

# **LAKE VICTORIA ENVIRONMENT MANAGEMENT PROJECT**

## **BRIEF ON LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT TO THE MINISTERS OF STATE VICE PRESIDENT'S OFFICE**

### **1. INTRODUCTION**

Lake Victoria Environmental Management Project (LVEMP) is a comprehensive environmental program for the conservation of Lake Victoria and its basin. It is a regional Project formed under Tripartite Agreement signed on 5<sup>th</sup> August, 1994, by the three riparian countries – the Republic of Kenya, United Republic of Tanzania, and the Republic of Uganda; which provided for its preparation and implementation.

The major objective of the LVEMP is to restore a healthy, varied lake ecosystem that is inherently stable and able to support, in a sustainable way, the increasing activities in the lake and its catchment for the benefit of the people of the riparian countries as well as the international community.

### **2. PROJECT OBJECTIVES BEING IMPLEMENTED**

The overall objectives of the Project are:

- 2.1 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;
- 2.2 To conserve biodiversity and genetic resources for the benefit of the riparian and the global community;
- 2.3 To harmonize national and regional management programs in order to achieve to the maximum extent possible, the reversal of environmental degradation of Lake Victoria.

### **3. THE LAKE AND ITS CATCHMENT**

Lake Victoria is the world's second largest fresh-water lake and the largest in Africa, with a surface area of 68,800 km<sup>2</sup>. It has a volume of 2,760 km<sup>3</sup> and an average depth of 40m. The deepest area is 81m. The lake is shared between Kenya (6%), Tanzania (51%) and Uganda (43%).

The lake catchment area covers 193,000 km<sup>2</sup> with Tanzania occupying 44 per cent, Kenya 22 per cent, Uganda 16 per cent, Burundi 7 per cent and Rwanda 11 per cent. There are many rivers flowing into the lake.

#### 4. **ECONOMIC IMPORTANCE OF THE LAKE AND ITS CATCHMENT**

- 4.1 The Lake Victoria and its catchment supports about one third (30 million people) of the population of Kenya, Tanzania and Uganda estimated to be 90 million.
- 4.2 The lake and its catchment provides food (fish), hydropower generation, transport and communication, tourism, water for domestic agricultural and industrial use, waste water disposal, recreation etc. The lake is also vital for weather and climate modulation.
- 4.3 Over 70% of the population of the three countries is engaged in agricultural production mostly as small scale farmers such as sugar, tea, coffee, maize, cotton, livestock keeping, horticulture etc. including the lake catchment.
- 4.4 About 3 million people earn their living directly or indirectly on the fish industry of Lake Victoria in the three countries.
- 4.5 Lake wide fish production is estimated at between 400 – 500 metric tons with Tanzania landing 40%, Kenya 35% and Uganda 25%. The landed value of this catch is between USD 300 – 400 million annually.

#### 5. **MAJOR THREATS TO THE LAKE**

The multiple activities in the lake and its catchment have increasingly come into conflict.

- 5.1 Population pressure contributing to the existence of “hot spots”, caused by human waste, urban runoff, effluent discharges from such industries as breweries, tanning, paper and fish processing, sugar, coffee washing stations, abattoirs.
- 5.2 Inflow of residues from use of chemical herbicides and pesticides, to a limited extent heavy metals resulting from gold mining operations. All these have been contributing to eutrophication of the lake.
- 5.3 Raw waste from settlements, market centres and towns around the lake contribute significantly to pollution of the lake waters.
- 5.4 Unsustainable utilization of the major wetlands through agricultural activities and livestock keeping, has greatly compromised the buffering capacity of the wetlands.

- 5.5 Introduction of two exotic species of the Nile Perch and the Nile Tilapia about 30 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.
- 5.6 Nutrients (phosphorus and nitrogen) inflow has given rise to five-fold increase in algae growth since 1960s causing de-oxygenation of the water which threatens the survival of deep water-fish species.

## 6. **WATER HYACINTH INFESTATION**

- 6.1 By 1996 the weed was estimated to occupy about 15,000ha., of the lake water.
- 6.2 The weed obstructs water transport and light activities.
- 6.2 It is the home of poisonous snakes and harbours mosquitoes.
- 6.3 It blocks fishing activities, as well as beaches where people draw water or cattle drink water.

## 7. **LVEMP IMPLEMENTATION STRATEGY**

The Project is implemented through a national execution mechanism with relevant government departments/ministries and institutions in all the three governments. These are ministries responsible for agriculture, finance, environment, natural resources and water; fisheries research institutions – Fisheries Research Institute (Uganda), Kenya Marine and Fisheries Research Institute (Kenya) and Tanzania Fisheries Research Institute, as well as environmental agency – National Environment Management Council.

Implementation at national level consists of two committees:

- **The Project Implementation Committee (PIC)**  
This Committee comprises of Project Component Coordinators and Task Leaders. The role of the PIC is to review physical and financial progress of all Project Components on a periodic basis – monthly or quarterly.
- **National Steering Committee on Water Hyacinth**  
This Committee consists of six (6) members chosen on their merits. The Committee is responsible for supervising the implementation and management of water hyacinth control.

- **National Secretariats**

Each country, has a National Secretariat headed by a National Executive Secretary which is responsible for coordinating the activities being implemented. The Secretariats liaises with the World Bank and the implementing ministries and institutions.

8. **LVEMP REGIONAL COORDINATION**

The Tripartite Agreement mentioned above, provides for a Regional Secretariat and a Joint Regional Policy and Steering Committee (RPSC). The Regional Secretariat, based in Tanzania is responsible for the coordination of regional activities such as facilitating and convening harmonisation meetings and study tours in the three countries as well as acting as a Secretariat to the RPSC.

The Regional Policy and Steering Committee (RPSC) consists of nine (9) Permanent Secretaries, 3 from each country of ministries responsible for the above mentioned sectors, implementing LVEMP activities. The RPSC is responsible for policy guidelines, supervision and coordination of activities being implemented such as approval of annual workplans and budget estimates.

9. **COLLABORATION IN PROJECT IMPLEMENTATION**

The LVEMP has brought the three countries riparian to Lake Victoria closer than ever before. This is so because there is a lot collaboration and harmonisation of activities by officials in the three countries implementing similar activities. For example, the three countries are harmonising their fisheries legislation, as well as working out a modality of collecting and sharing fisheries information and database. They are also undertaking several joint studies/consultancies such as fish biology and biodiversity conservation, integrated water quality/limnology study and toxic.

10. **PROJECT IMPLEMENTATION**

The Project activities being implemented are:

10.1 Catchment Afforestation which aims at increasing forest cover through tree planting and preventing soil erosion through conservation of natural forests with full involvement and participation of communities.

10.2 Land Use Management emphasises soil and water conservation and appropriate use of agro-chemicals to reduce pollution loading and improve on agricultural production.

- 10.3 Wetlands Management Component emphasises sustainable use of wetlands in order to conserve them as well as improve their buffering capacity.
- 10.4 Industrial and Municipal wetlands emphasises the rehabilitation of existing treatment plants and use of the same by stakeholders, demonstrating the wise use of artificial or natural wetlands in waste treatment.
- 10.5 The Water Quality Monitoring Component provides qualitative and quantitative information on nutrient, eutrophication and pollution; phytoplankton communities and their composition; algal blooms and their dynamics; lake zooplankton, microbes etc.
- 10.6 Water Hyacinth Control and Management Component focuses on the control of the weed by removing the weed to manageable level by using biological, manual, mechanical and chemical methods.
- 10.7 Fisheries Management Component focuses on the establishment of a sustainable co-management of the fisheries through stakeholders involvement in extension services, law enforcement, and date collection, fish quality control, post harvest marketing improvement, fish levy trust fund to ensure sustainability, while simultaneously financing community demand driven microprojects to enhance the welfare of the community.
- 10.8 Fisheries Research Component generates information on fish biology and ecology, stock sizes, qualitative and quantitative information in aquatic biodiversity, socio-economic characteristics of the fishery stakeholders and restoration of scarce or depleted species.
- 10.9 Microprojects – are small community demand driven investments which address concerns directly related to the communities.
- 10.10 Support to the Riparian Universities Component aims at building capacity and strengthening facilities for environmental analysis and graduate teaching at Dar es Salaam, Makerere and Moi Universities.
- 10.11 Lake Victoria Fisheries Organisation (LVFO)  
The LVEMP is also facilitating the establishment of LVFO so that it can provide a permanent secretariat for fisheries research and management in the three riparian countries.

## 11. SUSTAINABILITY AND PARTICIPATION

During the preparation of the Project special efforts and emphasis was made, in all the three riparian countries, to involve and address the needs of local communities. Consultants visited communities, women's groups, Community Based Organisations (CBO), NGOs in fisheries, and fish

processing and marketing, soil conservation, wetlands development, forestry, water hyacinth control, among others. For example, in Tanzania a study on community needs was conducted in the three regions, 12 districts, 24 fishing villages and in more than 85 groups or communities. The consultant also organised workshops. Preparation also included a provision for community microprojects among the investments. All these community involvement efforts were intended to incorporate a community focus in the Project. In one of the governments' reports it is acknowledged that "one of the major set backs in aquatic resources management in EA is the general failure or lack of community participation in management programs" and that such participation is key to the successful implementation of any such programs. Community participation is woven into virtually every Project Component, funding for microprojects, a great deal of community training, hundreds of stakeholders workshops, from scientific studies to water hyacinth control, fisheries research to own-enforcement of agreed fishery regulations, sustainable use of wetlands, to soil conservation. For example, communities are involved in tree planting and conservation of natural forests, enforcement of illegal fishing practices through co-management in fisheries management, identification of fish breeding areas, providing information leading to the identification of where fish species feared to have disappear, can be found, rearing of biological control agents, in aquaculture by rearing fish in ponds etc. Involvement and participation by the communities ensure that they own the activities implemented and continue to draw benefits from better fishing management practices, aquaculture, lower fish post harvest losses, cleaner water, construction of community assets etc.

## 12. **THE LONG-TERM VISION OF LVEMP**

LVEMP is a five year Project (1997 – 2002). For these years, LVEMP is establishing the basic infrastructure for sound management of Lake Victoria and its catchment. The Project has:

- Re-established cooperation on some activities which stopped when the former East African Community collapsed, such as in fisheries, LVFO etc. collecting information/data on various issues in Lake Victoria ecosystem e.g. fisheries, water quality, wetlands etc.
- Has built and strengthened the capacity to manage the activities nationally and regionally.
- Has trained many people –24 Ph.Ds, over 1000 Masters and hundreds of short courses.

- Has renovated water and fish laboratories and supplied them with modern equipment and facilities.
- Had established mechanism of involving communities, NGOs, CBOs, local government (district and regional) authorities.
- The Project has won the heart of politicians.
- The staff implementing LVEMP activities are also motivated and keen to do their work.

### 13. **THE WAY FORWARD**

While the LVEMP has made some achievements during the five-year period, it is not possible to achieve the objective of having a clean and healthy Lake Victoria ecosystem within these 5 years.

Experience elsewhere e.g. Danube, Mosel, Baltic Sea, the Great Lakes of North America, shows that rehabilitation of an environmentally degraded lake the size of Lake Victoria takes longer than five (5) years. In the case of Lake Victoria, we are talking about 15 – 20 years or more.

This fact of Lake Victoria rehabilitation taking more than 5 years was realised during its preparation. It was stated that, “Phase I of LVEMP will lay the foundations to provide a central core/base around which will coalesce a larger program of intervention to clean-up Lake Victoria.

The LVEMP Long-Term Vision is a long term commitment by the three riparian countries for the conservation and management of Lake Victoria based on a clear Project vision. The vision will clearly show and state how the three countries wish to see the lake, its resources and the living standards of the people living within the catchment in 10 – 20 years from now.

Initial preparation of the vision has stated in all the three countries by involving all stakeholders in workshops, meetings, interviews, radio, TV programs etc. This initial preparation will be ready by October 2000.

Initial preparation will be followed by consultancies/studies to be undertaken by consultants. In addition to focusing on scientific and technical issues like water quality monitoring, industrial and municipal waste water management, fisheries research, etc. future LVEMP will also focus on areas like poverty eradication, aids, health.

It is also planned to establish regional mechanisms such as Regional Procurement Board, Water Hyacinth Monitoring and Surveillance System,

Fisheries Quality Assurance Certification etc., linked to the East African Community in Arusha.

LVEMP has introduced a new approach of implementing projects. It is working satisfactorily even when it is involving several countries. It is an approach to be followed.

#### 14. **STATUS OF IMPLEMENTATION**

The LVEMP is a five year Project. Its implementation started in July, 1997 and will end on 30 June, 2000. The Project is its 4<sup>th</sup> year of implementation.

During this period achievements have been made:

1. **Fisheries Management** – There has been a significant improvement and strengthening of fisheries management in the lake and its basin due to:
  - Formation of 509 Beach Management Units which carry on law enforcement, surveillance, data collection and fish stock assessment.
  - Improvement of hygienic conditions of fish landing sites through provision of floating barges, toilets and water as well as strengthening fish quality inspection at beaches and factories.
  - Awareness creation. There has been a lot sensitisation of fishing and other communities regarding rehabilitation and conservation of Lake Victoria and its catchment.
2. **Fisheries Research** – A lot of information on the biology and biodiversity of Lake Victoria, including an understanding of the social dimensions of the fishery of the Lake, has been collected. Information collected has provided preliminary information:
  - **On the status of ecosystem diversity, fauna and flora.**
  - Shown that some of the indigenous fish species once feared extinct have been located in some satellite lakes.
  - Reproductive behaviour and breeding patterns of the commercially important species has been documented.
  - Aquaculture research and training of farmers on fish farming has been carried out.



3. **Water Quality and Ecosystem Management** – Achievements include:
  - Establishment of water quality network throughout the catchment.
  - Rehabilitation of laboratories in Mwanza, Kagera and Mara.
  - Procurement of lab. equipment and facilities required for office management.
  - Improvement of industrial and municipal effluent, and assessing the contribution of urban runoff to lake pollution.
  - Elucidating the nature and dynamics of the lake ecosystem by providing detailed information on the chemical, physical and biological characteristics of the lake waters.
  - Establishment of a preliminary Lake Victoria physical processes and limnology model has been developed.
  
4. **Water Hyacinth Control and Management** – The weed which in 1995 was estimated to cover an estimated of 2000 square hectares on the Tanzania portion of the lake has been reduced to about 70%.

The reduction has been achieved through the use of integrated methods of manual and biological. Some communities including NGOs have participated in removal of water hyacinth in strategic areas such as fish landing sites. Some NGOs like LANESO were given some tools to enable them remove the weeds physically. Eleven (11) weevil Rearing Units have been constructed in Kagera, Mara and Mwanza regions which are producing between five hundred and one million weevils a month. Eight out of eleven weevil rearing units . The water hyacinth control activities of the LVEMP are implemented by the Ministry of Agriculture.

5. **Wetlands Management** – As the name implies, these are marshy low-lying areas, with water and grass. The LVEMP is implementing the following wetlands activities:
  - Investigation of the buffering processes and capacity of the wetlands is continuing.
  - Rapid assessment of wetlands has been carried.
  - Estimation of the economic benefits from wetlands products (fish, papyrus, reeds, clay, livestock grazing and agricultural products) in selected communities.

- A development of management strategies for the products sustainable use and for the rehabilitation of species degraded wetlands involving communities is continuing.
  - A pilot activity to demonstrate sustainable use is being undertaken.
6. **Integrated Soil and Water Conservation** – The following activities have been carried out:
- Assessment of agrochemical use on Simiyu River is continuing.
  - Inventories of agrochemicals in the Simiyu River is continuing.
  - Conducted field trials on the fate of pesticides and nutrients applied on farms, monitoring residues beaching out and pesticide levels in receiving rivers.
  - Assembling and reviewing database of agro-chemical use in Lake Victoria.
  - Mounting training courses for extension services.
  - Quantification of soil erosion and nutrient loss from different land covers and uses and designing remedial measures and sustainable agricultural practices.
  - Development of systems to promote soil and water conservation as well as establishment of demonstration units to disseminate successful soil and water conservation measures.
7. **Catchment Afforestation** – Some of the achievements include:
- Tree planting involving communities in Mara Region – A total of about 1.2 m tree nurseries have been planted.
  - Assist and involve communities in the management of existing forest reserves and creation of new forest reserves to conserve forest biodiversity.
  - Agro-forestry demonstration plots have been established in Mara Region.
  - Carried out sensitisation among communities on the need to plant trees as well as conserving existing forest reserves. This activity is carried out by the Ministry of Natural Resources and Tourism.
8. **Support to Riparian Universities** under the LVEMP, the Department of Zoology and Marine Biology of the UDSM is being support to strengthen and improve its capacity.

The Department is training 2PhD and one masters textures, to enable it produce more people with knowledge in environment. It has also been given equipment and facilities for scientific research.

9. **Microprojects** – These are demand driven projects for fishing communities near the Lake shore in 15 districts in Kagera, Mara and Mwanza Regions. These may be dispensaries, schools, credit money etc. One microproject costs up to USD 15,000 with a 10% contribution by the communities.

So far 31 microprojects have been carried and are in the process of completion.

- Microprojects are implemented by the Secretariat.

10. **Capacity Building** –

- The Project provides for training of staff involved in the implementation from the implementing institutions only.
- So far 24 have received or are on masters courses and 6 PhDs. Many have attended short courses and workshops.

11. **Community Involvement and Participation** in the implementation is emphasised in all Project activities.