

## THE COMPLEXITY OF THE MANAGEMENT OF LAKE VICTORIA CATCHMENT BASIN

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Lake Victoria is the largest lake in Africa and the second largest fresh water lake in the world. It has an open water surface area of 69,000 km<sup>2</sup> and a catchment basin of 193,000 km<sup>2</sup> extending up to Rwanda and Burundi with a mean annual rainfall of about 1320mm. The Lake is shared between Kenya with 6% by surface area, Uganda with 45% and Tanzania with 49%.

The lake's catchment is characterised by climatic and topographical contrasts and supports a wide range of ecotones and crops, different types of livestock, a wealth of wildlife, a high population and intense socio-economic activities. This results into a complex matrix involving exploitation of natural resources which impacts negatively on the same resources making the ecosystem, invariably, unsustainable.

About 40% of Kenya's population live and derive their socio-economic wellbeing from the Lake Victoria catchment basin in Kenya which is about 46,000km<sup>2</sup>. In the recent years, however, the ecosystem has deteriorated seriously due to increasing population and socio-economic activities.

### **Statement of the Problem.**

The Lake Victoria environment has largely been neglected in the past with consequences that are difficult and expensive to redress. Individual water pollution incidents and generally polluted cases have been reported particularly in the Winam Gulf in Kenya. As a consequence of neglect of the catchment, poor farming practices and land use, large amounts of silt and sediments from erosion of the cultivated areas are washed into the rivers and ultimately into the Lake. The following are some highlights of the problems on the Kenyan part of the lake basin.

- Agriculture, which uses 35% of the land and whose policy is to increase food production, contributes colossal amount of sediment into the lake. The contribution from a catchment area of 16,480 km<sup>2</sup> drained by five rivers with a combined annual mean discharge of 155m<sup>3</sup>/s, for example, produced 1.04 million tons per year suspended solids load.
- Industries and urban effluent contribute over 30 million m<sup>3</sup>/yr of partially treated effluents and large quantities of organic solid wastes which are discharged into the Lake.
- Destruction of wetlands and forests contribute to the deterioration of the ecosystems in the lake basin.

- Introduction of the exotic Nile Perch, Lates niloticus, into the Lake has exacerbated the reduced biodiversity which is further aggravated by inappropriate fishing methods.

The impacts have been manifested through the deterioration of the water quality resulting into eutrophication, proliferation of the water hyacinth, reduction in biodiversity and increasing occurrence of diseases and poverty.

The complexity of the Lake ecosystem, the adjoining catchment and the influence of diffuse and point sources of pollutants has been recognised. However, due to lack of scientific data and information necessary for sustainable management of the Lake and its drainage basin, there have been no major investments.

### **Management Strategies**

In addressing the Lake Victoria environmental management problems, it is necessary to delineate various issues into functional sector components. The inherent interrelationships are complex and least recognised by the various stakeholders. These interrelationships make integrated management complex and difficult.

The water resources continue to bear the brunt of all other sectors culminating in the continued deterioration of the water quality thereby impacting negatively on the other water-dependent sectors resulting into overall, unabated degradation of the environment.

### **National Intervention measures**

With a population of about 10 million in the Basin which is growing at a rate of about 3% per annum and which is dependent on the lake basin resources, intervention measures are necessary to ensure sustainable development and utilisation of the basin resources. In this regard, the interventions necessary in order to reverse the deterioration of the Lake Victoria and the adjoining catchment include a joint multi-sectoral and multi-disciplinary approach involving Government Ministries, Local Authorities, NGOs, the Private Sector, Local Communities, Regional Co-operation and Donor Agencies for:-

- the management of water quality to reduce the pollution loading into the Lake;
- the management of land use, including wetlands;
- the management of municipal and industrial effluents;
- formulation of policy and establishment of legislative and institutional mechanisms;
- the management of fisheries and the control of the Water hyacinth.

### **International Intervention measures**

On 5<sup>th</sup> August, 1995, the Governments of Kenya, Tanzania and Uganda signed a Tripartite Agreement jointly to prepare and implement the Lake Victoria Environmental Management Program (LVEMP). The Agreement provided for organisational

arrangements for projects preparation and continue to implementation of projects. The Agreement provided for a Regional Policy and Steering Committee, which functioned during the preparation of the projects, with a membership of nine, three from each country drawn from the Ministries dealing with water affairs, environment, fisheries and agriculture. Following on this, the three countries have each acquired credits and grants from the International Development Association (IDA) and the Global Environmental Facility (GEF) through the World Bank to implement the LVEMP. In Kenya, the implementation arrangements are a mix of complex collaboration.

### **Legislative and Institutional Arrangements.**

The various sectors whose activities revolve around, and are related to the complexity of the environmental management of the Lake Victoria Basin, water resources through direct or indirect use, are institutionalised in various government ministries. These require sound policies backed by appropriate legislation and institutional framework that promotes integrated approach to the management of the resources within the basin. In Kenya, the policy framework on the treatment and discharge of waste water is not adequately backed by appropriate legislation and institutional framework. There is need for a framework or enactment of an umbrella legislation which would fill in the gaps in each of the sectoral laws.

Considering that the Lake Victoria is a shared water body, the guiding principle in regional cooperation is through Agreements and Protocols while legislation is at the national level. What is required in the region is the establishment of a common forum to come up with binding principles to be enforced at the national level through uniform policies, legislation and appropriate institutional arrangement or a framework. The East African Regional Co-operation between Kenya, Uganda and Tanzania is expected to provide the right forum for this.

### **Conclusion**

The environmental management of the Lake Victoria Basin in Kenya within the context of the Lake Victoria Environmental Management Program is complex in that the implementation involves line Ministries and linkages with, and consequently, collaboration with, other public institutions, the private sector, individuals, Non-Governmental organisations (NGOs) and stakeholders.

The success of the environment management of the Lake Victoria Basin lies in the collaborative effort between the three countries. LVEMP offers a timely opportunity for the solutions of the numerous problems that threaten the Lake Victoria ecosystem. In addition to this, it is necessary to address the unchecked high population growth which is the precursor of the environment degradation.