LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT (LVEMP)

A Report on the Implementation Status of Lake Victoria Environmental Management Project in Kenya, Tanzania and Uganda from 1st July 1997 – 30th June 2002 and Way Forward

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EXECUTIVE SUMMARY

Introduction

1. The Lake Victoria Environmental Management Project (LVEMP) is a multi-discipline and multi-sector comprehensive development programme that was designed to successfully introduce, through implementation, environmentally and socially sustainable economic development to the Lake Victoria Basin. The mission of the project over the long-term is to enhance economic growth and reduce poverty while, at the same time, maintaining the rich biodiversity and resources base to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Background

2. For decades, East African scientists, policy makers, stakeholders and others around the world, noted the escalating environmental degradation of Lake Victoria, which is an international water body, and its catchments. Evidence of accelerated substantial changes in the lake ecosystem has been noted over the last four decades. These include among others, massive production of algae blooms, increased frequency of water-born diseases, excessive proliferation of water hyacinth, over fishing and poor land use practices.

3. It was also noted that the rapid increase in populations of the riparian communities, that is now standing at about 30 million people, and the multiple socio-economic activities within the basin have resulted into changes in land use, water quality, biodiversity, etc., that are turning the lake basin to become environmentally unsustainable. Nutrient inputs from adjoining catchments are contributing to excessive algal production while the introduction of Nile Perch some 40 years ago has also altered the food web structure. The two scenarios show that the lake itself is not the source of the observed problems; rather the problems are from human activities in the surrounding catchments.

4. It soon became clear that unless corrective measures were urgently taken, the consequences of letting such alarming

changes go unchecked could be catastrophic. It also became clear that any action to arrest the situation would not be meaningful and possible unless all the riparian countries were involved.

5. In the absence of a institution and legal framework dealing with environmental management in the Lake Victoria Basin, the three riparian countries to lake Victoria (Kenya, Tanzania and Uganda) initiated discussions in 1992, immediately after the United Nations Conference on Environment and Development (UNCED) in Rio, to broaden regional cooperation in environmental and social issues affecting the Lake Victoria Basin. This led the three Governments into signing a Tripartite Agreement on 5th August 1994 that set in motion the process of preparing and implementing the Lake Victoria Environmental Management Project (LVEMP) within the agreed institutional framework.

6. The LVEMP was declared effective on 5th March 1997 but due to the usual start-up delays, actual implementation commenced in July 1997 with financial support from International Development Association (IDA) and Global Environment Trust Fund (GEF) to the tune of US$ 70.00 million. The three Governments agreed to contribute US$ 7.6 million over the five years of the project as counterpart funds.

The Objectives and Focus of the LVEMP

7. The mission of the LVEMP is to achieve environmentally and socially sustainable economic development within the Lake Victoria Basin (LVB) with a focus on the following development objectives:

    - To maximize the sustainable benefits
    - To conserve biodiversity and genetic resources
    - To harmonize national and regional management programmes
    - To promote regional cooperation

8. Emphasis of implementation of the LVEMP during the last five years has targeted the following:

- The creation of reliable baseline data and information
- The building of institutional and human capacities
- The development of suitable management measures and practices through pilot projects
- The innovative application of strategies and management measures and practices that have proven successful.

9. The Lake Victoria Environmental Management Project activities are implemented by institutions in the Ministries responsible for natural resources, environment, fisheries, agriculture, lands, water and finance in the respective governments.

Achievements

10. In accordance with expectation, the LVEMP achieved the following outputs during the last five years:

    a) Water hyacinth infestation that had covered 12,000 hectares of the lake surface at the start of the LVEMP was reduced by 90%.

    b) Fish quality control and safety assurance improved to a level where the EAC States were able to re-establish the export market for Nile Perch in 2000 following the ban by the European Union in 1998. In addition Microbiological and chemical laboratories were established, equipped and became operational in the three countries in addition to training fish inspectors and workers in fish processing plants on quality control and safety assurance.

    c) Law enforcement mechanisms for curbing illegal fishing practices were strengthened through the adoption of co-management strategies that involves communities and the provision of enforcement facilities.

    d) Fish species once feared extinct were discovered in refugia within the lake through surveys, and strategies for conserving them were developed.

    e) Books containing scientific baseline information and trends in the following areas were drafted and are awaiting publication:

- *The Biology and Ecology of Lake Victoria Fishes: Their Development and Management*
- *Biodiversity of Lake Victoria: Its Conservation and Sustainable Use*
- *Aquaculture Potential in the Lake Victoria Basin*

f) Comprehensive socio-economic information and data have been gathered, analyzed and documented on the impact of fisheries activities on resource and environmental degradation, the contribution of the lake fisheries to the national economy and community involvement in the fishing industry.

g) Water quality and quantity monitoring network was established lake-wide and regular data collection using harmonized methods to monitor changes in the quality and quantity of the lake water has commenced.

h) Inventory and characterization of industries, municipalities, towns, some villages and settlements and their liquid effluents that enter the lake have been done and point sources of pollution "hot spots" were identified. Rehabilitation of sewage treatment plant in Kampala was completed while work on those in Mwanza and Kisumu is in progress. Wastewater dispersal model for the Inner Murchison Bay in Uganda was developed and put to use.

i) The inventory and ecological characteristics of both fringing and non-fringing wetlands were established and information on buffering capacity as well as sustainable utilization of wetlands was documented. Cost-benefit analysis of wetlands in Uganda was carried out to provide information for decision making on the utilization of wetlands.

j) 11.5 million tree seedlings were raised at public, private and commercial nurseries and planted in micro-catchment with survival rates averaging 85%. Public awareness campaigns were carried out and communities were sensitized on the need and how to conserve their natural forests.

k) Guidelines on land use and management practices were prepared and are being used by communities and inventories on agrochemical use in the catchments were documented. Mapping of present land use/cover and soil erosion hazard in the lake basin is nearing completion. Data on pollution loading are being collected from selected micro-catchments and are providing useful information on soil, nutrients and water losses.

l) Community awareness and involvement was integrated into project implementation in all project components to ensure ownership and sustainability of project activities that have been initiated.

m) Renovation and furnishing of offices and laboratories in addition to the provision of field and laboratory equipment to implementing institutions were carried out in order to enhance their capacities.

n) A fully functional secretariat for the Lake Victoria Fisheries Organization (LVFO) was established to provide a means for the Member States to exchange views on fisheries related issues.

o) Human capacity is being developed within the implementing institutions through training at under-graduate, post-graduate and through short courses, seminars, workshops and on-the-job training to enhance implementation efficiency.

p) Fish Levy Trust studies are being carried out to identify and propose sustainable funding mechanism for fisheries research and management activities that have been initiated.

Constraints Encountered

11. The following constraints that were encountered during the first few years of project implementation were successfully resolved over the years of operations except for monetary incentives to government civil staff implementing project activities.

- Delays in procurement of some goods, works and services caused by lengthy and bureaucratic processes.
- Inadequate number of qualified and/or trained staff.

- Lack and/or slow flow of adequate counterpart funds as Government contributions.

The Way Forward

12. The implementation of the current phase of the LVEMP was scheduled to end on 30th June 2002, but the three Governments requested for an extension by 24 months, to be financed in the case of Tanzania and Uganda through Supplemental Credits of US$ 5.0 million and US$ 4.5 million respectively. The World Bank has since approved the request for Tanzania and Uganda and for Kenya negotiations are on-going. The additional funding was found to be necessary because of unforeseen cost overruns associated with project execution that were beyond the borrowers' control. Specifically, the credits are supplementing the on-going LVEMP credits and are assisting in financing the on-going baseline environmental monitoring, completion of priority pilot activities and Project Components that are supporting activities to be undertaken in the next phase of the LVEMP.

13. The Second Phase of the LVEMP, the three Governments have already expressed their willingness and readiness to undertake, shall be a follow-on 15-year development programme. It shall focus on the environmentally and socially sustainable economic investment objectives and shall be based on both the successful operational strategies and cost-effective methods that have been identified and tested during the current phase of the LVEMP.

14. Preparation of the Second Phase of the LVEMP is at Project Identification Stage. World Bank Pre-Identification and Identification Missions have visited Tanzania and Uganda where they held discussions with stakeholders and senior Government officials. Final Identification Mission shall be in Uganda and Tanzania in September and November 2002 respectively. The preparation of the second phase in Kenya shall follow in due course.

The Content of the Report

15. This report provides a brief Background Information to the LVEMP and the Implementation Status that covers, not only the Objectives, the Issues to be addressed, the expected Outputs

and their monitorable indicators but also the Achievements and their Impacts before addressing the Way Forward through the Second Phase of the LVEMP (i.e. LVEMP II).

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LIST OF ACRONYMS AND ABBREVIATIONS

BMU	- Beach Management Unit
CBO	- Community Based Organization
EAC	- East Africa Community
GEF	- Global Environmental Facility
IDA	- International Development Association
LVEMP I	- Lake Victoria Environmental Management Project Phase One
LVEMP II	- Lake Victoria Environmental Management Project Phase Two
LVFO	- Lake Victoria Fisheries Organization
NGO	- Non Governmental Organization
PIC	- Project Implementation Committee
RPSC	- Regional Policy and Steering Committee
TV	- Television
USD	- United States Dollar

1.0 INTRODUCTION

1.1 Purpose of the Report

The purpose of this report is to provide information on the LVEMP implementation status that covers not only the objectives, issues to be addressed, expected outputs and their monitorable indicators but also achievements and their impacts. The report is also intended to assist policy decision makers to make informed decisions regarding LVEMP implementation. The report covers various activities implemented in the three partner states from July 1997 to June 2002. It also gives a brief account on the steps so far taken by the three partner states on the preparation of the second phase of LVEMP.

1.2 The Lake Victoria Basin

The Lake Victoria basin is a major strategic economic zone for the East Africa. Lake Victoria covering a surface area of 68,800 km^2 is shared among Tanzania (49%), Uganda (45%) and Kenya (6%). The Lake and its catchment has a rich ecosystem with abundant natural resources such as arable land, minerals, forests, wildlife, water and fisheries. The catchment covers a total area of 193,000 km^2 with Tanzania occupying 44%, Kenya 22%, Uganda 16%, Burundi 7% and Rwanda 11%. The major rivers flowing into the Lake include Nzoia, Sio, Yala, Kibos, Nyando, Sondu-miriu, Kuja, Migori, Riaria and Mawa from Kenya; Kagera, Bukora, Katonga and Sio from Uganda and Mara, Kagera, Grumeti, Mbalageti, Simiyu and Mori from Tanzania. The only river outflow is the Nile at Jinja. The lake has a volume of 2,760 km^3 and an average depth of 40 m with the deepest area being about 80 meters. The shoreline is approximately 3450 Km, with 50% in Uganda, 43% in Tanzania and 17% in Kenya.

The Lake together with the many rivers draining its catchment provides a huge reservoir of water and fishery and contains unique plants, algae and invertebrates. The Fishery of the lake is a source of major economic activity and also a source of food for the local populations. Transport across the lake provides a major link for regional trade while the soils and climate in the catchment area are suitable for commercial agricultural production. About 30 million people depend directly or indirectly on the Lake Victoria catchment in the East Africa including

Rwanda and Burundi. It is also a repository for human, agricultural and industrial waste.

Other major economic benefits and activities from the Lake Victoria catchment include:

- Provision of fresh water for domestic, industrial and livestock use.

- a rich agricultural area for production of both food and cash crops such as maize, tea, cotton, coffee, sugar and sugar.

- Source of income to the fishing communities and the Government in form of tax and export earnings. Lake wide fish production is currently estimated at 561 thousand metric tons with Tanzania landing 28%, Kenya 26% and Uganda 54%. The landed value of this catch ranges between US$ 300 – 400 million annually.

- Offering opportunities for scientific studies on lake ecosystem.

1.3 The Major Issues of Concern within the Lake Basin

The resources of the lake have not been harnessed and utilized in a coordinated and sustainable way resulting in the current scenario where there is heavy degradation of environment, pollution of water resources, loss of biodiversity both in terrestrial and aquatic ecosystems. These negative impacts arise mainly as a result of poverty, poor know-how and increasing human activities in the region. The communities living in the catchment are mainly involved in subsistence activities such as farming, livestock keeping and fishing which do not take cognizance of environmental management and conservation. These major threats to the Lake basin are compounded by the population of the riparian communities which is growing at about 4% per annum and whose activities lead to the many environmental problems realized in the Lake. The major issues of concern in the Lake Victoria basin are;

i) Decline in biodiversity and apparent disappearance of vital species

- Introduction of two exotic species of the Nile Perch and the Nile Tilapia about 40 years ago, and the use of unsustainable fishing practices and gears have altered the species composition of the fauna and flora of the lake. Before this introduction, *haplochromines* constituted 84%. Now the Nile Perch constitutes 80%, which has led to the loss of locally favoured fish species, known for their medicinal and cultural values.

ii) Deterioration of water quality

- Population pressure in the lake basin contributes to the existence of "hot spots", caused by human waste, urban runoff, effluent discharges from industries such as breweries, tanning, paper and fish processing, sugar, coffee washing stations and abattoirs. Inflow of residues from use of chemical herbicides, fertilizers, and pesticides and to a limited extent heavy metals resulting from gold mining operations also contribute to lake pollution.

- Raw liquid waste discharge from settlements, market centres and towns around the lake contribute significantly to eutrophication of the lake waters.

- Nutrients (phosphorus and nitrogen) inflow has given rise to five-fold increase in algae growth since 1960s causing de-oxygenation of the water threatening the survival of deep water-fish species.

ii) Unsustainable utilization of wetlands

- Agricultural activities and livestock keeping, has negatively affected the buffering capacity of the wetlands.

iv) Poor Land Use Systems

- Unsustainable land use practices in the Lake basin has resulted in deforestation, serious soil erosion and farmland degradation with negative consequences in land productivity

v) Invasion of water hyacinth

- Water hyacinth infestation was reported in Lake Victoria in 1987/88 and has caused a lot of socio-economic and

environmental problems to the lake basin. Among these are; interference with; water transport, availability of water for industrial and domestic usage, and fishing activities.

2.0 THE LVEMP

At the inception of Lake Victoria Environmental Management Project (LVEMP) it was realised that in order to solve the environmental problems of the basin, the governments of riparian states would have to develop a long-term programme of rehabilitation of the degraded resources. LVEMP I was therefore designed to form a basis for wider investments needed in the lake basin in later years with direct aim of cleaning up the Lake ecosystem and introducing socially and environmentally sustainable management of natural resources.

LVEMP is a comprehensive regional environmental programme involving the three East African states, Kenya, Tanzania and Uganda through a Tripartite Agreement signed on 5th August 1994 in Dar es Salaam. The aim of the project was to rehabilitate the lake ecosystem for the benefit of the people living in the catchments. The vision of this project is to restore a healthy, varied lake ecosystem that is inherently stable and that can support, in a sustainable way, the many human activities in the lake and catchment. The project was declared effective on 5th March 1997 and was expected to end on 30th June 2002 and close on 31st December 2002 after five years of implementation. The project has however, been extended in Tanzania and Uganda for a period of two years while in Kenya negotiations are in progress.

2.1 Project Objectives

The projects 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 the global communities;

- Harmonize national and regional management programs in order to achieve to the maximum extent possible the reversal of environmental degradation

- Promote regional cooperation between the riparian states

To achieve these objectives, the project has been addressing a complex set of managerial, scientific/technical and institutional issues within the Lake basin. The project involves information-gathering, capacity-building, institution establishment and implementation of activities directly addressing the environmental problems of the lake and its catchment, water hyacinth control, improving water quality and land use management including wetlands. The major concern has been to reduce the flow of nutrients and other pollutants into the lake and reverse some of the adverse environmental developments of the past. The main areas of focus includes;

- Management and control of water hyacinth infestation and other aquatic invasive weeds in Lake Victoria.
- Improvement and strengthening the management of fisheries resources.
- Improvement of the management of water quality
- Improvement and strengthening of fisheries research
- Management of industrial and municipal effluents.
- Conservation of soils and water in pilot areas, and assessment of agrochemical use within the region.
- Capacity building through training, acquisition of laboratory equipment and other facilities and renovation of laboratories.
- Involvement of communities and other stakeholders in the implementation of LVEMP for ownership and sustainability.

During project preparation it was noted that an environmental project like LVEMP would cut across many sectors and its implementation would therefore require involvement of many government institutions and stakeholders. The Project Components were established by relevant Government implementing agencies in each country for ease of management, implementation and coordination. Similar activities of the project are implemented in the three Partner States and coordinated by Regional and National Secretariats of LVEMP.

2.2 Expected Outputs of LVEMP

At the end of the implementation period the Project was expected to achieve the following outputs:

- Reduction in water hyacinth infestation by 95% of the initial coverage to manageable levels through a combination of manual, biological and mechanical control methods.

- Improvement in the management of fisheries resources in the lake for better catches through the establish of Beach Management Units (BMU), harmonizing legislation and enforcement practices.

- Conservation of Lake biodiversity through the adoption of sustainable fishing practices, pollution control methods, utilization of both fauna and flora.

- Available water quality information on the levels of vital parameters such as phosphorus, nitrogen, total dissolved solids and oxygen.

- Improved water quality showing acceptable levels of coliform counts.

- Inventory of and ecologically characterized fringing wetlands and information on vital parameters regarding their buffering capacity

- Management plans for the Lake Basin wetlands prepared using the baseline data and trends that shall be created from scientific information collected.

- Guidelines for managing natural forests and protection of water sources as well as for the nurseries and tree planting. 3 million trees planted in the lake catchment per year.

- Improved soil and water conservation in the pilot areas through the adoption of rational agricultural and other land use practices using scientific information collected.

- Improved capacity in terms of personnel, equipment and other facilities through skills development at post-graduate, graduate and short courses levels as well as the provision of office, laboratory and field equipment.

- Reduced poverty among Lake Basin communities through demand driven micro projects in health, water, education, sanitation, access roads, afforestation and fishing.

2.3 Project Funding and Financing

The project is financed by a total of USD 77.6 million of which USD 70 million are donor funds while the remaining USD 7.6 million being contributed by the three Partner States. The donor funds include a Credit from the International Development Association (IDA) and a Grant from the Global Environment Facility (GEF), each contributing 50% of the total.

2.4 The Project Components

Technically, the Project consists of ten closely related components. These include:- fisheries management, fisheries research, wetlands management, soil conservation, catchment afforestation, water quality and ecosystem management, water hyacinth control, industrial and municipal waste management, university capacity building and micro-projects with local communities.

2.4.1 Main functions of the Components

i. *Catchment Afforestation Component* aims at increasing forest cover through tree planting and preventing soil erosion as well as conservation of natural forests.

ii. *Land use Management Component* emphasizes soil and water conservation and appropriate use of agro-chemicals to reduce pollution loading and improve agricultural production.

iii. *Wetlands Management Component* emphasizes sustainable use of wetlands in order to conserve them as well as improve their buffering capacity.

iv. *Industrial and Municipal Waste Management Component* emphasizes wastewater management by industries as well as use of artificial or natural waste water treatment.

v. *Water Quality Monitoring Component* focuses on the establishment of water quality monitoring system in order to

provide qualitative and quantitative information on nutrient, eutrophication and pollution, phytoplankton communities and their composition; algal blooms and their dynamics; lake zooplankton, microbes etc.

vi. *Water Hyacinth Control and Management Component* focuses on the control of the weed by reducing the weed to manageable levels using a combination of biological and mechanical/manual removal methods.

vii. *Fisheries Management Component* focuses on the establishment of a sustainable collaborative management of the fisheries through stakeholder involvement. The component also puts emphasis on extension services, law enforcement, data collection, fish quality control, post harvest improvement and establishment of Fish Levy Trust to ensure sustainability. It also finances community demand driven micro-projects to enhance the welfare of the community.

viii. *Fisheries Research Component* generates information on fish biology and ecology, stock sizes, qualitative and quantitative information on aquatic biodiversity, socio-economic characteristics of the fishery and restoration of scarce or depleted species.

ix. *Micro-projects* are small community demand-driven investments, which address concerns directly related to communities in the sectors of health, water supply, education, sanitation, access roads, afforestation and fisheries. It should be mentioned here that while Micro-projects constitute a full Component in Tanzania, they are treated as Sub-Components under the Fisheries Management Component in Kenya and Uganda.

x. *Support to Riparian Universities Component* aims at building capacity and strengthening facilities for environmental analysis and graduate teaching at the riparian Universities of Dar es Salaam, Moi and Makerere.

xi. *Establishment of the Lake Victoria Fisheries Organization (LVFO) Secretariat* - Uganda was given the responsibility of establishing the Lake Victoria Fisheries Organization (LVFO) Secretariat which is considered as a component.

2.5 Project Implementation Arrangements

The Tripartite Agreement provided for the preparation and implementation of LVEMP. Although the project is regionally coordinated, much of the implementation is handled nationally but conforming to the following implementation arrangement.

2.5.1 Regional Coordination

i) The Regional Policy and Steering Committee (RPSC)

The RPSC is responsible for policy guidance and decisions, which affect operations of the Project. This is a Committee of nine (9) Permanent Secretaries, three each from each country's Ministries responsible for environment, agriculture, fisheries, water or natural resources. The Committee meets twice a year although extra-ordinary meetings can be arranged whenever necessary. The Chairmanship of the Committee rotates annually amongst the three countries.

The Tripartite Agreement establishing LVEMP was signed before the establishment of East African Community (EAC). With the signing of the EAC Treaty, EAC Secretariat is given the mandate to coordinate all initiatives aimed at sustainable development of the Lake Victoria Basin. In implementing the provisions of the treaty, the EAC Secretariat has established the Committee on Lake Victoria Development Programme (CLVDP) and a Lake Victoria unit at the EAC Secretariat responsible for approving and coordinating all projects in the Lake basin. In this regard, it was recommended that RPSC be made a sub-committee of CLVDP and was adopted by the CLVDP for onward adoption by the Council of Ministers. RPSC is now a sub-committee of CLVDP and its meetings are now scheduled in the EAC Secretariat calendar of meetings.

ii) The Regional Secretariat

The Regional Secretariat ensures regional harmony and uniformity in Project implementation in the three countries. The Secretariat based in Dar es Salaam, and is headed by a Regional Executive Secretary who is also the National Executive Secretary for LVEMP Tanzania. The Regional Secretariat, assisted by the National Secretariats, organizes RPSC meetings as well as coordinating regional technical meetings, workshops and other regional activities.

iii) The International Panel of Scientists

This is a Committee of seven (7) high level panel of internationally renowned scientists. Each country has appointed two members while the World Bank appointed one member.

The Panel's roles includes:

- Giving overall advice on the lake's scientific studies to the Governments and the World Bank.
- Acting as standing Committee of technical expertise to whom task and project managers under the LVEMP may refer technical issues and reports for comments and advice.
- Helping to identify international training opportunities for researchers from riparian countries.
- Informing the international community about research issues being addressed by LVEMP.

2.5.2 National Coordination

i) The National Secretariat

The National Secretariats are headed by a National Executive Secretary in each country, and is responsible for coordinating and supervising implementation of the LVEMP various activities. The responsibilities of the National Secretariat include:

- Coordinating implementation of the Project activities at national. District as well as grassroots level.
- Acting as contact/focal point for the Government and the World Bank and stakeholders.
- Being responsible for monitoring implementation progress and coordinates preparation of progress reports for decision-making.
- Creating awareness among the stakeholders on the need and importance of conserving the resources of Lake Victoria and its catchment.

- Ensuring community involvement and gender concerns in the Project implementation.

- Providing a central focal point and information clearing house for all agencies implementing the program and all donors.

ii) Project Implementing Institutions

The Government Departments and Institutions in each of the three countries are responsible for the day to day implementation of the various LVEMP activities. At each of these institutions there is a Project Component Coordinator who advises the Permanent Secretary/Head of Institution on day-to-day implementation of the Project.

iii) Water Hyacinth National Steering Committee

This is a committee appointed by the Governments in each of the EAC Partner States to supervise and advise on the control of the water hyacinth as well as ensuring the involvement of local communities and NGOs in each country.

iv) The Project Implementation Committee (PIC)

The PIC in each country is composed of technical staff, who are implementing the Project. It is made up of Project Component and Sub-Component Coordinators, Task Leaders in charge of sub-components, scientists and the Secretarial staff, Non-Governmental Organizations (NGOs and Community Based Organization (CBO) representatives.

The PIC is responsible for:

- Discussing quarterly progress reports;
- Monitoring and evaluating progress on a quarterly basis;
- Guiding project staff and scientists regarding various activities of the project.

2.6 LVEMP Achievements (July 1997 – June 2002)

2.6.1 Overview of the achievements

The project has made notable progress with evidence of significant achievements as follows;

- Develop of methods, procedures and collection of baseline data on the status of environmental parameters of the Lake.

- Helping to create a mechanism of working together to manage the Lake Victoria basin. Government departments and other institutions, which used to address the issues of the lake independently, are now working more closely together for the common objective. At regional level, there is closer working relationship among similar components of the three countries.

- Assisted in creating capacity through training, procurement of equipment and other facilities required for effective management of the Lake and its catchment.

- As a result of the capacity created, Implementing Agencies have been able to locate and quantify some of the environmental problems of the lake and in its catchment.

- Public awareness campaigns have been mounted among lake communities and other stakeholders. This has resulted in the communities and other stakeholders in the EAC Partner States being aware of the fate of Lake Victoria and its catchments and the need to conserve its resources.

- As a result of the LVEMP, a lot of interest has been generated on conservation of Lake Victoria resources.

- Increased knowledge and information on the lake and its resources such as biodiversity and levels of pollution.

- The project has carried out capacity building in terms of training for all implementing institutions. The number of persons trained are 28 PhDs, 88 MSc, 3 BSc, 10 Diplomas and 1487 attended short courses and over 3500 participated in seminars/workshops. This includes those trained at the riparian Universities and outside the region.

- LVEMP has coordinated two regional consultancies on water quality/limnology study and On Oil Spill and Toxic Waste Contingency Plan for Lake Victoria. The two studies have been completed and they form the basis for water quality monitoring in

the Lake and disaster management for oil spills and toxic wastes in the Lake.

- Improvement of standards of living of local communities through implementation of demand driven micro-projects aimed at reduction of poverty by provision of health facilities, clean water, improvement of sanitation facilities, forestry, education and access minor roads. A total of 153 micro-projects have been initiated out of which 110 have been completed.

2.6.2 Achievements of Components

Other achievements and progress specific to components are tabulated below;

a) Establishment of Lake Victoria Fisheries Organization

Objectives	Targets	Achievements
▪ To establish a functional Secretariat for the LVFO	• To have an LVFO Secretariat which is fully operational and able to fulfill its obligations as stipulated in the convention.	• Accomplished the establishment of a functional LVFO ➢ Set up offices at Jinja; ➢ All staff recruited; ➢ Procured vehicles, office furniture and equipment; ➢ Carried out major renovations of office and compound;

b) Fisheries Research

Objectives	Targets	Achievements
• To provide information on the ecology of the lake and its catchment, the biology of its flora and fauna, the impact of environmental factors on the lake system and socio-economic implications of use of the lake resources.	• Interests and concerns of fisherfolks assessed and incorporation of information in management plans	• The three books on the biology and ecology of lake Victoria fishes and aquaculture potential have been written and are in their draft form. *The books are* o *The Biology and Ecology of Lake Victoria Fishes; their Development and Management;* o *Biodiversity of Lake Victoria; its Conservation and sustainable use* and o *Aquaculture Potential in Lake Victoria Basin"* is also in draft form. • Museums with properly identified fish collections have been established. • Bibliography of published information on Lake Victoria has been

		completed • The project has initiated the establishment of an inventory of fishes of lake Victoria. • Reports on socio-economics studies have been produced.
• Restoration and sustainable survival of several endangered and threatened species of fish through aquaculture fish farming.	• To have available information on species diversity	• A list of endangered species has been compiled and fish refugia mapped. • fish species once feared extinct have been identified and strategies for conserving the planned
• Increase fish production through appropriate aquaculture technology and practices.	• Developed fish broods and management technologies for fish farmers in Lake basin	• Refugia for fish species have been identified in the main lake and in satellite lakes, rocky islands and rivers and conservation management units have been initiated. • Fisher farmers trained on aquaculture techniques and provided with good quality fingerlings • A survey on aquaculture potential has been conducted in the Lake basin.
• To improve human and institutional capacities in fisheries research	• Trained scientists and well equipped research facilities	• Adequate facilities have been provided for fisheries research. This includes renovation of three research boats, breeding ponds, museums and laboratories in the three countries and provision of

		water and ground transport. • Manpower trained in library and information sciences

c) Fisheries Management

Objectives	Targets	Achievements
• To promote better management of fisheries of the Lake Victoria	• Harmonized fisheries legislation and regulations • Involvement of communities in the management of lake fisheries	• Harmonization of fisheries legislation has been initiated and 11 areas for harmonization covering research, fish stocks, fishing gears, landing beaches, post harvest practices, closed fishing areas and seasons, environment, fish farming, co-management and cross border trade identified. • Establishment of Co-management has been initiated in the Lake Basin; a total of 746 Beach Management Units (BMUs) have been established. The process of providing legal framework for BMUs in East African Community Partner States is underway. • Enforcement mechanism for curbing illegal fishing has been strengthened by the project through use of patrol boats and involvement of the police. Seventy-five Fisheries Personnel have so far been trained in public prosecution and the process of gazetting them is underway.

• Coordinate fisheries management, extension and training, conservation and wise use of the resources	• An informed and trained community on conservation and wise use of fisheries resources	• A total of 141 new fish breeding areas have been identified and the process of gazettement is underway. Search for new sites is ongoing. • Closed fishing seasons in the breeding areas is observed between January and June of each year. • Training of fishermen on business skill and cooperative movement has been carried out in the three countries involving a total of 220 fishermen in the whole basin. • manuals on fish farming have been prepared and distributed to fish farmers. • Reports on indigenous knowledge on lake fisheries have been prepared in the three countries.
• To improve fish quality and handling	• Fish quality laboratories established • Improved handling facilities at landing sites	• Infrastructure and fish handling facilities have been improved at fish landing sites. A total of 100 new landing sites have been identified for gazettement. • improved fish handling and strict adherence to fish quality standards, resulted on the lifting of a fish export ban imposed by EU countries on the EAC Partner States and export for Nile Perch resumed.

		• Fish inspectors have been trained. • a fully equipped government fish quality laboratories have been established and operationalized in both Tanzania and Uganda, while in Kenya equipment is being procured for the laboratory.
• To conduct regular Lake wide frame surveys on the Lake and carry out catch assessment	• Conduct a lake wide frame survey once every two years. • Statistical data on fishing effort availed	• Two joint Frame Surveys covering the whole lake were conducted with full participation of BMUs. The first one was conducted in March 2000 and the second one in April this year 2002. • The three countries are collecting daily data on catch assessment surveys in sample beaches.
• To ensure sustainable funding of fisheries activities.	• Self financing fisheries sector	• A mechanism for sustainable funding for Lake Victoria environment through a Fish Levy Trust Study has been initiated in the three countries. This study has been completed in Tanzania. In Uganda and Kenya it is in its final stages.
• Disseminate information on Lake Victoria fisheries.	• Well informed communities of fisheries	Brochures, manuals, TV and radio programmes, leaflets, workshops have been produced

d) Water Hyacinth Control

Objectives	Targets	Achievements
• To establish sustainable long-term capacity for control of water hyacinth and other invasive weeds in the Lake Victoria Basin through integrated effort involving intensified publicity, legislation and integrated pest management with community involvement	• Improved standards and adequate mass rearing capacity for the biological control agents • Strategy for local community participation formulated • 30 Water hyacinth weevil rearing units established equipped with necessary facilities. • Reduced coverage of the weed by 95%	• 32 rearing facilities for bio-control agents have been established around the Lake Victoria. Tanzania has established 12 rearing units, Kenya has 9 while Uganda has 11. • The involvement of Rwanda has been realized. Rwandans have been trained in mass rearing of bio-control agents and experts from the three countries have visited Rwanda. As a consequence of this, Rwanda is currently operating two weevil-rearing sites. Attempts to involve Burundi are in progress. • Riprarian communities involved in weevil rearing and manual removal of water hyacinth at strategic sites. Working tools have been availed to local communities to assist them in manual removal of the weed at landing beaches, water sources and recreational sites. The tools enabled the communities to keep landing beaches clear of the weed during peak infestation. • Both mechanical and manual harvesting of the water hyacinth has been implemented at strategic points such as Nalubale Dam, Port Bell, and Winum gulf. • The integrated approach using manual/biological control methods has reduced weed infestation by over 95% in the whole lake.

• To investigate possibilities for integrated strategies for control of water hyacinth	• Strategies of water hyacinth control identified	• A combination of biological control, manual removal and mechanical removal of water hyacinth is accepted as appropriate methods for the control of water hyacinth in Lake Victoria.
• To develop a regional survaillence and monitoring systems in Lake Victoria	• A regional surveillance system for water hyacinth established	• Monitoring water hyacinth infestation in the lake and in River Kagera is continuously done by all three countries using ground surveys, aerial photography and satellite imagery. • A regional surveillance system for water hyacinth has been developed and hot spot areas have been identified around the lake and in River Kagera. This system will ensure that water hyacinth infestation is closely monitored and interventions carried out at the right time.

e) Water Quality and Ecosystem Management

Objectives	**Targets**	**Achievements**
• To provide details of limnological changes and elucidate the nature and dynamics of the lake ecosystem; predict their short and long-term consequences and	• Water quality monitoring networks established • Comparative data on vital water parameters available • Trends in lake water quality	• A water quality model has been developed and tested and is currently being validated. • Water quality/limnology study in Lake Victoria has been completed. • Regular water sampling and analysis done and data on vital

provide guidelines for ameliorating potentially disastrous changes.	established • Improved water quality showing acceptable coliform counts	parameters as Nitrogen, Phosphorus, Biological Oxygen Demand (BOD), temperature, water alkalinity (pH), is now available.
• To establish an operational and integrated water quality monitoring network in the Lake basin.	• Have in place sampling points in the Lake basin • Develop a monitoring water quality network	• A water quality-monitoring network in the lake basin consisting of 56 monitoring stations has been established for the whole lake. Regular data collection and analysis is ongoing. Tanzania has 28 monitoring stations, Uganda 19 and Kenya 9. • The three countries have agreed on common standards for water quality monitoring. The water quality laboratory at Entebbe has been selected as a referral laboratory in the catchments. • Maps showing water quality trends, sampling points have been prepared.
• To build capacity for water quality monitoring in the Lake basin		• The Project has renovated and equipped water quality laboratories in the three countries to enable them carry out routine water analysis. • Staff trained on sampling and analysis techniques
Carry out a pilot study to estimate sedimentation rates at the mouths of three major rivers (Kagera, Simiyu and Nyando)	Sediments loads into the lake from the three rivers quantified and compare with data on soil losses from the catchment	• Data on sediment loads have been collected, analyzed

f) Industrial and Municipal Waste Management

Objectives	Targets	Achievements
• Prepare inventories and classifications for all factories and industries in the catchment.	• Comprehensive information on the location of industries, the numbers, distribution and density and their particulars including type of effluents, treatment methods, efficiency, points discharge and their potential impact on water resources. • Information and data on for use in public awareness efforts, training and a base for monitoring of industrial/municipal discharges, including trends. • Public involved in executing pollution mitigation measures • Information and data for design/procurement of appropriate and affordable effluent treatment options to reduce pollution loads and achieve target standards • In house cleaner technologies initiated • Capacity building, strengthened institutions and improved effluent management • Public participation in the preparation of the legislative incentives and deterrence	• Factories and Industries have been classified with view to knowing their effluents and treatment systems. • Industries in the catchments have been involved in cleaner production through sensitization and training of 21 industries. • The process of harmonization of effluent standards in the three countries has started.

• Investigate the importance and efficiency of both constructed and natural wetlands in stripping pollutants from industrial and municipal effluent.	• Assess the efficiency of buffering of constructed wetlands • Test the best microphytes for use in artificial wetlands for treatment of industrial waste	• Pilot artificial wetlands are being tested for treatment of industrial effluent • Some microphytes have been identified as being efficient for treatment of effluents of some specific effluents.
• Rehabilitate waste treatment works in three key municipalities in the basin (Kisumu, Mwanza and Kampala)	• Rehabilitate effluent treatment plants in the three cities to increase their efficiency and reduce pollution loads into the Lake.	• Sewerage treatment plants in Kampala has been rehabilitated while those in Kisumu, Mwanza and Bukoba are in progress.

g) Wetlands Management

Objectives	Targets	Achievements
• To inventorize and classify the wetlands and monitor nutrient loading in priority areas.	• Information on the area occupied (hectares), their types, flora and fauna and their uses available. • Management plans for Lake basin wetlands	• Inventories of wetlands in the Lake Victoria catchments in terms of hectarage, types, flora and fauna and their uses have been prepared
• To investigate the buffering processes and capacity of Lake Victoria wetlands and to advise on a management strategy	• pilot studies on buffering capacity for selected wetlands carried out.	• Buffering capacity of wetlands study have been initiated in the three countries and the mode of buffering capacity developed.
• Assess the economic value of wetlands in the LakeVictoria basin	• Cost benefit analysis of wetlands carried out	• Cost/benefit analysis of wetlands in Uganda was completed and is being used for policy decision making on alternative uses of wetlands.
• Develop management strategies for sustainable use of wetlands		

• Strengthen capacity of local NGOs & CBOs to undertake wise use of wetlands	Informed and enlightened communities on importance of wetlands and the need to management them sustain-ably	• guidelines, Brochures, guidelines, TV feature stories and newsletters on wetland values, have been developed in collaboration with the communities. • Communities have been trained and participated fully in formulation of management strategies for wetlands. • Public awareness on the functions and roles of wetlands in the catchments has been done.

h) Land Use Management

Objectives	**Target**	**Achievements**
• To quantify the magnitude of soil erosion and nutrient loss from a range of land covers	• Soil and nutrient from various pilot land covers quantified	• Guidelines on land management practices have been prepared and disseminated to stakeholders. In Uganda scientific data on soil and water losses have been collected and quantified. In Tanzania land use/cover and soil erosion hazard mapping is nearing completion while in Kenya catchments approach has been employed targeting both crop production and livestock.
• To develop systems to promote soil and water conservation in the Lake basin.	• Suitable soil and conservation measures established	• Techniques for harvesting rainwater for crop production (paddy) have been developed and disseminated to the communities in Tanzania. Sub-soiling to improve rainwater infiltration and reduce run off has also been demonstrated. In Uganda, 50 water tanks have been constructed to store rainwater.

• Identify appropriate remedial measures and interventions for arresting the degradation process by developing sustainable agricultural systems in the catchment		• An inventory of fertilizer and agrochemical use in the Lake basin has been prepared.
• To sensitize the communities on the importance of soil and water conservation	• Sensitized stakeholders • Extension and training modules for use in other areas in the catchment available	• In Kenya 724 farmers have been trained on sound land use practices. In Uganda 516 participated in field visits on sound land use practices. In Tanzania 354 have been trained on soil conservation techniques and several have been taken on study tours.
• To assess the use of agrochemicals, fertilizers reaching lake Victoria waters in the pilot micro catchments	• an inventory of agrochemical and fertilizer use in the lake basin in place • Report on relationships on agrochemical run-off close to the point of application and impact on the Lake made • data on pesticides, fertilizer and other agrochemicals used in the catchment available	• Inventories of agrochemical used in the catchment have been established are regularly updated • Experiments have been established to investigate the relationships of agrochemical run-off. Work still going on, available data is not conclusive. • Surveys have been done on the marketing and use of agrochemicals in the catchment

• To establish a reliable and regular system of for the types and quantities of pesticides and fertilizers used in the Lake catchment		• Data on types and quantities of agrochemicals used in the lake basin is regularly collected. • Database on agrochemical use has been established being updated regularly.
• To promote safe use of agrochemicals	Information packages on efficient use of agro-chemicals documented	Communities around the lake basin have been sensitized on safe use of agrochemicals

i) Catchment Afforestation

Objectives	**Targets**	**Achievements**
• To protect fragile critical catchment of lake basin by planting trees and conserving natural forest.	• 3 million trees planted per year • Conserved natural forests	• The project has contributed towards afforestation in the lake catchments whereby a total of 11.5 million trees have been planted in the catchments.
• To increase awareness among communities on catchment protection and tree planting.	• Well sensitized communities on value of forest in catchment protection	• communities sensitized on catchment protection and tree husbandry and are now practicing conservation of natural forests • Capacity Building in afforestation has been done among the communities in terms of training, provision of tree seeds,

• To improve management of existing forest reserves and create new reserves and conserve forest biodiversity	• management plans prepared • tree seeds and tree nurseries established • 5000 hactares of natural forest protected	watering cans and other facilities for nursery management. • Seven Agro forestry demonstration plots and 58 tree nurseries have been established in the whole lake catchments managed by communities and government institutions. • management plans for natural forests and guidelines for nursery management have been develop. • A total of 3200 hectares of critical catchments of natural forest have been protected and planted

j) Support to Riparian Universities

Objectives	Targets	Achievements
• To strengthen facilities for environmental analysis and graduate teaching at Moi University (Department of Fisheries and School Environmental Studies), at the University of Dar es Salaam (Department of Zoology and Marine Biology) and at Makerere University (Department of Zoology).	• Equipped teaching facilities such as laboratories, libraries and other equipment.	• The project has supported the riparian universities through renovation of offices, laboratories, supply of chemicals and lab equipment, office equipment and stationary. • The required laboratory, field and office equipment were provided to all components.
• To strengthen the staffing of components through training to Masters and PhD levels and avail opportunity for upgrading of academic and support staff.	Academic standards of staff of universities to upgrade their academic standards	Staff from the universities have been trained at PhD level. The Universities have also trained officers from components at PhD, MSc, BSc, Diploma and short courses.

2.7 Challenges and Constraints

The Project has been faced with, but not limited, to the following major problems;

2.7.1 Delays in Procurement

There has been a general delay in the procurement of certain works, goods and services due to certain lengthy government and World Bank procurement procedures. Lack of transport (both land and water), office and laboratory equipment at the beginning of the project, together with subsequent delays in procuring the same were partly responsible for initial delays in carrying out field activities. This problem was later significantly reduced with the arrival of vehicles, motorcycles, motorboats, dinghies and bicycles.

2.7.2 Inadequate Qualified Manpower

At the beginning of the project and indeed for most of the first two years of the project, most components lacked sufficient qualified manpower to efficiently undertake the planned activities. This problem has been significantly reduced through training of staff, use of collaborators and recruitment of consultants.

2.7.3 Disruption in Disbursements and Problems of Counterpart Funds

Uganda had almost a full year's disruption in the flow of funds due to:

- Closure of a local commercial bank in which the project had opened both Special (foreign) and local accounts.

- Suspension of disbursements by the World Bank due to initial delay in releasing counterpart funds by government.

Due to budgetary constraints Tanzania could not meet her obligations of counter part contribution. The Government of Tanzania requested the World Bank to wave the 10% counterpart contribution which has a consequential problem in that the project could only operate with 90% funding.

In Kenya the major challenge has been low disbursement of funds attributed to the disbursement system through the Pay Master General Account, and slow flow of disbursement because funds were initially being channeled to components through their respective ministries making it extremely difficult for the National Secretariat to monitor. This problem was addressed by

consolidating the project funds under the national Secretariat and opening of the Project Commercial Account in the year 2001. The project is also subjected to multiple audits as required by the World Bank.

2.7.4 Lack of incentives

Implementation of project activities was to a certain extent negatively affected by lack of incentive packages to government project staff.

3.0 WAY FORWARD

3.1 Extension of LVEMP I

LVEMP was to have ended on 30th June 2002. However, not withstanding the achievements in last five years, not all the original set goals have been accomplished. This is so partly due to the delays and constraints mentioned above and the fact that some of the scientific pilot programmes would require a longer time to yield conclusive results. It was with these views in mind that the three Partner States requested the World Bank for an extension of the project. During the extended period, the pending activities will be completed and preparation of the LVEMP II would be done.

The EAC Partner States submitted a request to the World Bank for two years extension of LVEMP I. The extension has been granted and supplemental credit effected to cover the period July 2002 to June 2004 for Tanzania and Uganda. During the two years extension the Project will consolidate activities initiated in LVEMP I and participate in the preparation of Vision Development for Lake Victoria Basin under the coordination of EAC Secretariat and in the preparation for phase II of LVEMP.

3.2 LVEMP II

- As indicated earlier, it was recognized from inception that the impact of LVEMP would be realized if implementation is sustained for a longer period. The current phase was therefore designated as phase one of a longer term programme.

- A review of achievements made by LVEMP during five years of implementation reveals a number of tasks, which should be continued in LVEMP II. Among these are:

    - Further data collection on quantity and quality of water in the Lake basin;

    - Continuous sensitization of communities about the fate of the Lake Basin and the need for conservation of Lake basin resources;

- Maintenance of fish quality for both local and external markets;
- Establishment of Lake Victoria Environmental Fund;
- Biodiversity conservation;
- Continued monitoring, surveillance and control of water hyacinth infestation;
- Promote private investment in the basin
- Poverty reduction among the lake basin communities;
- Putting in place management measures to control pollution from "hot spot" areas;
- Enforcement of regulations, which protect soil and water conservation, wetlands and catchment forests.

- Developments so far made towards LVEMP II preparation include:
  - A pre-identification missions to Tanzania and Uganda held in November 2001
  - LVEMP II identification missions to Tanzania and Uganda held in March 2002
  - Other project identification missions are scheduled for Uganda and Tanzania in September and November 2002 respectively.
- The general aspects of the project shall be;
  - That the LVEMP II shall be a 10 – 15 year programme, beginning in year 2004 and based on both the successful operational strategies and cost-effective methods that have been identified and tested during LVEMP I
  - That the LVEMP II will need to focus on maintaining ecological/socio-economic values of lake Victoria;

- That much more attention will be given a terrestrial issues;

- That the LVEMP II will transition from a knowledge acquisition, capacity building exercise to an intervention that uses the information and capacity developed during the LVEMP I to promote environmentally and socially sustainable economic development;

- That the LVEMP II will conform to process and objectives of Poverty Reduction Strategies in each of the Partner State.

- Given that the Government and donor support would not be sufficient on its own to promote visible and measurable environmentally and socially sustainable economic growth in the Lake Victoria Basin. LVEMP II will therefore be designed to leverage private sector (social capital, local and regional capital and 'foreign' capital) investment in socially and environmentally sustainable activities in the region.

3.3 Vision development for Lake Victoria Basin

- Committee on Lake Victoria Development Programme is developing overall shared vision for Lake Victoria Basin. LVEMP II will benefit from the shared vision developed by this initiative. It is anticipated that other projects and programmes to be initiated in future for the Lake basin would borrow from the shared vision and make their goals focus on the shared vision of the basin.