans that range from about Kshs. 3,000 rising to Kshs. 200,000. Other loan products include enterprise loans, development loans, school fees and emergency loans. In order to provide meaningful financial services, SAGA collaborates with other institutions in technical skills, capacity building and support to communities. SAGA has a plan to loan Kshs. 50 million in the next five years.



Fig. 26 A typical rural market within the Lake Basin

The realization of investments and interventions proposed in this document cannot bear fruits without the involvement and participation of institutions, individuals and other stakeholders.

10.0 STAKEHOLDER PARTICIPATION

10.1 Overview

One of the objectives of this assignment is to propose strategies to use community driven development (CDD) approaches for natural resource management linking the different components with the community. Community involvement is a powerful approach to ensure the achievements of the project objectives and goals.

Community participation is effective involvement of project beneficiaries in all stages of the project cycle. It allows the beneficiaries to give feedback on project successes or failures and the reasons for it. Community participation can take any of the following forms:

- **Consultations:** This entails involving the beneficiaries in conducting feasibility studies, market surveys and gathering any information concerning the project;
- **Contribution:** This is when beneficiaries give tangible items for project implementation in material or money form; and
- **Control:** Is when beneficiaries make decisions, take total responsibility and are in charge during the project implementation.

Attributes to participation

This is when there is dialogue with project beneficiaries on problem identification, prioritization, solution and decision-making. Contribution by project beneficiaries and involvement in project implementation including establishment of management bodies, maintenance of interventions and monitoring and evaluation constitute part of community participation.

Community driven development

The vision of LVEMP is to have a stable ecosystem capable of meeting the demand for food, income, safe water, employment, disease free environment and a conserved biodiversity. To realize this vision, one of the strategies is to work with communities using the Community Driven Approach. CDD is defined as an approach that gives control over planning decisions and investment of resources to community groups and other local institutions. Specifically, this includes direct responsibility to manage internal and external resources and responsibility for resource allocations. It defines a process by which community groups organize and take action to achieve their common goals, in the context of an enabling policy environment and with support from responsible institutions such as private sector, government and development agencies.

Community driven approaches have the potential to lead to improved allocation of resources and more sustainable outcome since it increases the power of the poor to negotiate for their rights.

CDD is context driven and thus requires diversity in approach. Experience from different institutions shows that CDD contributes to sustainability of initiatives, social inclusion and provides benefit to all.

- **Sustainability** – CDD needs to be demand driven. This means that it needs to be based on priorities defined by the beneficiaries and expressed through community contribution. Community groups and actions need to be based on internal resource mobilization and self help;
- **Social inclusion** – Communities are not homogenous entities, nor are they all equipped with representative, accountable and transparent organizations. Differences often divide communities along lines of wealth, gender, ethnicity and other social factors, which often

exclude women, the poor and the marginalized from having a voice in the community decisions and from enjoying benefits from development. It is therefore critical that community driven approaches ensure that all community sub-groups have a voice in and benefit from community actions; and

- Since gender issues cut across other forms of social inclusions/exclusion, ensuring that women have a meaningful voice in and benefit from community actions poses special challenges. Gender sensitive approaches are therefore required if community actions are to be genuinely inclusive.

10.2 Inventory of NGOs, CBOs and Other Community Based Institutions

Non-governmental organization (NGOs), community based organizations (CBOs) and other community-based institutions are commonly referred to as Civil Society Organizations (CSOs). It is envisaged that CSOs will play a key role in CDD approaches to bring about sustainable development of the Lake Victoria Basin.

Society organizations have demonstrated their role in socio-economic development since colonial times. During this period, religious organizations were the main suppliers of some services such as health care, education, drinking water, provision of clothing, foodstuff, especially for orphans and the destitute.

During 1980s when there was donor pressure for good governance in economic management and the opening up of the political space, CSOs adapted a critical posture vis-à-vis perceived state excesses against the citizens and emerged to champion various pro-democracy causes. The CSOs particularly NGOs and religious organizations put pressure on the government to allow citizens to have more say in the way they are governed. The concentration of donor intervention and the agitation of CSOs are responsible for making Kenya a relatively more open society than it was in the period before the 1990s. With the emergence of the HIV/AIDS scourge and its declaration by the government as a national disaster in 1999, CSOs emerged as the strongest support of the government to combat the scourge. This has resulted in the current decline of the national prevalent rate from 14% to 6 percent. Available demographic statistics show that the Lake Basin has a serious crisis recording highest rates in poverty levels and HIV/AIDS prevalence. Support of CSOs can help in reversing and minimizing the root causes of high infant mortality, high illiteracy levels and the depletion of natural resources.

10.2.1 Presence of CSOs in the Lake Victoria Basin

Available data shows a big presence of civil society organizations in the Lake Victoria Basin. The organizations are most actively engaged in social and productive activities in health particularly HIV/AIDS, agriculture, livestock, fishing, trade and micro finance. Notwithstanding this huge number, there are NGOs and CBOs that could play significant roles in achieving LVEMP II objectives. Below is the magnitude of CSO in the Basin.

Table 15: Distribution of NGOs and CBOs in the Basin

PROVINCE	DISTRICT	No of CSOs
Nyanza	Kisumu	512
	Rachuonyo	594
	Siaya	186
	Suba	313
	Bondo	2,200
	Kisii	384
	Migori	591
	Nyando	1,207
	Homa Bay	353
	Kisii central	274
	Gucha	336
	Nyamira	1,086
Western	Kakamega	228
	Vihiga	112
	Busia	185
	Butere/Mumias	118
	Bungoma	172
	Mt Elgon	100
	Teso	1,100

Source: National Aids Control Council

During the field consultations, some CSOs were identified for further consultations in community participation.

Table 16: CSOs identified for further Consultation

Name of CSO	Activities	Location
1. International family life Education program	Integrate family planning into existing programs and disseminate information to adult education groups	Kakamega
2. Catholic Dioceses Kakamega Kisumu Homa Bay	Family life programs and Health programs Agricultural Education SMES and NFI capacity building	Nyanza And Western provinces
3. Pride Kenya (Promotion of Rural Initiatives and Development Enterprises)	Provision of credit entrepreneurship training and income generating activities	Kakamega
4. Gender Sensitive Initiative (GSI)	Mobility communities to use available resources for development	Kakamega
5. Africa New	Oil manufacturing and promotion of sunflower growing, fabrication of building materials development of water tanks for schools and women groups, promotion of income	Nyanza and western province

	generating activities.	
6. AMREF	Bamako initiative pharmacy and Health trainings	Nyanza and Western Province
7 Family Planning Association of Kenya	Provides family planning services productive health services and counseling	Nyanza and Western provinces
8. Acton Aid International	Capacity building Advocacy, Poverty eradication programs	Nyanza and Western Province
9. Saga Thrift	Micro finance projects to fishing and farming communities, trade and capacity building	Nyanza and Western province
10.Heifer Projects International	Agriculture, mainly upgrading of livestock	Nyanza and Western
11. Association for better land husbandry	Poverty alleviation Conservation farming Business promotion	Western Province
12. Pathfinders International	Population, HIV/AIDS	Western
13. Community for Action for rural Development	Poverty alleviation HIV/AIDS, environmental conservation	Kakamega
14. Kenya Aids Refrain Team (Kraft)	HIV/AIDS Environmental Education	Kakamega
15. Uzima, Foundation	Youth programs HIV/AIDS and reproductive health	Kakamega
16. Amukeni Project	HIV/Aids,	Western
17. Kenya Worker Finance Trust	Micro credits to registered women groups	Nyanza and Western provinces
18. Wings of Hope	Poverty alleviation, primary Health care, drugs, alcohol & substance abuse prevention Education environment and agriculture	Kakamega forest
19.KakamegaEnvironmental Education Program	Introducing herbal tree planting to farmers conservation of Kaka mega forest	Kakamega forest
20. African Canadian Continuing Education services	Non-formal education and literacy to the disadvantaged groups	Western
21. Navakholo Aids Central team	HIV Aids Income generation	Kakamega
22. World Vision	Child sponsorship programs, poverty alleviation capacity building	Nyanza
23. Care International	-Capacity building - Development projects	Nyanza
24.Bunyala Primary Health care Group	Community pharmacy, HIV/AIDS	Kakamega
25. Christian Community Services	Community self help projects, production of water springs farming, HIV/AIDS, family planning, primary Health care	Kakamega district

27. Mothers Rural Care of AIDS orphans (MORCO)	HIV/AIDS, micro-enterprise Development and micro finance, advocacy of child rights, capacity building material contract and improved animal health	Rachuonyo district
28. Widow – orphan Support initiative agenda (WOSIA)	-Poverty reduction - Legal protection of widows and orphans - HIV/AIDS	
Osiendela (friends of lake Victoria)	- Environmental management, poverty eradication, capacity building, tourism information dissemination, energy saving and conservation, research and development	The Riparian districts of Lake Victoria, Nyanza, province
30. Rural Education and Economic enhancement program	HIV/AIDS, awareness creation, prevention, care and support for the infected and affected	Butula, Busia
31. Support for Tropical Initiative in Poverty Alleviation (STIPA)	-Single parents program - Men empowerment program - Community based Health program - HIV/Aids, income generating activities	Kisumu district
33. WOFAK	HIV/Aids, awareness, prevention, counseling support to infected and affected.	Nyanza province and western province
35. Rural Lake regional Development	HIV/AIDS, medical provision for outpatients, support for secondary school leavers	Migori district
36. Gender and Development Center	Gender awareness initiatives - Capacity building - HIV/Aids - Poverty eradication	Kisumu
37. Plan International	-Child sponsorship programs	Nyanza province

10.2.2 Weaknesses of CSO

The presence of civil society organizations in the Lake region is a valuable resource that can be instrumental in spearheading community driven development. However, during field consultations, the following shortcomings were observed: -

- Lack of guidance in the utilization of available resources for sustainable development;
- CBOs operating in the same areas using different development approaches;
- High poverty levels making communities unable to participate in the social and economic development of the region;
- High mortality and immobilization rates due to HIV/AIDS making the communities unproductive; and
- Limited access to credit facilities for initiating social and economic projects.

10.3 Strategies for Capacity Building

The aim of capacity building is to improve efficiency and effectiveness. The following strategies are proposed: -

- Improve community skills to mobilize and organize their activities for common cause;
- Create awareness on available natural resources and map out how they can be sustainably utilized to improve community livelihood;
- Impart technical skills and knowledge to guide communities in various development activities;
- Increase awareness to reduce the prevalence of HIV/AIDS in the region;
- Impart skills in lobbying and advocacy to create awareness on viable investment;
- Provide negotiating skills to create linkages with different institutions in order to synergize development efforts;
- Provide training skills in resource mobilization; and
- Impart lobbying skills for legislation and enforcement of products that directly affect them.

10.4 Areas for New Investments

New investments aim at economic empowerment of CBOs to enable them to participate more efficiently in the development agenda of the region. This will contribute to their sustainability by avoiding donor dependence. Opportunities for investments are based on the available resources, which are: -

- Farming as a business in horticulture, cereals and legumes;
- Exotic livestock keeping – poultry keeping, dairy farming and bee keeping;
- Cotton ginneries in cotton growing areas;
- Cold storage for fishing industry;
- Storage facilities for cereals and legumes storage;
- Eco-tourism in areas with unique features e.g. along the Lake shore lines, national parks and reserves;
- Value additions and exporting agricultural, livestock and fish products; and
- Diversifying products for the sugarcane industry.

10.5 Strategies for Participatory Approaches

Participatory approaches are aimed at facilitating communities to be involved in their own development agenda. Some of these are: -

- Participatory rural appraisal enables communities to identify and define their own way to sustainable development. PRAs are based on real needs within the skills and capacities of their local institutions. It also identifies community institutions to collaborate in development plans and enables the communities to identify the roles of external agencies that can be called upon to provide assistance. A PRA exercise culminates to Community Action Plans (CAPs), which help to guide the community as it implements various programs.

- A participatory baseline survey is an emerging approach that takes into account what has already taken place in a community. It identifies critical issues that face them and proposes intervention measures.

The community participation is crucial as it ensures effectiveness and sustainability of other key sectors. A proposal was therefore made to undertake a more detailed study on CSOs on how they can be involved in the implementation of the proposed program activities.

11.0 IMPLEMENTATION FRAMEWORK

11.1 Proposed Framework

The successful design and implementation of LVEMP-II will largely depend on an institutional framework that is elaborate and focused to address the integrated nature of the project. The framework will have to define the methodologies that would be used to select priority projects or programs that are in line with the Project objectives. Once the priorities are finalized, it would be important to define the implementation frameworks that will determine the way implementing institutions would be selected. In the past and up till now, projects are implemented through the traditional and perhaps outdated systems. Funds have been provided time on end without significant changes to the living standards of the people; in most case, standards have fallen to what is currently referred to as “people living below a dollar a day”. LVEMP-II should, as much as possible, avoid this long-established pattern. With the current shift in government policy to provide conducive policy and legal environment, and encouraging the private sector, NGOs/CBOs and individuals to undertake development initiatives in a competitive manner, LVEMP II should take advantage of this shift.

Implementation through government structures suffers from lack of innovativeness-business as usual, bureaucratic inertia, misapplication of resources such as transport and funds, and lack of adequate involvement of beneficiaries and lack of stakeholder involvement in decision-making. NGOs and CBOs are not linear substitutes either.

To ensure that the project benefits from the available capacity, it might be necessary to operate a grant system where funding is provided on the basis of competition. For example, KARI could compete for research funds with the local universities and other research institutions. Extension services could be contracted to GOK or NGOs depending on the nature of message to be disseminated. This should take into account the comparative advantage of each contractor. This modus operandis has been tried by the Community Development Trust Fund (CDTF), funded by the European Union and blends private and public sector ideals.

11.2 Project Design, Planning and Timeframe

The design of the project will require a team of experts with local knowledge of the project area. The team should work together with the potential implementation units within the various stakeholders. The stakeholders should be conversant with the general and project technical objectives and be considered on the basis of their ability to deliver the planned outputs.

In order to address the issues of poverty reduction, LVEMP II will have to be a long-term program. There will therefore be activities that, in the short-term, are able to provide benefits while others will take a longer time span to provide benefits. In addition, the Project will have to devise strategies for coordination and integrating resources available to the Lake Basin. The resources include GOK appropriations such as the Constituency Development Fund (CDF), Local Authority Transfer funds, Kenya Road Board Funds, Bursary Funds and other ministerial allocations. For example, the Basin received over Kshs. 5.4 billion from CDF. There should also be coordination with other donors operating in the Basin. The first phase of the project should cover a period of five years.

12.0 LOGICAL FRAMEWORK ANALYSIS (LFA)

This LFA has used the LVEMP II overall goal for all the sectors. The purpose of the Project has been modified to capture the special features of each component. In order to achieve the project purpose, Intermediate Results (IRs) have been generated. The IRs are achieved through the implementation of short-term and long-term activities. The activities addressing each intermediate result are included and appropriately numbered.

Project activities that are highlighted in this document, whether investments or interventions, will require considerable amount of time to have impact on poverty reduction and in the provision of services in order to conform to the Millennium Development Goals. Poverty focused programs need sustained implementation for positive effects to emerge. But investments that will benefit from the proposed investment fund should be of medium term, renewable as circumstances demand. Short-term loans to the farming community, the fisherfolk and the small-scale enterprises will perhaps be more effective and easier to manage and monitor.

LOGICAL FRAMEWORK MATRIX FOR THE AGRICULTURE, LIVESTOCK AND FORESTRY			
	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTION
<p>OVERALL GOAL</p> <p>To Enhance sustainable management of the Lake Victoria Basin's natural resources endowment as a way of improving riparian communities' livelihoods as well as promoting the provision of quality environmental services</p>	<ul style="list-style-type: none"> • Current poverty incidences reduced from 65% to 50% for Nyanza, W. Province from 61% to 46% and to 35% from 44% for the RV districts, between 2007 and 2013. • Food insecurity reduced by 10% p.a. by 2012 • Incomes increased by 10% p.a. by 2012 • 	<ul style="list-style-type: none"> • Annual Economic Reviews (CBS) • Regional performance reports • Provincial annual reports • Project Reports 	<ul style="list-style-type: none"> • Stable macroeconomic environment • Continuous willingness of stakeholders to support the project • Accountability of project resources
<p>PURPOSE</p> <p>To design and implement sector projects, programs and other development initiatives in all the sectors so as to improve the communities' livelihood while maintaining environmental and ecological balance.</p>	<ul style="list-style-type: none"> • Annual Workplans and Budgets prepared and implemented in order to achieve the project objectives. • Maize production deficit reduced from 3.2 million bags to 1.6 million bags by 2012. • Environmental conservation realized • Incomes increased by 10% p.a. by 2012 • 	<ul style="list-style-type: none"> • Performance monitoring of Annual Work plans and Budgets (AWP&Bs). • Poverty welfare monitoring. • Government statistics on poverty indexes • Special Surveys by the Project 	<ul style="list-style-type: none"> • Proper targeting of the poor is achieved • The Project Management Unit is not overwhelmed by the size and complexities of the region
<p>Result 1: Agriculture and livestock practices to improve productivity and environmental management enhanced.</p>	<ul style="list-style-type: none"> • Soil erosion reduced • Crop production increased by 20% p.a. by 2012 • Proper management of herbicides, pesticides undertaken • Integrated land utilization progressively promoted ▪ 10% pa increase in milk 	<ul style="list-style-type: none"> • Provincial reports • Surveys carried out by the Project • Outcome of Special studies on chemical usage (pesticide) 	<p>Availability of reliable data</p> <ul style="list-style-type: none"> • Reliable data collected • Special studies commissioned and remedial actions taken.

	<ul style="list-style-type: none"> production <ul style="list-style-type: none"> ▪ 5% increase in meat, mutton and poultry meat by the 2013 ▪ More farmers keeping broilers and layers ▪ 20% increase in honey production ▪ Reduction of incidences of livestock diseases • Increased fodder and other animal feeds, fattening of livestock in dry areas 		
Result 2: Forest resources for environmental and economic benefits harnessed.	<ul style="list-style-type: none"> • Increased tree cover of gazetted forested land. • Increased tree planting by farmers. • More tree nurseries managed by the private sector and individuals. • Rational exploitation of forest resources. 	<ul style="list-style-type: none"> • Government reports on afforestation • Project monitoring reports 	
Result 3 Efficient utilization of fishery resources and rationalized investments promoted.	<ul style="list-style-type: none"> • Improvement of fishing methods. • Number of facilities rehabilitated. • Number and amounts of loans given to the fisherfolk • Increased incomes of the fisherfolk, well distributed. • Fewer school going students engaged in fishing, thus increased school attendance. 	<ul style="list-style-type: none"> • Project monitoring reports. • Loan statistics • Monitored school enrolment in lakeside schools. 	
Result 4 Eco-tourism activities to create employment opportunities and incomes while maintaining quality environmental services promoted. .	<ul style="list-style-type: none"> • Increased investment in the sector • Increased environmental 		

	<ul style="list-style-type: none"> • awareness • Increased gate collection in parks • Increased incomes of the local people 		
Result 5 A Revolving Loan Fund to support viable economic and value adding activities established.	<ul style="list-style-type: none"> • Number and amount of loans disbursed to traders • Increases in employment and incomes 	<ul style="list-style-type: none"> ▪ GOK reports ▪ Project reports ▪ KAM reports 	Business culture a limiting factor
Result 6 Supportive infrastructures planned, developed and maintained (Agriculture, livestock, fisheries, forestry, access roads, mining, communications, tourism, and trade)	<ul style="list-style-type: none"> ▪ Number of infrastructures undertaken 	<ul style="list-style-type: none"> ▪ Project reports ▪ GOK Reports ▪ Community reporting 	
Result 7 Capacity of stakeholders to undertake Community Driven Development enhanced.	<ul style="list-style-type: none"> ▪ Number of CSO trained ▪ Number of projects implemented by CSOs ▪ Number of CSO/CBOs participating in NRM and conservation in the region ▪ Number of Community Action Plans produced and implemented. 	<ul style="list-style-type: none"> ▪ Maintained project lists ▪ NGO/CBO reports ▪ Project reports 	
Result 8 Value addition of raw materials encouraged and supported.	<ul style="list-style-type: none"> ▪ Number of agro-processing plants started ▪ Process livestock products into cheese, powder milk, leather, shoes, tinned beef ▪ Increase support in value addition using local funds and private sector financing 	<ul style="list-style-type: none"> ▪ Project Reports ▪ Department of Trade reports ▪ Provincial Annual reports 	
Main Activities for IR 1-budget provided separately			

<p>1.1 Develop land use plans, review legislation, harmonize and enforce land-use laws.</p> <p>1.2 Support agricultural research</p> <p>1.3 Promote soil & water conservation practices to improve crop yields while reducing sedimentation load into the Lake.</p> <p>1.4 Support & intensify cash crop and food crop production.</p> <p>1.5 Promote livestock enterprises.</p>			
Main Activities of IR 2			
<p>2.1 Preserve and reforest existing gazetted forests and promote social forestry.</p> <p>2.2 Encourage private-public sector partnership in forestry activities eg private tree nurseries.</p>			
Main Activities of IR 3			
<p>3.1 Strengthen Beach Management Committees and train the fisherfolk on savings culture and investment.</p> <p>3.2 Support appropriate fishing gears.</p> <p>3.3 Support initiatives to reduce municipal and industrial waste and non-point source erosion.</p>			
Main Activities of IR 4			
<p>4.1 Disseminate information on tourism potential in the Basin.</p> <p>4.2 Support marketing and promotion activities.</p> <p>4.3 Promote local tourism and tourist related business activities.</p>			
Main Activities of IR 5			
<p>5.1 Put lending mechanisms and procedures in place.</p> <p>5.2 Mobilize people to establish SSEs and MSE businesses.</p> <p>5.3 Enhance trader's capacity to make business decisions.</p> <p>5.4 Select appropriate MFIs to manage revolving loan funds</p>			
Main Activities of IR 6			
<p>6.1 Support infrastructure projects to promote agriculture, livestock, forestry, fisheries, mining, transport and communications and eco-tourism activities.</p>			

Main Activities of IR 7			
7.1 Needs assessment of community priorities 7.2 Train stakeholders to participate in their own development. 7.3 Build the capacity of implementing organizations. 7.4 Enhance performance monitoring by communities.			
Main Activities of IR 8			
8.1 Carry out a study on potential value addition ventures in all the sectors. 8.2 Provide incentives for private and public sector participation. 8.3 Use local financial resources such as CDF for value addition investments 8.4 Provide information on available resources such as CDF including market information.			

13.0 INDICATIVE PROJECT BUDGET

13.1 Proposed Budget Outlay

The total budget estimate for the Natural Resources Interventions and Investment is Kshs 1.2 Billion (USD 17.1 million). The estimate is apportioned per sectors as follows:

Sector	Budget Kshs.	USD. Million
1 Agriculture	200,000,000	2.86
2. Livestock Development	50,000,000	0.71
3. Forestry	100,000,000	1.43
4. Fisheries	50,000,000	0.71
5. Eco-Tourism	50,000,000	0.71
6. Infrastructure	450,000,000	6.40
7. Micro Finance/Revolving Credit Fund	200,000,000	2.90
8. Community Development	60,000,000	0.86
9. Value Addition Initiatives	40,000,000	0.57
Total Kshs.	1,200,000,000	17.10

Rationalization of the Proposed Budget

In line with the overall goal of LVEMP II, “To enhance sustainable management of the Lake Victoria Basin’s natural resources endowment as a way of improving riparian communities’ livelihoods as well as promoting the provision of quality environmental services” the budget is apportioned between the productive sector so that people’s livelihoods could be improved while mitigating the negative effects on the environment, infrastructure, the revolving loan fund and funds to spur community driven development and value addition.

The productive sectors include agriculture, livestock development, forestry, fisheries and eco-tourism. The total budget for this category is Kshs 450.million. Infrastructure has also an allocation of Kshs. 450 million. This amount is to cater for outlays in the agriculture, livestock, forestry, fisheries, roads and other sectors. A Revolving Loan Fund with an estimated budget of Kshs. 200 million will cater for all the loan and credit aspects of the entire project. A modest amount of Kshs. 50 million and Kshs.40 million is set-aside for community driven development and value addition initiatives respectively. Main activities that are proposed for support are indicated in the logical framework and the budget table below.

No.	INTERVENTIONS & ACTIVITIES	5 Year Project Period					Total
		Year 1	Year 2	Year 3	Year 4	Year 5	
A. AGRICULTURE							
1	Development of Land use plans	3,000,000	2,000,000				
2	Agricultural Research	15,000,000	10,000,000	10,000,000	10,000,000	5,000,000	
3	Soil & water conservation activities	20,000,000	15,000,000	15,000,000	15,000,000	10,000,000	
4	Promotion of food crops	10,500,000	10,000,000	5,000,000	5,000,000	5,000,000	
5	Support cash crop production						
6	Undertake livestock activities	5,000,000	10,000,000	10,000,000	5,000,000	5,000,000	
B. FORESTRY							
1	Community Dialogue	2,000,000	2,000,000				
2	Preserve and reforest existing forests	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	
3	Support to social forestry	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	
4	Support to private nurseries and tree planting	2,000,000	4,000,000	4,000,000	4,000,000	4,000,000	
C FISHERIES							
1	Strengthen Beach Management Committees	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	
2	Train fisherfolk on savings and Investment culture	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	
3	Support appropriate fishing gears and cooling facilities -Loans	5,000,000	4,000,000	4,000,000	4,000,000	4,000,000	
4	Support initiatives to reduce effluent discharge	10,000,000	10,000,000	0	0	0	
D ECO-TOURISM							
1	Capacity Building in Information Technology	1,000,000	3,000,000	1,000,000	0	0	
2	Support Development of common policies and strategies	1,000,000	2,000,000	2,000,000	2,000,000	2,000,000	
3	Support information generation on tourism	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	
4	Support marketing & promotion activities	3,000,000	2,000,000	2,000,000	2,000,000	1,000,000	
5	Promote tourism related activities	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	

E	Infrastructure						
1	Support infrastructure projects in agriculture, livestock, forestry, fisheries, mining, eco-tourism and access roads	80,000,000	120,000,000	100,000,000	70,000,000	70,000,000	
2	Organize Common Interest Groups in all the sectors	3,000,000	1,000,000	1,000,000			
3	Collect appropriate data to support sector decision making	3,000,000	2,000,000	0	0	0	
F	MICRO FINANCE AND MSEs						
1	MFI/MSE Policy support	1,000,000	2,000,000	1,000,000	1,000,000	0	
2	Put management structures in place	5,000,000	2,000,000	2,000,000	2,000,000	2,000,000	
3	Mobilize entrepreneurs to establish/strengthen local businesses	5,000,000	10,000,000	10,000,000	10,000,000	10,000,000	
4	Capacity building of MFIs and SSEs	5,000,000	4,000,000	4,000,000	4,000,000	0	
5	Loan Disbursement Facility	40,000,000	60,000,000	50,000,000	0	0	
G	COMMUNITY DRIVEN DEVELOPMENT						
	Needs Assessment	2,000,000	2,000,000	0	0	0	
1	Capacity Building for CSO	3,000,000	3,000,000	3,000,000	3,000,000	1,000,000	
2	Community Projects Supported	10,000,000	8,000,000	8,000,000	8,000,000	4,000,000	
3	Monitoring & Evaluation	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	
H	VALUE ADDITION VENTURES						
1	A study on viable value addition ventures	2,000,000	1,000,000	0	0	0	
2	Incentives to individuals and the private sector	5,000,000	10,000,000	8,000,000	8,000,000	8,000,000	
3	Negotiate for co-funding with local resources eg. CDF						
	Total Estimate						

Annex 1: Terms of Reference

1.0 Background

Lake Victoria is Africa's largest and the world's second largest freshwater lake. It is one of the most important shared natural resources of Eastern Africa. It straddles across the common borders of the three East African Community Partner States of Kenya, Tanzania and Uganda, and features the world's largest freshwater fishery with significant local consumption and exports, in particular to the European Union, and it is a global center of aquatic biodiversity. The Lake catchment also extends further to Rwanda and Burundi. The Lake and its catchment form a Basin that is valued for its socio-economic potential in addition to its immense ecological values. The economic potential of the catchment is based on the rich agricultural soils, abundant rainfall, and significant minerals deposits, among others. The Lake, on the other hand, is one of the unifying factors for the three Partner States in addition to having a critical importance to the region's society and economy as a source of food, potable water, transportation, agricultural water, power production and tourism.

The lakeshore populations are the most rapidly growing geographic sectors in countries that have among the highest population growth rates in the world. The lake, the lakeshore and the lake basin are obvious engines of economic growth in countries where poverty alleviation of high priority.

The lake has experienced a decline in water quality since the 1960's. Phosphorus concentrations and algal biomasses have increased significantly, and filamentous and colonial blue-green algae now dominate the algal community. Water hyacinth invaded the lake, and in the mid- to late 1990s reduced the efficiency of operation of the Owen Falls hydroelectric plant and blocked access to ports, fish landings and watering points. The water quality changes favored the success of the Nile perch and contributed to the reduction of endemic fish species.

Joint management of the Lake Victoria and its Basin as a shared ecosystem gained momentum following conclusion of the Rio Earth Summit in 1992. The Lake Victoria Environmental Management Project (LVEMP) was prepared and implemented from 1994 as part of this initiative. In 2001 the Lake Victoria Development Programme (LVDP) at the EAC Secretariat and more recently the development of a Protocol for sustainable management of Lake Victoria Basin which provides both for the detailed legal framework and a Lake Victoria Commission as a body for the regional management of the entire basin.

LVEMP-1 and other bilateral efforts, have developed significant knowledge and technical capacity in the national agencies to enable assessment of the environmental stresses confronting the lake and its catchment. Additional research on key issues is needed, on the basis of which one can prioritize actions and set objectives for management of the lake and its resources. This should be done in a participatory manner in which local community interests and concerns are appropriately reflected. In many cases final objective setting will require agreement of the other riparian states and the endorsement

by EAC via its Secretariat. The successful setting of objectives for water quality management requires a broad vision of what the riparian peoples desire for Lake Victoria in the future. This will require blending individual sector knowledge and visions for their resource with the more general and integrative interests of the communities that enjoy and require beneficial uses of the lake and its tributary waters.

Implementation of the LVEMP-1 has resulted in improved ability in the riparian States to embark on a long-term program of resource management and environmental improvement (such as capacity building). Some of the achievements of LVEMP include: establishing and supporting fisheries “co-management units” with local fishing beach communities in over 800 sites around Lake Victoria; Obtaining an estimated 80-90 percent reduction in surface coverage of water hyacinth in the Lake through central and village-level biological agent rearing and mechanical/manual means, thus reducing water hyacinth to non-nuisance levels except in some hotspots including inflow from the Kagera river; Undertaking a “whole Lake” fishing pressure survey; Undertaking a harmonized “whole Lake” water quality/limnology survey; Undertaking three multi-sectoral management pilots (one in each country) of important micro-catchments in the Lake Victoria Basin. These involved the soil conservation, catchment afforestation, wetlands management, micro-projects, and water quality components of the project working together to improve river/Lake water quality; and assisting the three governments to meet European Union requirements to improve beach sanitation and export certification of fish shipped to European Markets.

As a result of the establishment of East African Community and subsequent materialization of an East African Development Strategy (2001-2005) designated LVB as a regional economic growth zone. The identification of Lake Victoria Environmental Management Project phase two (LVEMP-2) was done through a process involving review of performance of Lake Victoria Environmental Management Project phase one and development of a Vision and Strategy Framework for management and development of Lake Victoria Basin. The above processes culminated into a Regional Stakeholders Concept Workshop, which identified the priority areas of focus for LVEMP-2 as, Socio-economic Development, Management and Research. The next step is to develop intervention that uses the information and capacity developed to promote environmentally and socially sustainable economic development.

Sustainable Economic Growth and Development Programme will have a major component as Priority Natural Resource Investments/Interventions. It will focus on improving the environmental health of the basin by promoting sustainable economic growth. Policies will be harmonized to facilitate private sector investments in the Lake Basin. Selected regional priority investments in the area of natural resources management and identified in the Strategic Action Program (SAP) will be implemented at the community level. Flow of funds to a broader set of investments identified in the SAP will be promoted. Other key investment projects identified in the SAP supporting a productive trans-boundary Lake Victoria Basin could be financed at the national level or through other regional framework such as the NBI.

2.0 Objective of the consultancy

The main objective is to provide input to the preparation of the LVEMP-2 by assessing the potential for natural resource interventions/investments in the Lake Victoria Basin.

2.1 Specific Objectives

- i) To identify priority investments both short term and long term in the Lake Victoria Basin.
- ii) To propose an establishment of an investment fund to support sustainable investments at the national and trans-boundary levels with specific emphasis on micro-enterprises.
- iii) To assess environmental impact assessment legislation and capacity in the member countries, identify gaps, and propose strategies for harmonization.
- iv) Propose strategies to use Community Driven Development (CCD) approaches for natural resources management.

3.0 Specific tasks/activities

The work by the consultants will be carried out in close collaboration with the client. To this end, the consultant shall organize national workshops to get stakeholders consensus.

- i) Assess potential for agricultural products (including livestock associated products and enterprises) including non-traditional export crops and identify appropriate technologies for processing and packaging that would add value to products and suggest marketing improvement strategies. Other issues to be assessed include technologies that are used to process and package the produce for value addition and marketing improvements.
- ii) Identify strategies for artisanal fishing (fishing methods, processing, packaging) industry to improve the quality of products
- iii) Identify potential for mining and processing with a view to adding value to exports and suggest strategies to maximize profits for artisanal miners and their protection from cartels.
- iv) Assess the current status in communication; including road network, railway system, pipeline, air, information technology, water transport in the region. Examine goods storage infrastructure including cold storage and go-downs. Identify gaps and propose strategies for improvement.
- v) Identify potential areas of eco-tourism and propose strategies for development of these areas in the region

- vi) Assess the micro-finance industry and their capacity to provide finance to SME's investments and propose strategies to develop an affordable and sustainable micro financing industry in the region.
- vii) Propose a strategy for the establishment of an investment fund to support sustainable investments at the national and trans-boundary levels with special emphasis on micro-enterprises.
- viii) Assess the environmental management legislation in the country and their suitability for implementation of the project.
- ix) Inventory and assess existing CBO's, NGO's and other community based institutions and assess their capacity to undertake community driven Development projects;
 - a. Identify shortcomings.
 - b. Propose strategies for capacity building.
 - c. Propose areas for new investments.
 - d. Propose strategies for participatory approaches in development projects.
- x) Propose an implementation framework for this project.
- xi) Prepare a final project document for this component and which should include a clear logical framework and detailed budget

4.0 Methodology

The tasks will be carried out in close collaboration with the client. The consultancy will be done in two stages: an inception phase and the main stage.

During the inception stage, the consultant will:

- i. Carry out a preliminary assessment of available data by doing desk reviews on existing empirical and situational literature and case studies.
- ii. Carry out preliminary field visits to key stakeholders, projects and programmes relevant to the assignment;
- iii. Produce an inception report.

The purpose of the inception report will be threefold:

- i. To test the understanding of the terms of reference by the consultant;
- ii. To state clearly how the consultancy will be carried out, in terms of both the methodology and timelines, as well as the anticipated limitations/constraints; and

- iii. To state the progress which will have been made and problems/challenges if any.

During the main stage (following clearance of the inception report through a workshop/meeting) the consultant will:

- i. Use appropriate approaches for the study, including baseline surveys, focus group discussions, stakeholders' workshops, data collection, coding, analysis and interpretation of the key findings. This will include reviews to analyse all available data in LVEMP, stakeholders and other sources;
- ii. Establish the cause-effect relationships underlying identified problems;
- iii. Identify long-term measures to address the problems;
- iv. Produce the *Draft* Final Report;
- v. Incorporation of comments to produce and submit a Final Report.

The consultant will collaborate closely with the National Secretariat and liaise with consultants from the other partner states to consolidate the National Reports into a Regional Report led by Tanzania.

Annex 2: List of People Interviewed

	Name	Organization	Designation
1	Prof. George Krhoda	Ministry of Environment Natural Resources	Permanent Secretary
2	Dr. Hezron Mogaka	Ministry of Environment Natural Resources	LVEMP Project Coordinator
3	Mr. Samuel Gichere	Ministry of Environment Natural Resources	Deputy Chief Economist
4	Mr. Richard Sidiga	Ministry of Environment Natural Resources	Undersecretary, MENR
5	Prof. Fredrick N. Onyango	Maseno University	V/Chancellor
6	Mr. W.O. Omutsani	Department of Livestock Dev and Fisheries, Western	Provincial Director of Livestock Production
7	Mr. Remjivs Gwaye	Department of Livestock Dev and Fisheries, Western	Fisheries Officer
8	Dr. Oteyo Eliakim	Department of Livestock Dev and Fisheries, Western	Provincial Director of Veterinary Services
9	Mr. F.S. Murekefu	Department of Livestock Dev and Fisheries, Western	D/PDLP
10	Mr. P. T Makheti	Department of Agriculture, Western	Provincial Director of Agriculture
11	Mr. J Mbai	Retired District Agriculture Officer	
12	Mr. David Nyamumbo	Department of Agriculture, Kisii	Deputy DAO
13	Mr. John Okwiyo	MPND	District Development Officer, Kisii
14	Mr. John Ndege	Department of Livestock Production Officer	District Livestock Production Officer
15	Mr. Ben Onyango	IFAD, South Nyanza	Project Manager
16	Ms. Rose Mugidde	East African Secretariat, Arusha	
17	Mr. James O'M Omaroro	Ministry of Trade	Chief Economist
18	Dr. Stephen Njoka	LVEMP Secretariat	Project Coordinator
19	Mr. Stephen Kyalo	LVEMP Secretariat	Communication Officer
20	Ms. Agnes Yobtek	LVEMP Secretariat	Community Development
21	Ms. Eddah Kaguthi	LVEMP Secretariat	Management Information Systems Officer
22	Mr. Ali Hassan Noor	Nyanza Provincial Office	Provincial Commissioner
23	Mr. Shem S. Siah	Nyanza Provincial Office	Provincial Planning Officer
24	Mr. David Nyatika	Provincial Agriculture Office	Research Extension Liaison Officer
25	Mr. F.K Wanyonyi	Lake Basin Development Authority	Managing Director
26	Mr. J M Baruga	Kisumu District	District Commissioner
27	Mr. A K Mwasserah	Western Province	Provincial Commissioner
28	Mr. Eliud Salano Mwarari	Western Province	Provincial Planning Officer
29	Mr. Maurice Otieno	Department of Fisheries	Senior Fisheries Officer
30	Mr. Anthony Kariuki	Pact, Kenya	

31	Mr. R. Nzomo	Lake Basin Development Authority	
32	Mr. Enock S Wanyonyi	Western Province	Regional Manager, Water Resources Management Authority
33	Mr. John K. Nzwili	Western Province	Provincial Forest Office
34	Mr. Charles Monasi	Western Province	Provincial Information Officer
35	Ms. Judith Ombok	Western Province	Press Representative, KNA
36	Mr. John Chelimo	Western Province	PA/ PC
37	Eng. Diru Magomere	Lake Victoria North, WSB	Chief Executive
39	Eng. Badaza Mohamed	Lake Victoria Basin Initiative	Project Manager
40	Mr. David Mwikia Mbugua	Lake Victoria Basin Initiative	
41	Mr. M.D Macharia	Lake Victoria Fisheries Organization	
42	Mr. Simon Ndubi	Nambale Farmers Coop Union	Chairman
43	Mr. L Ndukhu	Nambale Farmers Coop Union	Union Manager
44	Mr. Nicholas Hilkan	Nambale Farmers Coop Union	Secretary
45	Mr. Obiro Onganga	Osienala	Executive Director
47	Mr. Arnolda Chao	Kenya Association of Manufacturers	Executive Officer, W. Kenya
48	Mr. Peres A Oyugi	SAGA-Thrift and Enterprise Promotion Ltd	General Manager
49	Mr. Reuben I Muhindi	NACC	Field Officer
50	Mr. E. Lwanya	NACC	Field Officer
51	Mr. Nelson Otieno	Fishermen	
52	Mr. Odhiambo Oganda	Fishermen	
53	Mr. Morris Juma	Hyacinth Furniture Maker	
54	Mr. Odhiambo	Mat Makers	
55	Mr. Ochieng	Mat Makers	
56	Mr. Ibra Oduor	Boda boda Operators	
57	Mr. Francis O. Goga	Boda boda Operators	
58	Mr. Francis O. Ogolla	Boda boda Operators	
59	Mr. Caleb O. Onyango	Boda boda Operators	
60	Mr. Felix O. Omollo	Boda boda Operators	
61	Dr. Khadudu Were	NGO Western	Chairman

ORGANIZATIONS INTERVIEWED

- 1) LVEMP Secretariat, Kisumu
- 2) Lake Basin Development Authority, Kisumu
- 3) Lake Victoria Fisheries Organization, Kisumu
- 4) Provincial Administration, Kisumu
- 5) Provincial Administration, Kakamega
- 6) Osienala-Friends of the Lake NGO, Kisumu
- 7) Kenya Association of Manufacturers, Nairobi
- 8) Kenya Tourist Board, Nairobi
- 9) Provincial Director of Agriculture, Kisumu,
- 10) Provincial Director of Agriculture, Kakamega
- 11) Provincial Director of Agriculture, Nakuru
- 12) Provincial Planning Officer, Nyanza
- 13) District Livestock Development Office, Kisii
- 14) District Development Office, Kisii
- 15) Seminar with CBOs, Homa Bay
- 16) Amaranthus Farmers, Migori
- 17) Soil & Water Conservation Office, Kericho
- 18) NEMA, Kericho
- 19) NGOs in Kisumu, Kakamega, Nyanza, Siaya, Homa Bay.
- 20) Fishermen at Dunga, Homa Bay, and Siaya
- 21) Cotton Ginnery at Nambale
- 22) Muhoroni Sugar Company
- 23) Saga Thrift
- 24) KREP

STAKEHOLDER WORKSHOPS

1. Inception Report Workshop Nairobi
2. Mid term Review Workshop Kisumu
3. Final Report Workshop in Kisumu

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