Lake Victoria Environmental Management Project

Regional Lessons Learnt Draft Final Report

By

J.B. Okeyo-Owuor Ph.D.
Lead Consultant

Chapter 1

INTRODUCTION

1.1. The Lake Victoria Environment

1.2. The Lake Victoria Environmental Management Project

Lake Victoria Basin is rich with current value placed at about US$ 12.4 billion and which could be developed further with good management intervention. There are many factors that are threatening rich biodiversity and natural resources in the lake 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 practices, destruction of wetlands , pollution loading from industries and municipalities, fishing malpractices and invasion by numerous exotic species especially water hyacinth. The results have been rampant land degradation, deterioration of water quality, decline in biodiversity, unsustainable use of the resources, increased poor health and food insecurity with the resultant high levels of poverty amongst the riparian community.

The Lake Victoria Environment Management Project (VEMP) was conceived and initiated to arrest and address the observed threats so as to bring the attention of the governments and stakeholders to the problems threatening sustainable development and utilization of the lake basin resources. LVEMP is therefore a comprehensive and holistic regional environmental program involving the three East African states, Kenya, Tanzania and Uganda aimed at rehabilitation of the Lake Victoria ecosystem and its catchments. The fundamental vision of this project is "*to restore a healthy, varied ecosystem that is inherently stable and that can support, in a sustainable way, the many human activities in the catchment and in the lake itself*".

LVEMP's implementation framework was jointly identified and developed by the three partners states through a process of consultation with Governments and other stakeholders and subsequent of a Tripartite Agreement signed on 5th August 1994 in Dar es Salaam. This then lead to the parallel activities which have been implemented in the three partner states and coordinated by respective National Secretariats of LVEMP for the last 7 years to address the major threats to the Lake and its Catchment as detailed in the project document.

Since the inception the project has obtained considerable amount of achievements as well as receiving numerous challenges and constraints in its diverse components. Many lessons have since been leant by both the implementing and funding organization which need to be well natured to provide the way forward into a sustainable and long term management of the lake's environment and improvement of the socio-economic status of the riparian community who are still reeling in poverty amidst high potentials presented

by the rich natural resources in the region. To help achieve the objectives of LVEMP it has been felt necessary to conduct a well coordinated assessment of the various components of the Project, excluding the Water quality and Fisheries Management, to draw lessons leant from implementation of the different components in the 3 riparian states.

The LVEMP Project objectives are to:

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

1.2. Funding, Implementation Arrangements and Project Components

The LVEMP is funded by the International Development Association (IDA) and the Global Environmental Facility (GEF) in form of a Credit and Grant respectively. A total of US$ 79.6 Million was provided for LVEMP and has been shared equally between the three riparian countries around Lake Victoria, Kenya, Uganda and Tanzania. Each country was bound to contribute 10% of its allocation as counterpart funding.

The Tripartite Agreement provides for an implementation arrangement, which is established in the region and within each country. Within each country, the Project activities are implemented through relevant existing government institutions and departments and are coordinated by the National Secretariat for LVEMP in Tanzania and Uganda and the Project Coordination Unit in Kenya. However, to ensure uniformity in approach, standards and follow up of harmonization of policies, all regional activities are coordinated by a Regional Secretariat based in Dar es salaam which is headed by the Regional Executive Secretary. The Regional Secretariat also coordinates all other regional meetings and activities of the project while the National Secretariat/Project Coordination Unit has the overall responsibility of coordinating the implementation activities under the National Secretary in case of Uganda and Tanzania or Project Coordinator in case of Kenya. They are assisted by the Operations Officer/Project Coordinator, Community Participation Officer, Project Accountant, Procurement Officer and Management Information Systems Officer, supported by a number of support staff. overall Project Coordination is being managed by the national secretariats. In Kenya, for the initial 5 years of the project it was under the management of the Ministry of Environment and Natural Resources but was later switched to the Kenya Agricultural Research Institute (KARI). In Kenya the National Secretarial is based in Kisumu and while for Uganda and Tanzania the respective secretariats are based in Entebbe and Mwanza respectively.

LVEMP is a comprehensive program conducted by the three countries aimed at rehabilitation of the lake ecosystem for the benefit of the 30 million people who live in the catchment, their national economies and the global community. The Project is divided into eight implementation units (Components) which are located at different relevant government departs around the lake basin in each country. To date the project has been in existence for the last 7 years. The first phase of the LVEMP came to an end on December 31st 2002. However, the three countries negotiated with the World Bank for a 2-year extension which is will be concluded in December 2005.

1.2. The Lessons Learnt Consultancy and Report

Since its inception LVEMP has made considerable contributions towards maximizing sustainable benefits of the Lake Victoria Basin resources and its catchment resources in all the three countries. Through its 8 components the project has been able to collect considerable amounts of data and information as well implementation of various activities of direct benefits to the riparian communities. But it has also faced a number of constraints and challenges during its close to seven years period. Therefore its is the desire of the funding agencies and stakeholders to assess how far the intended objectives have been addressed and lessons learnt drawn and reported across all the components in a well-coordinated review process. This task was conducted by the National Consultants from the different riparian countries who were mandated to assess and draw lessons learnt from the following project Components/sub-components/Tasks:-

- Wetland Management.
- Water Hyacinth Control.
- Catchment Afforestation.
- Integrated Soil and Water Conservation (Kenya and Tanzania) or Land Use Management (Uganda)
- Wetlands Management
- Capacity Building
- Community Participation
- Micro-projects

The TORs for both the lead and national Consultants are provided in (**Annex 1**) To achieve the stated consultants' tasks a series of working sessions, desk reviews, field assessments and workshops were conducted by the respective national lessons learnt consultants and component coordinators under the overall coordination by the Lead Consultant in close collaboration with the Regional and national Secretariats. The Lead Consultant started working on 19th May 2005 while the national consultants for each component started on 19th may 2003 in Kenya, 23rd May 2005 in Uganda and 26th May 2005 in Tanzania successful Inception Workshops held in Kisumu, Entebbe and Mwanza respectively. The exercise was conducted through a series of working sessions, desk reviews, field assessments and workshops at the national and regional levels. The Lead Consultant and National Consultants worked closely with the regional as well as the respective National Secretariats and Component staff to generate data and produce the various component Lessons Learnt reports. In each country, the findings and lessons learnt were presented by the respective National Consultants to stakeholders at a National

Workshop to receive contributions necessary for preparing the component Final Lessons Learnt Reports. National Workshops for Kenya, Uganda and Tanzania were held on 7-8 July, 11-12 July and 11-12 August respectively.

This lead to the production of the final versions of the National Lessons Learnt Report (NLLR) for each Component. From these reports a Regional Component Lessons Learnt Report (RCLLR) was compiled by consolidating the respective NLLR for each component at a Regional Working Session at Mukono, Uganda on 29-31 August 2005. The Lead Consultant then synthesized these reports and produced a draft Regional Lessons Learnt Report which was presented to stakeholders at the Final Regional Workshop in Arusha on 19-20 September 2005. This lead to the production of a final status report on regional Lessons Learnt which provides the outcome of this assessment. The report documents and explains successes, constraints and opportunities found from the activities of the various components over the last 7 years of LVEMP. It provides an overview of the present scenarios, information for future interventions and areas of possible scaling up in the phase II of LVEMP. The report also highlights areas where the project was less successful and/or even failed in order to avoid similar pitfalls in future.

Chapter 2

Integrated Soil and Water/ Land Use Management Component

2.1 Background

The Lake Victoria basin is highly populated with an estimated population of about 30 million (World Bank, 1996), growing rapidly, and heavily concentrated near the lake. Of the total populations in the lake basin 40.7% is found in Kenya, 26% in Tanzania and 33.3% in Uganda and all with population densities between 100/km^2 to 1200/km^2. The basin supports some of the poorest rural and urban populations in the world who depend on a multiple livelihood activities which result into numerous resource use conflicts and environmental degradation especially soil and water in the upper catchment and in the lake itself a situation that renders continued dependence on the lake resources and their conservation unstable and unsustainable. The main causes of wide spread soil and water degradation in the region are weak regulatory mechanisms, deforestation, soil erosion, sedimentation of the lake, and loss of biodiversity a situation that the LVEMP I through its Integrated Soil and Water Management Component (ISWMC) has been addressing by implementing several SWC activities in the region The Component was implemented by the Ministry of Agriculture (MoA) in Kenya, the Ministry of Agriculture and Food Security (MAFS) in Tanzania, and the National Agricultural Research Organisation (NARO) in Uganda. In each country the component activities were implemented in selected micro-catchments representing the diversity within the Lake Victoria Basin (LVB). The pilot areas concentrated on the main catchments with rivers draining into Lake Victoria. The work at the pilot sites addressed point-source and non-point source pollution problems. The ISWM component engaged community participation to promote better land use practices geared towards enhanced soil fertility, for increased and sustained agricultural production, through mobilization, sensitization, demand driven training and support to the initiatives meant to reduce nutrient and sediment loads flowing into Lake Victoria. This Chapter provides the findings and lesions learnt from implementing this component at national and regional levels.

The overall objective was to identify underlying causes of poor land management, assess their magnitude, and promote better conservation technologies to achieve sustainable resource management. Specific objectives are:

- To quantify and map soil erosion and nutrient loss from a range of land use practices
- To identify and design appropriate remedial measures and sustainable agricultural practices
- To develop systems to promote soil and water conservation.
- To disseminate appropriate technologies and information on soil and water conservation.

To achieve the above objectives the ISWM components have carried out the following activities during the last 7 years (1997-2004):

- Establishing baseline information, quantifying and mapping land management problems.
- Identifying suggested solutions to solve the problems; and designing Community Action Plans (CAPs); and putting in place implementation mechanisms.
- Capacity building at all levels through training of personnel, improvement of research and extension infrastructure, and strengthening farmers groups.
- Establishment of linkages with development partners, and strengthening collaboration with universities, service providers, government institutions, NGOs, CBOs, and private sector institutons.
- Research to quantify the magnitude and distribution of land degradation, and water pollution; and quantifying the potential impact of soil and water conservation measures.
- Participatory evaluation of various technologies and designing of recommendations at pilot sites in collaboration with end-users, research and development institutions.
- Dissemination of successful soil and water conservation measures through sensitization, demonstrations, exchange visits, field days, training materials, mass media, and publications.
- Supporting relevant micro projects to improve community livelihoods as an incentive to adopt improved conservation measures.
- Assisting farmers to diversify their farming systems in order to achieve food security.
- Mobilizing and supporting communities to form community-based natural resource management committees

The objective of this consultancy was to prepare a lesson learnt report for the activities of the Component through the following specific objectives:

- To assist component scientists to analyze data and draw conclusions and lessons from experience in implementing the component.
- To review the achievements of the component, approaches, and interventions used during the project life and prepare lessons learnt report.
- To liaise with international and national component scientists and consultants from Kenya, Tanzania, and Uganda and prepare consolidated regional lessons learnt report.

2.2 Findings and Lessons Learn

2.2.1 Findings, Achievements and Challenges

- **Kenya**: Erosion hazard maps for Kenya had already been prepared and studies to quantify land degradation started in 2005 following the establishment of run off plots have been established in one focal area. During the eight years (1997 to 2005) period of LVEMP's existence as a World Bank funded project, the ISWM Component's achievements have been rated highly by the World Bank during their periodic

evaluation missions. The achievements made by the ISWM Component are summarised in Table 2.1.

Table 2.1 Project outputs and achievements (Kenya)

Output/Activity	**Total**
PRA Reports, CAPs and Resource Maps (one of each)	189
FADC Members Trained	756
Demand Driven Training of CIGs	58
On Farm Field Days	30
Other Demonstrations	54
FSAPs	6736
Protected Springs	15
Conservation Structures in km	275
Fruit/Tree Nurseries	29
Water Pans	7
Radio Programs in Luo and Kalenjin	2
ISWM Micro Projects	4
Exchange Tours/Visits Focal Area Visits Country Tours/Visits	 278 14
ISWM Staff Regional Tours	8
No of ISWM Staff Trained MSc Courses Short Courses	 4 53

- **Uganda:** The component identified causes of land degradation as: soil erosion, soil runoff into rivers and lakes, and pesticide residues from agricultural activities and produced a soil erosion hazard map of the LV catchment It continues to assess and monitor the water quality but data on the levels of atmospheric depositions is yet to be produced. It has been established that areas with the highest erosion risk are rangelands on bare hills, and fields cultivated with annual crops and samples of eroded sediments had significantly higher nutrient concentrations than the remaining soils and this continued loss of top soil will render poses a serious challenges to the sustainable agriculture, food security and future conservation efforts

- **Tanzania:** The present land use/cover and soil erosion hazard in the whole Lake catchment has been survey and subsequently a report and maps produced. These provide important baseline data for prioritisation of interventions in the Lake Victoria Basin. For instance, areas around Lake Victoria shores have been delineated as being problematic in terms of slope indices (although aggregation of other factors such as soil, land cover, socio-economic, rainfall could lead into different conclusion). Such findings will be valuable for planning and implementation of interventions by LVEMP II as well as by various stakeholders in the basin including government departments, local authorities and NGOs whose aim are to improve environmental conditions, production systems and livelihood in the basin. Since 1999 there has been significant improvements in the level of awareness and adoption of SWM

technologies including construction of contour bunds Table 2.1, although farmers efforts and participation has been hindered by factors such as long droughts,

Table 2.2: Performance of ISWM Component in TZ

Type of indicator	1999	2000	2001	2002	2003	2004	2005	Total
Number of farmers that adopted various SWC measures	54	108	438	530	462	434	139	2065
Length of contour bunds & ridges	8000	16,260	23,494	33,800	14,615	3,380	3400	102,949

Source: LVEMP (2005).

2.2.1.1 Extension approach and Participatory Methodology

- **Kenya:** From inception up to May, 2004, the extension approach adopted by the ISWM Component was based a micro-catchments approach. This approach involved selection micro-catchments on the basis of relief. However, in June 2004, the Component adapted the National Agriculture and Livestock Extension (NALEP) focal area extension approach. Under this approach, the focal areas for ISWM interventions are identified on the basis of physical rather than water catchment boundaries. The advantages and impacts of this change in approach poses some challenge for the Component and participating communities. Table 2.1 shows major component achievements in Kenya.

- **Uganda**: The project has followed the approach of starting with a few pilot sites, and scaling up through partnerships with extension service providers. The objective of the pilot phase was to develop recommendation and draw lessons for scaling up. The results show that working with farmer groups has been more successful than working with individuals. The multiplier effect is much higher when trainers or contact farmers belong to a group. However, the group institution was well not developed in some places. This requires further strengthening. Five pilot micro-catchment management committees have been set up at village level in Kooki sub-county, Rakai district. The village committees will be institutionalized, and will be the main channel for future dissemination and implementation of land management programmes.

- **Tanzania:** During the implementation of Integrated Soil and Water Conservation (ISWM) activities in the pilot areas, two approaches have been used i.e. the individual approach and the catchment approach. On the basis of difficulties with the Individual Approach, the ISWM component staff decided to embark on participatory approaches whereby they worked closely together with communities and prepared an action plan on how to apply the soil and water conservation measures through catchment committees.

2.2.1.2 Cost-Benefit Analysis (CBA)

The main impact observed was due to increased crop yields resulting from improvement in soil fertility and reduced soil erosion after adoption of contour bunds and mulch. The

economic analysis shows that investment in soil and water conservation technologies is profitable to farmers, and that adopters are much better off than non-adopters. Mulching is not profitable in coffee production. The profitability of beans was lower than normal due to drought during the research period. Such fluctuations in land productivity and profitability will reduce adoption of new technologies. This is not a new or unique problem in agriculture. However, it means that the future LVEMP design must include additional interventions to support adoption of improved technologies. Details of the Cost Benefit/Analysis appear in the various country reports their clarity, significance and output are limited due to insufficiency of appropriate data and time limits for this consultancy.

2.2.1.3 **Impact of project activities**

In general throughout the region the impact of the component is apparent in the operational pilot areas; and was judged as a significant improvement in livelihoods by stakeholders. The main impact observed was due to increased crop yields resulting from improvement in soil fertility and reduced soil erosion after adoption of contour bunds and mulch. Other impacts were: increase in supply of safe water, and strengthening of group cohesion. Economic analysis shows that investment in soil and water conservation technologies is profitable to farmers, and that adopters are much better off than non-adopters. Improvements in land use management also resulted in an improvement in the quality of the environment and productivity of land. Although there ware varied results for the different countries, it was found that within only 2-3 of implementing appropriate SWC practices such as contour bunds, significant improvements were achieved in both environment quality and land productivity as given in the specific National Lessons Learnt Report indicators for the different countries.

- In **Uganda** a ten-fold increase in water infiltration and nutrient loss reduced by 16 – 438% was reported. Soil loss was reduced by 50 – 74% and rangelands biomass increased by 286%. The ground cover increased by 69% while plant species diversity, an indicator of biodiversity wellbeing, increased by 15%

- In **Tanzania, t**he introduced soil and water conservation interventions indicated positive effect and many benefits on soil erosion control, increase in vegetation cover, improvement in aquifer recharge. The observed benefits which have direct implications on community livelihood include: increased crop yields and therefore improvement in food security, improved incomes through sales of agricultural crops and tree products, and easy access to fuelwood for domestic use and for burning of mud bricks for construction of modern houses.

- In **Kenya** this intervention started late and changed from the conventional micro-catchment to NALEP focal area approach but results show that maize crop yields have on average increased by 119% and the biomass by 140% after two years of continuous conservation. The introduction of micro-projects and food security crops as incentives for conservation activities have resulted in remarkable achievements and impact on catchment conservation. Water spring protection initiated by the component has

impacted positively to catchment conservation as it has not only saved time for fetching water by women but also improved the health of nearby communities. Multiple benefits of protected springs include disease free water, more even flow, improved biodiversity and habitats around the springs. Women's representation and participation in catchment conservation committees like FADCs is about 30% and increases to 45% in CIGs. The women are now more actively involved in conservation through the production of food security crops. Exchange visits and demonstrations have significantly contributed to the transfer of new agro-technologies to farmers.

2.2.1.4 Institutional Collaboration and Linkages

- **Kenya:** The ISWM Component has established strong collaboration linkages with the University of Nairobi, Moi University, Tea Research Foundation of Kenya, Kenya Soil Survey of KARI - Nairobi, and KARI-Kibos, Kisumu. Other collaborators at community level included a number of local and international NGOs, and CBOs that were supporting local development initiatives. In the districts covered by the ISWC Component of LVEMP, there is the need for harmonization of agricultural extension services so as to develop and extend joint extension messages for identified farmers' problems

- **Uganda.** The component has forged only limited partnership with NARO, NEMA, the Faculty of agriculture of Makerere University, Canada, MAAIF department of soil and water conservation, districts (Rakai, Mayuge, Jinja); and farmer groups at pilot sites. The linkage with the University of Waterloo, Ontario Canada has filled a critical gap in analysis of atmospheric deposition samples. It is therefore necessary to create stronger and sustainable linkages with institutions that will complement its capacity to develop technologies; and scale up dissemination. Its strength lies in research. The option to develop this capacity locally needs to be examined due to the high cost which might not be sustainable by external collaborators in such as that with the University of Waterloo.

- **Tanzania:** The component has been working in close collaboration with the Universities of Dar-es-Salaam, and Sokoine as well as the Agricultural Research Institutions Some collaborative work have also been done with local, and international NGOs and local governments. Farmer training centres have also played an important role in training farmers.

2.2.1.5 Up-scaling of proven conservation technologies

- **Kenya:** The ISWM started its activities in 1997 and recorded good progress with regard to the expansion of conservation technologies especially in the pilot areas in Kericho and Nyando districts. The Component's activities have been scaled up to 7 districts. The component has provided training, demonstrated and promoted adoption of technologies on production, preservation and processing of food security crops, energy saving stoves, bee keeping and poultry production, agroforestry, and SWM.

- **Uganda:** Although, the Land Use Management activities were mainly confined to Rakai district reasonable grounds were achieved in collaboration in NGOs, District Extension Staff, and Farmer Organisations which provided good potentials for up-scaling its successful initiatives such as to promote contour bunds, grass mulch, pruning and desuckering; and ferro-cement water harvesting tanks technologies. The component has sensitized and trained of extension staff and farmers as well as distributed of dissemination materials. The component trained 250 trainers, achieved approximately 80% and trained about 30% of farmers either directly by participating in the OFR programme, or indirectly though farmer to farmer networks which resulted into some 30 – 55% of households adopting the technologies in the project catchment. The success in achieving a high level of adoption at pilot sites is attributed to the project's emphasis on community participation, and sensitization.

- **Tanzania:** The Component used the Catchment Approach and focused on a few selected catchments for promoting and providing training on soil and water conservation activities. The opinion of various stakeholders consulted was that ISWM activities need to be expanded to all the hotspot areas within the catchments. The baseline information for the lake basin should be used in setting priorities for the ISWM interventions. The Component has already scaled up its activities from 2 to 5 districts.

2.2.1.6 Monitoring and Evaluation (M&E)

The initial project implementation plans in all 3 countries lacked a logical framework approach and base line data against which the stated achievements could be gauged. Although these were not the initial requirements at the planning stage of the project, in the course of implementation and assisted by various World bank missions, the components identified outputs and key performance indicators (KPIs). It is observed that M&E processes were weak and not well streamlined to assist in the planning and implementation of component activities.

2.2.1.7 Sustainability of project activities

Right from inception, the Component has lacked the necessary capability and capacity of handling a project of this magnitude. The capacity built in phase I improved the situation, however gaps still exist. The project has financed training of personnel, improvements in laboratory facilities, field equipment, vehicles, computers and printers. The capacity of implementing institutions has been significantly improved. However, the smooth running and performance of the component activities have been limited by various constraints including personnel, equipment, institutional set up and financial matters.

2.3 Lessons Learnt

- In all riparian countries the main land degradation problems are related to unsustainable land use practices and poor management of the mainly steep rangelands which arise from continuous crop cultivation and deforestation. The fast flowing waters cause soil erosion and forms gullies as well as carrying large quantities of sediment and nutrient loads into rivers. At the lowlands this leads to blocked drainage canals and flooding due to over-siltation.

- The component has achieved considerable grounds in promoting the soil and water conservation activities but it is observed that their adoption are long term and require substantial resource investment especially labour, capital and capacity building at all levels. This is costly and both government and donor funds investment are required to ensure good progress and reversal of the land degradation process. The resources available coupled with lack of trained staff and high staff turn over made it difficult for the component to realize all its intended activities during this pilot phase of LVEMP have not been sufficient in the various pilot sites. For instance the funds allocated to the component were much less compared to other LVEMP Components' allocations and yet it still achieved considerable output, thanks to the inputs from number of government and non-government partners to sustain activities.

- The often short term outputs and practical incentives from these soil and water conservation initiatives such as low crop yields, lack of markets and low income at household and community levels impairs rapid adoption and sustenance of recommended measures. In most parts of the Lake Basin land tenure issue are still problematic and cause constraints to community level conservation adoption. In areas where soil degradation is problematic the tenure system is communal, belonging to absentee landlords, or lack appropriate security of tenure making it difficult to take positive soil conservation measures. This situation also hinders up-scaling best practices as desirable and limits distribution of benefits from proven technologies without aggressive and extensive awareness creation, information dissemination and appropriate policy framework.

- The good achievements of this component was made difficult due to lack of baseline data and absence of LFA causing a weaker monitoring and evaluation framework. Both the planned activities were difficult to precisely prioritize, hence leaving gaps in monitoring and determine achievements and progress obtaining feedback from the lessons learnt in the process of implementation of activities. Implementation of the activities emphasized the micro-catchment approach in Uganda and Tanzania and at least initially in Kenya without aligning and determining the comparative advantages/superiority of these approaches with other approaches adopted by other development initiatives such as NAADs in Uganda, PADEP in Tanzania, later NALEP in Kenya and even traditional approaches based on indigenous knowledge. Indigenous knowledge and practices such as, bush burning and shifting cultivation, *ngitiri* (traditional woodlots) shade trees, medicinal trees, and rotation cattle kraals (*bomas*), in Tanzania often influence the adoption of conservation measures leading to either positive or adverse impacts.

- A strategy of community-based natural resource management has been piloted by the component through the establishment of micro-catchment management committees and needs to be strengthened and extended to include networking with all concerned stakeholders at catchment level, and ultimately integrated in the Lake Victoria Basin Commission framework at the regional level. At present the conceptual framework for inter-community, in-country and regional collaboration is yet to be adequately well defined. However, closer working relationships at community levels have been demonstrated in areas activities were identified and implemented along the common interest groups. This has translated into a stronger tool for community empowerment leading into significant progress and achievements even though better output may still be obtained with suitable incentives, such as micro-projects and food security crops, to spur adoption of appropriate approaches. Similar observations were also reported and appreciated by the various local and World Bank Missions. During LVEMP I the component has implemented its activities only with limited collaboration in the planning and implementation of activities with other components of LVEMP. Other stakeholders such as NGOs working on the same subject were accorded limited collaboration as evidenced by the few names given in various component reports even for obvious cross-cutting activities. The project performance in activities where some collaboration was initiated achieved good results justifying the need to ensure good collaborative efforts at all levels. Collaboration should be particularly enhanced with districts and key service providers so that SWM activities are integrated in development plans of partner institutions.
- In the long run implementing soil and water conservation measures will provide better economic gains on annual crops, perennials, and rangelands/grasslands compared to closed woody areas, and closed trees with open shrubs. For instance from this assessment it was observed that some farmers in the pilot sites are already expecting higher crop yields and income following adoption of component promoted conservation measures. This is a major encouragement especially that the proposed LVEMP II will target more of development oriented issue aimed at maximizing economic output while improving environmental conditions in the basin.
- The increased expansion of agricultural activities has shown increased encroachment into the less productive or pristine (protected and unprotected) but fragile ecosystems in the Lake basin. To reverse this trend it is necessary to increase land productivity per unit area and prohibit further encroachment of such ecosystems. This situation is already causing major challenges to conservation efforts and economic development and will require tactful approaches to ensure sustainable livelihood in the region. But a lot of valuable results from LVEMP I still need to be synthesized to enhance the development of policy recommendations, information dissemination, planning and management of LVEMP II and other parallel activities in the region.

2.4 Recommendations and Way Forward

- From the lessons learned in the implementation of ISWM activities in phase I, successful conservation interventions should be replicated in the other catchments. This should also involve up scaling of applied research and dissemination of technologies at various conservation planning levels or agro-ecological areas.
- In-depth socio-economics studies to determine the best SWM approaches and how to improve adoption of such technologies among different communities; the economic feasibility of alternative technologies in various land use systems; the appropriate incentives and their contribution to poverty alleviation and improvement of environmental conditions.
- Micro projects and other incentives should carefully be applied enhance, maintain and expand the recommended best practices of the component to avoid increased demands and over dependence. Emphasis should be placed where they provide a clear comparative advantages over and are lively to create better adoption success, results and sustainability for involving community participation in SWM measures.
- Given the weak institutional arrangements and unclear policy especially on the land tenure system, it will be necessary to lobby for review of existing policies and by-laws; and develop recommendations for community, local and central governments.
- A strong collaboration network with other partners including government departments, NGOs, universities, CBOs should be enhanced improve integration of recommended ISWC techniques with NAADS, NALEP and PADEP and indigenous knowledge through an acceptable formal arrangements to help up scale and disseminate knowledge on proven technologies.
- It is also necessary to continually evaluation and up-scale community-based natural resource management approaches with a view to promoting the formation of micro-catchment management committees. In future a strong and reliable monitoring and evaluation framework at inception stage and in the course of implementation should be based on LFA and available baseline data in order to improve project implementation efficiency. Any project review missions should consist of both World Bank and appropriate experts from the region and solicit information from indigenous stakeholders at various levels.
- During LVEMP II it worth considering elevating the three components "ISWM/LUM, Catchment Afforestation, Wetlands and Water Quality" for integration into a fully fledge project and renaming it as "Land Use and Water Management Project" while leaving their management as autonomous as possible. This will ensures proper planning, coordination and implementation of the different activities.
- It recommended that available data and non-reported information on land use patterns, soil erosion, runoff, land cover, and pollution loading should be collated, analyzed and made available in forms that are user friendly for different levels of stakeholders to enhance the development of site specific, district, national and regional natural resource management and land use plans.
- Noting that the component received limited budgetary provision during LVEMP I, in future an improved budgetary provision will ensure improved capacity, better planning and implementation and improved component output.

Chapter 3:

Catchment Afforestation Component

3.1 Background

Catchment afforestation was designed as a pilot project under the Land Use and Wetland Management component and its objectives were to protect vital parts of the catchment by planting trees, increase awareness among communities on catchment protection and tree farming, develop local seed sources, improve management of existing forest reserves and create new reserves, and conserve biodiversity.

The goal of the CA was to improve tree cover in the Lake Catchment for environmental and soio-economic benefits to the local, regional and international communities on a sustainable basis. The specific objectives of this component as stated in the project documents were to protect vital parts of the catchment by planting trees, increasing awareness among communities on catchment protection and tree farming, develop local seed sources, improve management of existing forest reserves and create new reserves, and conserve biodiversity. In the course of project implementation these objectives were modified and re-formulated as follows:

a. To improve management of forest reserves
b. To strengthen forestry extension services
c. To build capacity
d. To create awareness
e. To disseminate information nationally and regionally, and
f. To collect and analyze data on project performance and impacts.

The component has over the last seven years implemented a number of activities aimed at achieving these objectives. This Chapter presents the findings and lessons learnt from implementing this component.

3.2 Findings and Lessons Learnt

3.2.1 Findings

- It was observed that the activities conducted by the component included tree seedlings production, tree planting, creating and improving management of natural forests, rehabilitation and protection of water sources, awareness raising and information dissemination, strengthening of forestry extension services, development of Catchment Afforestation vision, forest monitoring and development of Catchment Afforestation database. Based on these activities the following achievements were found:-

- **To improve management of forest reserves and create new reserves:** In the Gazetted (Government) Forest Reserves, the component raised seedlings for planting

in Forest Reserves. A total of 2.1 million seedlings were raised in Kenya for planting in forest reserves, while 157,000 were provided directly by the component to the Forest Department (FD) and also assisted them in planting in reserves. The component also rehabilitated some 390 ha of forests reserves were rehabilitated in the three countries through tree planting (224 ha in Uganda; Kenya 166 Ha). There was no planting in Central forest Reserves in Tanzania. In Kenya, planting in central government plantations was discontinued through the advice of the Mid Term Review Mission in 2000. The CA also promoted improvement in management of forest reserves through Joint management of forest (JMF) reserves between communities and government in Uganda and Tanzania. In each case, the project facilitated development of Joint Forest Management plans and CBO by-laws, and these are already in use. Although in Uganda, a joint forest management plan was developed for Nabanga Forest Reserve, its implementation was hampered due to lack of enabling legislation. Also a block of 378 ha forest at Kalangala in Uganda, was identified to be exchanged with a degazetted forest and set apart as a forest reserve. In the three countries the component was also involved in forest surveillance and protection activities. For Village/Local Community Forest Reserves, in Tanzania, the catchment afforestation component has assisted the survey, boundary demarcation and mapping of six potential village forests reserves (area appx 2440ha). The surrounding communities were assisted by the component staff in prepared by-laws and simple management plans for managing the forests and signs of forest recovery are now evident in some sites although there are complaints from the villagers on the increasing destruction of wild animals which have now inhabit the forest reserves. In Uganda, the Component has conducted a reconnaissance survey in six forest reserves, and three of them have been rehabilitated (Mwiri, Nabanga and South Busoga) although encroachment by communities is a major constraint to these efforts.

- **To strengthen forestry extension services/ build capacity:** The CA component has assisted the relevant government departments in forestry extensive services through support to specific extension events, provision of tools and equipment, and to building capacity of personnel involved in extension work. Provision of equipment;, nursery materials and equipment (polythene tubes, wheelbarrows, spades, seeds, watering cans, etc), seedlings to extension services, to communities and government nurseries (also see Table)

Table 3.1: Some achievements of Catchment Afforestation in strengthening extension services.

Country	M.Sc FD	Short Courses	Train CBOs	Study tours	Staff Wk shops	Equip Provided	Seed lings	# nurseries
Kenya	5	4	271	6(4)	2	Varied	2.1mill	122
Tanzania	2	12	-	3(1)	2	Varied		65
Uganda	1	2	-	4(1)	-	Varied		42

(-) external study tours

- **To create awareness:** The success of the CA activities has been brought about amongst others by an innovative and aggressive awareness campaign. CA has been carrying out demonstrations to sensitize stakeholders on best practices of integrating trees in farming systems and the importance of forest and trees. Inception workshops

were conducted in all lake riparian districts, as a result of which the component is enjoying political support in the pilot districts. Awareness raising workshops were also held various areas within the catchment and many community groups were trained on nursery establishment and management techniques. During field visits, it was clear that communities today consider catchment afforestation beneficial to their livelihoods and environment. They now positively view trees and many communities have trees in their farms or woodlots. However, awareness raising is generally considered inadequate, as this was done only in selected places during component inception, and later by training of community nursery groups on nursery and field establishment and management. Awareness raising should be a continuous process and should involve a wide variety of methods. The specific achievements of CA are given in **table 3.2**. The Component put emphasis on producing tree seedlings from central, institutional, community, private and group nurseries for tree planting. And to ensure sustainability there has been a deliberate move to scale down direct involvement of Forest Department to raise tree seedlings from the central nurseries. It also promoted private and community participation in seedling production by providing them with technical and material support and at present individual farmers, farmer groups, CBOs, NGOS, other institutions and youth groups produce much of the seedlings.

Table 3.2: Some achievements of Catchment Afforestation Component

Country	Work shops	Pilot sites	# trained	Radio/ TV prg	Print Media	Agrof demo plots	Micro Projs.	CBOs formed	Seedlings (mill)	Riverine Planted	Springs Protect	Wood Lots
Kenya	5		2019	5	Vary	2	1	61	13	9.9Km	27	10000ha
Tanzania	15	33	2370	11	Vary	1	6	28	12	250ha	-	No 20
Uganda	5		>114000	3	vary	-	1	4	5.7	-	-	25ha
TOTAL												

- **To disseminate information nationally and regionally:** Although in its many activities the component appear to have achieved a lot these were not well documented a situation that suggests that there was low priority accorded to information dissemination both nationally and regionally. This Makes it difficult to depict some best replicable practices or achievements for scaling up in other areas of the Lake Basin with similar environmental and socio-economic conditions. Most of the components experience learnt including the deliberations from meetings and conferences and other useful sources of information such as back-to-office reports and reports should have been well packaged and widely circulated to stakeholders. However, it is worth noting that the component achieved some reasonable ground in information dissemination through, paper presentations at national, regional and international for a, production and distribution of pamphlets, brochures, etc and presented some scientific papers at the LVEMP National and Regional Scientific Conferences. The papers are too few compared to the quantity of research and data collected by the component which need to be well documented and disseminated.

- **Collection and analyze data on project performance and impacts:** Judging by the number of established permanent sampling plots, Tanzania (60) gave seem to have performed better than Kenya and Uganda in this area In Tanzania the component established as Permanent Sample Plots (60 in protected area, 65 in unprotected areas) and runoff monitoring plots (3 each in conserved and un-conserved forests) in Tanzania while available evident suggest none for the Kenya and Uganda.

3.3 Lessons Learnt

3.3.1 General Lessons Learnt

- Improvement of water quality in the lake depends on successful rehabilitation of the basin to control soil erosion and reduce siltation and eutrophication, yet catchment afforestation component was a pilot project aimed at addressing specific environmental threats to the lake ecosystem, and to generate data for implementation of phase II of the project. Consequently, it was given relatively low priority and only minimal funds allocated to it.

- The study noted that there was lack of prioritization of sites and interventions and lack of data to enable evaluation of project achievements and impacts. This is attributed to the lack of a baseline study.

- The logical framework approach is an important tool for planning and prioritizing project and component objectives and activities, for monitoring and evaluation, and demonstrating the contribution of component activities and objectives to project aims and objectives and therefore demonstrating impacts. This was not developed for Kenya and Uganda, and were developed retrospectively for Tanzania.

- The project and component activities were not as inclusive and consultative as would be ideal. This more expectations and reduced potentials for ownership of project activities by stakeholders and therefore discouraging community participation in successful implementing and sustainability processes as well as decision making on issues.

- The was observed that if the intra and inter-component collaboration for instance between the ISWC, was stronger that was found the positive impacts of the Component activities would have been higher in the same pilot areas using the catchment approach.

- There has been very minimal compilation of best practices to guide the scaling up component activities in phase II, while as a pilot project, this should have been a key output of component.

- Using beneficial incentives such as micro-projects, tree nurseries, fruit trees was valuable in raising community awareness and participation in the component activities.

3.3.2 Lessons Learnt Specific to Project Activities

3.3.2.1 Management and creation of forest reserves.

- Since this process is long term it is not clear the would be benefits and costs as well as distribution under Joint Forestry Management plans since such issues will depend upon the projects ability to generate adequate benefits to stakeholders.
- Local community institutional framework and capacity provided valuable opportunities for implementing component initiatives and were critical to the cost effective success of project interventions.
- Several factors such as continued encroachment in some forest reserves, lack of or inadequate supportive laws and policies hampered successful implementation /afforestation efforts.

3.2.2.2. Strengthening forestry extension services

- Project and component activities should aim to be as inclusive and consultative to the maximum extent possible through enhanced collaboration with other stakeholders so as to reduce their unsustainable expectations and enhance ownership of project activities. This will also improve on their participation and encourage joint decision making and implementation of project activities even when project staff are transferred. In the project sites where forestry and extension related initiatives towards forest management say, by NGOs and CBOs exist, it is important to ensure coordination and harmonization of these efforts so as to avoid; The inadequate collaboration and lack of multi-disciplinary approach to implementation of project activities with other relevant programs resulted in lost opportunities in terms of harmonizing strategies and approaches. Therefore the NEX arrangements should have consultative bodies incorporating representation of implementing line agencies for planning project activities at various levels.
- Training needs assessments were conducted in all the three countries, but were largely not implemented, and consequently the component was not able to build sufficient human capacity required for implementing major activities. This was reflected in the few pilot areas selected and insufficient outreach in each country. Training targeted mostly senior professionals and communities, and less technical level staff resulting into insufficient capacity in these critical cadres for project work. Loss of staff trained by the project also lead to reduced capacity for project implementation.

3.2.2.3 Awareness Creation and information dissemination

- Awareness creation by the component provided good initiatives but this should be a continuous process as deforestation and land degradation are also continues and there is need to empower and capture more stakeholders into the component activities. The inadequate awareness creation process during this project phase could be due to inadequate financial allocation for dissemination of information and limited documentation and publishing of experiences and best practices gathered during the implementation process. These are key outputs for piloting and future scaling up.
- The assessment revealed that, the component used very few communication channels in the awareness campaigns, which limited its reach to stakeholders but the

interventions through community institutions such as schools, prisons, individuals and groups proved to be an effective method of implementing the various activities.

3.2.2.4 **Tree planting Efforts:** The component outputs were hampered by poor survival and growth of planted seedlings especially where there was insufficient follow up due to limited staffing and insufficient allocation of funds leading to irregular visits by project personnel. Success was also limited by problems of selecting suitably tree species or varieties that match selected sites, unclear land/tree tenure systems and lack of appropriate incentives.

3.2.2.5 Monitoring and evaluation

- The component has not been able to accurately determine the progress of implementation or impact of interventions on target communities or ecosystems. This has been largely because establishment of a comprehensive monitoring and evaluation system has not been fully accomplished and there was lack of baseline data and LFA which were not clear to the component team at the onset of the project.

- Since the key project organs such as the National Steering Committees and the panel of eminent scientists critical for cross – coordination, were not functional due to lack of proper scientific guidance. This was compounded by other issues such as disparities in staff remuneration and allowances between project employees and seconded government employee that was a disincentive to good project performance

3.3. Recommendations and Way Forwards

- The Component has accumulated data on best practices that should be well analyzed and interpreted may be of significance in addressing numerous environmental degradation problems around the lake basin during LVEMP II to enhance its impacts.
- The project and component activities should aim to be as inclusive and consultative, by having consultative structures involving all stakeholders at key levels of project implementation for instance Catchment Afforestation, Soil and Water Conservation and Land Use components should work in the same areas using a catchment approach. The component should be a separate component, with sufficient financial allocation to enable it operate basin wide.
- As the project winds up and phase II is planned, there is need to carry out a baseline study during the bridging phase to provide information for identifying critical catchments and prioritizing interventions in key sites and to enhance the impacts of project interventions as well as improve the returns on project investment.
- The LFA should be used as the primary tool for planning project and component activities based on priority sites and interventions identified by the baseline study.
- The component should immediately compile, document and disseminate information on the best practices and lessons learnt as key pilot outputs to all stakeholders to guide its future in LVEMP II.

- The component should strengthen use of local institutional frameworks and capacities to enhance the cost effective, sustainable success of its interventions and foster better collaboration and multidisciplinary approach with other, programmes, government departments and CBOs. The achievements will even be greater if the government and other stakeholders develop and incorporate clear and equitable cost-benefit sharing mechanisms under JFM or co-management initiatives aimed at promoting sustainable management, mutual understanding and trust on target forest reserves. Further, it is necessary to ensure that all the project organs that support the component activities are functioning well.
- Training should be based on a training needs assessment, and should target all cadres of personnel and stakeholders involved in project work. Staff trained with project funds should be contracted to serve within the project for a minimum specified period.
- Awareness creation should be a continuous process and should involve a variety of methods and channels, incentives and should be conducted at component level to better promote tree planting. As a way of staff motivation and retention the project should harmonize remuneration and allowances of project and government employees involved in project work and ensure timely facilitation of personnel
- There should be clear land tenure policies for areas around the forests and tree species selection should be diversified and match target sites and objectives of planting.

Chapter 4

Wetland Management Component

4.1Background

Tropical wetlands are grouped into 8 classes namely Marine, Riverine, Lacustrine Palustrine, Deltaic, Plateau, Montane and Constructed wetlands based on topography and hydrological conditions (Crafter *et al* 1992). A wetland classification system for East Africa (Howard 1996) recognizes 22 specific habitat types, 16 of which are linked to inland waters. In general wetlands in the Lake Victoria Basin fall in the categories of riverine, lacustrine, deltaic, in some areas plateau and constructed (ponds and irrigated land). They are characterized by the changing hydrological regimes, especially the area around the Lake where rainfall seasonality leads to peaks and low riverflow. Wetlands of Lake Victoria play important roles to the lake ecosystem livelihood of riparian communities and being an important cultural and heritage. But due to the continued unsustainable use and poor management practices much of the previously pristine wetlands in the Lake Victoria basin is under serious threat and their ecological and socio-economic roles are declining considerably. The Wetland management Component of LVEMP I has continued to conduct research and involve community participation in implementing conservation related activities in the lake basin. Through, two key tasks namely Buffering capacity of Wetlands and the Sustainable Use of Wetlands Products the component has shown important achievements from which numerous lessons have been learnt and are presented in this Chapter. The Component's activities were implemented based on the following specific objectives:-

a. Buffering Capacity:-

- To investigate the buffering processes and capacity of Lake Victoria wetlands and devise management strategy for them;
- To develop an inventory and classification of wetlands;
- To Monitor Nutrient loading to priority areas,
- To Simulate the changes of buffering function associated with threats to the wetlands resources;
- To Assess the economic value of buffering functions;
- To prepare guidelines and investment proposals for introducing wastewater into wetlands as well as rehabilitation and artificial wetland construction.

b. Sustainable Use of Wetlands Products:-

- Assessing the economic potential/benefit from wetland products and evaluate their contribution to the local communities and the environment within the Lake Victoria
- Developing management strategies for their sustainable use and rehabilitation of specific degraded wetlands
- Evolving strategies for community participation in sustainable use,

- Strengthening capacities of local NGOs and CBOs to undertake wise use activities.
- Initiating pilot activities to demonstrate sustainable use of wetlands in the lake Basin.

The following were specific objective of the consultancy:-

- To make analysis of the issues encountered during the implementation of wetlands management component activities (including methods applied and lessons learned) in the country inline with the contribution of the component to the initial areas of focus of the project that is the ecosystem and water quality.
- To recommend on the best way to carry out wetlands issues towards maintaining long term lake ecosystem environmental protection through wetlands management

The findings and lessons learnt from implementing activities of Wetland Management Component are presented in this Chapter.

4.2 Findings and Lessons Learnt

4.2.1 Findings

4.2.1.1 Assessment and Inventory of Lake Victoria Wetlands

Rapid Assessments (RA) of Lake Victoria Wetlands were carried out in Tanzania, Kenya and Uganda leading to documentation of baseline information on Wetlands of Lake Victoria. In Tanzania the wetlands were classified into four categories namely Permanent Swamps, mainly reeds and papyrus; Seasonal swamp / floodplain; Tree swamps and Open waters, mainly inland lakes. In Kenya RA exercise categorized the role played by wetlands into two broad areas in terms of buffering capacity namely: Wetland acting as storage surfaces particularly in the upper catchment highlands and plateaus; and Wetlands acting as sediment traps and sinks for various effluents, nutrients, and other pollutants emanating from anthropogenic activities. Wetlands on the Ugandan side of the Lake Basin were identified, inventoried and the data integrated into the National Wetlands Information System (NWIS). This situations shows lack of uniformity in the approaches and findings from and the need to harmonize approaches for the RA in the entire region.

The rapid assessment carried out in the three countries reported several threats which include some utilization and management problems summarized below:-

- Over exploitation of wetland resources (eg. Over fishing, , hunting of wildlife, over-harvesting of macrophytes, overgrazing).
- Improper exploitation techniques (eg. Illegal fishing techniques (poison, nets with mesh size less than 5 inches, weirs), Bush fires, Utilization of protected species
- Pollution (eg. Agrochemicals, Industrial and Domestic effluents,: Large scale and artisanal mining, Oil and grease from boats and towns etc.)
- Sediment loading from upstream catchment changes in wetlands ecosystems hydro-dynamics (e.g. draining and reclamation, abstraction for irrigation or

domestic water, deforestation, catmint erosion / siltation, dam and weir construction/ hydroelectric power projects)

- Change of wetland habitats (frequent burning, conversion to agriculture, fragmentation by road construction, compaction. of peat, brick making and sand harvesting, channels for drainage and urbanization).
- Introduced exotic species (e.g. Nile Perch, *Mimosa pigra*, *Eichhornia crasspes*)
- Natural disasters (Storm / Floods, Diseases).
- Conflicts: (human/human and human wildlife)
- Unclear and conflicting inter-sectorial Policies and law enforcement problems.
- Lack of education and awareness (communities and leaders).

4.2.1.2 Mapping

The component in the 3 countries used different scales to map national wetlands. In Tanzania, satellite digital data was used to produce maps for the major wetlands and associated topographical features. (LVEMP, July 2002). All the maps and satellite images available. The area covered by the four main wetland types has also been established. (Buffering Capacity of Wetlands Study LVEMP 2001). In Kenya a map which shows the location and distribution of various wetlands of in basin was produced and includes maps of Dionosoiyet and Marula Swamp wetlands in Kericho and Uasin Gishu Districts in the upper catchments of the basin.. In Uganda all wetlands in the 15 districts were mapped and characterized, one general map of Lake Victoria wetlands in Ugandan is available. As a result of these processes by the Component, all the wetlands in the LVB area are now better known and the information form a valuable asset for planning and implementation of other future wetland projects by LVEMP II and other stakeholders. However, there is need to use similar methods and scales to map the wetlands in the entire region.

4.2.1.3 Buffering Capacity Sub-Component

Different approaches were used to study buffering capacity of wetlands in the three countries.

- In Tanzania the results of the studies conducted in 2001 are contained in a report which categorizes, classifies individual wetlands based on their buffering capacity, provides guidelines for wetland monitoring, , gives changes in buffering capacity caused by threats to wetlands and gives economic valuation wetland services (LVEMP, Dec 2001). During the study a computer package "**DUFLOW"** model for assessing buffering capacity of wetland systems was acquired and used.

- In Kenya the buffering capacity Kenya was studied in two wetland pilot sites Dionosoiyet in Kericho District and Marula Swamp in Uasin Gishu District. The results were valuable in developing and demonstrating a buffering capacity of wetland model (a computer package "**POND**" model) for handling different urban and agricultural runoff.

- In Uganda the Component generated and analyzed valuable data on buffering capacity of wetlands which yielded useful information for among others: better appreciation of the hydrology of wetlands; the application of GIS in buffering

capacity studies; and understanding the role of micro-organisms in the buffering capacity of wetlands.

- Whereas a significant amount of scientific knowledge has been generated in the three countries, the extent to which this knowledge was subsequently applied to influence management decision of Lake Victoria wetlands is generally limited at the moment.

4.2.1.4 Sustainable utilization and management Sub - Component

The sub-component has attempted to determine the economic potential of Lake Victoria Basin wetland products and develop management strategies for their sustainable utilization so as to demonstrate their wise use:-

- In Tanzania, studies on economic potential of wetlands were carried out leading to reports on negative impacts of livestock on wetlands caused by immigrant pastoralists in the two villages of Lamadi and Nyatwali studied. Other studies conducted in five pilot villages in Mara and Mwanza regions to determine the potentials of wetlands soil conditions and their agricultural potential for selected crops (LVEMP, December 2000). Another study on wetland macrophytes for their medicinal potential revealed that 31 plant species were used as medicine or for various domestic purposes by the local population (Lyaruu, Aug 2001).

- In Uganda three Dutch Consulting firms in collaboration with the Community Management Services (CMS) of Uganda analyzed Cost and Benefits (CBA) of wetlands and concentrated on valuing the present and future resources, in relation to wetland development scenarios, and estimated the investments needed to guarantee their sustainability (HASKONING, *et al*, 2001). Further studies on the production and marketing of wetland resources in Kabira Sub-county, Rakai District in Uganda showed that the benefits the communities derive from the wetlands included: water, fish, roofing materials and wetland resources for making products such as mats, baskets and carpets and trays which are sold mostly on the local market and a small proportion outside the community. The products mostly produced by youths (21-30 years old contribute significantly to the income and livelihoods of the people in that area even though, middlemen earned the largest income followed by craft makers and then the raw material harvesters. The study highlighted several marketing problems including low quality, limited markets, low and unstable prices, long distances to markets, and lack of collection centres which will need to be addressed in future. It was found that more efforts are needed to increase education and awareness and development of a management plan for the wetlands in order to realize better socioeconomic benefits and conserve the wetland ecosystems and its biodiversity.

- In Kenya a market survey of 3 wetland products (clay products, plant products and fish) was conducted covering 24 markets in 4 Districts within the Lake Victoria Basin (Busia, Siaya, Kisumu and Kisii Districts) in 1998. The study established that two plant species, *Cyperus papyrus* and *Phoenix reticulate,* are commonly used to make a wide range of products which are sold in local markets. It was also found that only two wetland fish species, *Protopterus aethipicus* and *Clarias gariepinus*, were

prevalent in the markets. Another market analysis of Lake Victoria Basin Wetland Products was done in the year Further, the component examined and determined the supply, demand and prizes of various wetland products. Generally, the study gave a clear picture of the great economic potential wetlands products have.

4.2.1.5 Knowledge, Practices and Attitude Surveys

- In Uganda, studies on the Knowledge, Practices and Attitudes (KAP) that targeted City Councilors in Kampala and communities around Sango Bay Wetlands revealed that the latter were quite knowledgeable about wetland conservation amongst Councilors (97%) and admitted the existence of a wetlands policy. Unfortunately, this overwhelming awareness is not being translated into action on the ground as evidenced by continued granting of property development leases in the urban wetlands. In Sango Bay communities, knowledge about wetlands was low but their attitude towards wetland conservation was positive, although affirmative conservation practices were hindered by poverty situation and lack of alternatives. In the local markets there was high demand for furniture made from cane of rattan (*Calamus deeratus*) especially in Kampala City. The source of the raw material, rattan cane, had traditionally been from the riparian forest patches in the LVB which have been extensively cleared leading to much damage of the plants as the demand for furniture continue to escalate. The Component has attempted to pilot propagation of rattan cane in an effort towards an integrated rattan cane production and conservation programme. A manual for rattan cane propagation has been developed and is being tested, within the Lake Basin. The local communities have shown good interests on this effort and participated by starting their own nurseries in 4 villages by planting both rhizomes and seedlings of rattan cane while other are attempting to rehabilitate wildlings in agroforestry settings.
- In Kenya and Tanzania, even if a large community members widely use wetland resources for farming fishing and production of wetland products, there has been a general lack of awareness and better knowledge on the need to conserve them before LVEMP I. However, during the project some selected pilot projects received good awareness creation and knowledge on the significance of such ecosystems and their resources. It would appear that more activities are still needed to increase the level of awareness amongst such communities and the national authorities. For instance in Kenya even, as LVEMP I was in progress one of the most important and pristine wetland, Yala Swamp was under threat for reclamation by a private developer having been sanctioned by the Kenya Government. It is worth noting however, that most wetlands around the Lake shores were intact. However conversion of wetlands into agricultural land (paddy cultivation) especially for those far from the lake shores (inland wetlands) was obvious phenomenon. But some indigenous is situ soil conservation practices *such as "ngitiri*" and rain water harvesting majaruba in Sukumaland if expanded could be valuable in conserving wetland ecosystems.

4.2.1.6 Community Involvement and Wetland Management Plans

- In Tanzania the Component has involved local communities in a range of activities (Musoke, June 2004) including development of River Simiyu Wetland Management Plans which is now awaiting adoption by the Magu district council before it is

operatinalized. On other wetlands namely Kitaji (Musoma) Rubana (Bunda) and Mabubi (Geita) community based management plans have also been initiated. Communities have also been involved in evolving strategies for community participation in sustainable use of wetland and pilot activities demonstrated to local communities in Simiyu, Rubana. In Nyatwali village in Rubana rehabilitate of the degraded wetland by planting trees are already in progress to supply wood products for community uses while the component facilitated a group of farmers from Ilungu village, Simiyu wetland, to practice sustainable agriculture and others trained on making improved handicrafts.

- In Kenya, Participatory Rural Appraisals (PRA's) were conducted in selected wetlands covering nine districts within the Lake Victoria Basin to highlight key problems facing different communities living around the wetlands, identify opportunities within the communities that could be exploited to alleviate the problem and propose specific interventions. The wetlands covered included Gomro (Bondo District), Okana (Kisumu District), Ombeyi (Nyando District), Sironga (Nyamira District), Siteko (Busia District), Matulo (Bungoma District), Yala Dam (Kakamega District) and Kamoson (Uasin Gishu District). Using the PRA tools community activities were pegged to specific periods of the year and are thus quite informative. The component has gained useful insights into and prioritized community's problems, basic needs and future resource expectations as well as roles played by different government departments and NGOs in such areas. Especially in Siteko, Sironga and Dunga Community Action Plans (CAP) was formulated and some of the mitigation actions included starting of small incoming generating projects, setting up wetland edge horticultural farms, fish farming and establishing tree nurseries among others. Although in Kenya no community based wetland management plans were formulated during the life of the project, guidelines for developing the same was given for two pilot sites by the SMEC Consultants who conducted the buffering study. This initiative should be built on and focus should therefore be directed towards this end to enable wetland managers make informed interventions.

- In Uganda, much work have already been done even before the start of LVEMP I. During LVEMP I the awareness creation and sensitization focused on the need for the wise use of wetlands especially use of school programmes, media, billboards and local drama. During the project a 3 part Wetland Management Plan was developed for adoption in various wetland sites. Part one contains the physio-geographical location of the wetland. Part two deals with management objectives and the conservation and management importance of the wetland. The last part covers implementation strategies and action plan. The plan spells out the significance of the wetland, its threats and actions that have been identified to improve management. Management plans typically cover 4 years and are revised at the end of the third year. Efforts were made to ensure that the management plan process was participatory and kept deliberately slow in order to reach consensus on critical issues and create a sense of ownership of the process and the product. Lake Nabugabo Community Wetland Management Plan is one such example.

Table 4.1 summarizes the different community projects implemented in the different

Table 4.1: Community projects to demonstrate wise use of wetland resources in the region.

Project #	Tanzania	Kenya	Uganda
1	Horticulture project at Ilungu	Siteko Wetland products and fish farming Project	Kasoga Kakuuto Aquaculture Micro Project
2	Handicraft work at Bubinza Village	Mubwayo - Bunyala Handicraft Cooperative Society	Kabira Wetlands Management Association (Drama, Mat making & Phoenix Planting)
3	The Restoration of Wild Date Palms (*Phoenix reclinata*)	Kamoson Spring Protection and tree planting Project	Bulungi Kwegatta Sunga Nabugabo (Craft making and farming)
4	tree planting pilot project at Nyatwali village in Bunda	King'wal Wetland Management Project	
5		Dunga Ecotourism Project	
6	5	Gomro Wetland Products and Catfish Propagation Project	
7		Neela Marachi Sofa Handicraft Project	
8		Dionosoiyet Wetland Conservation and SpringWater Supply Project	
9		Sironga Wetland Wise use / Conservation Project	

4.2.1.7 Other Organizations Working of Lake Victoria Wetlands

In the region three other LVEMP components namely Integrated Soil and Water Conservation Catchment Afforestation, Water Quality have strengthened the activities of the Wetland management Component (See Chapters 2 and 3 and for Water Quality Synthesis report). In Kenya all Components of LVEMP adopted the synergistic Focal Area Approach in the selected areas like the Nyando River Basin,

- In Kenya other non-LVEMP activities by some NGOs and other government departments such as listed below were involved in parallel wetland management activities with or without direct collaboration with this component:-
  - KIPRA – Eco-tools Project
  - ICRAF -Nyando and Yala Swamp Projects
  - Victoria Institute for Research on Environment and Development (VIRED) International Nyando Wetland Conservation Programme and (b) Constructed Wetland for treatment of wastewater from a sugarcane industry)
  - Friends of Lake Victoria (OSIENALA) – pilot Conservation and Rehabilitation of Yala Swamp
  - East Africa Inter-University Council - VicRes Funded Research Projects

- Kenya Wildlife Service (KWS) – Biodiversity Indicators for National Use (BINU) Project
- Egerton University (Finger-ponds Project) & theses research by other national universities and research institutes.

- In Uganda by the time LVEMP activities started, interventions in wetland management were being carried out under the National Wetlands Programme (NWP) with early support from the Royal Netherlands Embassy (RNE) and IUCN and later (now) by the Belgian Technical Cooperation (BTC). Some of the data and information gathered from NWP were subsequently used to facilitate the implementation of the Component. The relationship developed into a symbiotic one with the NWP also benefiting from the results of the Component's interventions through the buffering capacity studies and the sustainable utilization pilot projects. An interesting observation in the field showed that demonstration sites under NAADS especially for Kisoma, rakai district, were located close to those of the Component and NAADS may have taken advantage of dealing with communities already sensitized about conservation values. The East African Cross Border Biodiversity Project liaised closely with the Component in the Sango Bay area. A similar beneficial arrangement was with Nature Uganda. Furthermore, the Wetlands Management Component held closer relationships with some of the components under LVEMP I. The components closely related to the Wetlands Management Component on technical issues were: Water Quality and Quantity Monitoring; Land Use Management; Catchment Afforestation; and Industrial and Municipal Wastewater Management.

- Tanzania did not seem to have benefited from on going non- LVEMP wetlands activities in that country before the LVEMP I and therefore much still need to be done in Phase II. For instance much of the component work concentrated in Simiyu and partly at Geita, leaving out the vast but also threatened Mara River Wetlands and others in the Lake Victoria basin.

4.3 Lessons Learnt

Several lessons were learnt in each of the three countries, Kenya, Uganda and Tanzania (for national Details see specific Lessons Learnt Reports). The account below gives a summary of lessons that were common in the region:-

- **Project objectives, baseline information and design :** The LVEMP was the first multilateral environmental management of its kind in East Africa. The Project was complex and there were no reference points neither was there a Logical Frame Approach against which the achievements could be measured from the start. Consequently, the scope of the Wetlands Management Component did not benefit from a rational logical approach to the definition of the problems to be addressed. As a result, it is not clear how objectives were arrived at and performance and impact were difficult to determine. It is however, worth noting that at the planning phase of the project and inception the LFA may not have been in place and therefore not a key requirement. One of the obstacles encountered by the Component was inadequacy of

baseline information which resulted into much time being spent in generating basic information.

- **Allocation of Resources:** This Component though equally important did not receive similar weight and resource allocation as the **components on** water quality and fisheries. Little resources were put to deal with the upstream components such as Wetlands even though these latter became the main focus for the Buffering Capacity Studied by SMEC International.

- **Capacity Building from International Consultants:** The use of foreign consultants helped to generate information and new knowledge but little was done to ensure technological transfer to local personnel for them to be able to apply the new concepts in the management of the resources. For instance, modelling is an important tool in understanding the buffering capacity and management of wetlands but the one week training on the **DUFLOW model** in Tanzania*"* (LVEMP, July 2003), or the one day training on the **POND model** by the consultants in Kenya was not sufficient. Secondly as was the case in Tanzania and Kenya, it was quite apparent that the highly qualified initial team used to win the consultancy was not the ones who actually carried out the study. Future consultancies should target regional consultants as a first priority to ensure accountability and continuous technological transfer.

- **Maintaining "Lake Victoria Basin" Focus:** While focusing on the component objectives and activities on study sites / demonstration plots it is important to maintain focus of the project. Every information/experience generated from the pilot studies should be directed to application on a wider scale to solve a problems related to Lake Victoria Basin. So far not much of the data generated have been analyzed and applied for management of wetland ecosystems and resources at local, national and even regional context.

- **Application of Integrated Approach:** Wetlands are influenced by the delicate upstream-downstream linkages within the catchment which in turn affects the water quality and biota in the inland water bodies. An integrated approach that cuts across the components should have been adopted and relevant data from other components would be valuably applied to ensure integration in activities and management with ISWC, catchment Afforestation and the Water Quality Management Components. Also the work of the component did not draw experiences from and develop linkages with other related but non-project activities in the same area such as that of ICRAF, VIRED International, KIPPRA, KWS, etc or even from regional initiatives. In Uganda the component could have collaborated more with NAADS while in Tanzania no clear indication was shown on linkages with similar activities.

- **Buffering Capacity of Wetlands:** Different approaches were applied in the three countries. In Tanzania a DUFLOW model was acquired and used for simulating the buffering capacity of wetlands. In Uganda measurements were conducted in two pilot wetlands, one urban and one rural, but modeling was not done. In Kenya modeling using POND (Pollutant Nutrient Dynamics) software was used. It would have been

better if the approaches taken by the three countries were similar to enable wetland managers draw uniform management strategies.

- **Community Participation:** Pilot projects where appropriate tools were used to rally the community support and participation were very successful. For a community project to be successful the question of ownership is crucial for they should feel they own the project, understand that they need it and are part of the solution. The same projects must always be accompanied with relevant training financial inputs, incentives and enhancing co-management of the natural resources.

- **Degradation, interventions and policy:** The various interventions that included awareness creation, training, demonstration and piloting on best practices were important and appropriate but only targeted pilot sites and a small portion of the riparian communities of Lake Victoria Basin even though the wetland degradation continues. Although in Uganda wetlands policy already exists the same is urgently needed in Kenya and Tanzania. In Kenya a draft policy has been prepared and is awaiting cabinet approval. Apart from these initiatives there is need to come up with a LVB trans-boundary wetland policy from which Wetland Management Plans can be drawn. Today there are still area numerous sectoral conflicting government policies encourages which make implementation difficult. In the case of wetlands, previous government policies in Uganda for example allowed acquisition of wetland areas in urban centres, and the draining of wetlands for agriculture in rural settings. The current shift to the conservation of wetlands has, as a result, left the public confused or frustrated.

- **Fluctuation of Lake Victoria Water Levels:** Unprecedented recession of lake water levels observed since 2004 affected projects such as sustainable agricultural project at Ilungu in Tanzania and the catfish multiplication project at GOMRO in Kenya which could no longer draw water from Lake Victoria. It is important that when designing such projects to select sites based on historical data.

- **Environment Impact Assessment:** Several projects have been introduced in some important Lake Victoria Basin wetlands some of which have positive impacts to the riparian populations but negatively affect the target wetland ecosystems even through they may have been sanctioned by the respective governments such as the rice projects it Yala Swamp and Simiyu Wetlands in Kenya and Tanzania respectively without the desired EIA's.

- **The Role of Civil Society and Private Sector:** The role of the private sector in the implementation of activities was over-looked in LVEMP I. Yet, in many projects public-private partnerships have been shown to be effective. For example, it is possible that the Kasoga Kakuuto in Uganda Micro Project could have been more successful if entrepreneur John Sebutinde was given ownership of the management of the project right from the beginning. In Tanzania and Kenya no involvement of private sector or NGO was involved even some late attempts to involve only CBOs was done by some components.

- **Flow of Funds:** Throughout the lifetime of the project in Kenya, there was a problem of adequacy and flow of funds. This seriously affected time-bound activities and also the relationship between the component staff and the communities. The uneven flow of funds disrupted planning in general and scientific research in particular. In Uganda, whereas measurements for estimating buffering capacity were meant to be taken regularly (monthly), sometimes this was not possible due to delays in releases of funds. In Tanzania this problem was not reported during implementation.

- **Wetland Management Plans:** A comprehensive and bottom-up community based wetland management plan which are specific and implementable should be developed to chart out all the interventions to be carried out in wetland conservation and wise use activities. It must contain a concise description of the areas involved, issues in question, strategies and indicators for change as well as being accompanied with a suitable land use plan of the area. It should be supported by relevant laws and by-laws that would assist in the management of the wetlands.

- **Marketing Chains for Wetland Products:** Marketing chains for wetland products are not well developed in the region and was given no priority during LVEMP I even as most products were still poor quality and used too much wetland resources for too little financial returns. The common property resources nature of wetland products makes them suitable for generating capital needed to invest in other ventures. It is therefore important to assist the communities by providing training and demonstration of quality products and link conservation interventions to some immediate benefits which could improve their food security and standards of living.

- **Sensitization of Public and Policymakers:** Sensitization of all the stakeholders including the public and policymakers should be made more effective by using diverse channels for messaging like billboards, radio sports, drama, posters, etc

4.4 Challenges in Wetlands Management

- There is lack of clarity on land ownership and tenure in the three countries. Perceived free access to land on a "willing buyer willing seller" basis and free choice of land use combined with a single-use philosophy has exacerbated wetland loss and degradation.
- A major obstacle in the implementation of wetlands management plans is the absence of land use plans especially in the areas under major threats. Reclamation of wetlands for agricultural development is the biggest threat to national wetland conservation and management.
- Inadequacy of legal provisions, incentives and disincentives with regard to the sustainable wetland conservation and management can also lead to uncoordinated and unsustainable land use and sectoral conflicts. There is also weak enforcement of existing laws and regulations affecting wetlands management
- A wide variety of education and awareness materials are available in different institutions in various forms and formats. Much of the education and awareness information materials are in hard copies and available to the users in form of books, brochures, pamphlets and newsletters; in other places the information is in

audiovisual forms and not available to most of the stakeholders especially the local community. Since most wetlands occur in the rural areas, some form of extension services should be put in place to create awareness in these areas. These should make use of print and mass media, and deliberate inclusion of wetland management and wise use principles in both curricula and extra-curricula activities of formal school system. International Wetland Day celebration should be used to create awareness to the wider public.

- Provision of alternative livelihood is key to sustainable wetlands management.
- Development of management plans for trans-boundary wetlands is extremely important as a first step towards sustainable wetland resource conservation. Local communities from both sides should be involved to ensure a shared vision and national commitment.

4.5 Replicability of Component Activities

The following activities of the component up scaled and replicated in other areas to demonstrate their successes for conservation, wise use and benefit other stakeholders in the region:-

- Techniques for determining the buffering capacity studies and methods for estimating maximum sustainable yield to determine harvest rates of products such as rattan cane, papyrus and *Phoenix* palm can be used to characterize other wetlands.
- The methodology that was used in carrying out the cost benefit analysis of five typical wetlands in the LVB in Uganda and tools of participatory rural appraisal (PRA); knowledge, practices and attitude surveys; and demonstration sites in Kenya .
- The pilot activities for the sustainable utilization of wetland products need increased attention and demonstration for a longer time to enable scaling up and replicability.
- The idea and procedures for developing a community wetland management plan are noble but the ones that have been developed particularly in Uganda and Tanzania need testing and approval from the government before they can be made operational but ones successful, they may be up scaled and replicated will community involvement at all levels.
- The synergistic approach of all the components addressing land use issues, wetlands and water quality particularly in Kenya can be replicated in the other countries.
- Although micro-projects were only used in certain wetland areas their impacts have enhanced community participation in wetland management and awareness. This is a powerful incentive that should be used to empower the communities to take charge of sustainable wetlands management. In particular quality wetland products that minimize the use of wetland resources, encourage their conservation and optimize benefits need support through micro-projects initiatives. Other incentives that meet similar purposes should be innovated, piloted and if found successful used.

4.6 Conclusions

- The wetland component is an important part of LVEMP I and will continue so in future projects on the Lake's environmental conservation and development. Its initial research and implementation has helped to generate important baseline information and demonstrate some valuable pilot activities that may be used for pointing priorities for wider interventions. But the project interventions could have been better planned based an LFA and baseline data and

in closer collaboration with other components of LVEMP I as well as non-participating but relevant key institutions in government departments and NGOs. In this manner faster demonstration of best practices, awareness creation, wider geographical scope and sustainability can be achieved by better empowering of all stakeholders. All the good information that has been generated by WMC and other components need now to be synthesized across all components and channeled to the respective organs for implementation in a wider context.

- Community awareness and participation was a key activity in the Component and in the pilot areas good awareness was created on importance and wise use of wetland resources in the lake basin. However, it is worth noting that only a few pilot areas were targeted by the component due to limited resources and the pilot nature of LVEMP I which naturally has numerous constraints. But in all the countries the work of the component at least in Uganda was able to demonstrate that investment in wetland is cost-effective and profitable.
- Wetlands management is a young and unique area which cuts across several disciplines. Its understanding and implementation demands a multi-disciplinary / multi-sectoral approach through noble approaches such as promoting quality and beneficial wetland products, use of conservation driven inceptives such as relevant micro-projects, strengthening the capacity of wetland managers and communities and non wetland activities that target empower the community to alleviation poverty and participate in sustainable management.
- The Component carried out a number of successful activities within the Buffering Capacity Sub-Component and the Sustainable Use Pilot Projects mainly through international consulting firms who reported considerable achievements but created little time to demonstrate and train local experts so as to enhance continuity. And successes.
- The component contributed significantly to capacity building on wetland research and management at higher level regionally. Several people obtained M. Phil./M.Sc. and D.Phil. degrees on wetlands and there were numerous short courses on the same locally and outside the countries. But human capacities are still not adequate to help bridge up the high turn over of project staff and build a critical mass of active and purposeful wetland experts in the region.

4.7 Recommendations and Way Forward

- A Logical Framework Approach is a useful planning and monitoring tool and although it was not applied by the Component during LVEMP it will be necessary for LVEMP II and other related projects, and should therefore be developed at the onset of the project.
- A Cost Benefit Analysis (CBA) successfully carried out in Uganda shed some light on the values and profitability of investing in wetland conservation. The tools can now be applied to wetlands in Kenya and Tanzania, and extended to other wetlands in Uganda. However, there is need to develop and integrated and more robust CBA models such as testing the applicability of the Threshold 21 (T21) Model developed by the Millenium Development Project.
- Investible activities that add value to wetland products should be identified and their potential fully tested and exploited for sustainable management of wetland ecosystems and employment creating. Such may include use of papyrus for pulp and

paper making, ecotourism, medicinal values of plants, aquaculture, raising ducks and game ranching. But its is necessary to prepare suitable policies and guidelines for wise use and enhancement of the sustainable management of wetlands. Similar attempts have been demonstrated in Uganda but non in Kenya and Tanzania.

- In the design of the Wetlands Management Component for LVEMP II extra emphasis should be placed on the development of alternatives to wetland products. There should also be provision for capacity building in wetland well harmonized policies and law enforcement that empower communities participation, incorporates indigenous knowledge, imparts skills and entrust them with responsibility and ownership. This should be strengthened by develop a community based cost effective guidelines for monitoring ecological changes in wetlands.
- New wetland management initiatives should enlist the support of other stakeholder including private sector and NGOs. In particular focus should be on Cross Boarder wetlands and develop management plans and strategies for the shared resource. New and on going development protect that may impact on wetland ecosystems must be subjected to proper Environmental Impact Assessment and Audit in accordance to the NEMA/NEMCA requirements in each country. A regional guidelines for Management of Lake Victoria Basin Wetlands should be developed to help harmonize the activities and reduce any threats and cross-border conflicts on resource use.

Chapter 5:

Water Hyacinth Control Component

5.1. Background

The majority of the population in the Lake Victoria Basin LVB) depend on agriculture which is highly supported by the fishery for their livelihood. The Victoria is a major source of water valuable for domestic, livestock, agriculture, recreation, tourism, the fishery, irrigation and mining much of which have contributed to environmental degradation of the LVB. The invasion of Lake Victoria and other water bodies in the basin by water hyacinth (*Eichhornia crassipes*) introduced an additional dimension to the degradation of aquatic ecosystems of the basin. Water hyacinth, a free-floating freshwater weed often found in lakes, rivers and ponds, is native to South America was first reported in Lake Victoria towards the end of the 1980s, and by mid-190's became the single most dominant invasive aquatic weed in the lake, responsible for serious socio-economic and environmental problems in the three riparian countries. This species was first gazetted as a noxious weed in the then Tanganyika when first spotted in Tanga region along River Sigi in 1955 and later in River Pangani in 1964. Water hyacinth invaded Lake Victoria in the late 1980s. By 1995 it had spread to cover 700 ha of the shoreline including bays and gulfs known for their abundance of fish resources. Peak infestation was estimated at 2000 ha by 1998 **(LVEMP 1999).** In Tanzania, water hyacinth occurs in three administrative regions of Mwanza, Kagera and Mara which support the livelihood of an estimated 6.34 million people (roughly 19% of Tanzania mainland population – 2002 census). Although the weed had reached its peak infestation in some water bidies such as Lake Kyoga and the River Nile by 1988 it was not reported in the Ugandan sector of the lake until 1989 (Tailor 1993). So far the highest cover estimates for the weed in the Ugandan portion of the lake was 2200ha for the stationary mats along the shore and about 1800ha for the mobile mat mainly resident in semi-protected bays. In Kenya the weed was first reported in Lake Naivasha in 1982 before it appeared in Lake Victoria (Kenya) in 1992 followed bya a rapid speread in other water bodies in the basin. The peak infestation in Lake Victoria by water hyacinth occurred in November 1998, when the weed was reported to cover approximately 17,000 ha by Albright, Moorhouse, and McNabb (2002) but estimates by the LVEMP Water Hyacinth Control Component put it at 6,000 ha. Following successful control of the weed the infestation declined to about 500 ha by February 2000. However, the weed has caused adverse socio-economic and environmental/ecological impacts in the region which necessitated interventions by the LVEMP's Water Hyacinth Management Component through biological control, manual removal and mechanical harvesting a combination of which proved fruitful in controlling the weed to below ecological and socio-economic threshold level. But the use of two weevils *Neochetina eichhorniae* and *Neochetina bruchi* as biological control agents proved most successful in managing the weed between March 1997 and 2005. The purpose of this consultancy was to assess the activities and provide lessons learnt from implementing the water hyacinth control activities the results of which are contained in this chapter.

5.2 Finding and Lessons Learnt

5.2.1 Findings

5.2.1.1 **Earlier Efforts to Control Water Hyacinth in Lake Victoria**

Water Hyacinth was scheduled as a noxious weed by a Tanganyika Government Ordinance published in December 1955. Lockley and Turner (undated) recommended containment and eradication of the water hyacinth infestation in Sigi and Pangani Rivers through the use of the chemical herbicides, 2,4-D and MCPA through two FAO and funded Technical Cooperation Programme projects (TCP/UGA/9153). The situation of water hyacinth infestation in the Ugandan part of Lake Victoria, and in Lake Kyoga was assessed and recommended initiating immediate control measures at the National level and preparations for regional level cooperation. This lead to the development of a national strategy to manage the impacts due to water hyacinth that began between 1992 and 1993 following which FAO agreed on a programme of assistance with the governments of Kenya, Rwanda, Tanzania and Uganda, to run from April 1993 to March 1995 (TCP/RAF/2371) (FAO, 1994). This project defined the extent of water hyacinth infestation as at May 1993 and outlined its major threats and proposed biological control using *N. eichhorniae, N. bruchi* (both weevils), and the moth, *S. albiguttalis* as the primary control methods while advocating for immediate physical (manual) control at several strategic sites on the lake. Through this some 14 people were trained on weevil identification, handing and rearing and water hyacinth control. Other efforts to control water hyacinth included a GTZ funded project, and the passing of legislation by the Kenya Government (CAP 324 of Plant Protection Act). Based in the severity of Water hyacinth infestation during this period weed control activities were more intensified in Uganda than in Kenya and Tanzania. Earlier research and monitoring of infestation dynamics of water hyacinth in Uganda yielded valuable information on distribution patterns, preferred habitats, factors that was late used to initiate control work in the other two countries..

5.2.1.2 **Water hyacinth Control Component activities and achievements**

Between the onset of the LVEMP I in 1994 and 2003, the project achieved considerable progress in controlling the weed in the Lake and surrounding water bodies. Overall the control initiatives of the component was declared effective in 1997.

a. Mechanical and Manual Control:

- The approaches to mechanical removal was cautious in Kenya and Uganda due to its high costs, and that earlier attempts to use mechanical harvesters in Uganda were less successful. Therefore only specific sites were targeted by this method. Development of institutional arrangements for management of the weed started in 1992 when high level technical committee (NTCW) involving representatives of key government departments, parastatals and private sector was formed in Uganda.
- In Kenya, equipment for the manual removal of the weevils and protective gear was distributed to 12 beach communities in 5 districts that neighbour the lake and consistent manual removal efforts were made at some 4 beaches. Assessment of

manual removal activities indicated that 50% of the communities were consistently utilising the equipment provided for manual removal of the water hyacinth. Aquarius Systems of the U.S.A. were contracted through World Bank funding to remove 1,500 Ha of water hyacinth in Kenya in 1998 at a cost of US$1.3million but their impact remain questionable.

- In Tanzania, following sensitization by WHCC staff, communities were motivated to participate in manual removal of water hyacinth to clear beaches along the lake for fish landing, and to increase access to water for domestic and agricultural needs. Physical removal efforts were carried out by communities in close collaboration with a local NGO (LANESO) and Beach Management Units (BMUs), The Component provided working tools such as wheel burrows, rakes, safety jackets, cutlasses, forks and other small hand tools and some 530 strategic sites such as landing beaches, water intake and ferry landing points have been cleared of the weed .by manual removal but it is difficult to quantify this achievement in the absence of baseline data to show the original status. Members of BMU were also trained to conduct regular surveillance of the status of water hyacinth in the lake near their homes and working areas.
- In Uganda support manual removal of water hyacinth was successfully carried out through community participation. Community sensitization was undertaken to enhance participation. Hand tools, protective gears, and sensitization messages (printed on T-shirts and caps) were distributed as Government input. Manual removal kept most small and medium sized landing beaches free of water hyacinth. The Component provided some operating funds for mechanical weed extraction at Owen Falls Dam on the river Nile and the Wagon Ferry Terminal at Port Bell in inner Murchison Bay that lead to temporary but essential relief from the impacts of water hyacinth.

b. **Biological Control efforts**

- **Mass raring and releases of weevils:** Regional consent to rear and release the biological weevils into the lake was obtained in 1995 after detailed studies to show specificity of the two species on water hyacinth. Mass rearing started earlier in Uganda, while in Kenya and Tanzania mass rearing and host specificity tests were conducted at KARI's Miguga and Kibos stations and NBCC in ARI at Kibaha respectively. In the three countries the component established successful institutional and community based mass rearing units at different sites along the lake and in schools. In Kenya 18 weevil rearing units were set up compared to 12 in Tanzania
- In Kenya for instance adult weevils and infested plants were released at 27 sites around the lake between January 1997 and August 1998. Up to 2005, 4.3 million weevils were estimated to have been reared and released. This was boosted by early releases in Uganda and the weevil populations on the weed rose quickly in the lake. In Tanzania it is estimated that by June 2005 approximately 200million weevils of both species were reared and released into the lake by the three counties. In Uganda .some 12 more weevil rearing stations were established, 60 fishermen and fisheries extension staff trained, community participation in production and release of biological control weevils was promoted.

- The weevils were subsequently released in the Uganda's and Kenya's lake part between 1995 and in 1997 the initiative was declared effective even though funding only become available in 1998 when the peak infestation the Kenyan portion of the lake was observed covering approximately 6000-17,000Ha. But following the releases of the weevils the infested water surface was reduced to only less that 500ha by February 2000.
- The recent resurgence of the weed on several parts of the lake may have been due to the sinking of the water hyacinth mats which led to the loss of weevils and continued inflows from River Kagera and other hotspots. This phenomenon require stepping up of weevil mass rearing and releases across the region.
- Other main achievements reported include established control capacity at grassroots, national and regional levels for manual removal and bio-control, established a regional surveillance system, approximately 80% weed control, identified and mapped hotspots, available population of weevils for enhancing control and established mechanisms for regional collaboration in water hyacinth research, surveillance and control.
- The moth *Sameodes albiguttalis* was also imported and released in Kenya, but failed to establish while *Orthogalumna* mites were also imported, released, established well and continue to exert pressure on the remaining and new weed infestations. Research on mycoherbicide development was undertaken in Kenya and Uganda and potential fungal pathogens have been isolated but not released.
- The overall output was enhanced distribution; establishment and population build-up of biological control weevils in Lake Victoria followed by rapid decline in the physical condition water hyacinth plants where the species N. *eichhorniae* constituted over 70% of the weevil population and effects significant biological control on water hyacinth biomass that lead to the **m**ass collapse and sinking of the weed biomass in the lake during the last quarter of 1998 and after.
- All three riparian countries (Kenya, Tanzania and Uganda) credit the integrated approach to water hyacinth control and in particular, biological control using Neochetina weevils with the control of water hyacinth (especially the mobile component) on Lake Victoria. The weevils however failed to establish and build effective populations on water hyacinth in riverine environments such as River Kagera and the lower zones of river Mara and other nutrient rich habitats.

c. **Chemical Control Efforts:** A task force was formed to review the merits of using chemical herbicides under the aegis of the water hyacinth control components in the three East African countries. Their recommendations resulted in rejection of the use of chemical herbicides, even as an emergency control measure.

d. **Contribution of ecological succession:** The research sub-component of the WHCC in Uganda attributed the control of most (over 80%) of the stationary water hyacinth mats along the lake shore in Uganda to the natural process of ecological succession. The climax vegetation in the succession was often hippograss (*Voccia cuspidata*). At peak infestation stationary water hyacinth

cover in the country was estimated at 2200ha and mobile cover mostly resident in semi protected bay was 1800ha.

e. **Factors enhancing infestation and persistence of water hyacinth**:

- **Nutrient Loading**: In the three countries, studies on nutrient and sediment loading from different land use activities in the catchments were being conducted in collaboration with the Soil and water Conservation Components. In Uganda, the research on the role of nutrients in the proliferation of water hyacinth was carried out by the In Tanzania, the research on nutrient loading has been conducted by the water hyacinth component.

- **Water Hyacinth Hotspots in the Lake:** A total of 36 hotspots were mapped of which 13 were from Uganda, 7 from Kenya and 16 from Tanzania. River Kagera, a major hotspot is shared between Tanzania and Uganda. The existence of water hyacinth hotspots is mainly caused by nutrient enrichment especially nitrogen and phosphorus mainly from atmospheric deposition, municipal and industrial effluents and agricultural practices in the catchments. Regionally other hot spots for water hyacinth have been identified in the floodplain wetlands and in slow flowing parts of rivers within the Lake catchment such as Nyando, Sio, Nzoia, Mara, Kahororo, and Kanoni. Heavily infested small water bodies and satellite lakes are also sources of the weed. The weed is moved up the river systems from the lake by winds during periods of low water flow in the rivers and by human, birds and animal transport either deliberately or inadvertently a situation that poses a challenge to future control effort, especially when seeds or plants that are without the control agents, are transported to new locations where the weevils are absent.

f. **Occurrence of Other Invasive Aquatic Weeds**

- Opportunistic successional infestations of indigenous water plants usually occur in stationary water hyacinth mats. The climax communities are often dominated by hippograss (*Vossia cuspidata*) or Cyperus mundtii. In some locations papyrus (*Cyperus papyrus*) extends the succession. If formed along the lake or river, such successions are temporary and eventually dislodge and become floating islands settle at beaches and in bays. They eventually disintegrate under the forces of the lake or river.

- Some native water plants such as Najas horrida, *Trapa natans*, *Hydrilla verticillata*, *Pistia stratiotes*, parrot feather and Azolla sp were observed to replace .water hyacinth especially in shallow water. Some of the plants are associated with serious socio-economic and environmental impacts requiring detailed study of their prolific tendencies and associated impacts. .

5.2.1.3 **Research, monitoring and information dissemination**

- Information generated from research in Kenya, Uganda and Tanzania have helped in the understanding of the biology and ecology**,** infestation dynamics and ecological and socio-economic impacts of water hyacinth but many gaps still remain unattended and more detailed research is required during Phase II of LVEMP.
- It has been observed that water hyacinth exhibits three polymorphic forms as influenced by water quality and quantity including varied levels of environmental Phosphorus and nitrates for which more investigations are needed.
- Although negative environmental/ecological impacts of the weed have been outlined by the component and other researchers which included displacement of biodiversity and smothering of feeding, breeding, nursery habitat and refugia of fishes, sufficient well researched data is not available to support such reports.
- In the three countries, technical bulletins on water hyacinth and its control were produced locally; progress of the control efforts was also covered in newsletters, the print and electronic media. Posters on noxious aquatic weeds were produced, and the results of the on going water hyacinth control efforts were presented at national and regional conferences and workshops. A Surveillance system has been developed, though its implementation has been rather slow.

5.2.1.4 Regional coordination for management of water hyacinth

Regional information dissemination and exchange has been promoted through regional workshops and conferences, harmonized work plans and consensus. These have enhanced and strengthened collaboration between the countries and individual researchers and enabled faster information dissemination and exchange of experience gained during implementation of LVEMPI. This is valuable for future projects that target Lake Victoria including LVEMP II.

5.2.1.5 Capacity Building

- In Kenya, Capacity Building was undertaken at different levels: 35 local community members were trained in weevil rearing, harvesting, and release. Several beach communities were sensitised on water hyacinth control; support staff have been trained at different levels in accounts and supplies; short term training of staff in different fields has been done; 2 PhDs and 2 M.Phils have been trained. The research conducted by the PhD and MPhil students also added to the body of knowledge on water hyacinth control and impacts.

- In Tanzania, the academic standing of the core WHCC staff is one PhD, two M.Sc., 2 BSc and one diploma. The WHCC core members of staff who have been trained through the component include one member undertaking PhD studies, and two others who trained and completed M.Sc. degrees. A third M.Sc. sponsored through the WHCC was undertaken by a collaborator from the local government who is not a core staff of WHCC. The core staff has also participated in numerous national and international meetings as well as study tours. Selected members of impacted communities were trained in the care and maintenance of WRUs. Others were

sensitised on water hyacinth and its management through study/familiarisation tours and surveillance trips.

- In Uganda, communities were sensitized to appreciate voluntary management of water hyacinth; sixty fishermen and fisheries staff were trained as trainers on biological control (weevil rearing and field release) in their communities; stakeholders trained through information exchange and dissemination at national and regional workshops and conferences; hands-on knowledge of monitoring biological control process was given to technicians, support staff and BMU members; two M. Sc. and two Ph. D. degree holders were trained in country and overseas; information materials in the form of Journal articles, Theses, Conference Papers and Technical reports were produced and circulated. Information generated by the research sub-component of the WHCC in Uganda and that contained in the theses prepared for the award of degrees all add significantly to the fund of knowledge on water hyacinth management.

5.2.1.6 Community Participation

In the three countries, communities participated in water hyacinth control activities through manual removal of the water hyacinth, mass rearing and release of biological control weevils and record keeping of number of weevils and sites where released were made. Community ownership of biological control activities was however not satisfactory. There was an apparent need for motivation/incentive for the participants. This situation and community attitudes may pose challenges to the sustainability of community participation beyond project life.

5.3 Lessons Learnt

Control strategy: The water hyacinth control component adopted control measures that are environment-friendly, deferred the use of chemical herbicides, and promoted and promoted biological control as the best option, even amidst scepticism by the public and politicians from the region. Public opinion became supportive of the biological control efforts after the water hyacinth mats sunk between 1998 and 2000. The main lesson to be drawn here is that *a science led policy, executed by dedicated staff can yield positive results even beyond the initial expectations of the policy makers*. The communities were brought on board upon realisation of the benefits of the science led policy actions.

Community participation: Well planned sensitization of communities involving local opinion leaders and chiefs helped them understand the relevance of the interventions to control water hyacinth to their own livelihood and to improved environmental status of the lake area in general. That understanding plus the incentives of hand tools and protective gear influenced the successful community participation in manual weed removal. Various experiences with communities during the management of water hyacinth demonstrated that participatory planning is essential to successful and sustainable project implementation. But due to other issues including overdependence on the Component support and lack of appropriate incentives and management settings Sustainability of community participation may not be assured.

- **Biological control: The use of** *Neochetina* weevils were the most cost effective sustainable option for the control of mobile water hyacinth in Lake Victoria. Establishment of component and community based WRUs at sites along the shorelines was a good strategy which and improved understanding and participation of local communities on biological control efforts and achievements. It is evident that the weevils had the most devastating impact on the water hyacinth. They are highly effective and fairly easy to rear and release. Local communities can effectively participate in rearing and release efforts. The poor weevil establishment on rivers such as Kagera and Mara generally hampered the rate of success in the lake as fresh input of weevil-free water hyacinth from the rivers into the lake was often discharged from these rivers. Further studies will be valuable provide new techniques for weed control. Although mycoherbicide agents against the weed have been isotated and being tested care must be taken before their application on a wider scale to avoid their adverse effects on non-target and some times valuable vegetation.
- **Manual removal:** Community mobilization (including NGOs and CBOs), sensitization and facilitation with suitable hand tools and protective wear promoted effective voluntary manual removal of water hyacinth at small and medium-size landing beaches but relevant and sufficient incentives to sustain community involvement was not given. It appears that the project assumed that the community had a greater share in the infestation of the lake and should go on their own tom manually remove the weed.
- **Mechanical extraction and translocation:** Removal of water hyacinth from the Lake by mechanical tools was the most suitable option for relieving the weed biomass burden at strategic importance such as hydropower stations, river mouths, and ship terminals. Effective mechanical weed removal equipment were, however, often designed to suit a given site and task. Experience gained revealed that procurement, operation and maintenance of the equipment was highly costly.
- **Research, monitoring and information dissemination:** Valuable research findings generated from both postgraduate, component level and other sources, generated much data that enhanced systematic control and monitoring of the weed infestations and success of control in Lake Victoria. Such results have been presented in local and international workshops, published in refereed journals and presented in conferences. Monitoring and surveillance of water hyacinth infestations by visual inspection and aerial surveys has helped to determine areas that need urgent and priority attention even thou application of satellite image will be more efficient. Other research work and community reports also show that some previously rare indigenous fish species have found refuge under water hyacinth which seem to have promoted their resurgence following protection from increased fishing pressure and predation by the invasive Nile perch. From this revelation there is need to determine the optimum level of water hyacinth desirable for enhancing improved populations of such endangered species. There is the new view that eenvironmental and ecological dynamics partly contributed to the control of weed cover, an issue that need a more detailed study to maximize such effects in weed management.
- **Water Hyacinth Resurgence and other aquatic weeds:** Persistence and resurgence of water hyacinth at hot spots will continue to pose challenges to the control of water hyacinth especially if the conditions in such habitats favour luxuriate growth and

multiplication of the weed. Successful control efforts must also address the reduction of nutrient inflows into the Lake which seem to be more pronounced in the hot spots. This will require collaboration with agro-industrial firms, farmers and urban councils in the catchment as well as relevant line ministries whose contribution was not well captured during LVEMP I.

- **Succession processes:** Stationery large mats and biological control of water hyacinth led to proliferation of opportunistic successional infestations by indigenous aquatic plants the climax of which were often dominated by hippograss (*Vossia cuspidata*), *Cyperus mundtii*, and papyrus (*Cyperus papyrus*) which extends the succession process. If formed along the lake or river, such successions are temporary and eventually dislodge at beaches and in bays and eventually disintegrate. Other native water plants such as *Najas horrida, Trapa natans, Hydrilla verticillata, Pistia stratiotes*, parrot feather and *Azolla* sp were observed to replace .water hyacinth especially in shallow water. The process and impact of such processes were to studied in LVEMP I.
- **Capacity Building:** Capacity has been built up, both at the technical/scientific, and at the community level for mass rearing and release of *Neochetina* weevils into water hyacinth infested areas. The recommendation arising from this lesson is that there is need to maintain and enhance capacity, because of the cyclic nature of resurgence of water hyacinth infestations, and redeployment and natural attrition of trained staff. The firm orientation of the WHCC to hands-on capacity building produced a pool of trained human resource ranging from members of the local community to technicians and research officers.
- **Collaboration and information dissemination:** Information dissemination has been conducted through site visits, brochures and fliers, radio and television programmes, articles in the print press, scientific presentations, and internet communications. Linkages with regional and global organisations dealing with water hyacinth control have also served as information exchange avenues. These need to be further facilitated, maintained and enhanced. Collaboration with scientific and technical was done but not sufficiently so especially at the national, regional and international levels. The International Panel of Scientists envisioned in the Project Document could have served a monitoring and motivational role to spur greater realisation of project objectives than happened. In the next phase of the LVEMP, such a panel should be facilitated and given a greater role to play in reviewing and advising on the progress of the project.
- **Policy and legal aspects:** Each of the three countries has laws that prohibit the importation, planting, growing, and propagation of weeds under the respective Plant Protection Acts. However, invasive aquatic weeds will remain a permanent component of the ecosystems of Lake Victoria and other water bodies in the lake basin. There is no specific policy on invasive weeds. Existing laws are not adequately enforced.
- **Flow of funds:** The flow of funds has been a major constraint to the timely implementation of control activities. Some equipment which was supposed to come in the early stages of the project is being procured at the conclusion of the project. Steps should be taken to ensure timely and effective flow of funds in the next phase of the project.

5.4 Conclusions

- Although water hyacinth has been around for over 50 years its invasion and subsequent real threat in to the lake/s ecosystem and community livelihood started in 1990s when massive weeds entered into the Lake from River Kagera. During this time there was lack of proper control methods and substantive national and regional policies that would have contained the invasion and provided for management the weed and any other exotic and invasive aquatic biota.
- The proliferation and spread of water hyacinth occurred as a result of high nutrient loading into the lake especially in water hyacinth hot spots at which control strategies were targeted. There are still numerous such spots in and around the lake where future management of the weed will need to be continue and the control of high nutrient loading from both point and non point sources will be the key to proper management of the weed in Lake Victoria.
- Initial attempts to control the weed started in Uganda's part of the lake which was hardest hit and to make significant progress significant research and systematic monitoring was conducted in Uganda and later in Kenya which lead to a regional approach for controlling water hyacinth through LVEMP I. Other earlier efforts in this direction was conducted through support by FAO and other organizations.
- Control of water hyacinth in Lake Victoria was achieved through a combination of deliberate effort by man as well as by environmental and ecological processes that destroyed the waterweed. In particular the use of imported and locally reared biological control beetles, *Neochetina bruci* and *N. echhorhia* proved highly successful against the weed in the three countries. But todate control of water hyacinth in River Kagera and other affluent rivers and in satellite ponds have so far not been successful and pose major challenge for its future management. Therefore resurgence of water hyacinth in Lake Victoria is a growing threat.
- Other invasive weeds, which are rapidly increasing in population, pose additional threat to the environmental health of the ecosystem.
- Detailed research, management plans and funding will be required to contain water hyacinth and other invasive aquatic weeds below economic and ecological thresholds.

5.5 Recommendations and Way Forward

5.5.1 Control strategies

- Control of Water Hyacinth and other invasive require a well consolidated and uniformly coordinated regional management plan and control strategies involving the five riparian. The use of the beetles as the appropriate choice to be incorporated into a well researches and planned IPM strategy control strategy for the weed should be strengthened by up-scaling their rearing and intermittent releases into the lake. This process should be supported by manual removal and selective mechanical biomass extraction. Other bio-control agents that can supplement the actions of the weevils also exist but need to be researched further.
- Participation of local communities at all stages of project implementation has proved crucial to improve their knowledge, ensure ownership and sustainability of activities initiated under WHCC. In particular mannual removal through community

participation, supported by timely community mobilization, sensitization and positive incentives is recommended . The use of chemical herbicides to control water hyacinth and any other aquatic weeds should be totally discouraged to avoid possible hazardous effects on the biodiversity and riparian people.

5.5.2 Research, Surveillance, monitoring and capacity building

- Development/adoption or review of the control strategy for water hyacinth management should be based on relevant research information. Research on the management of water hyacinth should be widened to include other invasive aquatic weeds and be a continuous process as long as the weed remains a threat in the lake region. It is important to characterize nutrient status, sources, dynamics and influence on resurgence and proliferation of water hyacinth. The infestation dynamics and environmental drivers of some native and other exotic aquatic weeds which tend towards invasive status should be investigated. It will be necessary to examine the causes and dynamics of resurgence and proliferation of water hyacinth in Lake Victoria basin.
- Detailed studies should be conducted to determine the status and implications socio-economic and environmental impacts as a guide to selection of control options if needed. It will be necessary to also determine quantities, fate and environmental and socio-economic impacts of water hyacinth biomass from River Kagera constantly deposited into Lake Victoria. There is need to understand the roles of the communities and in particular factors that will motivate them to fully support and participate in the IPM of the weed.
- The weed continues to deposit large quantities of seeds into the lake, the fate and potentials of invasion through this mechanism should be investigated and monitored in various hot spots and small water bodies in the Lake basin.
- Ecological factors that might hinder establishment of biological control weevils in River Kagera and other hotspots should be determined and solutions including the potential use of other bio-control agents such as the mite (O***rthogalumna terebrantis)*** be examined for application against the weed in such sites.
- Capacity Building should be conducted at various levels ensured a critical mass of experts and ensure sustainable the control efforts.

5.5.3 Policy and legislation

- Strategies, options and programs to manage water hyacinth and other invasive weeds should be based on substantive policy supported by appropriate legislation. All the riparian countries in the region be advised to put in place legislation similar to the Plant Protection (Control of Water Hyacinth) Rules in Tanzania and they be committed to allocate sufficient resources for enforcement.
- Oversight of the component activities should be done by locally based panel of scientists to enhance the benefits to be generated by the component.
- Mechanisms to translate socio-economic findings acquired so far into policies should be instituted and in the future programme greater emphasis should be placed to support and empower community participation in control of water hyacinth and other aquatic biota that prove a threat to the lake ecosystem and livelihood.

5.5.4 Regional Collaboration and Funding

- Regional coordination and collaboration among components should be strengthened to facilitate handling of common problems in a coordinated manner. The tripartite (Uganda, Tanzania and Kenya) agreements on research to identify other potent bio-agents and developing a regional protocol for surveillance and early warning system for water hyacinth and other invasive weeds in the lake basin is essential in view of the steady resurgence of water hyacinth and the enhanced proliferation.
- Sufficient funding should be allocated from the respective national budgets and supported by donor funding to sustain control methods and support continued monitoring and evaluation of new invasions and resurgence. Special funds will be required for maintenance and operation of mechanical harvestors whose role will be important in strategic sites of the lake. Further procurement of aquatic weed harvesters should take into account suitability of the design for the intended site and operations and should be preceded by cost benefit analysis.

Chapter 6

Micro-projects Component

6.1 Background

The micro-project of LVEMP was initiated with a goal of providing incentives to the local communities around the Lake and its catchment 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 acess to natural resources as a result of restriction of LVEMP.

According to the project document, funds' totaling about US$3 million was to flow through the regional administration of the three countries to support micro-projects in selected fishing communities. These were to comprise small investments, costing not more than US$15,000 each, in ground water supply, sanitary facilities, local roads, health facilities and seed funds for assisting fishing communities to adjust to new regulations such us those related to fishing net mesh sizes. Initially these micro projects were to address concerns directly related to the fisheries management and water quality while providing incentives to communities to participate in other components of the overall LVEMP project.

The Sub-component had three specific objectives:

- To build the capacity of local communities in community problem identification, prioritization and solving. This would also help the community to manage, maintain investments and apply lessons learned to future needs
- To improve the standard of living of participating communities especially the most vulnerable and disadvantaged groups.
- To encourage the communities to adopt environment friendly practices that ensures conservation of the lake ecosystem and its catchment.

The overall aim of this consultancy was to assess the work of the component so as to prepare a "lessons learnt report" on micro projects that would inform future interventions and contribute to decision-support mechanisms.

6.3 Findings, and Lessons Learn

6.3.1 Findings

- Micro-projects was a subcomponent of LVEMP I which was conceived and implemented after the project inception to contribute to improved standard of living and facilitate appropriate community participation in component activities.
- The activities in micro-projects were also intended to influence behaviour patterns in favor of conservation and sustainable use of resources in the lake basin.

- The component was planned and implemented in a hurry and without clear need assessment, baseline information and logical framework analysis (LFA) resulting into lack of clarity of performance indicators and no proper guideline manual for implementation.
- The management structure for the various micro projects stemmed from the grassroots represented by Village Project Implementation Committees (VPIC) in Tanzania, PMC Project Management Committee and Catchment Committees (CC) in Kenya and Community Project Implementation Committee (CPIC) in Uganda. They wrote and submitted proposal, mobilized community for 10% contribution, identified contractors, and construction sites and later carried out procurement and wrote accountability reports for LVEMP. Certain variations occurred in the management committees for instance in Kenya and Tanzania the BMUs doubled as PMC even through in some cases they paid a different role. These committees managed funds for micro projects for their group members.
- Some groups were formed during and after community awareness meetings and community mobilization by the Component personnel some groups had been existence even prior to LVEMP its self. The latter had strong self-help group with very active implementation committees the performance of which depended on their leadership. While some committees received basic training on project and financial management and were empowered and well prepared to manage micro-projects other were not.
- At a higher hierarchy District Micro Project Steering Committee (DMPSC) were formed in some riparian districts in Kenya and Tanzania while in Uganda there were DRC in being project requirements. These committees had a membership of 8-10 depending on the country and their role was to provide oversight and technical support. Generally however, the level of facilitation by such committees determined the level of involvement in micro-project affairs even through the composition of these district committees were elaborate and quite effective.
- In Kenya, although the micro-project received considerable support and were popular with communities and local leaders alike and should continue to be funded in LVEMP II under their coverage was limited to only a few districts and especially in Kenya some committees were not sure of the limits of involvement probably due to insufficient sensitization and training. This made some to feel that they were needed for approval or signatures as or when required. As a result there is need to adopt strategies that will create more involvement amongst all cadres of committee members including officers in whose docket the micro project directly falls e.g. health officers, roads engineers, etc. In Tanzania the operational manual clearly spelt out the duties and responsibilities for the DMPSC members. There is need to harmonize the operational manuals for the countries and in line with other working manuals. Another problem noted in Kenya and Tanzania was the very high staff turnover of the district heads and hence the need for secondment of staff who would therefore stay longer to supervise and monitor project progress.

- Where the community had freedom to choose their need driven project, plan and implement them community ownership was implied. Especially projects that addressed income generation (IGAs) there was a high sense of ownership as opposed

to where projects were imposed, neither need driven nor IGAs. Where PRA, proper sensitization and awareness were done enabling community participation in initiation, design and implementation there is high sense of ownership. Service provision projects such as sanitation and clinics posed a challenge on ownership when they had to be handed over to the government for sustainability especially government participation was not solicited and ownership indicators not well established.

- A measure of the degree and nature of community participation was associated with their ability to contribute in labour, kind, cash, etc 10% for Kenya and Uganda and 15% for Tanzania of project cost to enlist commitment, interest, ownership and certain degree of cost sharing There is progress towards harmonizing such contributions across the components and the region so that LVEMP will have a general standard. The communities had to meet and decide on withdrawal of funds and approve budgets. In future the project should be cost and value the community contribution that come in other forms apart from cash.

6.3.2 Benefits

Micro project subcomponent yielded some results the benefited communities generally in the region or that were specific to riparian countries and districts.

- ***Provision of Employment***; for example some health facilities have employed Community Health Workers (CHW) and water projects have employed water managers and technicians.
- ***Increased expertise and recognition***; the districts have recognized the projects and communities that have implemented them as important development partners and are often invited for meetings, seminars and facilitation nationally and regionally. Members of VPIC, CPIC and PMC and CC and communities gained both managerial and technical skills in leadership; financial management and record keeping and which have been used even in personal enterprises.
- ***Improved access to social services*** such as education in Uganda and Tanzania leading to increase in school enrolment, more children accessed education. Improved access to health leading to reduced distance to the nearest health, availability of relatively cheap medicine facility while some of the dispensaries also organize sensitization on good hygiene practices especially those near beaches and awareness campaigns on HIV/AIDS. In Kenya the VCT services have also been brought closer to the beach and general fishing communities. There is improved accessibility to water resulting to reduction in time spent collecting water by women and children and more time available for children to go to school and women to do other activities.
- ***Accessibility and mobility*** through improved rural access roads that have resulted into increased traffic.
- ***Improvement human health***. New health and sanitation facilities as well as protected springs have enhanced control of several killer diseases such as cholera, dysentery, cough, measles and tetanus and in some cases some have translated into better income generation for the group members. Improved cleanliness of the beaches has resulted in resumption of fish export to the EU.

- ***Change in attitude and behaviour*** for example health-seeking behaviour where health facilities were put up especially MCH and utilization of latrines where improved sanitation facilities were made availed a situation that has created a healthy working relationship with some government departments such as fisheries department at the beaches and markets.
- ***Group and community cohesion***; Where micro-projects have been successful there is a strong sense of community identity, working as a group, developed sense of project ownership and the project site serves as a meeting and training venue for community.
- ***Improved security*** due to fencing that is much needed in the beaches especially at this time for fishermen investing heavily in the recommended net mesh size for conservation of fisheries resources.
- ***Better income and environmental protection:*** In Kenya Micro-projects have improved income and environmental protection especially where tea/tree nurseries have been planted and selling are being sold by the groups. Some tea planted on steeper part of the slopes thus helping to reduce soil erosion and in the case of tree planting better environments (improved catchment afforestation) are being created and bee keeping has picked up as an IGA. Because of good entry, mobilization and exposure awareness the results have been positive in the upper catchment and along the watercourse and downstream and the concern on the effects of human activities on the environment may improve in the long run. Some of the trees planted around homes have provided materials for building, and fencing as well as source of fuelwood.
- ***Sustainability:*** The two most important elements of sustainability are stakeholder ownership, and provision for fiscal continuance. Projects that address income generation have created a base for sustainability since they address both poverty alleviation and environmental conservation. Where there was a highly participatory mode of project preparation through PRAs and also high level of involvement/participation in implementation has provided ownership. For the service provision projects, eventual collaboration with the ministry of helps provide for way in providing sustainability.

6.4Lessons Learnt

6.4.1 Crosscutting Issues

- Planning and involving community participation and district leaders is critical to management and sustainability of all micro-projects. It is important to understand the community criteria, consider socio-cultural issues and indigenous knowledge for nominating leaders, identifying needs and priorities, planning, capacity building and determining factors that might hinder or enhance successful, continuity and sustainace. Community contribution is an excellent practice but the process should help people appreciate and value their input and not a burden.

- It is important that all public service projects receive technical guidance and approval from qualified personnel. Although the community approach was good for micro-

projects, there was need to link them to the District from inception. Income generating micro-projects were stronger and cash seems to be the gluing factor.

- Communities proved that they could identify their problems and develop plans and the anticipated benefits are key to sustaining community interest and participation. Channeling financial support for project implementation is cheaper, more/cost effective and straight forwards, creates confidence and trust than where contractors gave quotations and their costs were usually quite high and inflated.

- Project or programme success depends on how well the communities are empowered to freely make choices, plan and implement and community perceptions and linkages with other development agencies are important in the achievement of designed objectives since it is difficult for some projects to excel in isolation of the general development arena. For instance where district officials did not give fully support due to lack facilitation, negative attitude or late involvement little success was achieved even though project money was given to the communities. Therefore, district committees should remain the best option for technical support and backstopping. In such initiatives it is also critical to define well the roles of each stakeholder and clearly distinguish between the community and ownership issues so as to clearly understand the nature and scope of community and beneficiaries.

6.4.2 Lessons learnt in Tanzania

- LVEMP worked best where government decentralization has taken place and at that level involving government decision maker is vital to the success and sustainability. Further community members should be encouraged to learn skills for identifying key issues and develop own solutions. In Tanzania, community micro projects allowed residents to put theory into practice and see some material results.
- With the current multiparty politics and lack of civic education among communities, it is important to bear in mind that there are areas where party politics are prevalent among certain opposing communities that could sway the direction and hence success of a micro-project. Therefore, all key stakeholders should be made well aware of the objectives, details, target groups, output and benefits of the proposed project.
- In Tanzania the best micro-project is that which addressed economic well being and fully involve participation of target community. Thus most such Micro projects have resulted in environmental awareness and contributed to improve environmental practices such as tree planting in schools, cleaner beaches etc. In general micro projects have boosted public understanding and appreciation of LVEMP environmental management although some negative feelings can still be found in fishing communities. For instance, the requirement that women should be members of the VPIC with veto power in financial matters has helped in transparency even though some communities do not seem to understand such a necessity. In some areas social-cultural norms and taboos have tended to create barriers for successful implementation and are important aspects to be considered in micro project participation.

6.4.3 Lesson Learnt in Kenya

- The trans-district boundary nature of LVEMP funded micro project creates a room for addressing the environmental issues in a discrete ecological unify in a basin-wide perspective wherever they are environmentally focused. It was also instrumental for involving community participation in jump-starting the development and environmental conservation processes. In Kenya the adoption of the Focal Point and Catchment Approaches and Project Management Committees (PMC) helped the communities to better identify priorities that are linked to project goals.
- The project decided on uniform funding even for varied need and inputs a situation that discouraged participation in some projects which stalled due to insufficient funding. Therefore, funding levels need to be tied to the nature and character of the project to be funded:
- At Component level varied successes were recorded in implementing micro projects but the distribution of such projects were too skewed in favour of certain few districts while the majority had only one or nil. Under such situations the overall significance of micro-projects have not been felt and appreciated in may districts and the expected changes in behaviour patterns in favour of environmental conservation and improved livelihood has been hard to realize and explain.
- Micro-projects were conceived, planned and implemented in a hurry without baseline surveys, clear project indicators made self and global assessments. Initial selection of pilot projects in the riparian districts was restricted to community service projects which are not income generating. In some cases political considerations and lobbying contributed to citing Micro-projects where they are today and the intended benefits may not have been realized.
- Despite the restrictions stated above, Micro projects remain popular with communities in districts where their success and value have been demonstrated positively. In some projects focusing the micro-projects programme on activities that mirror the environmental conservation and resource utilization objectives of LVEMP is being lost.

6.4.4 Lessons Learnt in Uganda.

- Community Participation in development is an empowering and more effective way to deliver community development initiatives. Therefore, detailed sensitization and spending quality time on problem analysis and prioritization is central to the success of the subsequent steps. Although communities have capacities to manage their livelihoods, they often lack capacity for projects new to their experience such as was conceived in the case of certain micro-projects.
- For success and sustainability, winning the support and confidence of local leaders in vital since their lack of sensitization and involvement may either support or frustrate new development efforts.
- Ownership and freedom of choice are essential for the continuity of the projects. To achieve this, detailed understanding of the community and its dynamic is essential for successful selection and design of community micro-projects. Once sensitized, convinced and committed about the services, people are more willing to pay for services they need. Further, expected incomes from user fees played a major part in the motivation perhaps more than sanitation concern. This is some times linked to

certain cultural norms and religious practices that should well understood and catered for project planning, design and implementation. The case of waterborne toilets and EcoSan facilities constructed at the beaches in Uganda part of the lake in hand and Muslim sanitation practices serve to demonstrate this issue (See Lessons Learnt Report for Uganda).

- Harmonization of programmes and partnership between the community Management Committee and the District Community Development Officer is essential smooth integration of projects into District/Sub-county support. Coordination and proper linking of the CPIC with existing management committees is important for partnerships and general community support and for need driven identifying projects. For instance the pay system for toilets constructed at the beach or market places have not worked well in Uganda due to high levels of poverty and other pressing needs for cash. In some areas the community is dynamic and members are always on the move in search of better livelihood a situation observed amongst the fisher in Uganda. Therefore, the team that lead identified, planned and constructed the micro-project may not necessarily the end users and managers.
- It was not only the design but also the community spirit and devotion that has led to the success of some of the projects. Capacity building is essential for proper management, building confidence and competencies among community and their leaders. In the LVEMP I the components did not attend to these requirements well since the duration allocated was short and did not allow full scale community capacity building to enable them comprehend the desired practices and output. Opportunities for leadership can be a means of capacity building for community
- While gender and women empowerment was much talked about, the attitudes of male leaders do not change until they see and appreciate the role of women in development. Effective attitude change begins with individual or group learning and becoming convinced about the new initiative which can be achieved by entrusting resources to communities so that they learn to work together, and builds community cohesion members. Positive and active participation enhances ownership and responsibility for both positive and negative consequences of collective choices. Therefore, it is essential to plan every detail of the projects, including the maintenance and sustainability, and to determine who would take the lead.
- Transparency with finances is a powerful weapon in saving reputations and building trust with the community. The magnitude of benefits and time it takes for people to benefit are essential for maintaining community interest and support. It is important to link the projects to the purpose for which they were developed and not view them as "charity", to encourage critical examination of the objectives and understand the strengths, weaknesses, opportunities and challenges being created by getting involved in its implementation. In Uganda some hurriedly implemented micro-projects may have suffered bad fate due to these issues not being well attended to.

6.5 Challenges

- **Awareness building, Sensitization and project set up. It** was misconstrued that micro projects should only be for the lakeside communities. Spreading of micro projects to other components was therefore delayed until after the review mission was convinced of the need in 2001. Time allocated and resources to facilitate Community

sensitization and priority setting was not enough and some projects did not relate to real community needs and priorities. There was lack of detailed feasibility studies before awareness creation and project implementation and technical guidance was lacking leading to substandard project that were to be re-done. The community choices for desired projects was limited to only those that addressed both environmental conservation and income generations a situation posing great challenge to the project.

- **Project implementation:** There was lack of proper technical guidance during design and implementation of some projects and in other cases this came late, was inadequate and ended early: soon after the funding ended. The technical and managerial capacity of some CPIC members to deliver affected the pace and implementation process. There were cases of misunderstanding of roles and responsibilities of the CPIC and DRC leading to unnecessary wrangles and time wastage. CPIC thought they were autonomous, not required to account to DRC, and yet DRC wanted to the CPIC to account to them. The working definition of participation was reduced in most projects to the 10% contribution. Participation in decision-making, M&E was limited. Some projects were not linked to the local government and therefore isolated from the mainstream development agenda. The dependency syndrome, personality and attitudes of individuals in some communities and District offices affected the support performance of projects. The training was not adequate to provide all the knowledge and skills communities required.
- **Management, technical guidance and supervision:** In Uganda there was a dwindling of community and CPIC commitment to projects especially after realizing that there would be no incomes and because continuity was not properly planed. Most CPIC looked to the completion of the funded phase as their output, and faithfully worked until the money was all spent and accounted for. There was insufficient collaboration between communities, implementing NGOs and contracting firms. The majority of the micro projects were completed and launched while a few were terminated due to lack of performance by contractors . However the capacity of the communities to provide resources for running and equipping completed facilities such as clinics, was limited. Some projects were too sophisticated for the communities and they did not have skills required to manage such facilities. However most of the problems encountered were social-cultural and yet LVEMP did not plan for any support in this area. Issues such as the transient nature of the fishing villages, religious practices, land tenure and management structures already in communities were not explored and even through they had direct implications for the micro projects. The Project Operational Manual were too technical for some communities and were not translated into local languages as in the case of Tanzania for ease of understanding. Supervision and monitoring at every stage to ensure quality and adherence to agreed target was not consistent and mistakes that could have been avoid went unattended.
- **Challenges associated with Sustainability:** Maintenance costs of none income-generating projects such as rural access roads, clinics and water supply require recurrent costs and presents a sustainability challenge .In Uganda some projects ended up with the CPIC for lack of community ownership due to lack of sufficient empowerment, cohesion and technical skills. Several of the projects were identified

by communities with the aim of generating an income from user fees but the government abolished such fees leading collapse in community moral and motivation to participate. Some unforeseen challenges were the millennium development goals and changes national polities. There was a missing link with NGOs working in the area to take advantage of their presence and expertise. The working definition of "community" was not provided: The NRC noted that by not defining who the community was, in many instances they became satisfied with the CPIC and forgot the general community. Also some of the fishing villages were transient making the need to define who the target for contributions and membership to the CPIC.

- ***Funding and other support:*** Delayed disbursement of finances from LVEMP affected the pace of micro project implementation and led to unnecessary repetition of tasks as rains ruined some of the structures while the communities waited. In Uganda the initial design of the micro-project over looked DRC facilitation assuming the Districts would have reserve resources for this roles a situation that undermined structural provisions of the micro project and weakened the role of the DRC. Further, some DRC and local authorities did not support the implementation modalities of the micro-projects, especially giving money directly to communities. Prices of many of the inputs almost doubled as inflation over the period of implementation greatly stretched the budgets at the community level. There was a level of interference from politicians that in some projects almost paralyzed the work, especially the local contribution. Due to the seemingly excess autonomy given to Ugandan CPICs some Components diverted funds to unplanned activities and budgets for others projects were stretched to cover more. In some cases some projects were changed by DRC from the initial intentions of the communities and by so doing lost the community support.

6.6 Recommendations

- During LVEMP II the status of Micro-projects should be elevated to a full component and be made a crosscutting aspect of natural resources management initiatives in the region entire. This will provide the strength micro projects need to become effective, crosscutting to cover all components and to become adequately resourced. While doing this it is necessary to provide sufficient time for community sensitization and priority identification of need driven projects. Selection and identification processes of the target vulnerable groups should be explicitly stated,, project preferred projects well specify, expected output and benefits well defined and explained.
- Training communities for micro-projects should be an integral part of the implementation process to enable appreciation of intended project activities and empower them to take charge. This should not focus only on finances and leadership but also skills specific to given projects but should also ensure appropriate linkages to the local government system, for public/social services projects.
- Use every interaction with the communities to talk about the Lake and its eco-system and how livelihoods affect or are affected by the lake. People living in the Lake Basin need heightened awareness on how their livelihood strategies affect the Lake, and how this in turn affects their livelihoods and in the case of a micro-project intervention, they should be facilitated to develop own participatory M&E systems. DSMC should continue monitoring the performance of micro projects even after

completion and handing over. This can help inculcate a sense of continuation, responsibility and sustainability.

- During identification, planning and implementation of the desired project by the community, LVEMP Components should become basically a funding and supervising agency rather than a key participant or the driving force in the day to day administration of the micro projects. Conservation, poverty alleviation and improving livelihoods should be a primary focus of the project to ensure good linkages and support. It is necessary to provide manuals and guidelines to enable communities to develop their own criteria for selecting projects which are need driven and appropriate for their unique situations. Community participation should go beyond the 10%, to decision-making, M&E and CPIC accountability to the community while planning should give sufficient details and budgetary provisions that can be supported by LVEMP.
- Since, LVEMP has a responsibility to the 121 projects in 74 communities, revisiting such communities to review challenges, opportunities and develop their capacity will maximize benefit for on-going projects. It should also negotiate with the District Departments and sigh MOU of support to micro-projects, with clear checks and balances to ensure that technical people do not arm-twist communities from their priorities. To this end efforts must be made to facilitate the linkages of the projects to local government and other development initiatives for long term support, participatory M & E and implementation.
- It is important to explore the social-cultural, political and economic dynamics of projects and assess the community livelihood strategies for support and better re-align as well as strengthen and revamp the community sense of pride and ownership in the selected micro project.
- Positive incentives such as exchange and exposure visits, educational tour that have been used successfully by NGOs as powerful tools for attitude change should be adopted by LVEMP II in micro projects.
- LVEMP II should extend the micro projects concept to cover economic investments which promote environmental conservation across various geographical scope. The ceiling for funding should be based on the technical nature of proposals for example some water provision and health related ones. Funding should be categorized into small, medium and large and ceiling put appropriately.

- The project or components should incorporate traditional leaders with rich indigenous knowledge and ensure continuous dialogue and consultations with key stakeholders from NGOs, private sectors, politicians and government departments in the process of project identification, prioritization, planning and implementation so as to built-in with government roles. LVEMP should continue providing training and awareness to DSMC and District Commissioners on micro project to enlist their participation and support. However, the CPIC should be made more accountable in the utilization of project funds while receiving effective supervision, monitoring and evaluation mechanisms.
- Efforts should be made to review and if possible complete the pending projects or bring them to a functional level before starting new ones. Those already completed

should be operationalized and good ones like those under CA, ISWC and WM be replicated in LVEMP II.

- The focal point approach used for entry into the community by the implementers in the catchment districts should be up scaled and replicated in other riparian districts or else the work should be done by similar components within the riparian districts so that results can be felt.

6.7Conclusions

- Micro projects provided the only direct avenue for communities in the Lake basin to take the lead in their own development process. Whatever their nature, Micro projects provided tangible benefits, capacity building and linked communities to wider development initiatives. This was the core incentive for community active participation and motivation for conservation initiatives.
- Communities demonstrated their capabilities to identify, prioritize, plan and implement projects with minimal support from external agents. The majority of the projects were successfully completed and many already providing serves with tangible livelihood improvements. There is improved access to social services, quality of life, positive attitudes, group and community cohesion, employment opportunities, enhanced expertise from technology transfer and recognition of the projects in the Districts.
- The design of the projects and steps provided in the manual were good. The project was strong on the provisions it made in terms of community participation and allowing them to manage their development resources and processes while providing the with technical support.
- However the interpretation and practice presented a range of challenges many of which originated from LVEMP facilitation mechanisms. Therefore the main recommendation from this "lessons learned" exercise is for strengthening the status, facilitation mechanism and mandate of the micro-project to better link Lake Victoria management to community development in East Africa.

Chapter 7:

Community Participation Sub-component

7.1 Background

The significance of community participation lies in the recognition that the community is a key stakeholder and beneficiary of the process. Community involvement from the onset improves the conceptualization process and participation in the implementation of the programs through available community structures. This is an imperative consideration for ownership, continuity and eventual sustainability of environmental management by communities. With this understanding, community participation objectives were centered around developing a community that is knowledgeable, capable, and committed to managing Lake Victoria's resources in a sustainable way within the context of maximizing benefits to riparian communities by adopting strategies that allow people to chart their own development.

Lake Victoria Environmental Management Project envisaged that community participation would be woven into virtually every component to reflect a people-centered project and that community participation would play a significant role in the successful implementation of the project. It was on the basis of this rationale that efforts were made to involve local communities, strengthen their capacities for effective participation and instill a sense of ownership that is critical for sustainable development.

Community participation cuts across all components of the project and as a result various activities were undertaken by community as stakeholders and other stakeholders outside the community. These activities were at various stages of implementation when this assessment was done. While micro-projects were a major propel for community participation, community groups were mobilized and engaged in many other activities identified through Participatory Rural Appraisal (PRA). The activities have both direct and indirect relation to the sustenance of the environment. These are outlined and discussed within each of the relevant project components.

The broad objective was to assess community involvement, performance and generate a Lessons' Learnt report that would contribute to decision-support mechanisms and inform future interventions in the management of the environment.

7.2 Findings and Lessons Learnt

7.2.1 Findings

7.2.1.1 Capacity Building Component

It was noted that capacity building in LVEMP though intended to be crosscutting was more inclined to the institutional level by improving physical facilities at the selected and training at M.Sc. D.Phil. and PhD degrees at the selected riparian universities. These provided capacity for essential research and data analysis during and after the Project. Although the capacity building at this level showed little interaction with the communities, some 61 research topics closely cover community perspectives although not much dissemination of the information gathered has been achieved. In several cases local communities have been involved in data collection of various scientific studies, but the results have not been communicated back to the community, except in one instance where there was a concerted effort to mount community dissemination workshops to share the research findings with the community. Despite the success in high level university training, the major challenge is on how to package the information from the research theses for better understanding and use by the communities. In future deliberate efforts to engage in applied research that not only produces theses for certification but also leads to positive action at the community level are necessary. Further, a missed opportunity is holding stakeholder workshops involving community, NGOs, industrialists, municipalities, CBOs and extension workers, among others to share research information more extensively to understand the problem and define roles and responsibilities for appropriate action.

On a separate footing the there has been significant capacity building through improved skills and increased awareness amongst district extentions workers, and local communities resulting into good participation in conservation issues including law enforcement such as on fish quality and safety assurance. The evelopment of several the fishponds initially intended for commercial purposes and provided useful opportunities as sensitization centre and become major avenues for interaction with the local community as part of learning and "demonstration" of aquaculture and the relevant technologoes. During the project several curricula have been developed for short courses at Moi University, Kenya some of which should be repackaged for community-based capacity building and offered as on-site training, Some such courses have also been offered to component officers and local communities in project focal sites. In Tanzaia, the Univerity of Dar es Slaam was a collaborating higher learning institution but did not offer specific demand driven community trainings.

7.2.1.2 Fisheries Management and Research Components

The new concept of establishing Beach Management Units (BMUs) was adopted regionally to promote co-manage of fisheries resources with the community following the Lake Victoria Fisheries Organization (LVFO) technical committee recommendation. It as observed that co-management is a substantive sub-component of the fisheries component

that has created democratically elected community structures to ensure sustainability. In Kenya, BMUs are in the initial stage and the plan is to legalize and entrench them into the Fisheries Act. Every district that has a lakeshore line has a BMU and the numbers have increased progressively to 306 in Kenya and 511 in Tanzania by 2005 where they play a lead roles in inappropriate fishing practices and improved beach sanitation and contributed to the lifting of the EU ban. Through this and other arrangement several achievements such as creation of a consultative forums, beach sanitation, training of BMUs (40), vetting fishers licenses, enforcement of fishing closed season, identification of some 113 fish breeding grounds (98 were gazetted in 2001), fisheries data collection (e.g. Frame Surveys and catchment Assessment Suirveys) have featured community participation. The BMUs have also served as entry points for other agencies to the beach such as micro-projects, HIV/AIDS programs among others. This as a community aspect BMUs are considered beneficial in that for the first time fishermen have come together and work as a unified group with well grounded rules, defined role and activities as well as enhancing hierarchical and horizontal collaboration and that the initiative has proved beneficial to the community and lake ecosystem, should be sustained and financially supported.

Community participation under this Component is was in the area of improved aquaculture production techniques where several fish farmers have benefited greatly and potentials of up-scaling and replication are great. Although the initiative was given by this component the key player have been Wetlands and Fisheries Management Component in Kenya and Tanzania. The main target was to produce fish catfish fingerlings as bait for Nile perch as well as Nile tilapia for food both of which are in high demands and the market requirements far exceed the production level. There has been increased capacity building in aquaculture and capture fisheries in Kenya and Tanzania through awareness creation, short courses and exchange visits which has also lead to improved cross border relationships through signed Memorandums of Understanding (MoUs) and settlement of local conflicts.

7.2.1.3 Water Hyacinth Control Component

The involvement and participation of communities in the control of Water Hyacinth in the lake basin has resulted to reduction of infestation levels by over 80% from the original levels. For instance, prominent community participation has occurred in rearing and releasing the weevils, manual removal and monitoring levels of new and resurgence infestations of the weeds. It is worth noting that, in Kenya, water hyacinth control activities were mainly done by schools while in Tanzania, these activities were mainly executed by communities, BMUs, and one non governmental organization. Some communities have also been involved in the utilization of water hyacinth to produce quality market oriented products at pilot and commercial levels. The total results have been successful management of the weed leading to eased lake transportation, availability of clean water, access to fishing grounds, improved health, better food security situation and improved lake quality of the lake ecosystem. The task now is to sustain this equilibrium through community efforts with support from respective village governments. As in the past their contribution should be enlisted for continued

monitoring and keeping records on any resurgence and new infestation levels of the weed. Suitable incentives should be provided by the project to ensure sustainable water hyacinth management by the communities. For instance stronger and durable weevils rearing tanks and addition tools to facilitate the activity should be provided to participating communities and schools. The challenges for community participation in this component was insufficient training of and frequent transfers of teachers in the participating schools. It was also observed that the community at large is not yet well in touch with component activities even though giving the better knowledge would have enhance success and benefits. In both Kenya and Tanzania the riparian communities were given study tours in Uganda for experience sharing on water hyacinth control operations. Uganda work on control of the weed was initiated earlier than in the other 2 countries and provided better opportunities for crating awareness and training for Kenya and Tanzania but with the new threats of resurgence and problems of managing the weed at some sites in the basin more efforts will be necessary to increase awareness, training and participation for the communities in the three countries especially in monitoring and reporting, weevil rearing and releasing, enforcement of quarantine regulations for Control of Water Hyacinth (Rules, 2001). The communities have continued to receive component support and technical advise on control of water hyacinth which must be continued and expanded to hotspot and other areas that were not specifically targeted but pose threats for weed invasiveness. It is worth noting that in the absence of tangible benefits (e.g. financial returns) that accrue from community participation in controlling the weed, such as was found in Tanzania, the project activities may be vulnerable to lack of sustainability.

7.2.1.4 Water Quality and Ecosystem Management Component

Although, this component is involved principally in the collection of scientific data it has not engaged communities optimally, yet technical issues aside, water and water quality is a community issue. In Kenya, what seemed evident is that the technical staff are not sufficiently grounded in the issues of community participation and did not know how to engage the community. But there was some work that involved a few community members such as in installation of gauging equipment, taking care of them and gauge readings for recording water flows and holding water and sanitation workshops in Kisumu. In Tanzania, the Component had involved the private sector organizations and in particular industrialists in the project so as to improve management of industrial and municipal effluents and adopted a Cleaner Production Technology (CPT) strategy and in-plant demonstrations program for industries along Lake Victoria. Besides, several meetings were conducted to sensitize communities on effects of lake pollution, environmental degradation and their place and roles to reverse the situation.

The major challenge cited in this component is how to actively engage communities in scientific research, particularly at the level of appreciating their role in water quality, noting that it is the community activities that contribute to water pollution and subsequently the quality.

7.2.1.5 Wetlands Management Component

Wetlands of Lake Victoria basin are important assets on which the riparian community is dependant and where involving community participation is a pertinent issue. The component involve community participation in several activities of wetland management including initiatives that would uplift their livelihoods, mapping and baseline surveys**,** identifying community priorities for micro projects and awareness creation and education in some selected wetland areas. In Kenya, the Component has a good working relationship with other LVEMP components. The project identified and supported various activities of over 30 CBOs including spring protection, aquaculture, handicrafts from wetland resources and conservation initiatives leading to income generation, better awareness (Wetland days) , positive attitude changes on and piloting wetland conservation. in some 8 districts. In Tanzania, wetland management committees have been formed in participating villages and communities have been involved in the process especially around the Simiyu and Rubana wetlands where they actively participated in preparing in yet to be approved and operationalized Wetland Management Plans. Pilot activities to demonstrate sustainable use of wetlands to local communities, and strengthen capacity of local NGOs and CBOs to undertake wetland wise use activities have also been undertaken. In particular there are indications of good success for the communities participating in making handicrafts and small scale farming around river Simiyu Wetlands. The challenging issues are that related to human/human and human wildlife conflicts associated with wetland use and conservation. Further, most communities living around such wetlands are poor and need alternative means of livelihood as well as good incentives to enable them actively participate in sustainable wetland management. Further, because of its pilot nature, the component concentrated its activities in only a few wetland sites and selected communities when the entire lake basin is a wetland mass. Some important national and cross border wetlands were not attended to and yet they are threatened by serous degradation. Although some crude cost and benefit analysis have been done is selected wetland sites detailed work still need to be conducted and supported to critically determine the ecological and economic values of major wetlands around the lake in the phase of the on going threats and to enable communities appreciate their role and need for sustainable management. The only current threat to sustainability is poor quality of wetland products and lack of proper market for their goods.

7.2.1.6 Integrated Soil and Water Conservation Component

This component which is implemented by the Ministry of Agriculture for both countries is largely community based in its activities. It is participatory and uses the existing structure of extension personnel whenever possible. The main focus of the component has been mobilization of farmers and dissemination of soil and water conservation technologies. In Kenya, the component has facilitated the establishment of democratically elected Focal Area Development committees (FADCs) and trained them in a manner that assurance sustainability of its activities. A more viable approach is the flagging of opportunities and the formation of Common Interest Groups (CIGs), which only call for tailor- made training. This tends to attract more women, at least (45%) compared to the initial 30% in the FADCs. In Kenya the component in collaboration with other components involved community participation in several activities that has lead to good success in pilot areas which need to be upscaled and replicated especially where areas of

tangible benefits accrued and may be applied to ensure soil and water conservation practices. The potential for the involvement of other stakeholders, particularly the NGOs is even more pertinent given their ground presence. In Tanzania, the Component has in some cases worked with progressive farmers who are potential adopters of a new initiatives such as in paddy production under ridges and tie ridges, and the use of farmyard manure. Such farmers experienced substantial increase in yields and had used the proceeds accrued from selling the agricultural produce pay school fees for their children. Local communities have been trained on good soil conservation practices, handling and disposal of agrochemicals and Integrated Pest Management (IPM) concepts among other things. Communities were involved in the Component Vision development and students from different local universities and training institutes were trained on various land management measures and environmental conservation in the pilot areas. The challenging issue was the short duration taken by the project team with any one community and the limited financial resources for the planned tasks. For instance in Kenya, the PRA and preparation for activities were rather short and the one year time frame for a given focal area was inadequate especially without a technical backstopping mechanism that left some 60% of the community based activities moribund. In Tanzania was in relation to lack of collaborative efforts was a major challenge as the component did not take advantages of the existing Serengeti game park expertise and resources and complements form Catchment Afforestation component close to its selected project sites..

7.2.1.7 Catchment Afforestation Component

Until pointed out by the Midterm Review Team, in Kenya and Tanzania this component like other LVEMP components did not cover community aspects. This lead to a shift in approach that involved the community, starting with sensitization, training in nursery management and seed collection. In both countries, apart from working with community at large, the Component has been working with specific community groups such as youth, women and self-help groups such as by forming CBOs, involving of schools in afforestation, raising tree seedlings, tree planting and spring protection as well as providing the necessary training and hand tools to empower the selected communities and enhance their participation in promoting catchment afforestation activities. Communities have participated in preparing and implementing management plans for catchment afforestation as well as in development of the Component Vision Development.

The achievements are in double dose; afforestation is now a source of employment at the same time ensuring tree cover in the process. Communities now appreciate that a tree has value and some trees have already been sold to meet basic household or group needs. In Kenya, this component is performing extremely well and the community activities is addressing adequately the project objectives. The diversified and integrated approach applied in Kenya is closely linked to the natural resource and already proving beneficial to the participating communities and the project. However, in Tanzania such approaches are still to be adapted making the component activities less sustainable. Projects with vivid short-term benefits were not integrated like the case of Kenya. However, through experience and World Bank Reviews, Tanzania is considering modalities of forging integrated approach.

The major challenge under this component is attitudinal problem especially for communities in Tanzania where Catchment Afforestation was piloted. Some of the communities are still looking for the Government to provide everything, and catchment afforestation is not seen as priority activity in these communities due to low level of education. This has made financial incentives to be a must for some of catchment afforestation projects and community 10% contribution or pay for seedlings for instance a disincentive as they believe that the activities belong to LVEMP not the community. This attitude is characterized by statements such as "We have already planted your trees. What are you giving us in return?" in Tanzania and not in Kenya where the demand for seedlings far exceeds the supply.

7.2.1.8 Micro Projects

This was intended to support local communities to address some of their priority basic needs and to entice the communities expected participation in the implementation of LVEMP. Several community based micro-projects were identified, planned and implemented. Micro-projects registered the highest community participation process that saw implementation of projects such as services water supply, sanitation, basic health services, primary schools and access roads even though the sub-component was initiated later than other project component after petitioning by stakeholders to the donor. The activities were meant to draw communities away from their major source of livelihood than negatively impact on the lake's ecosystem and enable positive attitudes and activities that ensure sustainable management. The project were therefore thought of a compensatory approaches aimed at improving the standard of living of participating communities. It has resulted into increased availability of social services to the community, generation of income, and positive views on sustainable management of the fragile lake's resources. Thus, it has provided the cementing media for involving communities in successful implementation of LVEMP's Component's and if continued will ensure sustainability and empower communities. It is however, worth noting that as a new initiative to LVEMP implementation has not been smooth and the approaches, planning and implementation of desired micro-projects must be well thought of and improved upon in future.

7.2.2 Challenges and Emerging Regional Issues

- **Impact of the Project on Poverty Reduction:** Given the complexity and pilot nature LVEMP I has done remarkably well in a majority of the areas towards meeting the Millennium Development Goals (MDGs), Poverty Reduction Strategy [2001] Poverty Reduction Strategy [2001] and amplified the Economic Recovery Strategy for Wealth Creation (2004) in Kenya and National Strategy for Growth and Reduction of Poverty (2005) for Tanzania at the community level. But better achievements would have been made with more focus and smoother implementation on community interventions. But, due to the late inception of community activities, the different communities are at various stages of participation and majority still need mobilization, training and initiation of project activities even though willingness to

participate in environmental conservation seem to be quite high and gives enormous potential for the project.

- **Program Design:** Community participation came into this project as an afterthought after design and even start of the component activities a situation that dragged back the activities and its achievements. It is worth noting that community participation will remain pivotal for LVEMP and similar projects in the basin and is stressed in the project document and Staff Appraisal reports, and yet it was not evidently translated into action until rather late. The belated entry of community participation as a strategy has meant that such elements were not well articulated in the critical initial project preparations. This situation has lead to quite few tangible output/outcome indicators against which achievements can be made and for the projects such achievements have been more of qualitative nature than quantitative. In spite of this, there have been some notable achievements related to consultations with stakeholders, involvement of communities in, for example, co-management of fish landing sites, afforestation schemes, and promotion of micro-projects. These achievements are described in the community participation Stocktaking reports, quarterly reports and in the various technical reports of the project. The community participation officers face the challenge of stimulating and coordinating activities across the different components of the Project and should have sufficient skills and capacity to perform this task for instance use of PRA and community dialogue as primary entry point. The component has been short of this as he only community participation officer was based in the National Secretariat and non at the component meaning that the meagre but mainly technical component staff had to perform the tasks of community participation.

- **Networking and Collaboration:** The Community Participation Officers of LVEMP, have assisted in initiating collaboration with local CBOs and NGOs but available opportunities have not been exploited to the full even where some other organizations were working on the ground. For example, in Kenya, the components had only limited, informal and uncoordinated linkages with IUCN, KWS, OSIENALA, CARE, ADRA. ASCON and VIRED International all working on nearly similar issues around the lake. But it is commendable that some community groups, out of their own volition have reached out to such organizations to work with. In Tanzania, only a few local NGO namely LANESO, Heifer Project International, ACORD, and MOGABIRI collaborated in Hater Hyacinth, ISWMC and project's Aquaculture sub-component respectively. In both countries there are community initiatives under the Project, which remain uncompleted in collaboration with NGOs or other departments perhaps they could have been mainstreamed either within the district development interventions or the parallel programs and concluded. Therefore it is necessary to conduct stakeholders' analysis workshop to map out and plan formal collaboration with stakeholders operating in the basin. In Tanzania there seemed to be insufficient community representation in meetings and poor feedback mechanisms due to community reluctance to attend village meetings, inactive village leaders, poor feedback to villagers, inability to read brochures prepared in English and their poor circulation The project is currently reviewing its information dissemination process strategy for better results. In Kenya the communities knew about LVEMP project and

seem to be well represented in several component activities although information is lacking to support this.

- **Mainstreaming HIV and AIDS:** In the 3 countries HIV/AIDS is a major problem in the Lake Region yet; it was only addressed cursorily in this project. Nevertheless, within all components, HIV/AIDS is now an integral part of all community sensitization and trainings using drama and theatre, video shows and information sharing. However, taking comparative advantage as a consideration, the project should be proactive in linking the communities to other partners working in the same region to address such crosscutting issues more comprehensively. In Kenyan and Tanzania, marginal treatment of HIV/AIDS has been observed despite these alarming HIV/AIDS prevalence rates and the hindrances it causes towards sustainable management of natural resources and livelihood in the Lake Basin. There is need to mainstreamed in activities HIV/AIDS prevention activities within the implementation of LVEMP II.

- Community Perception of the Project and Sustainability: The participating communities have benefited directly and indirectly from the project. The benefits could be perceived as motivation for sustaining the projects. Other measures of sustainability are community participation and commitment, and source of revenue to sustain project activities. The community response to the project has been positive and this is evident in the level of engagement and benefits as confirmed from the project participants during this assessment. Some project activities that involve community participation such as education and training, better water and sanitation conditions, resource maximization and diversification, improved health conditions, employment creation and increased incomes from selling seedlings, wetland products and improved stoves and savings and credit societies has contributed to improving attitude changes at community level in all the three countries. However sustainability is in danger because the facilities have not been adequately manned in number and quality. Further, there is lack of assured market for quality wetland products such as handicrafts. Further, it is worth noting that communities are not homogenous and working with them is especially a major challenge.

- Replication: Replication of activities by communities that are merely borrowing from their neighbors is a good sign that the project is not only appreciated but also that communities indeed have embraced the ethic of environmental protection within the context of overall sustainable development. In many projects activities with strong community participation even without much efforts from project adjacent communities were already replicating them. In this project the establishment of tree nurseries topped the list of some most sustainable project. Pockets of rural communities in the project area are experiencing rural transformation based on comparatively little input from the project. Although, some members are still lagging behind they would still wish to perform as well as or even better than those who have succeeded. Conducting exchange visits, study tours and field demonstrations contributed to the road to sustainability of project activities as the communities were able to exchange information and see for themselves the constraints and or progress being made by others. But the communities indicated that the visits or tours were too

few and some did not have the opportunity to participate therefore requesting for up-scaling this activity during LVEMP II.

- **Micro-Projects as a Strategy for Community Participation:** The Project's responsiveness to the needs of the communities is lauded as communities tend to respond to Project interventions that only address their priority needs. Micro-projects had a very broad focus and often tended to incorporate projects that may not address direct environmental issues. However, the Project implementers are convinced that environmental issues resulting from human actions cannot be addressed out of context. Thus, LVEMP's challenge has been responding to and meeting the needs of the stakeholders, in particular the beneficiaries while keeping a focus on its mandate and core business of environmental resource management a situation that require stakeholder analysis and log frame for LVEMP which would have been very useful. Therefore is also need for strategic focus so that the Project is not spread thinly and run the risk of initiating activities that stall.. The micro-projects could have been guided by the Project document rationale to center around sustainable livelihood and changes in productive systems identified as major threats to the lake (See the Staff Appraisal Report, World Bank 1996: 6-7).

- **Gender Balance/Dynamics in Community Participation :** The Gender Analysis Framework demonstrates that there is an economic rationale for investing in women and men to assists in planning and designing more efficient projects and improve overall productivity for meeting set goals. It provides information on the role of men and women in a community and highlight the key difference and influencing factors. This assessment notes that gender concerns were not initially considered in the design of the project activities, gender aspects have been addressed in the majority of project activities. In Kenya, gender audit was done for all the project components and a gender sensitization workshop for Project staff was organized in 2003 to developed gender objectives, entry points and monitoring indicators. In addition a gender strategy was developed in line with the partner institutions. The fact that most projects have both men and women as beneficiaries shows the sensitivity of the project to gender. In Tanzania, examples include participation of women (20-40%) in drafting of the River Mara Water shed Management Plan for six villages located in Tarime and Musoma Rural districts. Although committee membership in most projects was skewed in favor of men women were accorded some key elective positions in such committees. Further, women groups also own some projects such as tree nurseries and fishing boats in their own right for sale. Although gender balance is not yet at 50/50 level, as is desired, the trend is towards this end. The Use of Participatory methodologies: In promoting the participatory methodologies some challenges have been experienced. For instance, PRA was not always used in identifying communities' needs in the initial stages because of the disciplines divide between social and natural scientists where the former are more at home with the PRA technique. It is also noted that LVEMP staff had insufficient participatory methodology skills at the beginning of the project. Nonetheless, training on participatory skills in particular PRA has been conducted and more are on line. In both countries the interviewed component coordinators and Task Leaders agreed that the training has made a difference on their approach to community participation. In

Tanzania, there are additional approaches such as Rapid Rural Appraisal (RRA); Livelihood Assessment Approach; and Obstacles and Opportunities to Development (O & OD) that has been aggressively introduced in some of the communities, and it is currently in use and could cause confusion amongst communities if not well addressed

- **Community Contribution:** In invoking the element of community participation the basic premise is that it is community activities that precipitate environmental degradation and their participation in abating the situation is necessary especially for achieving sustainability and a sense of ownership. This requires contribution from community members in various ways especially for micro-projects in both countries where the contribution was mainly in kinds such as contribution of labor for construction, brick making, collecting water, sand and stones for construction, cleaning the beaches, collecting water hyacinth and patrolling the lake and also cash in some cases. This is critical because it is the outcome of these simple investments that does not only benefit the community but would in the long run contribute to the attainment of the project objectives. However, looking at the community initiatives across the board one gets the feeling that community contribution is always undervalued by components and in both countries, the actual community contribution is more than the project contribution. The expectation of community participation should go hand in hand with project facilitation at least as a jumpstart for activities.

- **Component inter-linkages:** In Tanzania, components were found to be interlinking in several activities but in some cases the same community members were found to be implementing activities from several components but in uncoordinated manner. There is no mechanism in place to document areas of convergence, and determine best ways to allocate financial and human resources to these areas. Further, the complementarity of activities conducted under each Component has not been tapped. As much as Project Implementation Committee (PIC) acts as a forum where all components staff meet to discuss progress and implementation challenges, the need to form a PIC sub-committee in charge of identifying components linkages and propose a way forward as far as financial and human resource allocation to these areas is concerned is apparent. However, in Kenya, collaborative efforts are evident based on joint work plans under land use management components: Integrated Soil and Water Conservation, Catchment Afforestation, Wetlands, Agrochemicals and management of Pollution Loading sub-components. Some collaboration with the capacity building component was noted although this was not based on a joint work plan. This collaboration should be maintained for greater impact as it maximizes the contribution of each component.

7.3 Lessons learnt

7.3.1 Community participation

- Initial appreciation/recognition of community as a primary stakeholder in the project and largely as a user/exploiter of the resources and should be in the forefront of maintaining/restoring the resources. For adequate community participation Micro-projects are a key-motivating factor especially when they are inbuilt into the project and focus on community-identified needs. Tailoring and linking community micro projects to environment related project is doubly beneficial: welfare of the communities is boosted while projects environmental related objectives are also achieved.

- Gender balance is not always easy to achieve. Much depends on the nature of the activity and willingness to change particularly for both men and women. However, where there is adequate interest as in community interest group and production of handcrafts there are more women. This underscores the importance of conducting gender related studies and compilation of gender disaggregated data.

- Community mobilization and implementation of Community action plans is time consuming and therefore adequate resources and time is needed for repeated visits and monitoring. The efforts to take beneficiaries (farmers, fish folks, teachers, pupils etc) to different areas to share their experiences and learn from others are highly commended. In order to cultivate the spirit of emulation of best practices, it is suggested that during the second phase of LVEMP study visits by community members to other areas where certain practices are very successful be enhanced. Sensitization of technical officers on the strategies and approaches in community participation and participatory methodologies is an important step prior to project implementation.

- Community involvement in the planning process is a **prerequisite** for continued community participation and sustainability of the project but it is **not sufficient**. Community "change of mind set" is essential for sustenance of these projects. Instigating the spirit of self-reliance among the communities to initiate and sustain activities using their means and de-cultivating the ideas that the government and development partners will do everything for them is of essence. This calls for awareness creation continuum. To enhance better community participation and benefit from related activities in the area it is necessary to conduct an analysis of major stakeholders operating in the project area, their objectives, root cause of mistrust and conflict among stakeholders, areas of collaboration, modalities of collaboration etc. should be sought.

- No Exit Strategy has been prepared for LVEMP I which in principle should have been part and parcel of the project proposal. This is essential in sustainability of the project because the proposed institutions to handle the project would have known *apriori* what it entails and would have taken a different path in preparing

for handling project activities. However though not explicit in the project document most of the community activities referred to have inbuilt mechanisms for sustainability that are in themselves exit strategies.

7.3.2 **Capacity building:** The training and the scientific research through riparian institutions have been successful. However, packaging the information in a way that is useful to and understood by the community has been and remains a challenge. There should have been a deliberate effort to engage in applied research that not only produces theses for certification but also leads to positive action at the community level. Holding stakeholder workshops that include communities, NGOs, industrialists, municipalities, CBOs and extension workers, among others to share research information and help understand the identified problems and interventions would have helped to define roles and responsibilities for appropriate action.

7.3.3 **Water Quality Management :** The challenge in this component is how to actively engage communities in scientific research, particularly at the level of appreciating their role in water quality, noting that it is the community activities that contribute to water pollution and subsequently the quality.

7.3.4 **Community involvement in Natural Resources Management**

- More work would need to be done with the communities who exploit the lake' resources such as fishermen for a turn around in perception of resources and instill a sense of a working ethic that places value to the resources and the need for savings and investment for the future. Dialogue is necessary with a broad spectrum of "local leaders" is more complex and goes beyond the officers in the project even though such an activity will iron out conflicting interests arising from resource exploitation. Self-compliance and a sense of ownership of the lake's resources is low among the fishing communities and the common barriers for co-management include poor leadership skills, absence of financial and business skills.

- Fishermen have been involved in identification of fish landing sites, fish breeding areas and managing closed fishing areas using their indigenous knowledge. Indigenous knowledge and skills are important element in the management of fishery resources. In particular economic activities initiated by the fishing communities have a high degree of success when compared to projects imposed by government, donors etc.

- At grassroots level community management structures need to be given recognition, incentives and empowered to better appreciate and manage the lake's resources. For instance in Tanzania, BMUs are well organized have the capacity to manage economic projects and the environment. The use of BMUs as watchdogs of illegal fishing, monitoring the resource, licensing and vetting of fishers migration is an important element of community participation/policing and is a structure that should be expanded and sustained and has enhanced the process

of co-management strategy in the natural resources management, especially in the fisheries sector.

- Use of indigenous knowledge in formulating strategies for management of the lake's resources will adds value to science led management. The promotion of tree nurseries and fish farming as an economic activity attests to this and already some communities and BMU's have started saving culture that demonstrate the potential of saving and development in the area. In Kenya, gender concerns specifically fish for sex were raised but with the establishment of BMUs all members including women deposit their savings with the marketing department an activity which already empower women and other vulnerable groups economically.

7.3.5 **Wetland Management:** There is a double gain in involving community participation in the wetlands management through conservation and the fact that they do earn a sustainable livelihood from wetland resources. In Kenya, there was lack of development of a community management plans for wetlands while the same was done for two wetlands in Tanzania which are not yet operational This would provide a better way to demonstrated co-management of wetlands with community groups.

7.3.6 Integrated Soil and Water Conservation: Community participation was well demonstrated in this component in both Kenya and Tanzania even though the component scope was limited by lack of transport for monitoring and supervision is inadequate. In Kenya, for the Soil and Water Conservation group the duration of one year in a focal area then exit is not adequate to allow proper preparatory phase of the activities, PRA and community mobilization leading to successful implementation of the intended activities. Therefore, without backstopping mechanisms, 60% of the projects became inactive. In Tanzania, communities adjacent to pilot area have emulated the SWC technologies and the demands have increased beyond the project's pilot areas and outpacing the service providers which is a challenge for them.

7.3.7 **Water Hyacinth Component:** For this component's success the use of schools, community groups and BMUs provided useful grounds for rearing and releases of weevils for effective control of the weed even though community level training including teaches were insufficient given the frequent changes in such areas. This calls for training of more teachers for continuity to cover for retirement and transfers; and commendation or recognition towards participation in this as co-curricula activity especially for the participating teachers. In Kenya, with reduced hyacinth infestation beach communities expected payment to maintain the units, hence the need to re-strategize and focus on schools. There is need to incorporate income generating activities in weevil rearing to generate income and make hyacinth weevil rearing attractive. In Tanzania, efforts to transfer rearing units from project to communities/NGOs have been underway and MoU has been prepared between the Ministry of Agriculture and Food Security and LANESO to

ensure sustainability. This requires motivation or incentives through different means/ways, for instance, training and study tours.

7.3.8 **Catchment Afforestation:** Seedlings production from community nurseries is cheaper than central component or government tree nurseries and has provided incentives to communities and contributed to poverty alleviation. In Tanzania, it was learnt that buying of seedling by LVEMP from the community is not a sustainable mechanism in the promotion of tree planting by the farmers. The involvement of farmer (villagers) in the management of natural forests is a sustainable way of managing natural forests and has to be expanded elsewhere in the country Lake Victoria Basin. The communities in the pilot areas in Tanzania accord low priority to catchment afforestation necessitating further sensitization and education. In Kenya the situation was different as the communities valued and invested on tree planting and nursery development as income generation project.

7.3.9 Micro Projects provided the necessary impetus needed for community participation and appreciation in LVEMP activities at the component level. Some communities were found to contribute more in micro projects than LVEMP a good indication for sustainability and ownership of the process. The major challenge under micro projects has been sustainability in maintaining the structures built, furnishing and manning for the case of health facilities.

7.3 Recommendations and Way Forward

- LVEMP II should begin with a stakeholder and gender analysis that spells out not only the stakeholders but also the place and contribution of each in the project. This would doubly sensitize the component leaders on communities as key stakeholders, the concept of community participation and how it fits in their components. This will lead to applying the Integrated Resource Planning (IRP) and Integrated Resource Management (IRM) concepts should be applied to ensure optimal utilization of resources at the community level.

- Develop a log frame (LFA) that spells the overall purpose, planned activities and means of monitoring to harmonize the approaches in the community across components. It is also necessary to development and operationalized well thought Participatory Monitoring and Evaluation Plans (PM&E) for community participation activities with indicators that would be incorporated in the monitoring and evaluation master plan.

- The micro project approach is useful but needs and assessment of the overall need, priorities and justification and should be mainstreamed within the overall government departments within the mandate of LVEMP. As deemed necessary, financial support for community micro projects should be enhanced to enable some difficult projects take off. A mechanism on how to handle the project after the phase out of financial incentives has to be worked out from the outset.

- Given that HIV/AIDS is a major problem in the Lake region and the role of the Lake in perpetuating the spread of the virus, mainstreaming of HIV/AIDS in LVEMP II activities is apparent.

- More work will need to be done with the fishermen and other natural resources users for a turn around in perception of resources and instill a sense of a working ethic that places value to the resources and the need for savings and investment for future self-compliance and ownership. Exposure tours have worked well in all the components where they have been implemented. This should remain a key strategy in phase two to spearhead information sharing and skills transfer.

- Networking and collaboration should become a central feature of a complex project such as this one in order to benefit from comparative advantage and also offload the community needs that are best handled by other projects/programs within the region.

- Since the project targets environmental management with a view to long-term sustainability, and recognizing that communities are key in this process, more resources should be availed at community level for capacity building. The Capacity building component will need to revisit its strategies in order to meet the demand at the community level over and above the institutional level. A shift to action oriented research would go along way in embracing both project and community concerns.

- In phase II of LVEMP, drafting of the Exit Strategy that clearly defines the potential institutions to take over project activities is of essence. This goes in line with involving the Local Government Authorities at all levels. The community participation activities should be incorporated into district development plans. It is also desirable to harmonize community participation strategies for the three countries and develop a plan of action to better manage conflicts and maximize opportunities that arise from common interest grounds such as cross border habitats and resources. The peripheral role and annexing community participation to the secretariat should be addressed to give it the status of a full-fledged component.

- Leadership and management skills among BMUs and other stakeholders are still low and therefore BMU sensitization should be continuous. Modules for training have been developed for Kenya and only need to be strengthened but for Tanzania they will still be developed. Even at this state the courses described in Kenya may be incorporated for use in the other two countries to create better harmony and common ground.

- Engage in applied research that not only produces theses for certification but also leads to positive action at the community level. Further, initiatives are needed to translate research findings into the language and level where they are

comprehendible to the wider audience including the extension workers and the local communities.

- It will be worth directing more resources and upscale community participation in all the activities in the Catchment afforestation, Soil and Water conservation and Wetlands components where the potential for community participation is very high. These are areas with direct benefits to communities and the potential for environmental impacts are fairly evident. The capacity and empowerment of communities should be supported by providing a strong supportive by laws where they do not exist and ensuring adequate enforcement mechanisms to make their role more effective and efficient.

- It is necessary to continue research that will help in identification and development of best practices and mechanism them using co-management approaches such as been demonstrated by the existence of BMUs in the Lake Basin. Along with this it is necessary to support communities to develop mechanisms to promote the culture of saving, instill self-compliance and sense of ownership of the fishery resources.

7.4 Conclusions

- It is noted that the strategic directions of the LVEMP have evolved significantly over the life of the project due to a number of external causes. This is more so for Kenya where there was a shift in the implementing and coordination ministries. This process affected the whole project but in particular the element of community participation, which was not fully integrated till 2002.

- LVEMP implements the project through a three-pronged strategy: 1) Improving the capacity of technical staff 2) Research and dissemination of findings and 3) Working with communities ensure sustainability. Linking the project components with the communities is a powerful approach and the three-pronged strategy is appropriate for LVEMP to achieve its objectives and goals.

- Although community participation had a belated start and was not fully appreciated by the various components, over the project period, tremendous improvements have been made in a very short period of time. In most components there is evidence of success and room for replication. In both countries efforts have been made to enhance the capacity of component coordinators and task leaders through specific skills in Participatory Rural Appraisal and techniques in community mobilization. There is now a critical mass of staff who appreciate the idea of and how to work with communities.

- Community participation approaches have had a positive influence on the knowledge, attitude and behavior of individuals in project sites. The community response to the Project has been positive and this is evident in the level of engagement where opportunities have been availed. The participatory methodologies have been particularly instrumental in facilitating self-examination

and realization that development can be and is best initiated from within. However there is a need to harmonize the approaches used regionally to facilitate comparability.

- The need for information and skills at the community level is there. The training and the scientific research through riparian institutions have been successful. However, packaging the information in a way that is useful to and understood by the community remains a challenge. There should have been a deliberate effort to engage in applied research that not only produces theses for certification but also leads to positive action at the community level. The Capacity building component will need to revisit its strategies in order to meet the demand at the community level over and above the institutional level. A shift to action oriented research would go along way in embracing both project and community concerns.

- The exposure visits have been lauded as providing learning experiences and information exchange amongst various stakeholders. In some instances communities have been motivated enough to organize and finance some of these tours; an indication that they recognize the value of exchange visits. Community members have implemented the experiences from these tours either as individuals or groups.

- Contrary to the belief that fishermen are poor some have actually appreciable earnings and should be relatively better off than their non-fisher counterparts. What seems to be the issue is their lack of saving and credit which remain alien to them and need to be candidly addressed in LVEMP II. However, the issue of fishermen and other wetland dependent communities is more complex and goes beyond the officers in the project for which more detailed research is necessary.

- In both countries, working with NGOs has been on a limited scale yet because of their ground presence, involving them will be more beneficial in terms of upscaling and replication of successful activities. The formation and strengthening of CBOs, and community interest groups (CIG) has facilitated the establishment of viable of community structures such as BMUs, and other relevant networks is evident. These have now assumed their own life and are likely to be the pillars of sustainability and a springboard for other community activities.

- While introduction and implementation of micro projects has proved complex but successful in several cases and even helped to jumpstarted others projects, some micro projects in health have performed poorly for lack of personnel, basic equipment and supplies and community ownership problems. Community activities through micro projects are increasingly getting inclined towards income generation to address poverty as a priority problem and less on conservation of natural resources a situation which causes some concerns. Micro-project activities that rally around water and sanitation, spring protection, social services, and afforestation and directly address objectives of the Project and worth promoting. So far, the community initiatives on the ground indicate that they have great

potential to address environmental issues even though they are on small scale and far in between. Environmental degradation observed in Lake Victoria basin is a product of community-based activities. It is therefore logical to invest more in sustainable community initiatives if a reversal of environmental degradation is to be realized.

- The concept and strategy of community participation needs to be understood by the components from the start to facilitate planning for it appropriately so that it does not appear as an afterthought leading to haphazard application. The involvement of the community as key stakeholders in the project is pertinent. In phase two of the Project, it will be necessary to undertake stakeholder analyses to identify the key actors, their area of work/mandate and possible areas of collaboration. These would guide the development of project activities based on a logical framework that facilitates setting targets and tracking them.

Chapter 8:

Capacity Building Component

8.1Background

The Lake Victoria ecosystem is subject to a wide range of demands by multiple beneficiary groups which generate a multitude of environmental and socioeconomic concerns. The diversity of user groups accounts in part for the variety of sectoral activities impacting the ecosystem. In the face of a fast growing human population and the need for better services from this regional resource, Lake Victoria has experienced a decline in water quality since the 1960's massive infestations by water hyacinth, oversiltation, wetland degradation, poor sanitation in fish landings and watering points. Among other things. Continued open dialogue and exchange of information among these actors are needed to enable them to work together towards a varied lake ecosystem which can support the many human activities that depend upon the Lake's resources. This objective raises special requirements of public information, transparency of stakeholder participation, as well as the dissemination of lessons for replication all of which hinge on sufficient institutional and human capacity building. One of the Components of LVEMP concerns Capacity Building whose overall objective is to coordinate capacity and training programs for all implementing agencies through training of human resources in environmental studies, fish biology and related areas, as well as strengthening training facilities at Moi University

This component was aimed at supporting the riparian universities. The component was to coordinate capacity and training programmes for all the implementing organs of the project. The project selected three riparian universities to participate in the implementation of this component given as Moi University in Kenya, Makerere University in Uganda and Dar es Salaam University in Tanzania. Other capacity building activities were also conducted by the various components within LVEMP for which training activities will need to be captured by other reports. This component has since the project inception made considerable contributions in terms of institutional and human capacities in the region.

The specific objectives of the Capacity Building Component are:

- To strengthen the human resource capability and capacity of various participating components and strengthen facilities for training and analysis the 3 national universities vis Moi, makerere and dare s salaam.
- Provide solutions to environmental problems through research
- Develop and conduct short courses training of component nominees.

8.2. Findings and lessons Learnt

8.2.1 Findings

LVEMP has contributed to building both human and institutional capacity in the 3 countries that will. These achievements have and will continue contribute to positive sustainable management and improvements of natural resources in Lake Victoria Basin.

8.2.1.1. Human resource development and its impacts

Form the envisioned output (WB Appraisal Report 1996), of 2,000 short-term and on-job training courses, 100 regional Masters Degrees and 15 PhDs the followings results were recorded during this assessment:

- That the WB Appraisal Report did not specify the capacity building needs and allocations by country.
- That individuals have been trained in short specialized courses and this knowledge is now available within the East African region resulting into improved institutional capacity for managing the LVB resources.
- The project also hired additional personnel to supplement the component staff while capacity was being built.
- Formal Training was conducted by fully sponsoring project staff and giving partial support to others for M.Sc./M.Phil. and Ph.D. training at various local Universities as well as outside the region (refer to the country reports for details). Table 8.1shows the number of local formal trainings supported by the project during its lifespan.
- There were several cases in which people received training at institutions outside the country. **In Kenya …..., Tanzania …… and Uganda ……**trained outside the country at Masters and Doctorate level and have returned to support the LVEMP work. It was difficult to assess the direct output of such training on the project activities as in the case of local training but once returned home they have continued to provide services in one way or the other.
- The PhD and Masters students who trained locally conducted theses research whose finding have contributed to knowledge on Lake Victoria environmental issues thus contributing positively by filling knowledge gaps necessary for sustainable management and had positive socio-economic implications to the riparian communities. These studies have had the following specific impacts:
    - facilitated students to deal with and answer some questions concerning fisheries management and conservation.
    - generated baseline data necessary for future research and accumulated information to help guide planning and activities necessary for rational management, wise use, and management decisions
    - Created opportunities for experimenting and piloting conservation and development activities in order to test and harmonize scientific ideas and concepts as well as improve on the existing legislation, extension, monitoring, enforcement, developing measures and strengthening service delivery mechanisms in key areas

- The project also supported some undergraduate and diploma level training for a few needy students in the three universities for the 3 countries. The number of students sponsored are given in Table 8.1. especially for degree in Fisheries and Aquaculture which helped to uplift the fisheries management and aquaculture and enhance availability of qualified personnel in this specialized area. The trainees are also exposed to biological dynamics and sensitivity to change in aquatic resource. This has resulted into increased demand for more training in this field

especially in Uganda and Tanzania where hitherto such course were only part of other departments such as Zoology, Veterinary and Agricultural sciences.

- Short courses for special skills (1 week-3 months) such as taxonomy, librarianship, statistical packages, fish quality, pest control, public prosecution, computer training, secretarial were conducted within the region and overseas (Table 8.1.).
- Informal training, awareness creation and on the job training were conducted by different components and supported by the respective secretariats of LVEMP I. This lead to increased interest and much positive impacts at the project management and community participation level especially in selected target areas. It also led to meeting the project objective "*to maximize the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income, supply safe water and sustain a disease free environment"*. The components conducted seminars, workshops, project meetings, study tours and field visits for both the communities and project staff and collaborators, decision makers (politicians and administrators) at the local and regional levels.
- Curriculum development for both specialized and general courses have been improved (M.Phil./M.Sc and Ph.D) and developed for graduate, technical and community training and awareness creation. Makerere and Moi Universities new BSC and short courses curriculum which direct Lake Victoria environmental and livelihood issues including Fisheries and Aquaculture have been designed and being taught.
- The formal and informal course created significant impacts on the project activities:-
    - awareness creation through meetings, seminars, radio spots and talk shows, billboard and posters led to formation of several CBOs/CSOs exclusively focusing on the conservation of Lake Victoria.
    - Many policy makers and the public are now aware of the priority to protect Lake Victoria as a resource. The resources of the LVB are now better known and can be prioritized for protection and some districts within the LVB have used the information gathered in the production of their district development plans
    - There has been knowledge upgrading through various courses which has lead to supportive staff having broadened and strengthened their grip on technical knowledge in various aspects on the lake environmental conservation and natural resources management.

Table 8.1. Formal Training Sponsored by LVEMP 1 Within East Africa

Figures outside ()-fully sponsored, (*)- partial theses research support), (**)- Females

Country	PhD	Master	Bachelors	Diploma	Short courses (Min. No.)	Total
Kenya	4 (21*)=25 (7**)	8(*50)= 58(**10)	0	0	**429**	**512**
Tanzania	7	30	0	6	**280**	**323**
Uganda	13	20	45	18	**1056**	**1152**
Total	**25**	**108**	**50**	**24**	**1765**	**1987**

8.2.2. Publications and Capacity for Consultancy Services

- Publications and scientific reports from LVEMP I research work by thesis and other sources indicate increased human capacity at the highest technical and professional levels. A number of posters, brochures, research reports and theses/dissertations, seminar proceedings and even journal publications were realized through LVEMP I. Such publications and documents have expanded international recognition and scientific profiles and generated new collaboration ventures for LVEMP participating scientists, government department, universities and NGOs. Since the onset of the project there has been a noticeable increase in the number of publications and scientific reports from East Africa mainly due to increased capacity for research on Lake Victoria.
- The project has increased the capacity for the regional scientists to engage in several consultancies, contracted research and service delivery providing a healthy ground for enhanced performance at the national and international levels in home grown service delivery, information generation and better knowledge of the lake and the lake basin.

8.2. Institutional capacity Building

- Most components used existing buildings belonging to implementing government departments, the project financially supported improvements/ renovation and equipping of various offices, research laboratories and field research plots for its use by components.
- The project also provided various equipments as indicated below an assortment of vehicles, laboratory apparatus, field equipment and tools that varied between components in numbers and type depending on specific component objectives.
- Certain variations occurred in the institutional capacity building which hindered fast progress and may have occurred due to a number of factors including lack of a balanced detailed needs assessment at the project inception time and lack of capacity to absorb certain working gear. There was also some delayed procurement and delivery of certain equipment required for implementation of component activities. At the time of the present study, equipment was still being ordered and some being delivered.

8.2 Other related programmes

- Several programmes and/or organizations have addressed the LB by building capacity in areas of human, infrastructure, equipment and others. The list includes those that have worked in the LB and catchment but without necessarily having

the Lake in mind (See details in the Specific Lessons learnt Reports for each country).

- Capacity building output from LVEMP I will be useful in providing trained human resources, institutions and materials for future capacity building for LVEMP II and other organizations keen on providing positive contributions for conservation and development in Lake Victoria Basin.
- It was also found that there are hardly any development partners who are keen on to sponsor high level capacity building especially at PhD and MSc levels on sustainable management of LVB resources. Therefore, although LVEMP I started from zero and there are no similar programmes, it has achieved good grounds for future developments. The situation is worse with short courses because those were highly specialized and targeted. The same to awareness raising/workshops and study tours

8.3 Lessons Learnt, Challenges and Key Emerging Issues

8.3.1 Regional Lessons learnt

- Through LVEMP1, several people trained formally and informally and at various levels and areas of specialization this process has lead to various forms of collaborations, networking and interactions at all levels resulting into both hierarchical and horizontal relationships which have enhanced the capacity to better handle and made progress on the project implementation. In all cases, appreciable experience, knowledge, interest and concern on Lake Victoria and its catchment has been registered.
- Generally There was good success in building capacity in specialized areas and awareness creation and that the personnel that have worked with the project form a critical mass of important (reserve) individuals who for a long time will value and raise concern and even take action within their capability whenever an issue concerning the lake comes about. Form SWORT analysis by the consultants several strengths, weaknesses, opportunities and threats derived from the capacity building process were identified and summarized.
    - The Strengths include the fact that the process addressed all components of LVEMP I, significant research output key to excellent information exchange between components, institutions and regionally, developed numerous short courses and curriculum, benefited several project staff and empowered communities. Overall it has created a critical mass of highly trained personnel and well motivated community members.
    - he weaknesses include lack of training needs assessment and clearly defined training programmes, slow flow of funds affected research and slowed training progress, gender imbalances and the acquired skills difficult to transfer to communities due to inadequate mechanism and funds.
    - The capacity building has created several opportunities for further career development, promotion and staff development, improved performance outputs, enhanced project sustainability despite the recent retrenchments, created organized community groups to pass skills to e.g. BMCs, CBOs,

etc) It has also created better understanding for future training programmes.

- Some threats were also registered. The project as a whole did not develop mechanisms for attracting and retaining trained staff resulting in a situation where trained staff left the project through frequent government transfers or redeployment outside the project areas as well as unexpected staff retrenchment and negative impacts of HIV/AIDS on staff establishment. Insufficient funds and slow flows from the project and government contributions affected the expected positive outputs of this component.

- The project built and renovated office and laboratory facilities and secured vehicles, and assortment of equipment and tools which significantly improving the work environment and provided new and good apparatus compared to the previous conditions. In particular the improved laboratory conditions, apparatus and supply of chemicals is a major achievement in microbiological and chemical analyses that contributed to the lifting of the European Union (EU) ban on fish export to Europe and several laboratories have been accredited by the South African National Accreditation System (SANAS).
- The LVEMP1 has been mainly a reconnaissance project that has generated much baseline information against which future initiatives, such as the impending LVEMP2 and other non-LVEMP projects will be set.

8.3.2 Lessons learnt specific to Tanzania

a. **Human capacity Building**

- It was learnt that the training programme document was comprehensive in coverage even though needs assessment were not done at the inception of the project to help focus and development of a well balanced all inclusive training programme before the inception of the project main activities. Given the available information and experiences gained during LVEMP1 the future projects targeting capacity building as a main activity should provide time and resources for training needs assessment and develop suitable programmes prior to its inception. Further it would have been appropriate to conduct a detailed appraisal on human resources needs and individual commitments it help in identification and engagement and or posting of qualified personnel to the project for a the project lifespan. This way the project, rather than the implementing institutions, would be the driving force in pointing out the training needs.

- At the project inception component staff with postgraduate training were insufficient and the project activity created and was viewed as just another training opportunity. Therefore there was little ranking of priority training areas and study topic and/or area relevant to the project and sufficient justification was not provided where some components preferred masters training by research while others opted for the course work alone. This situation could lead to significant variations in the training outputs and affect the project achievements.

- Training for Masters and Ph.D. degrees occurred at both local and overseas with the former local trainees taking longer time. However, training locally contributed significant knowledge and build capacity at the institutions as well as being cheap to the project compared to external training. But the different experience gained in LVEMP I during this process will be valuable for plans and decision making in future capacity building. Undergraduate students from Sokoine University of Agriculture (SUA) and University of Dar es Salaam (UDSM) were attached for field practical within LVEMP Components which generated much interests amongst both academic staff and students and contributed immensely to capacity building at that level especially in the areas of environmental science and natural resources management in Lake Victoria and similar ecosystems. Some project components have hosted up to 20 university students per year and this should be continued as it has spill over capacity building effects.

- The various capacity building efforts have been and will be valuable asset for implementation of LVEMP II and related interventions in the basin. Good capacity building was achieved through field demonstrations, study tours and discussions to top-level officials and decision makers such as from SADC, Members of Parliament from three riparian countries and other African countries as well as officials from donor community accredited to Tanzania. It has accorded some external study tours for both decision makers and project staff in Germany, Asia and USA and Canada. These ventures have helped in create top level awareness on worldwide environmental problems and enhanced appreciation and support for the efforts and resources needed to save Lake Victoria and its environs. These experiences will enable development of a sustainable management plan and its implementation for Lave Victoria Basin and the entire River Nile basin. The project conducted several seminars and workshops conducted by the components have helped to create awareness, interests and improve output of the various cadres of staff, district extension workers, collaborators, BMUs and communities. If such initiatives are translated benefits the desired interests, participation and output will achieved leading to better sharing the benefits, costs effectiveness and window for sustainability.

- Exit plans need to be carefully thought out and experimented considering the recent bad experience of other projects such as HESAWA project (DANIDA funded) whereby facilities built for provision of safe water were left to deteriorate and even vandalized in some cases. The proposal for establishment of Lake Victoria Environmental Fund (LVEF) that was proposed by Wilson *et al*. (2001) and reiterated by Nanai and Nyirabu (2001) could be pursued to the full since an internal system of generating funds for capacity building is more likely to be sustainable than overdependence on external resources.

- Although, the project has achieved significant high level capacity building and created awareness and enthusiasm amongst the participating communities in pilot areas, large proportions of the Tanzaina's Lake basin still remain unattended and

further capacity building will need to be initiated and scaled up to capture the communities in the entire Lake Basin. This pilot initiatives in LVEMP1 indicated over 80% of the communities are aware and knowledgeable on the project activities, This is a positive indicator of the anticipated progress if the activities have to be expanded to the hitherto unattended areas of the basin. Although a good number of those involved in LVEMP1 were born in the lake region and/or had been there for various durations and in various capacities, most of them had considered the lake to be just another water body and had noted important events such as illegal fishing or water hyacinth intrusion, only in passing and without much internalization. The project period has meant tremendous increase in knowledge, interest, concern and overall internalization of the lake. Similar effort is needed for the wider Tanzania by creating awareness at different levels through various means including the media.

- The LVEMP1 created an enabling environment for research, monitoring and management through provision of equipment and overall working gear and rehabilitation of office and laboratory buildings. Prior to LVEMP1, the manpower can be said to have been largely stagnant and/or less aware of the lake issues. There was much between components variation in the number trained; this might be the result of many factors including availability of staff for training, training needs as identified by the officers at the implementing institution and knowledge and capability of an implementing institution to identify possible training places as these were left for components and implementing institutions to decide (see Lessons Learnt Country Report). The suggestion is that training, other than workshops and seminars, could be implemented through one component which would synthesize and take into account the training needs of the different implementing and other relevant institutions, all the time having the LB as the main reference issue. Without a central, capable and answerable body, such as a component, an implementing institution might have been allocated fewer or more of the training slots than it deserved given the objectives on hand. In the end, it is also important to have one implementing institution which would serve as a central data base. The Support to Riparian University might be a suitable lead component in this.

- The project has made significant efforts to produce publications and especially the two books which have assembled key research results by largely its Components. These publications will prove an important start point and more efforts should be made in this direction to provide the needed literature material at locally and internationally mostly in refereed journals, technical research reports and conference and workshop proceedings. For enhancement of sustainability, translation of key publications into Kiswahili will prove to be a useful undertaking for enhancing understanding by the local people, other middle level extension workers and decision makers.

- Institutional capacity building to support the local universities, TAFIRI and implementing components have enhanced the success of LVEMP I. For instance

the refurbishing and equipping laboratories and procuring vehicles has resulted into major project and respective component achievements. However there was considerable variations between the components on the nature and level of institutional capacity building for no clear reason. Capacity for office and laboratory work was markedly better built for the Water Quality Component than it was for the Fisheries Research Component. A plan for construction of a museum at the TAFIRI Research Centre at Mwanza was approved but could not be implemented while work to relocate the damaged water quality field station in Bukoba was underway at the time of the present assessment. This situation need to be harmonized while considering a holistic capacity building approaches to reduce conflicts that may arise between different implementing departments and components.

- There are other non-LVEMP capacity building activities in the Lake Victoria basin. Mostly, these initiatives have been isolated and scattered efforts across time and disciplines. Local public and private institutions themselves have addressed research and management of the lake from their respective sector perspectives with little cooperation between different sectors even within the same ministry. Although LVEMP I has done a commendable job in bringing about appreciable cross-sector fertilization and this constitutes a major achievement in component through the project much need to be done to harmonize and maximize benefits from different efforts such as the LVFO, Wildlife Department, Tanzania National Parks, and Tanzania Wildlife Research Institute among others (see National Lessons Learnt Report).

8.3.3. Lessons learnt specific to Kenya

a. **Human Resources Capacity Building**

- Each of the components was expected to sponsor staff for capacity building at Moi University but only 5 components sponsored students. Others sponsored their officers outside the country. While the components provided sufficient and regular funds to those sponsored outside the country, their counter parts did not get similar treatments leading to delays in completing the courses in time.
- At Moi University several self sponsored students though belatedly received LVEMP funding to support their thesis research, they did were not part of the staff development of the respective LVEMP components. However the results from their theses work has contributed immensely to bridging the knowledge gaps that existed before the project onset. In future it will be worth considering non-project scholars from the riparian regions for sponsorship to improve the capacity around the target project areas.
- A training needs assessment for each component was not undertaken at the onset of the project even though this was done during implementation of LVEPM activities. This situation may have led to problems of admitting qualified staff for university training where some did not meet the minimum requirements.
- The problems in implementation of the project in the early years to 2003 affected capacity building but at Moi University although by 2003, only 18 postgraduates had completed courses at the time of this assessment 118 students graduated with M. Phil.

and D.Phil. degrees. This is commendable and the lessons can be learnt lessons leant here are that local universities should be choice for capacity building and if sufficient resources are provided the results will be more rewarding than external training. Environmental studies can attract privately sponsored students who with additional LVEMP support will yield good results and effectively compete for the numerous emerging job opportunities on environmental issues.

- There was some gender imbalance in high level capacity building but in this infancy stage of LVEMP I capacity building already attracted 32 female students which is comparable to enrollment in other public universities. However future capacity building activities should strive to provide equal opportunities and gender balance.
- The positive trend created by the Moi University Fisheries department which annually graduates some 25 undergraduates will need to be strengthened and other specialized departments such as environmental studies should be considered for capacity building support at this level in future.
- Despite the successes, implementation of capacity building and time bound field research work was affected by inadequate funding and delays in releasing funds in earlier years, hence putting a heavy load in the extension phase. Further, such delays in implementation overburdened the academic staff of the participating university departments and delayed timely theses examination. The programme concentrated on environmental studies leaving out other disciplines related to the project implementation.
- The two departments involved in capacity building did a good job in community sensitization by conduction short courses of various environmental issues, fisheries management by SES and aquaculture practices by DoF as well as developing practical curricula for a variety on need driven short courses. By 2004/05, the component has developed 63 courses and operationalized 25 which benefited 147 participants. It was learnt that the courses had practical application and generated a lot of interests to the riparian communities. However to date the geographical coverage and participants have been small compared to the rest of communities especially along the lake who bear the burden of environmental degradation including the decline of fish catches in the lake. Probably the major limiting factors were insufficient funding and insufficient experts to widen the outreach at the pilot LVEMP I. It is therefore necessary to scale up such training to cover all parts of the Kenya's lake basin as a well conducted need assessment and work plan in LVEMP II.

b. Strengthening Institutional Capacity

- The project renovated offices and laboratories and purchased vehicles, laboratory apparatus and boats to enhance the capacity of the various components in implementing their activities. Moi University received 2 vehicles, one boat, aquaculture facilities and other items to support capacity building at the School of Environmental Studies (SES) and Department of Fisheries (DoF). However, the major constraint has been the slow procurement and financial procedures that tended to delay the timely implementation and improved output as was expected by the project. It was observed this support has facilitated training, research and has been instrumental in training 118 graduates. Although, they are still in good

conditions it is necessary to provide financial resources to repair and sustain this condition.

- The changes in project management from the national Secretariat in the MENR/NES to KARI improvement disbursement, procurement and delivery of other services to the component. However, although requests for component items are as per quarterly work plan, the funds received were usually insufficient for as specified in the work plan. Other delays have been related to the long and cumbersome tendering and procurement procedures as well as the previous meagre ceiling placed on small purchase which is currently increased to Kshs.40,000. Other procurement variations occurring between KARI and Moi University, government both parastatals need to be harmonized to avoid creating unnecessary delays and improve performance. To improve this situation the procurement specialists from both institutions should be involved and support the Components in deciding on equipment specifications and inspecting on arrival them for compliance and completeness.

c. Research on Environmental, Fisheries and Related Areas

- Good efforts have been made to general data and from research activities where graduate and theses research was conducted in the field and laboratory. It is worth noting that through such efforts more than 60 lake wide environmental and development problems have been addressed. This will form a strong information resource base for future management of the Lake Victoria basin. For instance the problems addressed in this manner include but not limited to water quality and health (30%), integrated soil and water management (16%), catchment afforestation and forestry management (13%), wetlands and swamps (12%). Other issues addressed were related to invasion, control and socio-economics of water hyacinth. This research progress exposed graduate students to methods of environmental analysis and research although funds.
- It was observed that the apart form building the capacity of component staff, other students and institutional infrastructure no provision was placed on building the human capacity for the riparian departments, presumably because either lack of funds, no provisions and / or oversight during project planning. Today as the LVEMP I comes to a close, the two departments as Moi University still have the same human capacity as at the beginning of the project. To some extent the capacity building activities increased the burden to the academic and technical staff who still had other non-project duties to perform. In future it will be necessary to support the human capacity building at the universities targeted for providing training to remove the envisioned budget, improve their research performance and motivate them.

8.3.4. Lessons learnt specific to Uganda

a. Human and institutional Capacity Building

- **New courses:** Before the intervention of LEVEMP, there was only one MSc course in fisheries. As a result other components sent their students abroad for other better courses in fisheries because the Zoology dept could not handle them. Therefore LVEMP could target or orientate its funding in the next phase at introducing those courses that the components had to look for from other countries, into the zoology dept of Makerere University. This would reduce the cost that the component incurred and as a result may have more students trained. The cost of one student abroad could cater for two or more students within the country. At the same time, this would benefit the dept and the university as a whole both financially (e.g. from school fees payment) and also technically (more lecturers and trained people in the Department).
- **Local and International Academic Linkages:** The Zoology Department had a student (Gladys Bwanika) who did her course in Makerere but only went to the outside university for sample testing. This reduced the cost of her having to have studied abroad full time. Honorary lecturers acting as supervisors and also their hosting institutions providing facilities otherwise unavailable to the home institution facilitated this. Therefore this method is encouraged for replication in future programmes.
- **Private Sector Linkages:** The public Private partnerships and linkages were realized. Through LVEMP, the linkage between the academic world and the private sector was established. The zoology dept was able to link up with the private sector under the LVEMP intervention. The dept offered lab services to the private sector at a fee and so was able to realize income but also provide the otherwise equally required service to the private sector. It was realized that there is a very high demand for fish fries by the private sector hence need for training in their handling.
- **Knowledge upgrade :** The introduction of the new BSc course in fisheries and aquaculture that attracted more demand is a sign that therefore the programme could target the introduction more modern courses in fisheries in the department.
- **Marketing:** In the past, Makerere University used to advertise its intake through the print media and those would reach a limited number of the public. However, under LVEMP intervention, the dept used radio spot messages in both English and local languages which attracted so many students in the department. Therefore the lesson is that there is need to change the advertising methods in the academic world. Another lesson is that this type of advert was pro-poor because most poor people and remote areas in the country do not have access to the print media but have access to radios.
- **Publications:** Several publications, research papers and conference presentations were produced during the LVEMP I. The project supported the production of one book on "*introduction of aquatic science in lower secondary schools*" that has created positive impacts and generated interests on the aquatic science amongst younger science based students.

- **Level of training success:** More success was realized at training Msc than PhD students. This was because MSc were junior employees while most PhD students were senior employees of their respective components and had therefore mare responsibilities than MSc. Students.
- **Short-term in-service training:** The potential for training using workshops and seminars is high for personnel in the fisheries sector fields. These include private managers in fisheries and fish processing.
- **Multiplier effect:** Training resulted into several areas. These included introduction of a new BFA course in Fisheries and aquaculture and writing of teaching manuals and research publications.
- **Building institutional capacity:** The institutional support provided by the project to department of Zoology has enhanced its capacity to admit and train more undergraduates and postgraduates in areas relevant to Lake Victoria Management. For instance the component benefited from refurbished and well equipped laboratory and aquarium, internet services and vehicle as well as other consumable items. It is necessary that continued efforts and financial assistance be provided to maintain such expensive and valuable facilities. This development have enabled the department to advertise and admit more self sponsored students and generate good income from their fees.

8.3.5. Challenges and Key Emerging Issues

- The LVEMP sponsorship was for Msc and PhD courses only but new experiences show that a lot more achievement would have been realized if the sponsorship also targeted lower courses like BSc, diplomas, certificates and refresher courses so as to bridge the existing gap in the between high level professionals and technician level who interact more with riparian communities on practical hands on issues. The suggested approach is pro-poor and therefore during LVEMP II, deliberate efforts should be made to provide training sponsorship at this lower level. It is also necessary to registered target undergraduates at the university and after the training provide enabling environment and conditions that favour their retention.
- Sustainability of the project activities is a key challenge in most of the components especially for capacity building because most institutions do have regular and adequate funds to continue sponsoring postgraduate students or train, pay and retain academic or even to maintain and procurement equipment. Yet, training should be a continuous process because new areas emerge, staff retire and move to greener pastures.
- Since most of the project components were implemented through government existing institutions and structure, meant that it had no control over its responsible personnel and frequent transfers and deployment outside the project affected morale, commitment, implementation and output. It as observed that there was rapid turn over of personnel who were trained by the LVEMP funds and it is suggested that staff retention incentives and mechanisms are necessary if the project has to perform as expected. The project trained many people who are near retirement age making it difficult to continue research and implementation of project activities should they retire or be retrenched. Because of this some

components will not have the capacity to continue using the equipment they received under LVEMP I if such people go home. Without imparting the knowledge and expertise to younger people.

- Although There is evidence that a training needs assessment was done, but there was problem with coordination and consultations during implementation. It may also be deduced that the component either was not given the opportunity or did not have the capacity to plan for the money given and therefore it did not benefit fully from its financial allocations compared to some components who received excess or irrelevant equipment. It was also noted that some people went abroad for training in courses that locally existed which made such training more expensive and denied other from receiving the same expertise. In some cases some trainees were sent abroad or to other universities without consulting the capacity building coordinators.

Chapter 9

Institutional Arrangement

9.1 Background

This Chapter addresses the key objective of reviewing the Institutional Framework of the Lake Victoria Environment Management Program (LVEMP) for the purpose of providing background information which could guide the preparation of Phase II of the LVEMP and its implementation framework.

Given the elaborate nature of the program, it is evident that the Institutional Framework faces some challenges which could derail or delay its full implementation. Therefore, there is need to catalogue its successes and shortcomings so that the management and policy makers can address them in future, in the context of the operational modalities of the next phase. This need provides the threshold for documenting the LESSONS LEARNT on the Institutional Framework of LVEMP I, which is the focus of this Report.

As indicated in the ToR, the fundamental objective of this consultancy was to review the Institutional Framework of LVEMP I so that the findings of the study can be used to guide the preparation of Phase II of the project and its implementation framework. The institutional framework includes the reporting mechanisms within the hierarchy of the organisation, the management and administrative arrangements, the in-built checks and balances incorporated in the Project Document to enhance quality control, and forward and backward linkages with implementing institutions in the context of various components of the program. In addition, the management structure was also intended to provide for collaborative efforts between LVEMP I and other agencies like the Lake Victoria Fisheries Organisation (LVFO), which perform tasks relevant to some aspects of the program.

9.2Findings and Lessons Learnt

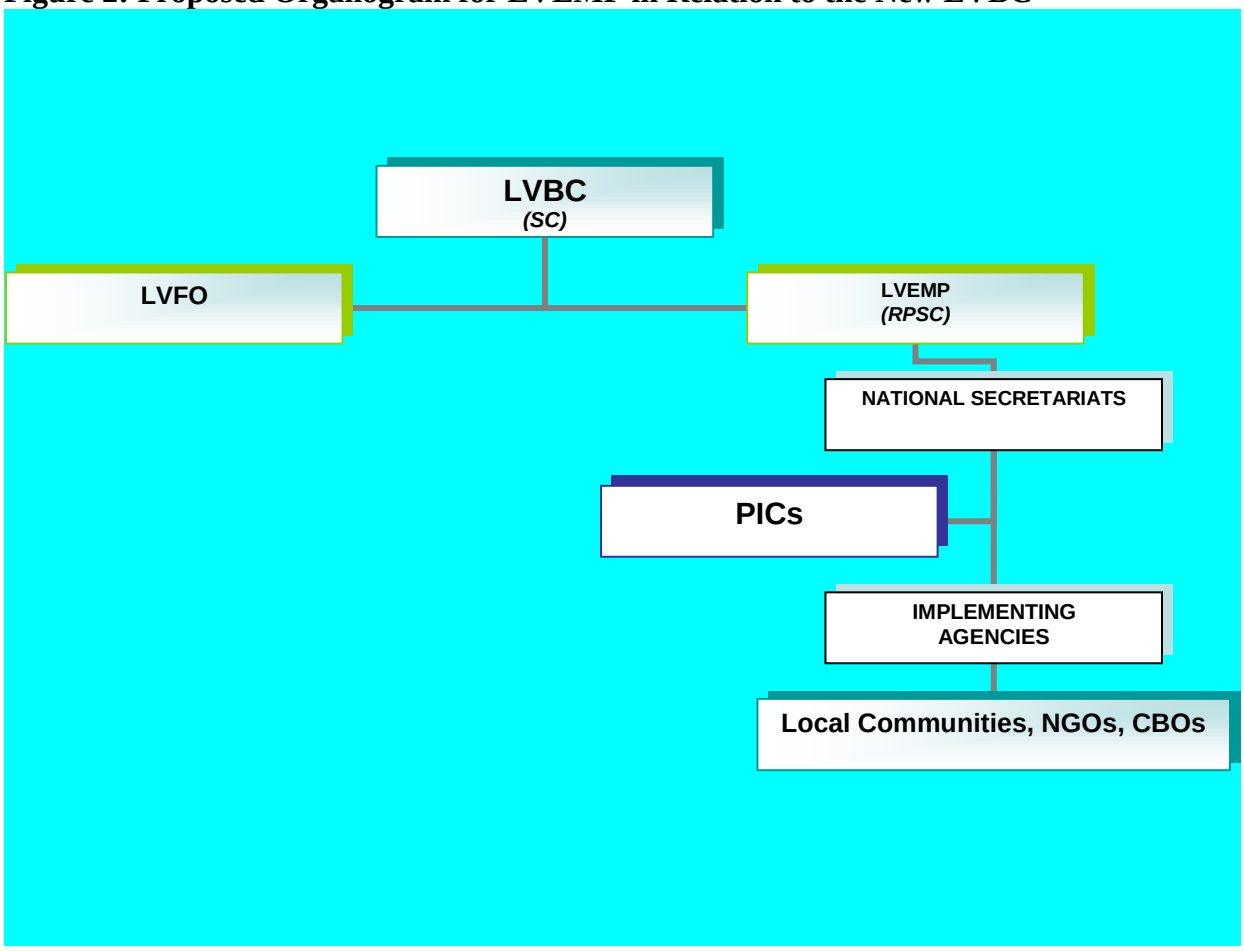
9.2.1 ***Regional Operational Framework:*** In general, LVEMP's institutional framework and operational modality reflect an innovative and cost-effective approach to the management of an elaborate, multi-sectoral, and multi-disciplinary program, whose success is critical to the development of a significant region of East Africa and the populace within it. The use of existing institutions for the project implementation enables the project maximize available institutional and human resource capacities while also strengthening their capacity to ensue sustainability. Moreover, by involving NGOs and CBOs at component level, enables incorporates the modality within it in-built mechanisms for information disseminating and awareness creation in the entire stakeholdership and regionally. This inspires the population and provides the necessary incentive for success. Therefore given the inspiring role and commitment of implementing agencies, the project success is attributable to this innovative approach and role of

other stakeholders and its participatory process during formulation. A cross-section of stakeholders from the three countries were consulted on issues related to the management of Lake Victoria and its catchments prior to the establishment of the LVEMP I a process that ensured and further strengthened common project ownership. These approaches in project formulation and implementation need to be improved for any loopholes and carried forward in future. But, in some cases, the institutional and management structure appears amorphous, leading to duplication of efforts, and delays in project implementation. Therefore, some institutional restructuring is necessary to harmonize and strengthen some their functions.

9.2.2 **The Regional Policy and Steering Committee:** The RPSC accords the LVEMP a regional flavour, especially in the context of the emerging institutional set-up of the recreated EAC, which now includes the LVDP/Committee, in addition to the LVFO. It provides the conduit for linking the LVEMP to the EAC Summit through the 9 Permanent Secretaries who constitute it, and the Council of Ministers which it advises on policy and operational matters of the program. To date, the RPSC has played one major role, in endorsing the incorporation of the LVFO as an organ of the EAC. But in the current form the RPSC can be regarded simply as a loosely constituted contact point, without any serious managerial and policy guidance responsibilities or even suggested mechanisms for enhancing Lake wide regional collaboration despite serving well as a meeting forum. It has also not ensured inter-country exchange of information but now with the re-emergence of the EAC as a regional body with its new appendages such as the LVDP/Committee now a permanent institution, an opportunity now emerges for the RPSC to be transformed and considerably strengthened. The protocol for the LVBC was signed in Arusha on November 29, 2003, and ratified by the EAC Partner States one year later as a response in recognition of Lake Victoria as a significant economic resource for the EAC Partner States. It has great potentials to spur development through promoting investments in the fields of energy, transport and communications, infrastructure, tourism, agriculture, fisheries, forestry, and mining. The Partner States acclaim water as an economic good with social and economic value. For this purpose, they have designated the LVB as an economic growth zone. The emergence of the LVBC within the EAC setting is further justified on the grounds that the Lake is a massive geographical entity, with a huge economic potential. And its biodiversity attracts the attention of the global community, who are concerned about its sustainable use as an international heritage site. For as long as the lake continues to exist, its environmental problems will also persist, although their manifestations and intensity may change. As a common property resources which transcend international boundaries and has finite lifespan which tend to create uncertainties about its future for sustainability and job security, worldwide experiences underscores the need for joint a management of projects. The re-established EAC needs to be strengthened structurally in order to generate the desired impact within the region, and in order to attract global attention as was in the past. The LVBC presents itself as a suitable candidate for this purpose and that it would be a central organ with the development and conservation intentions to attract substantial donor

interest and support. The objectives and functions of the Commission (as itemized in the Protocol) are geared towards the promotion, facilitation, and coordination of stakeholder activities with respect to sustainable development, poverty eradication, environmental protection, sustainable utilization of natural resources and compliance on safety regulation in the LVB. It will act to harmonize policies, laws, regulations, and standards and the implementation of sectoral projects and programs while promoting capacity building, institutional development, research and development, and security and safety on the lake. It shall have the responsibility of monitoring, evaluation, and ensure compliance with agreed policies and actions as well as spearhead common negotiating positions for the Partner States against any other State on matters concerning the LVB. The institutional structure of the LVBC includes the Sectoral Council (SC), the Coordination Committee (CC), the Sectoral Committees, and the Commission Secretariat. In fulfilling its obligations in the context of the LVBC, each Partner State will establish National Focal Points to coordinate national initiatives of the LVB and share information. Evidently, the establishment of the LVBC is a move in the right direction and can be regarded as an endorsement and recognition by the Partner States of the viability of the institutional setting and operational mechanisms of LVEMP. Thus it is worth making an implicit recommendation that LVEMP should continue operating in future in one form or another preferably under the LVBC set-up for a better harmonization of regional matters such as capacity building, information generation and exchange, policy regulations and standards as well as promoting regional stakeholder participation in sustainable manner. The LVBC also replicates aspects of the institutional setting of LVEMP in many ways such as its SC is a replica of the RPSC, functions and operations of Sectoral Committees are similar to LVEMP's National Policy and Steering Committees. But the LVBC seems to be a massive bureaucratic establishment on its administrative ladder or focal points and there are issues that need to be addressed in future to avoid setbacks in program implementation, as evidenced by the experience of LVEMP. The future should see the retention of LVEMP in implementing activities of the LVBC without the institutional bottlenecks referred to above. The operational mechanisms of LVEMP are advantageous in many ways, and, to date, leading to some of its components major successes. Its general current could be modified as suggested in Figure 2.

Figure 2: Proposed Organogram for LVEMP in Relation to the New LVBC



9.2.3 **The Regional Secretariat** is links up the RPSC with the National Secretariats through the Regional Executive Secretary (RES), who is its Secretary. Its functions replicate those of the National Secretariat (NS), but at a regional level. As a conduit between the RPSC and the NSs. But it was found that the Regional Secretariat hardly performs any managerial role. The way forward would be to restructure both the RPSC and the Regional Secretariat to become a viable, management-focused organ of the EAC, which appears to have been accomplished in the context of the LVBC.

9.2.4 **Employment Terms of Project Staff**: The Secretariat staff and the component specialists are employed on contract terms. All other full-time and part-time staff are employed under the respective national Governments Civil Service terms. The differentials between the two salary scales range from 4 times greater at the top level to 10 times greater at the bottom level – the Secretariat salaries being the highest. The staff on government conditions of service have benefited from the project in ways other than salaries. At officer level all of them have participated in short courses or post-graduate degree level studies; good office facilities, equipment, computers and transport have been provided. The difference in conditions of service, especially for the contract staff in the components, has created some dissatisfaction among staff on government conditions. The preferred option is for the conditions to be harmonized for all project staff.

9.3 Country Experiences

The experiences at the national level appear different in terms of project achievements, weaknesses and operational issues. This is evident from the findings and lessons learnt as outlined below.

9.3.1 Lessons Learnt in Uganda

9.3.1.1 Management Issues:

The National Secretariat is the pinnacle of the LVEMP institutional and management structure and works well in Uganda, which is amazing, in view of its rather scanty staffing position. Clearly, the innovative approach of using existing institutional and human resource capacities has contributed significantly to this success. In 2003, it was documented that the first two years of the program experienced slow progress (WB, July 2003) largely on account of the need to set things up for the take-off. This necessitated an extension of the program by two years. Since then, significant progress has been registered in most components, as noted by the WB Supervision Mission (WB, October 2004). The main achievements recorded so far include the following:

- creating baseline information and database for planning future activities in the management of Lake Victoria
- building institutional and human resource capacities in environmental management within the region to ensure long run sustainability of Lake Victoria and its catchments, including control of water hyacinth and other invasive weeds
- identifying all industrial and municipal effluent points in the lake basin as a step towards influencing the allocation of Government resources for addressing negative impacts from these sources.

- harmonizing fisheries legislation in the three countries, which has led to a review of the Fisheries Act, and strengthening enforcement in pilot zones through co-management with local fishing communities. This has led to effective regulation of landing sites within the pilot zones, gazettement of BMUs, and effective monitoring of fishing activities
- establishment of the LVFO, now an organ of the EAC
- establishing a lake-wide water quality and rainfall monitoring system
- completing inventory and resource survey of Lake Victoria
- preparation of investment proposals for the rehabilitation and economic management of wetlands
- undertaking a survey of community involvement in co-management
- a review of 300 socio-economic publications for the purpose of seeking guidance on best practices in environmental management of lake ecosystems

Indeed, the WB (May 2002, May, July, 2003) has rated the performance of most components as satisfactory. The expected benefits of these achievements to the riparian states include expansion of artisanal fishing and processing, including reduction in post harvest losses, control of water hyacinth, conservation of wetlands, improvements in pasture management, conservation of catchment soil, upgrading of urban sewerage management, industrial pollution abatement, and improvements in rural water and sanitation. Considered together, these successes constitute significant contributions in addressing the key concerns of the LVEMP in terms of improving the livelihoods of the people who live in the catchment area, enhancing their contributions to the economies of the riparian states, while simultaneously managing the lake sustainably for the benefit of the global community.

It has to be noted, however, that these achievements have not been made without problems as a result of sound management and facilitation by the National Secretariat despite having to cope with several setbacks in performing its tasks. Invariably, the National Secretariat has been blamed for underperformance without relating this to the staffing position at the Secretariat, or the fact that its performance hinges crucially on feedbacks from implementing agencies working under autonomous organizations. In reality, the staffing position at the Secretariat is scanty and requires a proactive rather than a reactive approach to solve the problem. However recruitment of additional staff in the Accounts, Management Information System, and Procurement units, and the secondment of an Internal Auditor have been done but the vast Community Participation section still has only one officer who has to deal with all project components and numerous communities in the pilot zones. The Secretariat staff need to be in the field, yet their office work is also quite demanding. Clearly, this causes delays in activity implementation. Given the experience gathered over the last seven years, it is evident that the staffing position requires re-evaluation, in view of anticipated activities of LVEMP II.

The Secretariat has also experienced delays in the submission of reports from project components, including accountability for disbursed funds. Often, the Secretariat staff have to move up and down in pursuit of these reports, an exercise which obviously

impacts negatively on their office performance. Delays in submitting accountability impacts negatively on the implementation of work plans, as funds cannot be disbursed without prior accountability.

Given the above scenario, and other responsibilities of the secretariat staff, it is apparent that these delays are not intentional. Without any additional financial motivation except for the provision of field trip expenses, it becomes difficult to expect them to apportion their time equally between the two demands. To circumvent this problem, the way forward would be to assign an officer (Task Leader) exclusively to LVEMP work within each implementing agency.

In December 2004, another constraint arose – that of Government interference in the management of project funds (WB, April 2005). Government shifted project funds from a commercial bank to the Bank of Uganda. In response, the WB stopped disbursement of funds until late March 2005, when the funds were relocated to a commercial bank. This seriously curtailed the implementation of project activities in all components. For the future, if there are no proven malpractices in managing project funds, such an extraordinary step by Government would be totally unnecessary.

There have also been delays in the award of contracts. On the one hand, the WB, the NS and project components seem to lay the blame on the Contracts Committee of implementing Ministries. On the other hand, the Contracts Committee blames the NS for invariably submitting incomplete bid documents, thus causing delays in the award of contracts. In addition, it has been noted that the NS has no Procurement Plan in place, which makes it difficult for the Contracts Committee to reflect particular bids in the context of a planned set of activities.

Whatever the case, this anomaly needs to be streamlined to warrant effective and results-oriented implementation of program activities. One suggestion is to fully assign procurement responsibilities to the NS, with co-opted members from the Solicitor General's office and the three Contracts Committee establishments. Another option is to selectively delegate some responsibilities to the NS, while the Contracts Committee retains its authority with respect to major cases. For this purpose, some thresholds need to be set.

In another regard, it is apparent that the National Secretariat has not adequately pursued its awareness campaigns among all stakeholders. Emphasis seems to have been placed on implementing institutions, NGOs, CBOs, local governments peripheral to the catchment areas, and local communities. For the future, these campaigns need to be extended to all Government Ministries, the private sector, religious leaders and legislators, whose support in attaining the LVEMP targets are equally important so that all stakeholders own the program. Those who missed this opportunity at the program formulation stage need to be taken on board at the implementation stage.

LVEMP activities have also been frustrated by divergent policy pursuits by Governments with respect to the exploitation of the common resources of Lake Victoria, as noted in the

WB Report of April 2005. The lake is a regional property, demanding mutual understanding among the member states in terms of its sustainable use. It has been noted that Uganda has been expanding its fish processing capacity rapidly, from 9 in 1999 to 15 in 2005. Three more are in the pipeline, awaiting licensing. Yet existing fish factories already have a production capacity of 420 tons per day. This puts pressure on fisheries resources, and sets a bad precedence for other interested parties. In future, this practice needs to be avoided. Matters of common interest need to be discussed for the common good, rather than implementing decisions taken unilaterally.

9.3.1.2 **Implementing Issues:**

As noted earlier, the Implementing Agencies are responsible for component activities. Whereas, in general, their performance has been commendable, episodes of malfunctions have also been manifest. In particular, delays in submitting work plans and accountability have been common, largely for reasons alluded to earlier. It has been observed that the program components have placed more emphasis on research and data collection, than on developing tools for solving actual problems. It is understood that not all problems can be tackled simultaneously. Hence, there is need to prioritize program implementation. Setting targets for output and performance measures (LFA) would provide an added advantage in this regard. This too has been lacking, thus requiring the necessary revisions to correct. It has also been observed that inadequate information flow among project components has retarded linkages among them. For example, with respect to capacity building, each component was submitting names of candidates for training independently. As a result, capacity building outcomes are incongruent with prescribed numbers.

9.3.1.3 **Project Implementation Committee and National Technical Committee:**

At project inception it was envisaged that Project Implementation Committees (PIC) would be formed and comprising of representatives from Ministries/Departments of Environment and Natural Resources, Fisheries, Water and Agriculture, along with members of specialized technical agencies/institutions participating in the project, and members from the private sector and NGOs. Each country, had an internal, self-regulating organ, the National Secretariat which facilitated and monitored implementation through the Component Coordinators, Task Leaders, Senior Scientists and Secretariat Staff. This is a useful body and dealing with technical issues and has performed very well during the project. Although according to the WB (2003), there seem to be lack of equal footing in terms of dialogue, activity coordination, and facilitation where NES seemingly dominates the show, the recommended that the Permanent Secretaries of implementing Ministries chair PIC meetings in rotation, while the NES becomes the Secretary may not be quite applicable given that the PSs are already overburdened with other work and the proposed arrangement will create unnecessary bureaucracy and even more delays. The alternative is to revert to the PCC to chair the meetings in rotation but would also be burdensome.

9.3.1.4 **Quality Control Institutions:**

The lead agency in undertaking quality checks is the WB through its supervision missions. The Bank and GEF supervisory role has been excellent and each country has been visited at least twice and giving the secretariat ample advice. Its rating of program implementation has greatly improved the preparation of work plans and implementation modalities and is a key input in project management. In future, this audit role should be maintained but the Team Members should include some qualified local experts to ensure relevance to key stakeholders. But the IPS has not been functional at all, because its services have not been called for by the project who appear to have qualified Component Coordinators who probably assumed the role of the IPS and probably because the role of IPS were not factored into the project's institutional framework. However, national review missions from the MWLE, among others, and the Auditor General's Office, should continue with their overseer role in managing LVEMP.

9.3.1.5 **Funding:**

Funding for LVEMP I activities was secured through credits from the IDA and grants from GEF initially for 5 years but extended separately to each of the three countries. This was based on the critical socio-economic importance of the lake Victoria in the riparian region, and its great scientific and cultural significance as well as the prevailing environmental conditions. The three Governments were required to contribute 10% donor' funds. Although donor funds are remitted to a Special Account in a local commercial bank, the 10% national contributions always delay and/or fall short of the set budgetary provisions. For example when counterpart funds from Government delay the donors also suspend their releases given that pre-financing of Government contribution with IDA funds is not permitted under the project. To ensure fiscal continuance in future, there may be need to waive contributions from Government. Instead, efforts should be made to involve other donor agencies to support the program in collaboration with GEF and the WB.

9.3.1.6 **Procurement Mechanisms:**

Procurements are coordinated by the National Secretariat, while the implementing agencies are responsible for the preparation of Procurement Plans for their components. The procurement modalities vary with the in each country and based on the magnitude of the cost of materials to be procured. Some procedures are cumbersome due to often lengthy institutional accounting systems and also delayed accountability from components. This reflects low absorption capacity leading which delays planned component activities. To improve the *status quo* the following measures are propose:-

- the requirement of counterpart funding should be waived; instead, efforts should be made to secure more funds from other donors in the interest of fiscal continuance, without which the sustainability of the LVEMP could be endangered

- instead of operating separate component accounts, LVEMP could cover component costs directly from the local Project Account, for which purpose the Accounts Unit needs to the strengthened.

- ♦ auditable supporting documents should be submitted to the National Secretariat prior to execution of payments to avoid delays in auditing accounts, since this process is undertaken centrally.
- ♦ The National Secretariat (NS) should be responsible for releasing the funds, but in collaboration relevant government departments and component officer, or the role should selectively be delegated to the NS.

9.3.1.7 Information Flow:

There are about six information sharing domains in the LVEMP institutional hierarchy. Such include between the Secretariat and project components, among project components, between the Secretariat and other stakeholders, and through the mass media to the general population. Although, National Secretariats have undertaken its task of information dissemination admirably these mechanisms are rather too many and dilute the process of information exchange beyond the smaller secretariat outfit and institutional framework of LVEMP. However, it is apparent that from the RPSC to the Government level, information flow has been somehow slow. There has also inadequate communication between components, which late improved, as noted by the WB (2005). Further, the National Secretariat seems to have initially ignored some important stakeholders notably Parliamentarians resulting into their reluctance to extend the duration of the project in Uganda claiming ignorance project activities. LVEMP needs to develop and strengthen a Management Information System which can collate information from all component activities. This could be further enhanced by hooking up all project components to a centralized system.

9.3.2 Lessons Learnt in Kenya

In Kenya the project was initiated through a participatory approach, which involved various stakeholders and riparian communities in identifying the priority areas that were important to them. This is a positive approach as it enables the communities to take ownership of the project activities and is crucial for sustainability. The project built human and institutional capacity at all levels, created baseline database and information on environmental and socio-economic threats, reduced water hyacinth infestation to manageable levels, thus permitting increase in fish harvest. At community level it helped to establish the Beach Management Units (BMUs) for co-management of the fisheries identified and documented procedures for conserving biodiversity, while providing reliable information on the environmental status of Lake Victoria. Other notable achievements include the following:

- Identified and documented water, soil and nutrient losses from the catchments and recommended practices for their conservation;
- Inventoried the wetlands and made recommendations for their alternative uses based on their cost-benefit analysis; and
- Initiated community, commercial and central forestry programmes.

Many of these achievements translate into benefits to the riparian communities and the international community in general. The principle ones include maintaining fish production at an acceptable level and quality, as well as increasing the biodiversity within the lake basin.

There are good trends for poverty reduction that are indicated by increase in agricultural production in pilot sites, better understanding of sustainable use of wetlands and their buffering capacity, better capacity building and activities in the lake due to control of water hyacinth.

The integrating project activities has demonstrated that a multi-sectoral and multidisciplinary composition of the project team has impacted positively on project implementation. This has been enhanced by the development of adequate technical and infrastructure capacity, as well as the involvement of local communities in project implementation, given the expectation of benefits that may accrue to them. This lesson underscores the tenet that if people are made aware of the need to manage environmental resources sustainably and adequately facilitated they will participate effectively in that process.

- Notwithstanding this positive outlook, implementation of LVEMP activities has experienced several structural and operational constraints, for instance in Kenya, at inception the project design did not critically address the question of the implementing agency. The participating ministries/departments that were to implement the various components were not fully involved at the design stage. In addition the Permanent Secretaries and/or Directors of the implementing ministries/departments do not have a consultative forum for discussing the policy orientation of the project. There were some problems concerning project staff recruitment some of which were less professional constraining relationship between NES and components and delays in funds release. The hand-over process from NES to KARI was not smooth and occasioned a long delay in starting activities. Further, the initial deposit into the special account of $250,000 was low leading to funds running out in the account. Initial seed money was also low and this led to slow disbursement and accountability. The change in World Bank Task Team Leaders (5 times during the Project phase) may also have contributed to ineffective service delivery.
- High turnover of procurement officers and long drawn out procedures through the Central Government system impacted negatively on project implementation. The component coordinators and task team leaders were employees of the line ministries and the secretariat has limited supervisory role over their activities. The management principle of "unity of command" is therefore breached. The scheme and terms of service for all LVEMP staff was also not harmonized. Appropriate and adequate remuneration of staff is very critical to their motivation.
- LFA was not incorporated in the initial project design and therefore there were no verifiable indicators including for ME&R to monitor physical and financial progress.
- Non-involvement of technical staff and users in procurement of equipment resulted in procurement of some equipment that was not according to specifications. For example, though the project had provision for acquisition of computers, there was no effective MIS and ICT strategy.
- Research data was not properly packaged and disseminated to stakeholders.
- Lack of appropriate policy hampered management of local resources such as wetlands.
- At inception there was no training needs assessment undertaken to identify skills gaps that required to be filled through capacity building. Training was therefore perceived to mean tertiary training and most of the support cadre staff were not trained and neither were the project clients.

- There has also been a relatively low incentive to attract and retain trained graduates in the project after completion of their studies such that full benefits have not trickled down to the ground to the communities and region.
- From the lessons Learnt in LVEMP Phase it is felt necessary to clear any project debts and procurements and prepare expenditure summaries, mainstream project activities in government operations, maximize capacity of local communities to manage their project, and develop M&E for continued activities. There is a critical need for development of a maintenance strategy to ensured for continuity. Proper plans for exit and sustainability should be packaged for other potential lenders and future programmes.

9.3.3 Lesson Learnt in Tanzania

The National Secretariat in Tanzania, based in Dar es Salaam is integrated with the Regional Secretariat. The National Executive Secretary is also the Regional Executive Secretary. There is one other officer whose time is used for regional work. Two Secretariat officers are based in Mwanza on the lake, while the remainder are in Dar es Salaam.

The project is implemented through line ministries, departments and scientific institutions. Full-time and part-time staff members are assigned by the implementing agencies to work on the components and sub-components. In addition, there are six staff members hired on contract by the Secretariat who work in component implementing roles. Their conditions of service are the same as those of the Secretariat staff members.

The logic of moving the National Secretariat to the lake has been expressed a number of times in Supervision Reports, but has only resulted in the Senior Operations Officer and the Community Participation Officer being based there. There are convincing arguments for retaining the office in Dar es Salaam for close working relationships with the government ministries and departments for ensuring smooth flow of funds, ministerial liaison, obtaining approvals where necessary, and management of procurement.

There is no evidence that the location of the office in Dar es Salaam has hindered project implementation. In fact, during the early years this location was no doubt an advantage in order to secure the necessary understandings, clearances and support from central government institutions. However, now that the project is well established in the national context, arrangements should be instituted for moving to the lake as this will help to focus and prioritize the project in terms of implementation in the field.

There will however still be need for a small liaison office in Dar es Salaam to deal quickly with clearances and contacts, but all other functions would be better located on the lake, at Mwanza.

Budgets are made annually together with the Work Plans. The budgets for each component appear in the annual Development Estimates of the implementing central ministries. The flow of funds is as follows: from the World Bank to the Tanzania Central Bank, then to the LVEMP Secretariat's commercial bank account and from there to the

components commercial accounts. Components request funds on a reimbursable basis according to the agreed Work Plans, and with the approval of their central ministries.

Although there have been complaints from the components about slow disbursement procedures, in general there have been no noteworthy delays in the flow of funds, and the rate of disbursement has been satisfactory, except in situations where the delay was beyond the Secretariat's control.

Procurement has followed the Government of Tanzania (Public Procurement Act) and World Bank (Procurement Guidelines) requirements. The procedures are lengthy, but are aimed at ensuring prudent utilization of funds. The Bank is involved in giving "no objections" throughout the process of all goods purchase over USD 50,000, and is involved in the contracting of all consultants. The suggestions for decentralizing all the procurement functions to implementing institutions need to be accompanied by appropriate expertise at the respective institutions. Audits have been carried out in accordance with Government of Tanzania procedures, and they have been done within the time limits set by the Bank.

Quarterly and annual progress reporting has been done on time. The style and format of the reports has been more narrative than quantitative, so it is difficult for an external person to see a measurable progression of outputs. The formats of the reports seem to change from year to year, and are not consistent from one component to another. The World Bank Staff Appraisal Report for the project and the Project Document listed six monitorable performance indicators for project but these have not been systematically measured and reported.

The Management Information System (MIS) Officer and his assistant are responsible for information gathering (mainly in hard copy form in the Documentation Centre), information dissemination, quarterly newsletters, TV programmes, radio spots, leaflets, a coming website, database development for the components. Most emphasis on Data Management appears to have been put in collecting information in hard copy, and producing quality information materials for the public who are interested in the lake and for publicity purposes to explain the project.

Database development has not reached a stage where data is collated into a form that can give an overview of the state of the environment of the lake. Small databases are maintained by the components for their own work, and some are in the process of establishing baselines. There is need to strengthen and enrich the data management aspect.

There has not been a systematic attempt to create environmental management policies, procedures and regulations for the lake, except in the case of fisheries legislation that was identified as a sub-component at the time of project design. Such an attempt would have been an integral part of project strategy if there had been some focus on management aspects of the lake, rather than the focus being largely on research and data collection.

The Secretariat is institutionally placed in the appropriate Tanzania government structure. LVEMP-1 was not initially designed to create a sustainable Secretariat. A phasing-out and sustainability strategy will be necessary in the last phase of support for LVEMP in order to ensure that Tanzania can sustain an appropriate structure for environmental management of the lake.

Precise, systematized monitoring has not been possible due to the lack of a standard Logical Framework Analysis (LFA) for the project. Although rigorous application of LFA would require appropriately trained staff to implement it, a simple matrix could have been developed of quantifiable outputs and measurable indicators that give an easy-to-read format as the basis of project reporting, but this was not done.

Progress reports have been produced quarterly by the components in connection with request for further disbursement of funds. The National Secretariat has produced annual progress reports for approval by the Regional Policy and Steering Committee. Each country has also been preparing Stocktaking Reports, with the Regional Secretariat compiling an overall report. However, all this reporting has not been consistent in reporting formats, and a narrative, largely qualitative, presentation of achievements has been submitted.

Supervision and reviews of projects are expected to provide critical new thinking that continuously guides the project towards its objectives. The objectives of LVEMP are very broad, so there was ample room for relevant new initiatives and approaches towards reaching the objectives. This does not appear to have happened to much extent. The supervision mission reports have been detailed comments on on-going activities. In this regard they have been useful for the implementation staff, especially after the Mid-Term Review when the reports started to summarize actions to be taken in tables and then followed-up in the next report.

What was lacking was new thinking, and references to best practices from similar activities in the region. A more open supervision process might, for example, have seen the necessity for a data management strategy leading to regular reporting on the state of the environment of the lake. This kind of overall status information does not yet exist.

9.4Conclusions, Recommendations and Way forward

9.4.1 Conclusions

The LVEMP I became operational in 1997, three years after the signing of the Tripartite Agreement, and two years before the re-establishment of the EAC. Through its various supervision missions, the WB has rated the performance of most project components as satisfactory, which means that the key concerns of the program were being addressed adequately. These concerns revolve around the sustainable use of the resources of Lake Victoria and its catchments for the purpose of improving the livelihoods of the people who live in the vicinity of the lake, enhancing their contributions to the economies of the riparian states, while simultaneously conserving the resources for the benefit of future generations and the global community.

The success of the program translates into benefits to the local communities and the economies of the three riparian states. At the local community and local government level, accrued benefits include expansion of artisanal fishing and processing, reduction in post-harvest losses, control of water hyacinth, conservation of wetlands, improvements in pasture management, conservation of catchment soil, upgrading of sewerage management, abatement of industrial pollution, and improvements in rural water and sanitation. Needless to point out, these benefits diffuse to the national and regional levels as well.

From a broader perspective, LVEMP I has equally been successful. Notable among its achievements are:

- creating baseline information and database for planning future environment management programs
- strengthening institutional and human resource capacities in environment management to ensure long run sustainability of the resources of Lake Victoria and its catchments
- identifying all industrial and municipal effluent points in the lake basin
- harmonizing fisheries legislation in the three EAC countries
- creation of the LVFO as an organ of the EAC
- establishing a lake-wide water quality and rainfall monitoring system
- completion of inventory and resource survey of Lake Victoria
- undertaking a survey of community involvement in co-management and monitoring of resource use
- preparation of investment proposals for the rehabilitation and economic management of wetlands
- completed a review of 300 publications in search of best practices in the management of lake ecosystems
- created awareness among various stakeholders about the need to manage the resources within Lake Victoria and its catchments on a sustainable basis

The key to this success lies in the innovative and cost-effective operational modality adopted by the project management. One component of this was to ensure that the

program was owned by Government and other stakeholders in each country, including local communities, who were involved in both program formulation, and in the implementation of program activities. This had the added advantage of having in-built mechanisms for disseminating awareness about the program, its activities, and objectives.

Another factor contributing to this success was the use of already existing institutional and human resource capacities in the implementation of program activities. This provided for a participatory and cohesive approach in managing the implementation process. Unfailing guidance from the WB and the ready availability of financial resources from the IDA and GEF were equally instrumental in ensuring the success of LVEMP I.

However, as with most programs, LVEMP I also had its share of problems and difficulties, the majority of which still persist within the current institutional framework and management functions. For the future, these need to be ameliorated in the interest of greater success in the management of the resources of Lake Victoria and its catchments.

9.4.2 Recommendations and Way forward

- The RPSC has demonstrated weaknesses in linking up the LVEMP with the EAC Governments due to its loosely institutional arrangement as meeting point for Permanent Secretaries, without the clout to formulate policies or enforce their implementation. Its usefulness seems to have been overtaken by events, in view of the re-establishment of the EAC in 1999 and the RPSC should be transformed into an authority within the EAC structure, with the responsibility of spearheading the development of Lake Victoria through existing regional and national institutions, including the LVEMP. The establishment of the LVBC provides the answer to this call.
- Other components of the institutional framework appear redundant, non-functional, or functionally duplicative, thus causing undue delays in implementing program activities. Notable among these is the IPS. The recommendation for the future is to disband the IPS and absorb the NTC into the PIC, in the interest of expediting the implementation of program activities, and to avoid causing confusion about its role.
- Experience has also revealed that the National Secretariat is understaffed vis-à-vis its elaborate workload. This has sometimes delayed program implementation, especially regarding information flow with and among stakeholders. In future, consideration should be given to strengthening the capacity of the National Secretariats in anticipation of the multiplicity of activities that are yet to emerge. The salary structure also needs to be reviewed, in the context of which appropriate increases need to be considered. In this regard, Mechanisms should be put in place to bond beneficiaries of capacity building schemes for a period of at least three years after completion of their studies so that benefits from their training can accrue to the project.
- LVEMP-1 has likewise experienced delays in submitting accountability and work plans by project components based in various implementing institutions. The way forward is to ensure that each implementing institution assigns an Officer to be exclusively responsible for LVEMP activities so that the officer does not get

distracted by other office responsibilities. LVEMP has also encountered delays in receiving counterpart funds from the Treasury among others. For the future, efforts should be made to secure complementary funds from other donors in lieu of counterpart funds or the Governments should allocate substantial budgetary provisions to funds LVEMP activities as an important national resource.. Other delays caused by lengthy and cumbersome operational modes requires that the responsibilities of the Contracts Committees be shifted to the National Secretariat, with co-opted members from relevant institutions, or selectively delegated to the NS.

- The observed imbalance in emphasis between research and data collection against developing tools for solving actual environmental problems should be addressed and links between components be improved through better exchange of information. There is also need to prioritize program implementation activities, set program targets and develop performance yardsticks, develop information dissemination capacity system-wise and accord due importance to information flow as a strategy for more effective program implementation
- Other areas of concern include restricted target audience for awareness campaigns and divergent policy pursuits by Government. The latter is particularly noticeable with respect to fish processing capacity. It is necessary to extend awareness campaigns to all stakeholders targeting, in particular, the segments of society who influence policy formulation, among others. Further, phenomenon, multi-lateral rather than unilateral decisions need to be accorded supremacy.
- There needs to be a complete paradigm shift from the way the project was initially designed and implemented in order to effectively and efficiently implement it and ensure the intended impact on the target beneficiaries is achieved and that the project will be sustainable after the exit of donors. For instance, there is need to involve technical personnel and users in procurement, develop a LFA methodology and uniform M&E tools, set environmentally related priorities (sites and activities) and harmonize performance indicators across the region.
- There is need for the development of an ICT strategy with a fully fledged documentation and information centre and a centralized database with a back-up system, and MIS should be institutionalized at all component levels. This will imply instituting linkages between components, coordination units and line ministries/institutions and establishment of information sharing through use of VSAT. Project design should prioritize the role of the Secretariat in data management with the focus of collating and synthesizing data into an annual State of the Lake report. In addition, data should be collected and analyzed only in relation to a clear Management Information System that delivers the appropriate data to relevant decision-makers.
- For Tanzania the National Secretariat should move to Mwanza and only a small liaison office needs to be maintained in Dar es Salaam. A National Policy and Steering Committee should be established to ensure high level of accountability and coordination of the project at national level.
- Capacity building resources should be allocated on the basis of training and other needs that are specifically related to the sustainability of project outputs.