

**THE LAKE VICTORIA WATER HYACINTH: ITS
IMPLICATIONS FOR INTERNATIONAL ENVIRONMENTAL
CONFLICTS (IECs) MANAGEMENT AND REGIONAL
RELATIONS IN EAST AFRICA. /**

BY

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DECLARATION

THIS DISSERTATION IS MY ORIGINAL WORK AND HAS NOT BEEN
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MY APPROVAL AS A UNIVERSITY SUPERVISOR.

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DR. MAKUMI MWAGIRU

DEDICATION

My efforts to the dissertation are dedicated to the two most important people in my life - My parents, **Mr. Augustine Mumma Odongo and Mrs. Emmarencia Atieno Mumma**. Baba and Mama, your unending love can measure with none. You are both special. Without your presence, love, encouragement and prayers, it would not have been possible. When things seemed impossible, you stood by me and gave me strength. You made me know and believe that I am capable of accomplishing anything under the sun so long as I have the will and pray about it. You are the most special gift God ever gave to me. *Mum and Dad* "what would I do without you?"
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IN MEMORY:

WILHELMINA ADHIAMBO ODUOL
(1960 - 1995)

It is you my sister who told me right from the beginning, "**Connie**, Read and study hard, you will Never Regret. I tell you, Education will change your life, believe me, you are capable and do not give up". **Minnah**, "These words have always rang in my mind. Its sad that you never lived to see the impact these words had on me. Rest in peace Dear sister. Though you are gone physically, spiritually, you will always remain in my mind. You were such a force to reckon with!"

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"Opportunities will always present themselves as Work" But always Remember, on Our Career Path, there are always Challenges, Discoveries, Determination and Rewards.

***This is one Project that has proved
this saying beyond all doubt.***

The saying goes Take Care! But to me being in Control and Taking Charge is paramount, always remembering that, if you want a thing bad enough, go out and fight for it. We must think about it, talk about it and expect it every moment. We must impregnate our total being with the expectations of what we want. As the feeling grows, the day will come when we give birth to exactly what we want.

(What Do You Want Most?)

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LIST OF ABBREVIATIONS

CIDA	Canadian International Development International Co-operation Agency
COM	Council of Ministers
COMESA	Common Market for Eastern and Southern Africa
DDT	Dichlorodiphenyl Trichloroethane
DRT	Department of Research and Training
EAC	East African Co-operation.
EAIWEC	East African Inland Water Environmental Concern
ECA	Economic Commission of Africa
ESA	Eastern and Southern Africa
EUFSAP	European Union Fish Stock Assessment Project
FAO	Food and Agricultural Organisation
FTPP	Forests, Trees and People's Programme
GEF	Global Environmental Facility
HYDROMET	Hydrometrological Survey of the Catchment of Lakes Victoria, Kyoga and Mobutu Sese Seko (1967-1992)
IECs	International Environmental Conflicts
IDS	Institute of Development Studies
IDA	International Development Agency
IGAD	Inter-Governmental Authority on Development
ILA	International Law Association
IPS	International Panel of Scientists
IUCN	International Union Conservation Network
KARI	Kenya Agricultural Research Institute
KBO	Kagera Basin Organization
KMFRI	Kenya Marine and Fisheries Research Institute
LBDA	Lake Basin Development Authority

LANESCO	Lake Nyanza Environmental and Sanitation Conservation
LVEMP	Lake Victoria Environmental Management Project
LVFO	Lake Victoria Fisheries Organisation.
LVO	Lake Victoria Authority
LVWRP	Lake Victoria Water Resource Project
NARO	National Agricultural Research Organisation
NGO	Non-Governmental Organization
NEP	National Environmental Policy
NEAP	National Environmental Action Plan
NEMA	National Environment Management Authority
NRBAP	Nile River Basin Action Plan
OSIENALA	<i>Osiepe Nam Lolwe Gi Aluora Ne</i> (Friends of the Lake)
PEC	Permanent Environmental Conflict
PIC	Project Implementing Committee
PPRI	Plant Protection Research Institute
PTC	Permanent Tripartite Commission
RECIEL	Review of Economic Community of International Environmental Law
RPSC	Regional Policy and Steering Committee
RSC	Regional Steering Committee
TAC	Technical Advisory Committee
TECCONILE	Technical Corporation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UN	United Nations
UNGA	United Nations General Assembly
WMO	World Meteorological Organisation

ABSTRACT

The study investigates the real and potential conflicts generated by the Lake Victoria water hyacinth, and their implications for international environmental conflict management including the regional and international relations of the three East African countries.

The study reaches the following conclusions: Firstly, although the water hyacinth generated conflicts are latent or convert and may only be evident in a given context, the problem must be tackled from a regional perspective. Secondly, Lake Victoria will never be freed of the water hyacinth until other problems inflicting Lake Victoria are solved.

The study further establishes that conflicts generated by the water hyacinth are manifested and expressed in terms of differences in the control and management strategies. Most of the conflicts occur because of the lack of shared vision among the three East African countries, as each has different aspirations exclusive of the others. Thus, the infestation of Lake Victoria by the water hyacinth presents radically different meanings to different groups of people. This has given rise to different approaches to the management of the problem. Lake Victoria Environmental management project as a regional institutional framework has been put in place to manage the water hyacinth problem. However, on its own, it is not adequate to effectively manage the problem.

The study confirms that there are alternative existing institutional frameworks for the management of the water hyacinth other than LVEMP. However, each institution requires either broadening, integration or strengthening to be inclusive of all, if not most of the countries in the Lake Victoria, Kagera and Nile basins.

The study concludes that since Lake Victoria, the Nile and River Kagera basins are ecologically intertwined, any examination and management strategy that ignores their ecological interdependence would be incomplete. The sustainable and integrated development of Lake Victoria can only be accompanied by close regional cooperation and other appropriate measures. Because of the various inter-linkages between the problems affecting Lake Victoria, it is logical and reasonable to assume that conflicts generated by the water hyacinth will exist for some time.

The study makes the case that the management of the water hyacinth should involve all the riparian and non riparian stakeholders in the management of the three basins. It would also be advisable in the long term to have an international agreement to govern integrated management of the three basins. This agreement should ensure that all actions taken to manage and conserve Lake Victoria in any particular country would not result in conflict with other countries of the basin.

The study advocates a systematic monitoring and exchange of information and standardization of methods for the management of all water flowing into and out of Lake Victoria. This would only be possible if there are political will and cooperation at all levels which are a prerequisite for the enhancement, promotion and realization of the three East African states in their endeavour to manage the water hyacinth problem.

CHAPTER ONE

BACKGROUND TO THE PROBLEM OF THE WATER HYACINTH

1.0. INTRODUCTION

Lake Victoria is the second largest fresh water lake in the world with an area of 68,000 Km². It lies across the equator at 0° 30' N-30° 0' S and 31° 40' E-34° 54' E at an altitude of 1135 metres above the sea level. The lake has a mean depth of 40 metres, maximum depth of 80 metres, a shoreline of 3,450 Km and is shared by three countries: Kenya 6%, Uganda 43% and Tanzania 51%. The drainage basin of the Lake covers an area of 258,700 Km² spreading eastwards to Mara, Mori, Suguti, Grumet, Mgono, Mogogo, Mbalageti in Tanzania; Kuja, Awach, Sondu-Miriu, Nyando, Nzoia, Yala, Sio and Gucha in Kenya; Ruizi, Kibale and Katonga in Uganda. Lake Victoria has only one outflow through the River Nile.¹

The Lake Basin is used as a source of food, energy, drinking and irrigation water, as a means of transport, and is a repository for human, agricultural and industrial waste. The importance of Lake Victoria is clearly shown by the fact that over three million people living in the catchment depend on the waters of Lake Victoria. It is estimated that the annual fish catch from Lake Victoria ranges between 400,000 to 500,000 metric tonnes, which generates over US \$300-400 million. The fisheries directly employ 100,000 people and over 2 million people are indirectly involved in the fisheries activities.²

¹ Oguya, F., The Environmental Issues Affecting the Lake Victoria Ecosystem and the Interventions Implemented by Lake Victoria Environmental Management Project (1998), p. 1.

² Ibid., p. 1.

In the past 30 years, the lake has undergone substantial changes causing a major threat to the water resource in the lake.³ The main environmental problems afflicting the ecosystem of the lake are: huge decline in biodiversity and apparent disappearance of vital species; changes in ichthomass biomass; changes in fisheries; deteriorating water-quality; increased discharge of industrial and municipal effluents into the lake; poor land use systems; mismanagement and destruction of the wetlands; invasion of the water-hyacinth.

The water hyacinth escaped from an ornamental pond in Rwanda into River Kagera, which flows into a tributary of Lake Victoria.⁴ The weed was introduced from River Kagera into the Ugandan side of the lake in 1988, into the Tanzania side of the lake in 1990 and into the Kenyan side of the lake in 1992.⁵ Since its introduction, the weed has spread so fast that it is now considered a great threat to the life forms of the lake and those who depend on it. The nature and negative impacts of the water hyacinth creates urgent need to manage it. Indeed, the prolific spreading of this exotic weed is adversely impacting on the biological diversity, fish breeding, access to fishermen's landing sites, water supply and lake transport, and hydro-power generation. The weed also provides suitable habitats for vectors of various human diseases (for example malaria). In addition, due to its high rate of evapotranspiration, the water-hyacinth causes drying up of the riparian wetland zones, thus enabling non-wetland species to invade.

³ Ibid, p.1.

⁴ Vidaeus, L. and G. Scheider, Regional Programme for Environmental Management of Lake Victoria A Discussion Paper for The World Bank and UNEP (1992), p. 16.

⁵ Ibid, p.26.

To curb its menace, there have been numerous efforts and projects to make positive use of the water hyacinth all over the tropics.⁶ Among other ideas, it has been proposed that it could be used as feed for livestock (pigs), for producing potash, fertilizers, or compost/mulch, paper, energy generation, and waste water treatment (removal of heavy metals). Despite these diverse potential uses, the overriding economic interest among the three East African countries still fundamentally rests on fisheries.

The importance attached to the lake by the three East African countries is of immense geopolitical significance and has a critical role to play in the present and future conflict management initiatives in the region.⁷ Being a major water body resource, use by one riparian state impacts on the activities of the other riparian partners.⁸

It is against this background that this study seeks to analyse the extent to which the management of the problem of the water-hyacinth in Lake Victoria affects, or has the potential of affecting the regional relations of the three East African states, and its implications for the collective international management of the Environmental Conflicts (IECs) arising from the problem.

1.1. The Problem

The conflicts arising from the problem of the water hyacinth are mainly conflicts about the possible ways and means of its removal. The water-hyacinth problem reveals that

⁶ Oguya, F., The Environmental Issues Affecting the Lake Victoria Ecosystem and the Interventions implemented by Lake Victoria Environmental Management Programme op cit. p.24.

⁷ Okidi, C.O., Development and the Environment in Kagera Basin Under the Rusumo Treaty, Institute of Development Studies, University of Nairobi. Discussion Paper No.284. Unpublished (1986) p.16.

⁸ Vidaeus, L. and G. Scheider, Regional Programme for Environmental management of Lake Victoria op cit. p. 30.

environmental conflicts may occur as a consequence of the introduction of different technological modes to manage it. These include manual, mechanical, biological and chemical control. Each of the stakeholders has different interests as far as these different methods are concerned, but none of the stakeholders is aware of the outcome of all of them. When donor support is anticipated, those various interests may become even more conflicting. While the management of the water hyacinth problem calls for concerted efforts from all the three countries, the various stakeholders will only approve of the overall management principles if their interests and policies are met.

Furthermore, the water hyacinth problem reveals that environmental conflicts may occur as a consequence of the introduction of a technological mode whose effects are not confined to a particular region. The use of chemicals is a good illustration of this. Chemical control is the most effective method for reducing the water hyacinth manifestation quickly, and it is the most widely used strategy world wide. Despite the effectiveness of the chemical control of the water hyacinth, it is common knowledge that it has serious drawbacks for the environment and for health. This is because however carefully the chemicals are applied, there is still the risk of the spray getting into contact with non-target plants growing in association with the weed. Since water transcends territorial boundaries, the negative effects of the chemical would not necessarily be confined to one area, but would be felt in other parts of the lake and consequently in other countries. It should be noted that the technological modes being used to manage the water hyacinth problem are not only technical, but they are also carriers of social and political biases in terms of who owns them and who is more vulnerable to their

consequences. Moreover, technology mediates the political arrangements of the society and in its quest for efficiency, it often produces undesirable impacts regardless of the scale of the operation and the natural resource endowment to be harnessed.⁹

From the foregoing, a number of pertinent questions emerge which in many ways constitute the interest of this study.

These include:

1. To what extent are the three states technically, institutionally and legally prepared to tackle the problem of the water hyacinth in Lake Victoria?
2. Do the three states have adequate regulatory frameworks to enforce any decisions and agreements made to manage the problem?
3. Do the three states have shared visions and goals as far as the management of the water hyacinth in Lake Victoria is concerned?
4. What mechanisms exist for the resolution of any conflicts that may arise in management, exploitation and conservation of the Lake Victoria water resources?
5. To what extent are the three East African countries subscribing to and implementing the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (1997)?
6. Does the list of stakeholders end with the three East African states of Kenya, Uganda and Tanzania which physically share the lake or should the issue include all the riparian states of Lake Victoria and the River Nile?

⁹ Kakoken J., Perspectives on Environmental Conflicts and International Relations (London and New York: Pinter Publishers, 1992) p. 121.

It is these questions that this study seeks to address.

1.2. Research Objectives

1.2.1. Overall Objectives

To investigate the potential and /or real environmental conflicts arising from the management of the Lake Victoria water hyacinth and how these are affecting or influencing regional and international relations of the three East Africa countries. It further investigates the approaches and mechanisms adopted by the three East African states to control and eliminate the water hyacinth problem.

1.2.2. The Specific Objectives

- (i) To find out the nature and magnitude of International Environmental Conflicts (IECs) generated by the water hyacinth problem.
- (ii) To investigate the International Environmental Conflict Management mechanisms and approaches adopted by the three East African States to address the water hyacinth problem.
- (iii) To establish the implications of the mechanisms and approaches adopted for East African diplomatic and regional relations.
- (iv) To make recommendations and suggest possible (alternative) international environmental conflict management mechanisms, particularly for the regional management of the water hyacinth problem.

1.3. Justification of the Study

1.3.1. Academic Level

One major justification for this study is that in East Africa, not much work has been done or conducted on the water hyacinth from the perspective of international relations, international law and conflict management. This study therefore seeks to add to the

body of knowledge relating to not only the management of shared water resources but also its implications for the regional and international relations. In addition, the findings of this study will contribute immensely to the growing body of literature on international environmental conflict (IEC) and sustainable management of shared natural resources.

1.3.2. Policy level

This study is expected to contribute significantly to the development of a policy framework for environmental conflict management related to shared water resources among the three East African states in particular, and the management of environmental and diplomatic conflicts arising from the water hyacinth.

1.4. Literature Review

1.4.1. Water hyacinth as a plant

The water hyacinth is a perennial, free, floating, fresh water plant originating from South America and classified as *Eichhornia Crassipes*.¹⁰ It belongs to the family of *Pontederiaciae*, which has eight other genera. It often grows with other aquatic weeds including *silvinia molesta*. It is one of the most productive plants on earth.¹¹ Among its unique characteristics are a high productivity and a tolerance of a wide range of ecological conditions. These features give the water hyacinth a strong competitive ability and enable it to multiple rapidly, often at the expense of its neighbours .

The widespread distribution of the water hyacinth is partly attributed to its attractive, purple flower, prompting its establishment in many botanic gardens during the late 19th

¹⁰ Woome P.L., Managing Water Hyacinth Invasion Through Integrated Control and Utilization: Perspectives for Lake Victoria Abstract. Africa Crop Science Journal Vol.5. No.3. 1997. p. 311.

¹¹ Alimi T., and O.A. Akinyemyu, An Economic Analysis of Water- Hyacinth (*Eichhornia crassipes*). International Workshop on Water- Hyacinth, Lagos 7 -12 August 1998, p.164.

century prior to its recognition as a noxious weed.¹² Additionally, the water hyacinth is known to have few natural predators outside its native home. It has a thin, wall capsule root containing up to forty small seeds. On the average, the water hyacinth weighs twenty-five kilograms per square metre or twenty-five tons per hectare. Since the plants are 95 percent water, they contain 12.5 tons of dry matter per hectare or 237.5 tons of water per hectare. It has a high capability of rapid, vegetative reproduction.¹³ This is coupled with a remarkable survival mechanism during the period that the seed remains viable. It also has a great ability to survive extreme drought conditions. All these factors combined have made it very successful in invading numerous water systems throughout the world.¹⁴ This has created many problems which have either short-term effects or severe long-term repercussions on both the environment and the people.

1.4.2. Origin and movement into Lake Victoria.

The water hyacinth is widespread throughout the world.¹⁵ It was first clearly spotted in South East Brazil, although it was already widespread in Central and South America. Several conditions were reported in 1929 from Demarara, Guyana, New Granada, Equador, and Buenos Aires in Argentina. In Africa, the water hyacinth was first introduced in Egypt, some time between 1879 and 1882, and in Natal in the 19th century. It was reported in Southern Rhodesia in 1937 and near Congo (Zaire) in 1952.¹⁶ It was

¹² Woomeer, P.L., Managing Water Hyacinth Invasion Through Integrated Control and Utilisation: Perspectives for Lake Victoria. op cit. p.1.

¹³ Alimi, T. and O.A. Akinyenyu, An Economic Analysis of Water Hyacinth (*Eichornia crassipes*) op cit. p. 165.

¹⁴ Cilliers, C.J., P.L Canpoly, D. Mauda et al Status of Water Hyacinth in Developing Countries in (FAO Strategies 1996) p. 87.

¹⁵ Gopal, B.B. and K.E. Sharma, (eds) Water hyacinth (*Eichornia crassipes*): The most Troublesome Weed in the World (New Delhi: Hindasiani, 1981), p. 21.

¹⁶ Cilliers, C., P.L. Canpoly, D. Mauela et al, Status of Water Hyacinth in Developing Countries op. cit. p.100.

spotted in Khartoum in 1958. By 1981, the weed was already widespread in Ethiopia, Madagascar, Mozambique, Natal, Eastern Cape, the Okavango Basin in Botswana, Zambia (Kafwe Reservoir), Angola, Guinea and Senegal. The major river basins infested by the water hyacinth are those of the Kagera, Lagone, Niger, Senegal, Zambezi rivers, and their tributaries. The water hyacinth is thought to have been brought to the African continent as a decorative plant by early travellers. In East Africa, the water hyacinth is thought to have entered Lake Naivasha in Kenya between 1982 and 1983, but was out-competed by *Silvinia molesta*.¹⁷ It was subsequently spotted on the Ugandan side of the Lake Victoria 1988. Two years later, it was spotted on the Tanzanian side, and then the Kenyan side in 1992. Since then, the spread of the water hyacinth has been shocking. In 1992, it was a mere passing interest. It has grown so rapidly that in some parts of Lake Victoria, it covers an area of a thousand hectares. Consequently, it has come to occupy centre stage in the debate about the management of Lake Victoria waters.

1.4.3. Factors contributing to its growth and current coverage of the lake.

The water hyacinth survives well in warm waters and because of its attractive flowers, it has been widely spread by man. The water hyacinth cannot tolerate any form of salinity. This explains why it is widespread in Lake Victoria, a fresh water lake and in Lake Naivasha which is also a fresh water lake, but not in any of the Rift-Valley lakes neighbouring Naivasha. It survives in clear waters but does not thrive unless some nutrients are added from agricultural runoff, urban waste or runoff, suspended solid from silt, and some industrial wastes.

To illustrate this sambari argues that,

¹⁷ Sambari J.T., 'Lake Victoria far from ignored' The Daily Nation, 22nd February 1996, p. 6.

“The water hyacinth thrives on sewerage from cities such as Kampala and Kisumu, effluents from sugar factories paper mills, tanneries and breweries springing up across the Lake Basin, and silt washing into the Lake as the catchment, forests are chopped down and converted to fields. These nutrients have turned a once clear, well-oxygenated Lake into muddy, stratified water body with no oxygen in its bottom layers. The fish may die but water hyacinth loves it.”¹⁸.

When the environment is conducive it grows very fast, flowers, sets seed and takes root.¹⁹ In the open waters such as that of Lake Victoria, the water hyacinth just survives but does not proliferate. When it comes to the shores especially to the protected bays where there are added nutrients, it grows faster. This makes the control of the water hyacinth very difficult.²⁰ In six to seven days, the number of plants can double in conditions of high temperatures and humidity. The plant normally forms a floating mat and can cover large areas of water surface thus polluting the water. The spreading of the water hyacinth is also enhanced by wind.²¹ There are numerous shallow bays within the shoreline of Lake Victoria which have permanent mats of water hyacinth. However, the extent of the water hyacinth infestation in Lake Victoria is difficult to map out. This is because the plants keep drifting with surface wind from one place to another.²² The exact distribution of these infested bays is shown in Table 1 and the Map I overleaf.

¹⁸ Ibid p.37.

¹⁹ Kosyan, S.A., V.E. Markosyam, L.S., S. N. Kisyan et al, A Texticological Evaluation of the New Herbicide 3. Nitor - Oxbenzyl ether BO 2. 4-9 Dicholorophenox Acetic. Canada Transolion, (1974) No. 2436, p. 14.

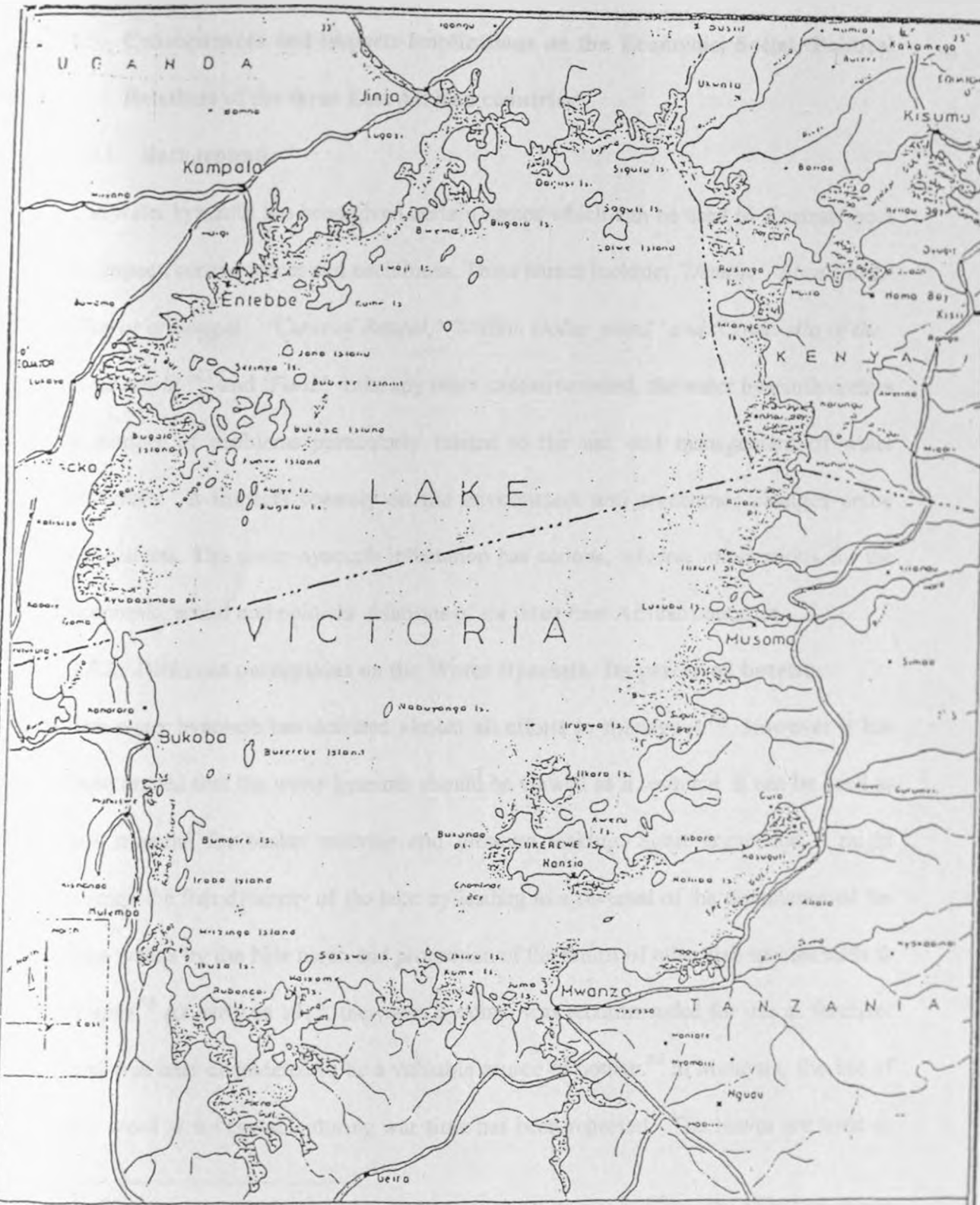
²⁰ Lee B., Insects for Controlling Water Weeds in Rural Research (1979) p. 105.

²¹ Ong'ang'a O. and K. Munywa A Rapid Assessment of Water Hyacinth Situation in L. Victoria Infestations: Current Scales and Trends, Report for RELMA, October 1998 p.7.








²² Kosyan S.A., V.E., Markosyam, L.S.. S.N. Kisyan et al, A Texticological Evaluation of the New Herbicide 3-nitor-oxbenzyl ether and 2.4-D dichlorophenox op. cit. p.15.

Table I: Areas most affected in Kenya, Uganda and Tanzania by the water hyacinth.

Kenya	Uganda	Tanzania
Kisumu Bay	Port bell	Mwanza Gulf
Dunga Beach	Owen Falls (Jinja)	Murchison Bay
Nyakach Bay	Entebbe	Emin Pasha Bay
Homa Bay	Sango Bay	Musoma Bay
Kendu bay	Kagera River Mouth	Mara River mouth
Asembo Bay	Kalangala District	Nasa Bay
Usenge/Uhanya Bay	Sese Islands	Magu Bay
Port Victoria	Sio Port	Bukoba
Budalangi	Major fish landings	Kagera Mouth
Marenga	-	-
Karungu Bay	-	-
Bala Beach	-	-
Sango Rota Beach	-	-
Uyoma	-	-
Sio Port	-	-



LEGEND:

-  Relative location of water hyacinth mats
-  International boundary
-  Rivers
-  Capital City
-  Roads
-  Major towns
-  Other towns

0 50 100
SCALE

Fig. Water Hyacinth Infestation in Lake Victoria

SOURCE: Map of East Africa, first edition SK 20 GOK 1974
A Chart of Central Africa, Victoria Nyanza (Southern Portion) Field No. 1954

Prepared for O.S.P.
Dante - U.S.S.R. - A.S.
River - Amazon

Source: On'ganga, O. and Munywa, K., "A rapid assessment of water hyacinth situation in Lake Victoria: Infestation, Current scale and trends", Report for RELMA, October 1998.

1.5. Consequences and impact: Implications on the Economic, Social, Political Relations of the three East African countries

1.5.1. Background

The water hyacinth has been given certain names which can be used to illustrate both its impact, consequences and usefulness. These names include: 'Demon,' 'Blue Devil,' 'Terror of Bengal,' 'Curse of Bengal,' 'Million Dollar weed,' and 'Cinderella of the plant world.'²³ and 'Ford.' Like any other excessive weed, the water hyacinth creates a number of problems particularly related to the use and management of water resources. It impacts severely on the environment and sometimes changes entire ecosystems. The water-hyacinth infestation has serious, adverse implications for the economic, social and political relations of the three East African countries.

1.5.2. Different perceptions on the Water Hyacinth: Its perceived benefits

The water hyacinth has defeated almost all efforts to manage it.²⁴ However it has been argued that the water hyacinth should be viewed as a resource. It can be used as raw material for basket weaving and furniture making. Some argue that it might change the fish diversity of the lake by leading to a reversal of the dominance of the lake waters by the Nile perch and promotion of the return of other fish species such as *tilapia*.²⁵ As early as 1917, the water hyacinth was recommended for use as fertilizer and was later considered to be a valuable source of potash.²⁶ In Malaysia, the use of the weed as a vegetable during war time has been reported. The leaves are used as

²³ Gopal, B. and K. P. Sharma (eds), Water Hyacinth (*Eichornia crassipes*): The Most Troublesome Weed in the World op. cit. p. 4.

²⁴ Terry, P.J. The water Hyacinth Problems in Malawi and Foreseen Methods of Control (1996) p.87.

²⁵ Gopal, B. and K.P. Sharma, Water Hyacinth (*Eichornia crassipes*): The Most Troublesome Weed in the World op. cit. p.15.

²⁶ Ibid, p.16.

fish traps in the Philippines, and when burnt its ash can be used to make soap detergents. In India, fine gray rayon-like material has been extracted from the water hyacinth.²⁷ Some people argue that the more important uses of the water hyacinth have been as cattle and pig feed, compost, source of energy and pollutant remover.²⁸ In the southern states of U.S.A. it has also been used as green food for poultry and ducks. It has also found use in producing fibres and pulp for paper.²⁹ A number of chemical compounds have been obtained from the water hyacinth as fuel in Indian villages. The water hyacinth can also be used for soil structure improvement since it can purify water naturally and it is a source of natural fuel.

Some people may argue that there is inherent value in the water hyacinth and therefore it deserves to be left alone. However, such arguments are fundamentally flawed in so far as they overlook the fact that whatever benefits the water hyacinth might bring, are far outweighed by its negative impacts.

1.5.3. Its impacts and implications

The First and most acute impacts and implications felt are the interference with the fishing activities of the lake communities. Lake Victoria provides a livelihood to one third of the population living around it, most of whom are dependent on fishing.³⁰

²⁷ Singh, S.P. and A.H. Khan, Problems and Control of Water Hyacinth in Eastern Uttar Pradesh India The 7th Proceedings of International Symposium on Aquatic Weeds Marendia Era. University of Agriculture Faizabad, India (1986) p. 229.

²⁸ Ibid., Problems and control of the water hyacinth in Eastern Uttar Pradesh India p. 299. See also Gopal, B. and K.P. Sharma op. cit, p. 18.

²⁹ Ibid ., p.18, Problems and control of water hyacinth in Eastern Uttar Pradesh India.

³⁰ Mumma, A., The Legal Implications of the Efforts to Eradicate the Water Hyacinth from the East African Water Bodies. Paper presented at Uganda Law Society's Ben Kiwanuka Memorial Lecture Kampala, Uganda, (1998) p. 2.

Considerable revenue is also generated for the national economies of the three countries from the fish exports. The water hyacinth problem has long term effects on the economy because the foreign exchange is diminishing. Such a situation has very serious economic implications for the relations of the East African countries. The hyacinth interferes with fishing activities because it impedes the access of boats to fishing grounds and landing beaches. It also harbours snakes and crocodiles and therefore makes fishing a dangerous activity. It interferes with fish breeding since the dense mat reduces light penetration and oxygen supply to the waters of the breeding grounds. In places where fishing activities have become impossible, whole communities have had to move to areas not yet infested by it. This is because with the increase of the water hyacinth there is a drastic decline in fishing activities since often the fishing boats are trapped in the water hyacinth mats. And since the population does not decrease there is a higher demand for fish. In cases of cross border migrations, different ethnic and cultural groups are propelled together under circumstances of deprivation and stress.³¹ In such cases, there is a likelihood of inter-group hostilities. During such hostilities, a group would emphasize its own identity while denigrating and discriminating against outsiders or even attacking them. It should be noted that the fisheries of the three countries are highly valued as a source of protein, employment for the population and revenue for the government. In Kenya it is estimated that the fishing business has been reduced to 70 percent because of the problem of the water hyacinth.³² It is estimated that the weed covers 2000 hectares around the Kenyan port

³¹ Ong'ang'a O. and K. Munyrwa, A Rapid Assessment of Water Hyacinth Situation in Lake Victoria, Infestation: Current Scale and Trends. Op cit p.4

³² Ibid p.4.

of Kisumu.³³ At Kusa Bay, South of Kisumu, the water hyacinth has filled the bay destroying the livelihood of a 2000 strong fishing community. It was reported that at least 52 fishing boats have been marooned³⁴ and the fishermen have been forced to “... fish from the rivers where fishing has been reduced drastically.”³⁵

One estimate puts the economic cost of the exotic invader at US \$ 150 million a year. Just like Uganda and Kenya, Tanzania’s fishing industry has also been hit hard by the water-hyacinth infestation. During certain seasons, the fishermen from Ukwere islands cannot move to Mwanza to deliver fish to processors. This has led to heavy post harvest losses for the fishermen and a reduction in the foreign earnings of the country.³⁶

The water hyacinth has seriously disrupted lake transport. Ports such as Kisumu and Port Bell are often blocked. It has choked important waterways and landing sites. Commercial transportation and services of people and goods, especially movement by small boats are often obstructed. Docking of steamers is now regularly delayed. This has serious implications for trade and economic activities in the East African region

³³ Drunnineh H., ‘All-out War on the Alien Invaders’ New Scientist, 23rd May 1998, p.37.

³⁴ Njuguna, S. Water Weed a Deadly Enemy-Counter Attack must be Biological and Daily Nation. 1997. p.2

³⁵ Ibid, p.2.

³⁶ Ong'anga, O. and K. Munywa, A Rapid Assessment of Water Hyacinth Situation in Lake Victoria. Infestation: Current Scale and Trends. op.cit p. 6.

and is hampering the revival of the East African Common Market.³⁷ Ship owners from Uganda and Tanzania find it very difficult and strenuous to gain access to the port of Kisumu because the waterway has been clogged by the water hyacinth. What this means is that millions of shillings are lost among the three East African countries. This is because from November 1997, more than 200 motorized boats which once moved goods across the East African countries have been abandoned in the water-hyacinth mats, rendering many people jobless.³⁸ Kenya Railways steamers and passenger vessels (like the *Alestes*) from Tanzania have suspended trips to certain parts of the lake because of the water hyacinth. Much money is lost daily as boat owners are forced to stay in the lake longer than planned for as they wait for the water hyacinth to move away. They are also forced several times to hire a gang of about fifty people to drag their vessels out.

The water hyacinth has also interfered with the operation of the hydro power production of the Owen Falls Dam as it clogs the water intake. This increases expenses and reduces the economic viability of the project.³⁹ The dam has a potential of 2700 MW. Very often the turbines have to be shut down for cleaning and maintenance since the screens covering the cooling systems have been covered by the water hyacinth. Losses of up to 15 MW are experienced as a result. A reduced

³⁷ Mumma A., The Legal Implications of the Efforts to Eradicate the Water Hyacinth from the East African Water Bodies. op cit. p. 2.

³⁸ Ong'anga, O. and K. Munyrwa, A Rapid Assessment of Water Hyacinth situation in the Lake Victoria Infestation: current state and trends. op cit. p. 5.

³⁹ Lukyamuzi, J.K. Fighting the Water Hyacinth Without Disaster: Legal and Environmental Issues. 16th Biennial Conference of the Weed Society for East Africa, September 15-16 (1997) International Conference, Kampala, Uganda (Unpublished) p. 6.

production of power does not only have implications on the power supply in Uganda but also in Kenya, which imports Ugandan hydroelectric power. Further, the water hyacinth has interfered with the water supply for urban and industrial use. Most of the urban centres around Lake Victoria like Kisumu, Jinja, Kampala and Mwanza depend on Lake Victoria for their drinking and industrial water supply. The weed has clogged water supply intakes and rendered abstraction an expensive and time-consuming exercise.⁴⁰ The weed has adversely affected the quality of the lake waters. In addition, the dead rotting leaves that fall to the bottom of the lake, and particularly in shallow portions, make the water anoxic. This means that more chemicals have to be added to the water for purification before the water can be used for drinking purposes.⁴¹

The water hyacinth has also led to the loss of tourist revenue as many beach resorts are now scenically unattractive and are closed to activities such as yachting and swimming which previously attracted tourists to places like Kisumu.⁴² In stagnant waters around the lakes such as in the wetlands, the polluted water has become a breeding ground for malaria carrying mosquitoes and for bilharzia-carrying snails. This has further added to the health problems of the local communities.⁴³ The increasing dominance of the lake waters by the water hyacinth has reduced the

⁴⁰ Pabari, M. War against Hyacinth Weed Lake Victoria Bulletin issue No.5., December (1996) p.6.

⁴¹ Oguya, F. The Environmental Issues Affecting the Lake Victoria Ecosystem and the Interventions Implemented by Lake Victoria Environmental Management Programme p.2.

⁴² Akatch, S.O. Dying Lake Victoria. A community Based Prevention Programme (Nairobi: Initiative Publishers, 1966) p.14.

⁴³ Ibid. p. 15.

biodiversity of the lake. This reduced biodiversity can have long-term implications for the region's economy.

Its worth restating that the water hyacinth's high competitive ability and few known predators outside its natural home means that it grows very fast. It is thus difficult to control and to manage.⁴⁴ Ecologists say that Lake Victoria will never be freed of the alien weed until its wider problems are solved.⁴⁵ It is threats posed to the Lake by the water hyacinth weed that led to the varied responses and interventions by the three different countries.

1.6. The Concept of International Environmental Conflicts (IECs)

Conflicts in general refer to incompatible interests built into the structures of the system where conflict is located.⁴⁶ Conflicts can be classified into violent and non-violent. Violent conflict is the overt kind, which is recognized and would lead to conflictual behaviour. It also causes physical harm on the victims. On the other hand, non-violent conflict is referred to as latent or incipient conflict. It is a more difficult kind of conflict to deal with because in many instances, we can neither see it nor imagine it.⁴⁷ Non-violent conflict is characterized by structural conflict, which is a conflict embedded in the structure of relationships and interactions. Because of its nature, the parties may not fully recognize it. For example, there are about forty-six international rivers and lake

⁴⁴ Mumma, A., The Legal Implications of the Efforts to Eradicate the Water Hyacinth from the East African Water Bodies. op cit., p. 4.

⁴⁵ Druninneh, H. All-out War on the Alien Invaders op cit p.4.

⁴⁶ Schmidt, H., Pearce Research and Politics: Journal of Peace Research Vol. 5 (1968) pp. 217-226. op. cit., pp. 217-226

⁴⁷ Mwangi M., Conflict: Theory, Processes and Institutions of Forthcoming Management (Nairobi: Watermark Publishers, 1999) p. 26. . (Forthcoming)

basins in the world.⁴⁸ By their very nature, they carry the potential for conflict. Under pressure from rising demand, national water resources become increasingly exploited⁴⁹ and competition for both quality and quantity of the shared water at a local level often leads to international water conflicts. The numerous shared water resources worldwide have triggered many IECs. While the potential for using river water in development plans is great, it cannot satisfy all possible demands. What happens upstream will inevitably have consequences for downstream users. If countries continue to consider only national priorities while developing and using international river systems, conflicts will inevitably arise.

Oguya⁵⁰ notes that the issue of international waters for Kenya, Uganda and Tanzania is a critical matter of development and requires regional management. To illustrate this, Madete⁵¹ states that the management of Lake Victoria and its basin is a challenge to the governments of Tanzania, Kenya and Uganda. The extent of the challenge is mainly defined by the degree in which the degradation of this important water resource exceeds the existing management capacities within each government. Oguya notes that it is the threat of the overall pollution of the lake from different sources and in particular the water hyacinth that prompted the three governments to reach a Tripartite Agreement on

⁴⁸ Review of Economic Community of International Environmental Law (RECIEL) International Water Courses: Conflicts in Africa (Blackwell Publishers, 1996), p. 105.

⁴⁹ Trollalden, J. M., International Environmental Conflict Management and Resolutions: The Role of the United Nations (Washington D.C.1992). UNEP, p.61.

⁵⁰ Oguya, F., The Environmental Issues Affecting Lake Victoria Ecosystem and the Interventions Implemented by Lake Victoria Environmental Management Programme. op cit. p. 24.

⁵¹ Madete, A. Prospects of the sustainable management of Lake Victoria. Workshop: Pollution of Lake Victoria Environment Workshop 10th-12th June 1998, p. 4. (Unpublished).

the preparation of an Environmental Management Programme for Lake Victoria on 5th August 1994. This Agreement set in motion a collaborative process of project preparation and implementation among the three states.

Madete further notes that the Lake Victoria Environmental Management Project (LVEMP) was established to look into the issue of conservation and management of Lake Victoria. This is because, despite numerous proposals, little action to manage and conserve Lake Victoria had been taken at the national level and none at the regional level. Although the three riparian states have initiated programmes on environmental management through National Environment Action Plans (NEAP), the three states economic capacity to effectively plan, implement and generally evaluate environmental activities is relatively weak. In Kenya there is the Lake Basin Development Authority (LBDA). But it has not been effective. This is because there have been inadequate budgetary arrangements to fund regional bodies such as Lake Victoria Fisheries Organisation, (LVFO) and Lake Basin Development Authority (LBDA). Secondly, the co-ordinating agencies lack the capacity to follow up regional regulatory decisions or guidelines through enforcement at national level. Thirdly, the institutional set-ups in Kenya and Tanzania are sectoral. Furthermore, there is little co-ordination among the institutions dealing with natural resources. It is only Uganda that has made a step forward, in that it has established a National Environment Management Authority (NEMA) which serves as the central policy advisory body on the environment and co-ordinates implementation of NEAP. Madete⁵² argues that there is also little dissemination of information. Once researchers have completed their work, they do not

⁵² Ibid p.6, Madete, A. Prospects of the sustainable management of Lake Victoria.

give feedback on the outcome of their research on the environment, especially on International Environmental Conflicts (IECs). The local authorities do not have records of research findings and hence are not in a position to make well-informed decisions about the environmental problems facing Lake Victoria.

Mugabe and Clark⁵³ note that although there are several legal statutes that address the conservation of water resources, they are disjointed and lack co-ordination as they are loosely placed in different legislation and are implemented by different institutions. The existing legislation, therefore, does not promote, and often prevents, appropriate resource conservation, management and use. The consequences of this situation are the lack of an effective enforcement mechanism and in many cases the government lacks the appropriate capacity to ensure the sustainable management of water resources.

Furthermore, the laws and regulations geared towards management and exploitation of the lake resources are not harmonized for effective management of the lake as a single unit. A critical examination of the laws and regulations existing in Kenya and Tanzania indicates that the laws are not harmonised, that they were enacted for other purposes such as agriculture, forestry, and water-supply, and were not specifically meant for the management of the lake. They do not, therefore, address the environmental problems affecting the lake.

Oguya⁵⁴ states that although states have enacted legislation for governing the management and exploitation of the lake resources, in many cases the enforcement and

⁵³ Mugabe, J., and M. Clark Managing Biodiversity: National Systems, Conservation and Innovation in Africa. (Nairobi: Acts Press, 1995) P.12.

⁵⁴ Oguya, F., The Environmental issues Affecting the Lake Victoria Ecosystem and the Interventions

punitive measures provided under the law are often too light to act as deterrents from mismanagement and non - conservation of natural resources. For example, it has been shown that the industrial waste dumped into the lake provides a conducive atmosphere for the water hyacinth to thrive. But so far, no law has been enacted to stop this kind of dumping into the lake.

In conclusion, Oguya⁵⁵ suggests that in the same way that Uganda has enacted umbrella legislation which fills the gap left by sectoral rules, there is a need for Kenya and Tanzania to do the same. At the regional level, the states would have to establish a common forum, which would come up with binding principles to be enforced at the national level through uniform regional policies, legislation and appropriate institutional arrangement. All sectoral legislation will need to be reviewed, updated and amended in order to harmonize them with national policies and international environmental concerns. These institutions are not effective mainly because they depend on donor funding.

The three countries have made several attempts towards harmonization. For instance, on 30 November 1993, an agreement for the establishment of a Permanent Tripartite Commission (PTC) for co-operation between the three states was signed in Arusha. On 30 June 1994 the Lake Victoria Fisheries Commission was established. On 5 August

Implemented by Lake Victoria Environmental Management Programme. op cit. p.8.

⁵⁵ Ibid. p. 9.

1994 the three governments initiated formulation of the LVEMP.⁵⁶ These have greatly helped in harmonization since it is through the Lake Victoria Management Project that the water-hyacinth problem is considered as one of the major components to be tackled on a regional basis. The up coming institutional arrangements should be made self-sustaining in order to be effective and reliable.

1.7 International Policy Framework for Environmental Conflict Management

The task of determining whether or not there is a customary rule of international law governing international water resources has always been a complicated one.⁵⁷ However, the International Law Association (ILA) advocated and influenced the development of a series of international regimes. These regimes relate to water resource management such as *International Regulation Regarding the use of International Watercourses for Purposes other than Navigation* (Madrid, 20 April 1911), *Regulation Governing Navigation on International Rivers* (Paris, 19 October, 1934), *Resolution on the Uses of International Non-Maritime Waters* (Salzbourg, 11 September 1961), *The Helsinki Rules on the Uses of the Waters of International Rivers* (August, 1966), *Declarations of the United Nations Conference on the Human Environment* (Stockholm, 16 June 1972), *Declaration and Resolutions of the United Nations Water Conference* (Mar Del Plata, March 1977), *United Nations Environment Programme: Governing Council Decision 6/14, Draft Principles of Conduct in the Field of Environment for the Guidance of States and Harmonious Utilization of Natural Resources shared by two or more States*

⁵⁶ Dribidu, E. and E. Kasimbazi, Legal Aspects of the Lake Victoria Environmental Management that Require Further Elaboration: Uganda Component, UNEP/UNDP Joint Environmental Law and institutional Project. June 1997, p. 54.

⁵⁷ Dante, A. C., The Law of International Water Resources: Some General Conventions, Declarations and Resolutions adopted by Governments and International Legal Institutions on the Management of International Water Resources (FAO 1980) p.6.

(Nairobi, 19 May 1978), Resolution on the Pollution of Rivers and Lakes and International Law (Athens, 12 September 1979). The states are required by International Law to take adequate steps to control and regulate sources of serious global environmental pollution or transboundary harm within their territory or subject to their jurisdiction.

There is ample evidence of continued support for the broad principle that states must control sources of harm to others or to the global environment. In particular, principle 21 of the 1972 Stockholm Declaration on the Human Environment is important. This is because it affirms first, the sovereign rights of states to exploit their own resources 'pursuant to their own environmental policies'. Secondly, it affirms their responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or to areas beyond the limits of national jurisdiction.⁵⁸

Principle 21 has remained a highly influential statement in the subsequent development of law and practice in environmental matters. Such are included in United Nations resolutions, in UNEP Conventions such as the London Dumping Convention, the Geneva Convention on long-range Transboundary Air Pollution, the Ozone Convention, or the Basel Convention on the Transboundary Movement of Hazardous Wastes. What is lacking in the Stockholm Declaration however, is an agreement on the extent to which the signatories to the declaration can enforce the provisions regarding the management

⁵⁸ Birnie P. W. and A.E Boyle, International Law and Environment ,(Oxford: Clarendon Press, 1993) p.90.

of International Environmental Conflicts (IECs)⁵⁹. The Declaration is not binding; individual countries therefore are under no obligation to implement it. Generally, all the declarations deal with the use of international water resources and not with protection and management in particular. It is in this regard that this study in its chapter four, will specifically highlight the salient features found in the 1997 United Nations Convention on the law of Non-Navigational Uses of International Watercourses and how these can be applied in solving the water hyacinth problem.

In dealing with IECs, some writers have tended to generally make passing remarks on the prevention and settlement of disputes including the control of water pollution. For instance, Westing has restricted his analysis to the protection of water resources and water installation in times of armed conflicts; administration of international water resources, regulation in flow and the relationship between water and other natural resources. He does not mention the point of pollution control.⁶⁰

1.8 Institutional Arrangements for International Environmental Conflict

Management

Tanzania, Uganda, Burundi and Rwanda (in 1977) made their own institutional arrangements for developing the Kagera River, by establishing the Kagera River Basin Organization. This agreement and arrangement however will need to be substantially revised when considering the water hyacinth problem especially now that the conflictual situation involves Kenya. Previously, the agreements involving the basin did not

⁵⁹ Trolldalen, J. M., International Environmental conflict Resolutions: The Role of United Nations op. cit. p.4.

⁶⁰ Westing A. H., Global Resources and International conflict environmental: Factors in Strategic Policy and Action. (Oxford: University Press 1996) p.12.

include Kenya. This is the first time that tensions over water might arise between Kenya and other countries around the Lake Victoria basin. Such a revision should take into account the interests and developmental needs of all the countries concerned and create an institutional framework in which they should all participate.

Chapter 38 of Agenda 21 (1996) states that the development and promotion of integrated management of freshwater resources is a primary task designated to United Nations Environmental Programme (UNEP). To illustrate these, Trolldalen⁶¹ states that for a number of years, UNEP has been involved in the prevention of environmental conflicts. Such activities as the UNEP Regional Sea Programs and Action Plans for shared lakes and river basins are examples of programmes designated especially to anticipate and avoid Potential Environmental Conflicts (PEC). However, it is important to note the fact that it is only recently (May 1997) that the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses was established to settle disputes concerning shared water resources. Therefore it is too early to assess its successes. In Article 7(1) the Convention states that "watercourse states shall, in utilising an international watercourse in their territories take all appropriate measures to prevent the causing of significant harm to other water course states."⁶² Such a provision, if followed by the three countries, would minimise the tensions that would arise due to the water-hyacinth problem in Lake Victoria. Madete amplifies this fact by stating that there has been a lack of regional institutional arrangements to govern the

⁶¹ Trolldalen, J. M., International Environmental conflict Resolutions: The Role of United Nations op. cit. p.4.

⁶² United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (1997) Article 7 (1).

management of the Lake Victoria Water resource⁶³ (apart from NEMA). For example, at the national level, the institutional management systems are often slow, bureaucratic and highly centralised.

Secondly, the institutional arrangements are designed in a top-down manner and therefore lack the necessary space to engage communities in the management of the water resources. With direct public participation in decision-making, local communities and users ideally become more responsible and accountable for the conservation and management of any water resources. Since fishermen and drawers of drinking water are most directly affected, their views and involvement have to be sought. These user groups are needed in order to define priorities. This is crucial since combating the water hyacinth requires a long-term effort. Further, Trolldalen⁶⁴ asserts that existing institutional arrangements are clearly challenged by difficult international decision-making initiatives that are required to address international environmental conflicts (IECs) effectively.

1.9 Technical Management of the Lake Victoria Water Hyacinth.

Views on the management of the water hyacinth have been largely varied and controversial over the years. Kenya Agricultural Research Institute (KARI) as the implementing agency of water hyacinth biological control component in May 1995 made the first release of beetles in Lake Victoria. Another Non Governmental Organisation (East African Inland Water Environmental Concern) run by a group of former marine experts advanced a theory of rearing ducks to control the water hyacinth.

⁶³ Madete A. Prospects for Sustainable management of Lake Victoria. Op. cit. p.2.

⁶⁴ Trolldalen, J. M., International Environmental conflict Resolutions: The Role of United Nations op. cit. op cit. p.5.

In Uganda, harvesters have been introduced by the Government to help the local communities remove the weed. Westing also reported that National Resistance Army Veterans were hired by the Ugandan Railway Corporation to help remove the weed.⁶⁵ The Department of Botany at the University of Nairobi has also come up with a fungal technology, which has been tested recently at the Nairobi Dam. All these attempts clearly indicate that many sporadic methods are being used to manage the water hyacinth problem and yet it is only through co-ordinated and concerted efforts on a regional basis that the water-hyacinth menace can be curbed. The three riparian states signed a Tripartite Agreement in August 1994 to tackle the lake's problems under the Lake Victoria Environmental Management Project. Each country has established a National Secretariat to co-ordinate the activities of the different components of the project.

What is emerging is that at present Kenya, Uganda and Tanzania have put in place an institutional framework to manage the Lake Victoria resources. However, what is lacking is a long term institutional framework to manage the problems facing Lake Victoria. It should be noted that the Lake Victoria Environmental Management Project is a five-year project. The question that arises, therefore, is what future plans the three countries have for Lake Victoria particularly for the management of the water hyacinth when the five years are over. This question will be dealt with in detail in the subsequent chapters.

⁶⁵ Westing, A.H., Global Resources and International Conflict Environmental Factors in Strategic Policy and Action, (Oxford: University Press 1996) op. cit. P.12.

1.10 Conclusion

From the literature review, it is clear that there are certain gaps, which have emerged; for example:

- (i) It is evident that the main conflicts generated by the water hyacinth were due to the fact that no common approach has been agreed upon for the control of the water hyacinth despite the fact that the different methods are known.
- (ii) The question, arising is why it should be difficult to come up with a common approach and why this should be a cause of conflict.
- (iii) At the international level there exist conventions and agreements. There are however no strict punitive measures that would deter any state from violating the principle and provisions of such international agreements and protocols on management of shared resources. Another question is whether this would be another source of conflict between the three East African countries.
- (iv) Lack of institutional capacity to settle disputes arising from the management, exploitation and control of Lake Victoria have implications on the diplomatic and regional relations of the three East African countries?

1.11 Conceptual Framework

The study focuses on the conflicts of interest that relate to incompatible goals in respect of the management of a natural resource (Lake Victoria) in one country which has negative environmental repercussions on the other two states. The historical development of international water law and policy has been based on environmental protection/conservation, political, economic, technical and social needs.⁶⁶

⁶⁶ Dribidu, E. and E. Kasimbazi, Legal Aspects of Lake Victoria Environmental Management that Require Further Elaboration op. cit. P.54.

In the analysis of the conflicts generated by the water hyacinth a number of principles that concern the uses of transboundary water resources can be used. These include absolute sovereignty; absolute territorial integrity; limited territorial sovereignty and integrity, and the theory of community of interest in international drainage basins.

However, this study is based on the theories of limited territorial sovereignty and integrity and of community of interest approach. The first two theories are not appropriate because they take into account only the territorial sovereignty of a state and disregard reciprocal sovereign rights of the states that have an interest in the same international water resource. Rather, there should be a combination of sovereign rights resulting from the use and conservation of resources held jointly by several states. Sovereign rights are clearly interdependent both from the technical and juridical standpoints. Both the theories of limited territorial sovereignty and integrity and that of community of interest approach recognise the vitality of individual and communal interest among states having claims over the same international water resource. They derive a series of reciprocal rights and duties.⁶⁷ In applying the theory of limited territorial sovereignty, each state is required to lose to a certain extent its national sovereignty to another state. This is in order to apply the principle of "give and take" in the utilisation of shared resources and in analysing and managing the conflicts generated by the water hyacinth. This is the essence of the United Nations *Convention on the Law of the Non-Navigational Uses of International Watercourses* (1997) Article (8), which states that:

⁶⁷ Dante, A. C., The Law of International Water Resources: Some general Conventions, Declarations and Resolutions Adopted by Government, International Legal Institutions on the Management of Water Resources.op. cit. P. 6.

"Watercourse states shall co-operate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of international watercourse."⁶⁸

Article 21 (2) further states that:

"Watercourse states shall, individually, and where appropriate, jointly, prevent, reduce and control the pollution of an international watercourse that may cause significant harm to human health or safety, to the use of the waters for beneficial purpose or the living resources of the watercourse. Watercourse states shall take steps to harmonize their policies in this connection."⁶⁹

The conceptual framework thus aims at harnessing the joint efforts of the participating states and international organisations without reference to political or geographical boundaries. In a sense, it imposes certain restrictions on the right of action of an individual state. Evidently, a combination of community of interest approach and the limited territorial sovereignty and integrity culminating into the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses has given this study a firm theoretical basis.

The question that arises is how the conceptual framework help us understand this study. It does this at four different levels. To begin with, considering the water hyacinth problem and its management, several factors are relevant: political, environmental, economic and socio-cultural. Secondly there are different stakeholders who include communities living around the lake, the different states, various non governmental organisations and international agencies. All these have different interests in the lake as

⁶⁸ United Nations Convention on the Law of Non-Navigational Uses of International Watercourses. (1997) Article 8.

⁶⁹ Ibid. Article 21(2).

a shared water resource. The severe impacts of the water hyacinth threaten such interests. Because each stakeholder wants to protect its interests, there is a likelihood of actual and/or potential conflicts. It is the realisation of these competing interests that led the different stakeholders to advocate different methods to manage the water hyacinth problem. These include biological, chemical, manual and mechanical control methods. The effective application of these methods will depend on the key factors at play and on the community of interests. Each of the methods can be applied individually or in integration with the others. This kind of interaction can influence the management of the water hyacinth problem positively or negatively. Positively, in that it can lead to the sustainable conservation of Lake Victoria and also enhance peaceful regional diplomatic relations. Negatively, if the problem of water hyacinth is not managed and conflicts arise. This was the main investigative problem of the study.

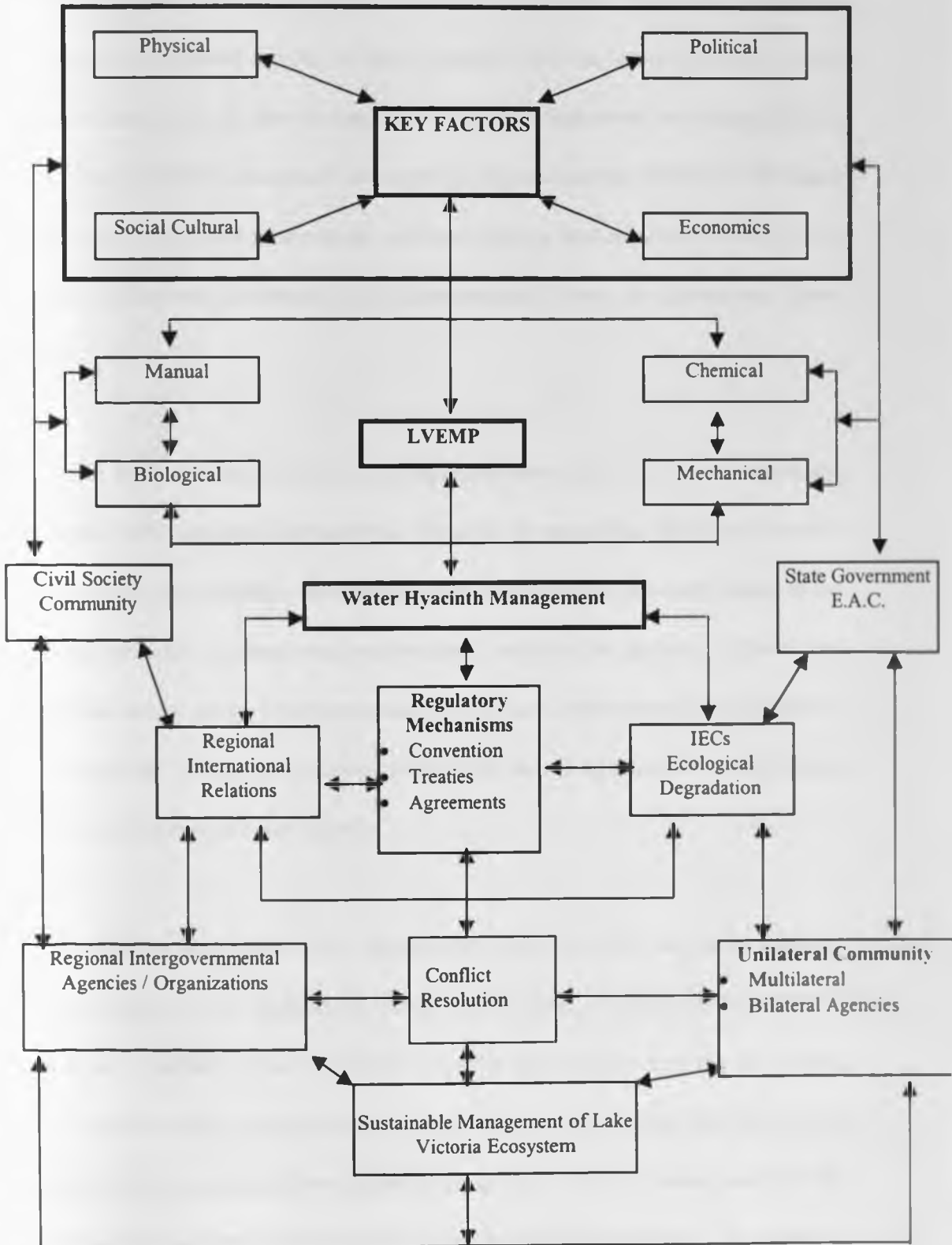
Tiyanjana Maluwa⁷⁰ observes that the community of interest approach aims at harnessing the joint efforts of the participating states without reference to political or geographical boundaries. In a sense, it imposes certain restrictions on the right of individual action, which a basin state might otherwise have enjoyed. However, its major advantage is that, it leads to unified development and offers the opportunity for the most beneficial use of water resources and the resources of the drainage basin in general. This theory lies at the root of the whole concept of integrated river basin management and development. This is because its essence is that the development and utilization of a river or any other watercourse (s) should embrace the whole basin

⁷⁰ Maluwa, T., Towards an Internationalisation of Zambezi River Regime: The Role of International Law in the Common Management of International Watercourse Comparative and International Journal of Southern Africa, Vol. 25, 5. (1992).

and involve all the members of the riparian or basin community. This is the philosophy that should be adopted by the three East African states in managing the lake Victoria water hyacinth and it's the theory that has guided this study.



**AN ILLUSTRATION OF THE
CONCEPTUAL FRAMEWORK
(Community of interest approach and limited
territorial sovereignty and integrity)**



Source: Atieno Constansia Mumma. (The Author)

1.11.1 Explanation of the conceptual framework.

As stand alone theoretical frameworks, community of interest approach and limited territorial sovereignty and integrity are inadequate instruments which can be used to analyse an environmental conflict as those generated by the water hyacinth. It was imperative therefore to develop an alternative conceptual framework integrating the two theories. The alternative conceptual framework postulates that the problem of the water hyacinth and its generated international conflicts whether real or potential can only be effectively tackled both theoretically and programmatically from four dimensions. These include:

First, is the understanding of the water hyacinth problem from a macro socio-political and physical environmental perspectives. It should be noted that the water hyacinth problem is not only a physical environmental problem but it is intricately linked to the prevailing political, economic and socio-cultural contexts for national, regional and international development. More importantly, its impact is determined by both national and international governance practices relating to the management of cross boarder natural resources such as Lake Victoria.

The second dimension relates to the institutional instruments and set-ups at different levels to respond to the problem of water hyacinth and its generated international environmental conflicts. These include the interplay and linkages between and among different governments, inter-governmental institutions, civil societies and community stakeholders who exercise different interests and goals as far as the management of the national environment and in particular, the water hyacinth is concerned. The extent to

which these different national, regional, international and institutional arrangements can effectively respond will definitely be determined by a number of factors. These factors include questions of national sovereignty and integrity, political governance system put in place and macro-economic factors such as Gross Domestic Product and Gross National Product. Of particular importance to macro level dispensation on the management of natural resources such as Lake Victoria is the appropriateness of the macro-level policies developed, technologies adopted and methodologies applied to the socio-cultural experiences and practices of the riparian communities.

The third dimension relates to the regulatory mechanisms. These mechanisms are set up at different levels to ensure that macro level, political, economic, socio-cultural factors are fine-tuned to effectively manage the natural environment. They are also set up to find out how efficient the institutional arrangements operate to (a) facilitate effective management of the ecosystem (b) reconcile different competing interests over natural resources, conflict prevention and resolution and (c) mobilise resources at different levels to sustainably maintain or manage the natural environment. It is in the light of these that the study takes particular interest in the work of Lake Victoria Environmental Management Project and other regional inter-governmental and non-governmental institutions in the management of Lake Victoria ecosystem but more particularly their responses to the problems of water hyacinth.

The fourth dimension relates to how the macro-level factors determine the technical and methodological approaches to the management of water hyacinth. It should be remembered that, for example, the level of political will, economic capacity and nature

of physical environmental conditions and institutions' preparedness will determine which method will be adopted to manage environmental problems such as the water hyacinth. In many ways this brings into a clearer focus the critical issues that relate to the extent to which the principle of community of interest can be exercised for effective management of the ecosystem. Secondly, it will determine the extent to which any given country is willing to protect its national sovereignty, integrity or the extent to which it is willing to forego certain levels of national sovereignty and integrity. This should be for the sake of actualising the community of interest of those countries sharing the cross border natural resources.

It is against this background that the conceptual framework presented is an attempt to reconcile the comparative advantage of the two theories (The community of interest approach and limited territorial sovereignty and integrity) over unique and pervasive environmental problems such as water hyacinth. Since it does not respect territorial boundaries, the water hyacinth has the potential of magnifying regional or international tensions over the management and utilisation of a shared water resource such as Lake Victoria

1.12 Hypotheses

- (i) Effective joint management and control of the water hyacinth problem depends on the political and economic commitment of the three East African States.
- (ii) The degradation of Lake Victoria by the water hyacinth affects the livelihood of communities living around the lake, thereby occasioning conflicts between communities and the states.

- (iii) The environmental conflicts arising from institutional frameworks and the managerial arrangements of the Lake Victoria water hyacinth can affect the diplomatic and regional relations of the three East African states.

1.13. Methodology

1.13.1 Secondary Data Collection Method

This method involved collection and review of information from documented sources such as published materials, unpublished academic papers, journals, electronic and print media.

1.13.2 Primary Data Collection Method

Key Informant Technique. This method was used to obtain information from key persons in organisations concerned with Lake Victoria management and control of the water hyacinth problem. Persons from such agencies as the Lake Victoria Environment Management Project (LVEMP); Ministry of Environmental Conservation, Ministry of Water Conservation, Lake Basin Development Authority, East African Co-operation officials (Executive Secretary), the World Bank, Uganda High Commission, Tanzania High Commission, UNEP, Kisumu Port/Harbour, NGOs such as OSIENALA and International Union of Conservation Network (IUCN), Ministry of Natural Resources, and policy makers were interviewed.

1.13.3. Instruments of Data Collection

Interview guidelines were developed for key informant interviews. The guidelines consisted of open-ended questions, which were administered face to face. This design helped in gathering as much information as possible, since in most cases questions were asked with no restrictions.

1.13.4 Field Work Site

There are many areas in Kenya affected by the water hyacinth problem. These include Kisumu, Migori, Homa-Bay, Sango Beach, among others. Because of resource limitation the research for this study was mainly conducted in Kisumu's Winam Gulf. This area was chosen because it is the main harbour connecting Kenya, Uganda and Tanzania. It is a main fish landing site and provides many other activities such as transport and recreation. The lake in this area is shallower than other areas. It is therefore more likely to suffer from the impact of the water hyacinth than any other areas.

CHAPTER TWO

THE WATER HYACINTH PROBLEM AND INTERNATIONAL ENVIRONMENTAL CONFLICTS (IECs) IN EAST AFRICA

2.1. Conflicts in general

2.1.1. Definition of Conflict

Generally, a conflict is a “manifestation of divergent interests between at least two parties on a given cause.”¹ It also refers to “any situation or social process in which two or many entities are related. This relationship is a form of antagonistic psychological relations or at least a form of antagonistic interaction”. It involves direct and open interaction between parties in which actions of each party aim to inhibit the realization of the objectives or goals of the opponents.² The complexity of the nature and causes of conflict suggest that there exist a variety of types of conflicts.³ These different types of conflicts reflect among other things the complexity of human society, its interactions and motivations. This infinite variety of human nature and theatres of action is reflected in classifications of conflict. Conflict is a pervasive, social process of a multidimensional character. It is present in all social systems however simple or complex, and irrespective of their location, time and space.⁴ Conflict exists in interpersonal, organizational, industrial, national and international relations.

¹ Mwangi, M., Conflict: Theory, Processes and Management (Nairobi: Water-Mark Publishers, 1999) Forthcoming, op cit p.11.

² Ibid.

³ Ibid. p.11.

⁴ Agnoson J., J.T and D. Wilke, Some Conceptual Issues and Empirical Trends in the Study of Successful Mediation in International Relations Journal of Peace Research, Vol.28 No.1991, p.7.

"It should always be remembered that conflicts are dynamic and organic. They are always growing and as they do so, they transform themselves in very unexpected ways⁵."

According to Mathieu and Dabire⁶ Conflict can have diverse forms; starting from an open or not open opposition, sometimes violent, to incompatible motivations and aspirations which are expressed by the attitudes, or simply a disinterest. Mwangiru further observes that:

'Conflicts usually start at local levels. As the numbers increase, they become internationalized and more complex. The more the number of parties involved in the conflict, the more there are different and wider interests and issues in the conflict. When it becomes this complex, managing it becomes more difficult. Therefore it needs to reflect the different levels of complexity in the conflict⁷.'

2.2. International Environmental Conflicts (IECs)

The different levels and complexities of conflict are evident in international environmental conflicts since such conflicts transcend international boundaries. What this means is that no state can deal with such conflicts on a national basis. Thus the problem of the water hyacinth can only be solved by the states working together. This is because the water hyacinth has infested a shared water resource. It can therefore easily cause conflicts among the East African states. What might look like a local conflict at the beginning becomes international due to the complexities. Trollidalen defines international environmental conflicts as:

⁵ Mwangiru M., *Conflict Theory. Processes and Management* (1999). op cit p. 11.

⁶ Mathieu L.P.H. and B.A., Dabine, Conflict Management in relation with natural resources: (Regional workshop, April 11 1999) Mombasa, p.16.

⁷ Ibid p. 12.

'Conflicts that arise from the utilization of natural resources in one country which has negative environmental consequences for another country or groups of countries.'⁸

Because the world's resources are not evenly distributed according to political boundaries, international environmental conflicts have many characteristics, which extend beyond national borders.⁹ This is because a conflict that was internal is seen to develop linkages across borders. It will involve more actors with multiple issues and dimensions. This implies that conflict management efforts cannot concentrate on only one part of the conflict. They must take into account other conflicts within the system. This makes the definition of international environmental conflicts simply in terms of one state versus another very difficult. Many international environmental conflicts start at a local level, but then escalate into international conflicts involving more than one state. Some international conflicts may have a regional or even a global dimension. The three main geographical levels of international environmental conflicts can be categorized as follows:

Local: If resources at the local level are poorly managed, the productive capacity of the resource base may be reduced which in turn hinders their sustainable development. For example, local indigenous people's historical use of natural resources may trigger many conflicts with a national government's need for revenue through tourism.¹⁰

Regional: Regional international environmental conflicts often involve one country's national interests being at odds with those of other states especially concerning

⁸ Trollalden, J.M., International Environmental Conflict Resolution: The Role of the United Nations op cit. p. 3.

⁹ Ibid p. 3.

¹⁰ Ibid. p.4.

activities within the national borders which have regional environmental consequences, or activities that affect shared resources.¹¹

Global: Global international environmental conflicts involve the management of international commons like lakes, rivers and mountains etc. Increasingly, such conflicts are linked to either industrialized or developing countries. In managing international environmental conflicts, the relationship between demand and availability of resources is always central .

The water hyacinth in Lake Victoria is likely to generate non-violent international environmental conflicts. This is because conflicts generated by it are not manifest. Such conflicts are not recognized and cannot lead to conflictual behaviour. However, some of the management mechanisms being advocated for the management of the water hyacinth may be a source of other potential conflicts.

2.3. The nature, manifestations and magnitude of the international environmental conflicts generated by the water hyacinth problem

The potential for conflicts over international shared resources has been increased greatly as a result of the much heavier demands placed on them by population growth, industrialization and technological changes.¹² Environmental conflicts arise typically when use of the resource domain is incompatible with the interest of another country. Unless the control of the flow of the regimes and obstruction of quantities of the water is done and agreed upon by all the states, acute conflicts will be inevitable.¹³

¹¹ Ibid. p. 6.

¹² Kakonen J., Perspectives on Environmental Conflicts and International Relations (London and New York: Pinter Publishers, 1992) p. 32.

¹³ Okidi, C.O., Environmental Stress and Conflicts in Africa: Case Studies of Drainage Basins (NAIROBI : ACTS press 1994), p.20

2.3.1 Conflicts that arise due to responses and interventions through different methods of management

The most commonly used methods of controlling the water hyacinth are the chemical, biological, manual removal and mechanical control methods. In their use, the methods impact on the environment differently thus causing different environmental conflicts.

(i) Chemical control method

Chemical treatment of aquatic weeds in general is used in various countries of the world.¹⁴ However scientists do not advocate herbicide in or near water bodies as this may bring about risks to the environment and to human health. This is especially so in densely populated areas where the communities draw water for domestic purposes as in the case of Lake Victoria. The use of chemicals to control water hyacinth must be preceded by appropriate experiments, which make the chemicals cost effective and acceptable to rural communities.¹⁵ Herbicidal control of large infestations has rarely been successful. This method is only useful where there are small infestations of water hyacinth in regions which are climatically unfavourable for its growth. The control of the water hyacinth with herbicides requires a high input of manpower and mechanical equipment, which may be very expensive. Regular inspection coupled with further treatment must be continued indefinitely or re-infestation will occur from scattered plant seeds. This long-term commitment is often difficult to maintain and is an on-going cost. Some argue that chemical control is the most effective method of reducing the water hyacinth infestation quickly, and is the most widely used strategy for aquatic weed control worldwide. They argue that many countries such as USA,

¹⁴ Kakonen J., Perspectives on Environmental Conflicts and International Relations op cit p.33.

¹⁵ Ibid p. 37.

South Africa, Thailand, Indonesia have safely and successfully used herbicides in controlling the water hyacinth. However, it should be noted that this might not be the case with Lake Victoria as the use of chemicals can have far reaching effects.

To begin with, a place like the Nyanza Gulf is very narrow and if chemicals are used to eradicate the water hyacinth, the biomass will completely block the narrow passage thus stopping most of the fishing activities. Furthermore, the chemicals can enter the food chain which will have far-reaching effects in the future. It is due to these serious effects that NEMA Environmental Impact Assessment rejected the chemical approach. A Ugandan (Askia Mohammed) even took the Ugandan Government to Court and forced the cancellation of the use of chemicals.¹⁶ Negative aspects of the chemical herbicide used include the effect on bio-control agents like the anthropoids which can easily die of starvation, the drift effect that may cause damage to non target plants. This happened in Sudan where the aerielly applied herbicides 2,4-D, were initially very effective but later were seen to have deleterious effects on other plants.¹⁷ Therefore, the reported negative effects should be taken seriously and the arguments like the ones below should totally be ignored. Some people argue that in countries like South Africa and the United States, the use of chemical herbicides is an integral part of integrated pest management of the water hyacinth¹⁸. In these countries minimal effects of the herbicide on the environment have been reported. Also a recent study by the Ugandan Government showed that there were no significant negative impacts

¹⁶ Labrada R., Status of water hyacinth in developing countries. strategies for water hyacinth Control Report of a Panel of Experts meeting, 11-14 September (Fort Luderdale Florida U.S.A., 1945), p.11.

¹⁷ Ibid p.14.

¹⁸ Druninneh, H., All-out war on the Alien weed. op cit p.4..

associated with the use of aquatic herbicides for the control of the water hyacinth in Lake Victoria. They argued that Herbicide Weed 2,4-D) and RODEO (Glyphosate) had no significant impacts on water quality or on the aquatic ecosystem in and around the treatment areas in Uganda.¹⁹

As a method of control, the use of chemicals can cause conflicts between individuals and states and between states and states.

(a) Individual Versus state conflicts as regards the use of chemicals

The chemical control is the most effective method used for reducing water hyacinth infestation quickly, and it is the most widely used strategy for aquatic weed control worldwide.²⁰ As already stated earlier in the chapter, many countries like United States of America, Sudan, South Africa, Thailand, Indonesia have safely and successfully used herbicides in controlling the water hyacinth.²¹ However, Uganda's proposal to use chemicals to control the water hyacinth in 1997 drew criticism from a wide range of parties, including diplomats, non governmental organizations, local environmental groups and even East African Cooperation bureaucrats based in Arusha. They argued that although 2,4-D and glyphosate are reported to have low levels of toxicity - particularly via aquatic life to human beings, the use of 2,4-D has

¹⁹ LVEMP, A Review of Herbicides Use in the Control of Water Hyacinth with Recommendation of Possible Use on Lake Victoria. (Regional Experts for the governments of Kenya, Tanzania and Uganda, 1948) p.7.

²⁰ Mrosso H.D.J., A Review of the Use of Herbicides in Water Hyacinth Control in Lake Victoria (LVEMP,1998) p. 2.

²¹ Ibid p. 3.

been banned in many countries.²² In Zimbabwe, it was sprayed in Lake Chirero outside Harare from 1950's to 1971 and again in 1990 when the weed suddenly took over one third of the lake. However, spraying was stopped following a public outcry over fish deaths.

John Hunwick who runs the Permaculture Training Center in Uganda and who spoke against chemical use pointed out that 2.4-D orange compound used during Vietnam war had devastating effects on the population. Drunnineh, points out that 2.4-D is banned in many countries especially for water that is intended for human, animal or agricultural use within seven days of spraying. His own report finds that 80 percent of the chemicals are still present in the water after two weeks. He points out that the chemical is

‘toxic to animals and can evaporate from water causing ‘drift’ that threaten crops along the shore, such as bananas, beans and cassava. For these reasons it is totally impractical in vast majority of African areas.’²³

Lukyamuzi, an M. P. in Uganda, observed that Uganda has signed over ten global Conventions and Protocols related to the protection of the environment.²⁴ He argues that Lake Florida, which is normally suggested as a case study of the successful use of chemicals is dead. There is no aquatic life to protect in it. Neither is there fish to protect, as compared to Lake Victoria with rich aquatic life, fresh water and unique fish species. He further argues that environmental law does not allow anyone to do

²² Preston C. M. and J. A. Trofymow (1989) Efforts of Glyphosate (Round up) on Biological Activity of Forest soils In Reynolds Proceedings of the Carnation Greek Workshop Manaimo 7-10. December 1987, Victoria British Columbia: December 1987)p. 1987.

²³ Ibid.

²⁴ Lukyamuzi, J.K. Fighting the Water Hyacinth Without Disaster and Environmental Issue op cit. p. 1.

what he wants in such circumstances without a thorough environmental impact assessment.²⁵ Local environmentalists also point to the potential conflict of interest arising from the fact that Aquatic Unlimited whose study was funded by the US Agency for International Development is also in the business of manufacturing chemicals and spraying equipment. Lukyamuzi argues that if the government was sincere in its commitment to the elimination of the hyacinth, it would not have employed Aquatic Unlimited in producing an Environmental Impact Assessment (EIA) Report. The contradiction is that it is the seller of the chemicals.

According to Dr. Kizito, of Makerere University, Zoology Department, the decomposing hyacinth sinking and de-oxygenating in the water will release more nutrients which will feed the growth of other algae and further affect the water quality. These algae will eventually replace the hyacinth and do just as much damage. If the chemical spraying is concentrated in the bays, it will eventually kill the reed belts that act as a natural filtering system for pollution and for silt entering the lake. And in quick succession, the water hyacinth will move in and replace the reeds. Marked changes are expected in populations of birds and small mammals in areas treated with herbicides for controlling the water hyacinth.²⁶

(b) Conflicts among states

Although the government of Uganda said that glyphosate and 2.4-D have been tested elsewhere in Africa and the parliament approved the use of these chemicals, there have been major protests from environmentalists and exporters and importers of

²⁵ Ibid p.1.

²⁶ LVEMP Document A Review of use of Herbicides in water Hyacinth Control of water Hyacinth on Lake Victoria op. cit p. 9.

Uganda's fish.²⁷ This is because, later on, those countries have felt the severe impacts of the chemicals. Kenya with whom Uganda shares the lake, is also opposed to the use of herbicides to eradicate the weed. William Mayaka, an official in the Ministry of Environment and Natural Resources, observed that the use of chemicals might have undesirable effects on water fauna.²⁸ This would put Lake Victoria and the entire Nile basin in great danger of being poisoned by the chemicals. It would also endanger the life of people in the riparian states of the Lake Victoria basin and of diverse plants, fish and animal species that inhabit lake.²⁹ Kenya is one of the countries that banned any use of highly dangerous and environmentally hazardous chemicals in water in 1992.³⁰

In some European countries, Uganda's proposal to use chemicals prompted the threat of fish boycotts from Europe. The buyers cashed in on the dangers caused to the fish by chemical spraying of the lake. Sales of Nile perch to the European Union plummeted in 1997. The banana export from Uganda was also faced with a similar trend. This is because the European Union buyers feared that the lake Victoria basin where bananas are in plenty, might have had contact with the chemicals. Uganda's exports of Nile perch to Europe are second only to coffee. The use of chemicals would

²⁷ Musoke D. and A. Dianga, Uganda's Chemical Control bid Sparks Protest. The Daily Nation (K) 18 1998. p. 2.

²⁸ Ibid p. 23.

²⁹ Op cit p. 4.

³⁰ Rambaya S., Lake Weed: Uganda considers Toxic Use The Sunday Standard (K) 20 August 1995, p.4.

cost Uganda billions of shillings in foreign exchange. Holland and Spain, two of the largest importers, had already expressed concern at the herbicide use.³¹

On 5th August 1994, the Governments of Kenya, Uganda and Tanzania signed a Tripartite Agreement establishing Lake Victoria the Environmental Management Project (LVEMP). This Agreement suspended the use of chemicals arguing that an environmental impact assessment had to be done by experts from the three East African countries. Despite the suspension Uganda still decided to try the chemicals on its side of the lake. In June 1997, it came up with an Executive Summary on the use of chemicals and wanted it discussed. The Regional Steering Committee (RSC) selected a team of experts to do research on the use of chemicals. In 1998 they came up with a review of herbicides use. The Regional Secretariat decided that the findings were not conclusive and thus they suspended the use of chemicals again. This clearly shows that even at the regional level, there are controversies concerning the use of chemicals again.

(ii) Manual and Mechanical control methods

Manual control method involves getting the local communities directly affected by the water hyacinth infestations to manually remove the weed from the nearby waters³². This has the advantage that the community is involved directly in solving its problems. Additionally the payment made for the labour would replace its income lost because of the water hyacinth's effect on fishing and related activities. It is used to provide temporary relief or to create access to the fishing landing sites and

³¹ Ibid p. 4.

³² Musoke D. and A. Dinga, Uganda's chemical control bid sparks protest op. cit p.6.

important shoreline installations such as water intakes and port facilities. Protective wear and first aid facilities have to be provided at clearance sites to protect labourers from snakes and other pests in the water hyacinth mat. The disadvantage of the manual removal is that it is tedious. It is also dangerous as it exposes those involved to snake bites and disease infections.³³ At the end of the day, only a small amount can be cleared manually leaving the bulk untouched.³⁴

The mechanical method on the other hand depends on using equipment such as harvesters to remove the weed. This has the advantage that far greater quantities of water hyacinth can be removed than by manual control. However, it is highly capital intensive and requires highly skilled manpower, as the machines have to work on water. A further problem is the generation of large quantities of biomass plant material, which is placed on the shore. First as the plant dries, water flows back into the Lake causing pollution. Secondly, the decaying plant material will be a breeding ground for disease-carrying organisms which affects the health of the local communities. Water hyacinth is about 95 percent water and takes a long time to dry. It would not be usable as compost because of its wet status and whenever they are cut and deposited the seeds would stay for a long time without dying. They would germinate again and infest the dumping areas. The biomass cannot be left in water, as its decaying components would render the wider area anoxic.

(iii) Biological Control

The biological control programme requires the multiplication and release of two weevil species. It involves the use of natural enemies to maintain the weed pollution

³³ Ong'ang'a O. and K. Munywa A Rapid Assessment of Water hyacinth situation in Lake Victoria: Infestation: Current scale and Trends op cit. p. 6.

at manageable levels. This method is considered to be a long term and environmentally sustainable control method. The advantage of the biological method is that it supposedly has minimal risk to flora and fauna and to humans generally. Its disadvantage is the long term span before results can be seen and it is not possible to predict the behaviour of the fauna being introduced and their impact on the flora. It is said that it will take at least three years before the efforts of the weevils can be felt³⁵. It is also thought that the weevils cannot totally eradicate the water hyacinth.³⁶ And so other control methods need also to be used to supplement the impact of the weevils. It has been argued that it is environmentally friendly although some express the fear that once the water hyacinth has withered the weevils might turn their attention to other plants around the lake. Apart from conflicts that may arise from the various management strategies, there are also conflicts that arise because the methods for managing the water hyacinth problem affect the three East African countries differently. The major aspects are discussed below.

2.3.2. Illustrations of the specific mechanisms used individually by the three East African states

The initial responses and interventions by the three East African countries to the presence of the water hyacinth weed have been largely uncoordinated and sporadic with each of them trying to solve the problem individually. In Uganda two years after spotting the weed in 1990, government officials and community leaders mobilized the

³⁴ Rambaya, S., Lake Weed: Uganda considers toxic use, op. cit. p. 7.

³⁵ LVEMP, A Review of Herbicides Use in the Control of Water Hyacinth with Recommendation of Possible Use on Lake Victoria: A Report Prepared by a Team of Regional Experts for the Governments of Kenya, Tanzania and Uganda, August 1998, p. 26.

³⁶ Singh S.P. and A.H. Khan, Problems and control of water hyacinth in Eastern Uttar Pradesh. op cit. p. 6.

villagers into groups to pull out the weed manually. This method however proved tough and futile as soon as a section was cleared, another mat of the water hyacinth appeared³⁷. Frustration in fighting the weed forced the Ugandan Government to buy a harvester with a European Community grant of US \$ 280,000. At the same time, a special squad of retrenched National Resistance Army veterans was hired by the Ugandan Railways Corporation to help remove the weed. In 1996, Uganda proposed the use of chemicals in the lake to control the water hyacinth.

In Kenya after the mechanical method was ruled out as dangerous and costly, the Kenya Agricultural Research Institute (KARI) began breeding beetles at its Kibos station. Apart from KARI, another Non-Governmental Organisation (NGO) run by a group of former marine experts advanced the theory of rearing ducks to control the weed. Kibos scientists disputed the claim that ducks introduced into the lake would tackle the weed better than the weevils. Instead on May 5th 1996, KARI introduced a bug to clear the weed. Professor Mibey, a botanist based at the Chiromo Campus University of Nairobi came up with fungi found on the hyacinth, which he believes can solve the problem.³⁸ However, Mibey does not address the problem of the biomass, which would render the water anoxic. The Daily Nation of July 1998 reported a scientist, Peter Omuya as saying that he had developed a biological product,

³⁷ Awori F., From Receding Shores of Lake Victoria - An Anguished Cry- Mother is Dying in The East African. August 25 - 31 (1997), p. 1.

³⁸ Were E., Defiant Weed Chokes Major Uganda Port *the Daily Nation* 17th April 1996, p. 26.

which can kill the weed in a few days.³⁹ Another method commonly used in Kenya is breeding predators like moths, mites and beetles.⁴⁰

Tanzania on the other hand did not immediately realize the enormity of the problem posed by the spread of the water hyacinth and it was slow in taking measures to check its spread in Lake Victoria.⁴¹ Most people thought it was just one of the plants they were used to seeing, such as papyrus and reeds. Even the relevant institutions in Tanzania could not identify the weed properly and for a long time did not know the danger it could pose to both waterways and marine life. This resulted into the transfer of the weed from one place to another by flower lovers. However, immediately the impacts were felt, a Non-Governmental Organization (LANESCO) started voluntarily to remove manually the weed from the lake waters around Mwanza. Theophilus Ndole, an official from the group reported that the group has been involved in this kind of venture since 1995.⁴² Each of the three East African countries has been grappling with the water hyacinth problem, but none of them has yet come up with concrete plans to control the weed.⁴³ It is these varied methods/responses that have laid ground for the emergence of various conflicts or even potential ones.

³⁹ Oywa, J. Beetles Brought in to Save the Lake Victoria *The Daily Nation* 25th August 1996, p. 13.

⁴⁰ Momanyi J., Hyacinth Control- A costly Affair 13th February 1998, p. 4.

⁴¹ The Newsletter of the LVEMP Lake Victoria Sea of Troubles Nyanza Review Vol. No. 1 May 1998 p. 11.

⁴² Onditi A., Scholars Warn on Weed *The Daily Nation* 14th November 1997 p. 10.

2.4. Ineffective cooperation on the management of the water hyacinth as a source of conflict

The most basic potential conflict arises from different degrees of commitment to addressing the problem that occurs when the management of the lake is handled as a unit. For example, a country like Uganda that experienced the problem of the water hyacinth first and that initially felt the impacts most, might be more dedicated to international action taken to manage it than a country like Tanzania where until recently the impact was minimal. This might be a major point of conflict since by its nature, the water hyacinth problem stimulates a strong demand for international co-operation. One country being less committed to its management might bring discontent among the other two. Since various management strategies may affect each of the countries differently, there may be fundamental disagreements on the basic approaches, which should be adopted or implemented. Uganda for example, initially preferred the use of chemicals, whereas Tanzania and Kenya opted for manual removal. This caused controversies among the three countries. On the other hand, even if a consensus exists on what basic approach should be adopted, agreements on international policies involving the management of the water hyacinth might prove difficult to reach. This is because each of the three countries is affected in different ways by the water hyacinth problem. Any of the three East African countries might argue that the damage that accrues is less than that for the other two states.

A country like Uganda will always suffer most from the water hyacinth problem. This is because it is geographically lower than Kenya and Tanzania. As a result the bulk of

⁴³ Rwamushona, G. Regional Body to Protect Lake Victoria Poised to Take off The East African 21st October – 2nd November, 1997 p. 4.

the water hyacinth and other forms of pollution are likely to be deposited on its side of the lake more than that of Kenya and Tanzania. A country which is most affected by the impact of the water hyacinth may thus be willing to accept the establishment of a new institution to manage it. One might argue that joint management would be unfair to a country that already controlled the spread of the water hyacinth on a unilateral basis. A country that took the lead in acting responsibly may argue that it should be given credit for what it has already accomplished. This can also be a major point of conflict. For example, Uganda has done a lot in trying to manage the water hyacinth problem since the time it appeared on its side of the lake. It has attempted all the four methods advocated for its management, whereas Kenya and Tanzania have mainly concentrated on manual and biological methods. The priorities of the majority of leaders are shaped in a significant way by the economic conditions of their states. Thus the other countries less affected might argue that the actions taken on a unilateral basis were due to the fact that the victim state was economically vulnerable, therefore it tried to strengthen its economic position by controlling the weed.

2.5. Conflicts due to previous exclusive claims

Different claims by each of the three East African countries led to the collapse of the East African Community in 1977. Past experience therefore, suggest how difficult it would be to persuade countries to relinquish their previous exclusive claims, although they might be willing to make some compromise with each other.⁴⁴ The nature of the water hyacinth problem requires that the lake be managed as a single unit. Therefore if any of the three countries insists on its previous exclusive claims, there is bound to be a conflict with the others. The need for environmental cooperation does not

⁴⁴ Kakonen J., Perspectives on Environmental Conflicts and International Relations op cit. p. 41.

necessarily mean that operation on every single environmental issue is always possible. The sources of difficulty in environmental cooperation are twofold: first, although Kenya, Uganda and Tanzania face a common problem, they lack a central authority that can articulate the common interest and act upon it. The East African cooperation treaty leading to the establishment of the EAC cooperation has not been signed yet. Therefore it becomes very difficult to act upon any of its provisions which are still at their preliminary stages.⁴⁵ Secondly, the interests that shape collective measures are national rather than international or global. Yet the water hyacinth problem is an international problem which can only be solved using a collective approach. This is because any problem it gives rise to also involves other states.

2.6. Relative deprivation conflicts

It has been observed that due to the water hyacinth infestation, there has been a drastic decline in the fishing industries in all the three countries. Relative deprivation theories indicate that as developing societies produce less wealth because of environmental problems, their citizens will probably become increasingly discontented by the widening gap between their actual level of economic achievement and the level they feel they deserve. As regards the water hyacinth problem, the level of discontent caused is substantial: the faster the economic deterioration, it is hypothesized, the greater the discontent.

The communities living around the lake who are in the lower income bracket groups will be more frustrated than the others will. This is because the rich or the elite will use their power, as best as they can, to maintain their access to a constant standard of

⁴⁵ Oguya., F., The Environmental Issues Affecting the Lake Victoria Ecosystem and the Interventions Implemented by Lake Victoria Environmental Management Programme op cit. p. 14.

living despite the shrinking economic pie. At some point, the discontent and frustration of some groups may cross a critical threshold, and they might act violently against other groups perceived responsible for the lack of management of water hyacinth. This kind of violence will put pressure on the government to look into ways and means of managing the water hyacinth problem. And whatever methods any of the three governments chooses to control the water hyacinth, they will have implications on its relations with the other two states.

2.7. Variations in knowledge about the water hyacinth and lack of experts

Experience in any problem concerning water resources is the primary condition for rational management and conflict avoidance.⁴⁶ Being a recent phenomenon in East Africa, the water hyacinth problem lacks the national or regional experts trained in research concerning it. In the absence of such experts studies and research, decision making proves to be a very slow process. Any agreement based on less information will be short-lived. Furthermore in negotiations, representatives from the three countries will not be speaking at the same level of competence. Consequently in the long run, such a situation will lead to acute conflicts.

All the conflicts described in this chapter are mainly potential and low level, but they should be avoided at all levels whether national or international. This is because their cumulative effects have very serious international health, socio-economic, trade and environmental implications. These economic consequences can also be very serious especially at the international level when other countries reject the fish from Lake Victoria because of the use of chemicals. It is thus evident that the responsibility of

⁴⁶ Okidi, C., Environmental Stress and Conflicts in Africa: Case Studies of Drainage of Basin, (Nairobi: ACTS Press, 1994) op cit. p. 30.

managing the Lake Victoria water hyacinth has all along been in the hands of the national governments and the departments responsible for environmental and natural resources management.

In principle, a state can seek to manage the water hyacinth unilaterally or together with others. However, the water hyacinth does not respect territorial boundaries. Consequently, no state can prevent its spread into its territory. It is therefore not possible for a state to act alone, since its management, though achieved at great expense, can only rectify part of the problem if others do not introduce corresponding regulations. As a result, the management of the water hyacinth problem stimulates a strong demand for regional co-operation among Kenya, Uganda and Tanzania. The realization that the water hyacinth and other problems inflicting the Lake Victoria ecosystem cannot be managed on an individual basis made the three East African countries put in place a regional framework which advocates integrated approaches to managing the water hyacinth problem. This is the main focus of the next chapter.

CHAPTER THREE

AN INTEGRATED APPROACH TO THE MANAGEMENT OF LAKE VICTORIA WATER HYACINTH PROBLEM: THE CASE OF LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT (LVEMP).

3.1 Introduction

From the Global Environmental Conference in Stockholm in 1972 to the United Nations Global Summit on Environment and Development in Rio in 1992 and many other international fora, there has been an increasing awareness of the need to manage water resources in a holistic manner. The purpose of this was to avoid escalating water related constraints to development or, worse, conflicts. The issues pertaining to the utilization of international watercourses are extremely sensitive and can be a source of conflict between riparian states. Thus in order to avoid such conflicts, the shared water resources should be managed in a holistic and collaborative manner whereby there exists a mechanism(s) for consultation in the event of any conflicts. This would be a useful means toward reduction of conflicts.¹

At the same time, the use of watercourses has become even more significant in the light of the ever-increasing human population. As the human population increases, a corresponding need arises for fresh water for domestic consumption and for agricultural and industrial uses. However, because the amount of water available is constant, there is now, more than ever before, an urgent need to take effective measures for the proper management of fresh water resources, including their

¹ EAC Secretariat Report High Level Seminar Meeting on the Lake Victoria 8th -9th September 1988, Arusha, Tanzania p. 144.

protection and preservation from activities that cause their pollution.² The Lake Victoria region is no exception in this respect. Apart from being one of the sources of the River Nile, Lake Victoria is also one of the world's largest water bodies which is shared by Kenya, Uganda and Tanzania. Yet it has been faced by many threats which have greatly reduced, or are likely to do so, its development potential for the three East African countries. The solution to these problems requires regionally coordinated action.³ Taking such action in the past was often complicated by various factors. These factors include unequal benefits drawn by riparian countries from the lake's catchment and lake body. In most cases their national interests might not have been convergent and there might have been inadequate information, water resources planning and management tools available to decision makers.

The situation is further exacerbated by the fact that the Lake Victoria countries are upstream riparians in the Nile Basin. Hence, any agreement for the sustainable use and management of Lake Victoria water resources should ideally be negotiated and agreed upon with downstream riparians of the Nile to avoid unnecessary conflicts that might arise due to lack of consultations.⁴ The prospects for reaching such an agreement can greatly be enhanced if East African countries have a shared vision and common policies on water use and management in the Lake Victoria region. With a shared vision, they can act as a group, rather than individually, in negotiating a final settlement with the downstream riparians. To illustrate this, Treaties relating to Lake

² Idris K. and M. Sinjela, The Law of Non-Navigational Uses of International Watercourses: An overview Vol. 3. (The International Law Commission's Draft Articles 1995), p. 185.

³ Georgakakos, A. P. and M. M. Adjelic. A Decision Support System for Lake Victoria – Nile 2002 Conference, (Kigali: Rwanda, February, 1998), p. 20.

⁴ Idris, K. and M. Sinjela, The Law of Non Navigational uses of Water Courses op cit p. 145.

Victoria and the Nile may be considered in two categories: pre-World War I treaties and post World War I treaties. In the pre-World War I period, a range of treaties were signed, primarily for the demarcation of spheres of influence but making some provisions for the protection of the interests of the lower riparians.⁵ These and other pre-World War I treaties may be presumed to have lapsed with the end of the colonial era. As regards post World War I Agreements, there was an agreement between the Egyptian Government, on the one hand, and the British government on the other hand, on behalf of Sudan and the East African riparian states.⁶ It was done by exchange of notes, concluded in Cairo on May 7th1929. The primary objective was to facilitate an increase in the volume of water reaching Egypt. The treaty became obsolete after Kenya and Tanganyika ceased to be territories under British administration as stipulated i.e. it was not one of the treaties the new states succeeded. One may say that what remains true at this stage is that the only treaties with outright binding effect are the 1954 Agreement for the full utilization of the Nile waters and the 1977 Agreement on the Kagera Basin Organization (KBO). That is why considerations should be given to the Nile and Lake Victoria.

3. 1. 2. Current situation and on-going activities.

In matters of Cooperation, it can be argued that the situation has radically changed in the past few years.⁷ The three countries are becoming increasingly aware of the importance of a regionally coordinated common approach in integrated planning and

⁵ Macha V. and P. Mwidunda, Draft Report on Review of Legal and International Institutional Aspects of Lake Victoria Environmental Management Program, East Africa Sub-Regional Project Environmental Law and Institutions, (UNEP/UNDP Joint Project 1997).

⁶ Ibid. p. 20.

⁷ JICA -Kenya Lake Basin Development Authority (LABDA) Report Kenya, The Study of International Regional Development: Master Plan for the Lake Basin Development Area, Final Report, October 1987.

management of the lake basin resources with particular emphasis on land, water and environmental protection, fisheries and transport.⁸ A number of regional coordination bodies or organizations have been created in recent years. These include the permanent Tripartite Commission for the East African Cooperation and its East Africa Cooperation Secretariat, Lake Victoria Fisheries Organizations (LVFO). Lake Victoria waters steering committee of FAO/ Japan Lake Victoria Water Resources Project (LVWRP). Its main mandate is to coordinate water resources development and management activities in the Lake Victoria region pending the formation of Lake Victoria Management Institution. There are also several other regional or national projects and initiatives currently active in the Lake Victoria region. Good examples are the European Union Fish Stock Assessment Project (EUFSAP), the FAO/ Italy Nile Basin Water Resources Project. This is the latest Nile basin initiative, which was launched by the Council of Ministers of Water Affairs of the riparian states of the Nile basin⁹

Currently, there are a number of parties interests and programmes operating or concerned with the use and management of Lake Victoria basin resources. Nonetheless, the activities of these parties are coordinated by different established bodies and mechanisms. Interaction and co-operation among the programmes and the respective co-ordination bodies in general is either poor, sporadic or non-existent.¹⁰ Such a situation has led the three East African countries recognize the fact

⁸ EAC Secretariat Report High Level Seminar on the Lake Victoria, op cit. p. 145.

⁹ Ibid. p. 145.

¹⁰ Klohn W., M. M. Adjelic, Lake Victoria: A case in International Corporation. In Lake and Reservoirs and Management, (ILEC, December 1997), p. 20.

that the problems and challenges posed by the lake, especially the water-hyacinth infestation, are today of such magnitude that they cannot be efficiently faced by the riparian states acting individually.¹¹ Consequently, the three East African countries signed an Agreement on the Preparation of an Environmental Management Programme for Lake Victoria in 1994.¹²

3.2. Establishment of the LVEMP

The Lake Victoria Environmental Management Project (LVEMP) was officially established when the Governments of the Republic of Kenya, the United Republic of Tanzania and the Republic of Uganda signed an Agreement on the preparation of a tripartite Environmental Management Programme for Lake Victoria on August, 5, 1994.¹³ The three governments agreed to establish a Regional Policy and Steering Committee, assisted by a Regional secretariat and two Regional task - forces dealing with fisheries management and control of the water hyacinth and other weeds; and the management of water quality and land use (including Wetlands)¹⁴. It was further agreed that each country would establish two National Working Groups and a Secretariat to prepare national proposals for incorporation into the regional programme components.¹⁵

¹¹ Ibid p. 21.

¹² LVEMP Document, Kenya, Uganda and Tanzania, June 1996, p. 30.

¹³ Oduor O. and A.G. Ligunya, Promotion of Stakeholders Consultations and Community Participation LVEMP Draft Report, August 1995, Kenya.

¹⁴ LVEMP Project Document, Kenya, Uganda and Tanzania, op cit p. 20.

¹⁵ Oguya F., LVEMP Activities in Kenya, Paper Presented in the IUCN-JET Sponsored Meeting in Mwanza, 10th -13th June 1998, p. 15.

The policy and steering committee handles policy and administrative issues of LVEMP. The membership of this committee comprises all the Permanent Secretaries of ministries concerned with the management and conservation of the environment in each of the three countries. As concerns the leading roles, Tanzania was given the responsibility for the Policy and the Steering Committee. Therefore, the Regional Headquarters for LVEMP is in Dar-es-Salaam and is headed by the Executive Secretary. The role of the regional task force on fisheries management and control of water the hyacinth was given to Uganda, while that of Regional Task Force on Management of Water Quality and Land Use (including Wetlands) was entrusted to Kenya¹⁶. The Tripartite Agreement also calls for the holding of various regional and national workshops and seminars. The national workshops and seminars should have representatives of all interested parties, including public agencies, private interest groups and national and international NGOs. The participation of the relevant groups is meant to afford the different stakeholders opportunities to review the project concept, to provide information in their areas of expertise and to comment on project design¹⁷. The Project Document was prepared between November 1994 to December 1995 and submitted to the World Bank and Global Environment Facility (GEF) for funding. The two Financial Institutions have agreed to support the first phase of 1997-2001 at a total cost of 70 Million US\$.¹⁸ The Lake Victoria Environmental

¹⁶ EAC Secretariat, Report Meeting of Experts on Water Hyacinth, Arusha, Tanzania June 8th -9th 1998 (Ref. EAC/TF/17/98).

¹⁷ On'gang'a, O. and K. Munyrwa, A Rapid Assessment of Water Hyacinth Situation in lake Victoria: Infestation: Current Scale and Trends op cit. p. 15.

¹⁸ East Africa Secretariat Report: Background paper on the Harmonization Strategies and Measures to Control the Water Hyacinth. Meeting of Experts on Water Hyacinth AICC Arusha Tanzania, June 8th -9th 1996 (Ref. No. EAC/SR/35/98).

Management Project (LVEMP) is therefore a unique initiative given that it is the first of its kind within the East African region.¹⁹

3.2.1. Project Objectives.

Lake Victoria Environmental Management Project is supposed to address managerial and scientific issues in the three countries. It therefore aims at providing the three governments with necessary skills, information, technical and financial resources, and a suitable institutional and legal framework, within which such an endeavor can be carried out.²⁰ It also aims at reversing the deterioration of resources and environmental conditions of the Lake Victoria ecosystem for the benefit of the people who live in the catchment, the national economies and the global community.²¹ Specifically, it aims at the following: maximizing the sustainable benefits to riparian communities by using resources within the basin to generate food, employment for income, supply of safe water and sustaining a disease-free environment.²² Further aims at conserving biodiversity and genetic resources for the benefit of the global community²³ and harmonizing national management programmes in order to achieve, to the maximum extent possible, the reversal of increasing environmental degradation.²⁴

¹⁹ Ongang'a, O. and K. Munyurwa., A Rapid Assessment of water hyacinth situation in Lake Victoria: Infestations current scale and trends. Op cit. p.17.

²⁰ East African Secretariat Report: Background Paper on the Harmonisation policies and measures to control the water hyacinth. op cit, p. 15.

²¹ A Newsletter of the LVEMP, Lake Victoria Information Bulletin Issue No. 1 February 1999, p. 3.

²² EAC Secretariat Report High Level Seminar on lake Victoria op cit. P.131.

²³ Ibid. p. 131.

²⁴ Ibid. p. 131.

3.2.2. Project components.

Lake Victoria Environmental Management Project (LVEMP) brings together several sectors to complement one another in order effectively to implement the project. To improve the efficiency in execution, the project is divided into various components for implementation by various sectoral ministries and institutions.²⁵

Following successful preparation of the LVEMP, the following areas were identified for rehabilitation and improvement: fisheries management; fisheries research; capacity building in riparian universities; water quality management; pollution abatement and management; land use and wetland management; water-hyacinth control and monitoring.

3.2.3. The water hyacinth as a component.

Water-hyacinth control was identified as a major component of LVEMP. The project aims to establish a sustainable, long-term capacity for maintaining control of the water hyacinth and other invasive weeds in the Lake Victoria basin.²⁶ This will be achieved by an integrated effort involving intensified publicity, legislation and integrated pest management with community involvement. The control of the problem will rely on the application of the integrated water hyacinth control programme consisting of

²⁵ Ibid. p. 133

²⁶ LVEMP Project Document Kenya Uganda and Tanzania op. cit. p. 6.

mechanical, bio-agents, manual and chemical methods.²⁷ Chemical methods will be limited for only short-term control in restricted areas, and biological agents for long-term control. Wetland management, improving water quality and reducing nutrient inflow into the Lake will be a vital element in the long-term approaches to dealing with the problem.

The biological control programme will rely initially on the multiplication and release of two species of weevils that have been used and found effective in the United States of America and Australia. The Plant Protection Research Institute (PPRI) of South Africa is also recognized as having achieved most success in the use of biological control agents against pests; and water hyacinth has featured prominently in the list of priorities. Weevils have already been imported, reared and released in the Kenyan and Uganda side of the Lake.²⁸ The possibility will be explored for supplementing the weevils by later releases of the moth *Sameodes albiguttalis*. The main elements of the biological control programmes will be: the establishment of mass rearing capacity centres around the shores of the lake as rapidly as possible a coordinated field release programme involving local community participation,²⁹ monitoring the performance of biological control agents in the field, and the development of a monitoring and evaluation protocol and training programme.

²⁷ EAC Secretariat Report, High Level Seminar on Lake Victoria. Op. cit. p. 132.

²⁸ Ibid. p.12.

²⁹ Oduor P., and A G. Ligunya Promotion of Stakeholders Consultations and Community Participation

3.3. Project Implementation

There are extensive, scientific investments in the programme as there is a worldwide interest in Lake Victoria and the need to seek innovative solutions to solving environmental problems that draw on a broad spectrum of physical, biological and social sciences.

There are also uncertainties associated with the lake ecosystem. The lake is used as a source of food, energy, drinking and irrigation water, transport and as a repository for human, agricultural and industrial waste. With the populations of the riparian communities growing at rates among the highest in the world, the multiple activities in the lake basin have increasingly come into conflict.³⁰ This has contributed to rendering the lake environmentally unstable. The lake ecosystem has undergone substantial and, to some observers, alarming changes, which have been increasingly dominated by potential toxic blue-green algae. Water-borne diseases have also increased in frequency.

The water hyacinth, absent as late as 1989, has begun to choke important waterways and landings. Over-fishing and oxygen depletion at lower depths of the lake threaten the artisanal fisheries and biodiversity (over 200 indigenous species are said to be facing extinction).³¹

op. cit. p.72.

³⁰ LVEMP Report A Review of Herbicides Use in the Control of Water Hyacinth with Recommendations on Possible Use on Lake Victoria op cit 1998, p. 2.

³¹ LVEMP Report Joint Regional Approach for Water Hyacinth Control on Lake Victoria , 18 November 1998, p. 1.

Scientists advance two main hypotheses for these extensive changes. First, the introduction of Nile perch as an exotic fish some thirty years ago has altered the food web; second, nutrient inputs from adjoining catchment are increasing. Consequently, the project has appointed a high level panel of internationally renowned scientists, (initially with seven members). This panel is meant to serve as an overall advisory group for the scientific studies in the lake.

3.3.1. Roles and responsibilities

The Tripartite Agreement (Signed on 5th August, 1994) which set in motion a collaborative process of project preparation among the three countries also provided for project implementation. First, it established three National Secretariats,³² each headed by a high level officer, selected by the respective governments and supported by a modest staff. The secretariats are to serve as essential co-ordination centres. The secretariat has been strengthened by the appointment of a procurement/ disbursement officer, an operations officer and a management information systems officer. The role of the three officers is to ensure compliance with International Development Authority (IDA) and Global Environmental Facility (GEF) conditions. The conditions include the reporting of procurement and disbursement procedures. The three secretariats, one in each country, will provide a day-to-day central contact point and information-clearing houses for all agencies and donors implementing the project.

The implementing agencies on the other hand are responsible for progress on their own components and for monitoring and reporting on that progress. The secretariat

³² Africa Water Network Report The Lake Basin Hot Spots Study Sponsored by the Swedish International Development Co-operation Agency (SIDA, August 1998), p.12.

will then gather information from all the agencies in their respective countries, be responsible for overall monitoring and preparing of progress reports for decision making. The heads of the secretariat will also, when necessary, organize tripartite meetings of officials responsible for various components of the project. The Regional secretariat in Tanzania organizes meetings when required by members of the regional policy and steering committee, which will also remain in place with the same membership as it had throughout the project preparation. The committee thus has several roles, the most important being the mechanism for settlement of disputes arising during implementation of the programme. The project also liaises with local and international consultants in areas where particular scientific expertise is called for beyond the abilities of the staff in the implementing ministries.

As different stakeholders collaborated during the project preparation, all the stakeholders including the International Development Authority (IDA), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP) will also collaborate during reviews of implementation³³. IDA will have the overall responsibility for the review; UNDP will focus on stakeholder consultation and participation aspects of the project, while the United Nations Environment Programme (UNEP) will focus on water quality aspects of the project.³⁴ It has been stated that as part of the mid term review of the project, the three governments would prepare an updated analysis of the trans-boundary environmental concerns to guide the second phase of the project implementation, and set the stage for

³³ LVEMP Project Document, Kenya Tanzania Uganda op cit. p. 10.

³⁴ LVEMP Report Global Environmental Facility and World Bank, (1996) p. 16.

subsequent initiatives.³⁵ Interestingly however, the project's first phase will come to an end in the year 2001 and yet it is 1999 and the preparations of such a review are not yet over.

Finally, the implementation completion report prepared by the three Governments at the end of the project will include a revised Strategic Action Programme. This would contain an outline of interventions needed to address priority problems. IDA will use this as the basis for convening a donor meeting to seek commitments to support such interventions.³⁶

3.3.2. Implementation of the water-hyacinth control programme.

The implementation of the water-hyacinth control programme is led by the Agricultural Research Organizations of the three countries namely: the Kenya Agricultural Research Institute (KARI) located in the Ministry of Agriculture Livestock and Rural Development; the Uganda National Agricultural Research Organization (NARO) located in the Ministry of Agriculture, Animal Industry and Fisheries; in Tanzania, and the Department of Research and Training located in the Ministry of agriculture, livestock, co-operatives and development. The research institutions are agriculture, livestock, cooperatives and development. They are responsible particularly for the programme to multiply and disperse the biological control agents because in all the three countries, it is these institutions that are responsible for crop protection.³⁷

³⁵ LVEMP Progress Report Mid-term Review The period July 1997 December to 1998 Part 1 February 1999. P.16.

³⁶ Ibid. p. 17.

³⁷ Oguya F., The Environmental Issues Affecting the Lake Victoria Ecosystem and the Interventions implemented by LVEMP. op cit. p.11.

In Kenya for example, an institution like KARI has the capacity to deal with the water hyacinth as a weed because it has had past experiences with other weeds such as *salvinia molesta* in Lake Naivasha. It has the personnel, infrastructure and a crop protection division dealing with aquatic weeds. KARI and the Fisheries Department would also handle the manual control method. This is because the Fisheries Department has a network along the Lake. The manual method is mainly administered by the fishermen. KARI provides the hand tools for the fishermen whereas the Fisheries Department mobilizes the communities involved with the lake activities.

National water hyacinth steering committees will be established in each country to oversee and coordinate the programme. They will also ensure the involvement of local communities and Non-Governmental Organizations (NGOs).³⁸

3.3.3. Implementing ministries and institutions.

The project covers all the areas in the Lake Victoria Basin. In Kenya, the project is implemented by the Ministry of Environment and Natural Resources which is the local focal point for LVEMP. It comprises the Fisheries Department and Forest Department. As for the mechanical control method, the national secretariats would deal with it directly because of the logistics of negotiating with Banks and procuring the harvesters to be used in the Lake. The other key ministries and institutions include the Ministry of Foreign Affairs and International Cooperation, the Ministry of Agriculture, Livestock and Development, the Ministry of Science and Technology; Kenya Marines and Fisheries Research Institute (KMFRI).

³⁸ LVEMP Progress Report. Mid Term Review The period of July 1997 December to 1998 op. cit. p.18.

In Uganda, the institutions include: the National Environment Management Authority (NEMA) and National Agricultural Research Organization (NARO) and the Namulenge Agricultural Research Institute.³⁹ Tanzania's main actors are the Office of the Vice President – Division of Environment, Ministry of Foreign Affairs, Ministry of Water, Ministry of Agriculture, and Ministry of National Residence. The implementing ministries and institutions are responsible for the co-ordination and implementation of all activities in their component.

To effectively implement the proposed activities, the project is divided into eight components which are implemented by various sectoral ministries in each country. The various national agencies implement components of the projects as follows: the three Fisheries Research Institutes play the leading roles in all sub-components of fisheries research. They also collaborate with the fisheries departments of their respective governments and with the Ministry of Environment and Natural Resources. These ministries collaborate with the Ministry of Agriculture, Livestock and Rural Development in their implementation of the components of land use and wetland management. National Wetland Committees in all the three countries are also involved in this component with continuing assistance from the World Bank and the International Union Conservation Network (IUCN).

³⁹ The World Bank Staff Appraisal Report Kenya, Uganda and Tanzania, June 18th 1996 (Report No. 15429-AFR).

The Moi, Makerere, Sokoine Universities, and the Universities of Nairobi and Dar es Salaam are involved in many of the studies including those in socio-economics. The water testing laboratories of Kisumu and Mwanza Municipal Councils, the Uganda Water and Sewage Corporation and the Lake Basin Development Authority (LBDA) also assist in laboratories already operating or planned by the respective ministries of water.⁴⁰ Each has a project component co-ordinator who is assisted by task co-ordinators in implementing various project activities. There is also a project implementation committee whose members are all the project co-ordinators. The Project Implementing Committee (PIC), meets once every month to monitor and to consider the financial and physical progress of the project. Implementing ministries and institutions submit periodic reports to LVEMP National secretariats.⁴¹

3.4. Financing the LVEMP

The LVEMP is funded by the Global Environmental facility (GEF) and the World Bank.⁴² The GEF is a mechanism for international co-operation for the purpose of providing new and additional grants and concessional funding to meet the agreed global environment benefits in climate change, biological diversity, international waters, and ozone layer depletion. Because it is being funded by GEF, LVEMP is expected to provide for, or facilitate consultations with, and participation of major groups and local communities throughout the project cycle.⁴³ The participation of the community is therefore paramount for success and sustainability. The project has

⁴⁰ LVEMP Project Document, Kenya, Tanzania and Uganda op cit. p. 26.

⁴¹ Ibid p. 20.

⁴² Oduor, D. and A.G. Ligunya, Promotion of stakeholders consultations and community participation LVEMP (Draft Report, Kenya, August 1995), p. 14.

⁴³ Ibid. p. 14.

specific activities targeted at the community. The idea is to empower the local communities to manage the activities and eventually own the project targeted at them. However, this has not been happening. In this connection, the objectives of the Lake Victoria Environmental Management Project include as part of its preparatory activities, stakeholders consultation and local community participation in decisions concerning the objectives of the development programme, its design, implementation and management have not been met because initially all discussion concerning the management of Lake Victoria began at high levels ignoring the fact that the communities living around Lake Victoria have a major role to play.

3.4.1. Cost estimates and financing.

The total cost of the project, including physical and price contingencies, is estimated at US \$ 77.58 Million.⁴⁴ The three governments would contribute US \$ 7.6 million to the project leaving US \$ 70 million to be covered by donors like GEF, the World Bank and the International Development Authority.⁴⁵ Incremental costs financed by the GEF amount to US \$ 35 million. The remaining project costs would be financed by IDA with an allocation of US \$ 35 million.⁴⁶ The water hyacinth management and control as a component was allocated US \$ 8.31 million out of US\$ 77.58 million.⁴⁷ The project will finance vehicles and boats, office, laboratory and field equipment, laboratory chemical and herbicides, biological control agent rearing facilities for bio agents and renovation of offices and laboratories; training and workshops, technical assistance, personnel costs, and operations and maintenance expenditure.

⁴⁴ LVEMP Document Kenya, Tanzania and Uganda op cit. p. 24.

⁴⁵ Ibid. p.24.

⁴⁶ Ibid. p.12.

⁴⁷ Ibid. p. 24.

3.5. Modes of operation.

Most of the activities of LVEMP commenced in June 1999. At this stage, therefore, no results can be established. However, one of the preliminary achievements of LVEMP efforts is the recognition by the three governments of the need for regional co-operation and the co-ordination of efforts towards the environmental management of Lake Victoria ecosystem.⁴⁸ The signing of the Tripartite Agreement on the preparation and implementation of LVEMP is an important element for continued co-operation in the future.

3.5.1. LVEMP proposed hyacinth control and management mechanisms

(i) Chemical control

Due to the possible negative effects of herbicides, the three countries through consultations and discussions have deferred the use of chemicals until further tests are carried out and agreed upon by them. There was a consensus on chemical control among the East African countries as per the Joint Project Agreement for the LVEMP signed in Nairobi on 10th September 1996 by Uganda, Kenya and Tanzania together with International Development Agency (IDA) and World Bank. At this meeting, they agreed that all herbicides used in the water hyacinth control programme shall be acceptable to the Association (IDA), be used sparingly in strictly selected and confined areas; be handled by persons trained in their safe and appropriate handling and establish a mechanism for careful monitoring of their use.

The Regional Policy and Steering Committee (RPSC) of LVEMP at its 14th meeting on 1998 discussed the whole question of controlling the water hyacinth in Lake

⁴⁸ EAC Secretariat Report High level Seminar in the Lake Victoria op. cit. p.132.

Victoria and a review of the use of the three methods, and decided to appoint a committee of experts - three from each country, to conduct further reviews and advise on the use of herbicides in controlling the water hyacinth.⁴⁹ The committee of experts reviewed a wide range of literature, documents and research findings on the possible use of herbicides. The committee submitted a report to International Panel of Scientists (IPS) entitled *A Review of Herbicides Use in the Control of Water Hyacinth with Recommendations on Possible Use in Lake Victoria*.

The International Panel of Scientists (IPS) met on 23rd August 1998. After discussions, they recommended that it was then inappropriate and unacceptable to use herbicides for the control of the water hyacinth in Lake Victoria. The International Panels Scientist and Regional Policy Steering Committee (RPSC) report was further discussed at their fifth meeting in Kisumu, Kenya on 14-15 September 1998, but they were of the opinion that the report was non-committal and did not state whether or not herbicides should be used in the control of the water hyacinth in Lake Victoria. Members of RPSC were against the use of herbicides for fear that the herbicides may also harm those who depend on water from the lake for drinking and cause contamination of the fish market and other living organism in the Lake.⁵⁰ In the meeting of 28th September 1998 in Kisumu, Kenya, the committee directed that the use of herbicides should be deferred until further research on the efficacy, safety to health and environmental friendliness of the recommended chemical compounds was

⁴⁹ LVEMP Report Meeting of Experts Committee on the Use of Herbicides in Controlling Water Hyacinth on Lake Victoria, 1998, p. 12.

⁵⁰ EAC Secretariat Report, First meeting of the Committee on Environment, Arusha, Tanzania, November 5-6 1998 (Ref. No. EAC/SR/35/98) p.36.

done by the three countries.⁵¹ This was to be followed up by the national secretariats of Lake Victoria Environmental Management Project.⁵² The committee further recommended that other stakeholders including the European Union should be invited to participate in the research activities on the use of herbicides in the control of the water hyacinth in Lake Victoria. This is mainly because the European Union is a major importer of fish from Lake Victoria. The European Union involvement will also give the findings an international perspective. Because no conclusive research has been done, there is a general atmosphere of uncertainty on the use of the chemical methods despite the fact that it was the first method agreed upon as early as 1993. The emerging question therefore is whether the available funding meant for the management of the weed will be used in a desperate attempt to justify the chemical method while other options are available.

(ii) Manual and mechanical removal.

In Tanzania, this option is being used by local people and non governmental organizations to control the weed in strategic areas including water supply intakes, landing beaches, ferry crossings, dams and ports.⁵³ It was reported in 1998 that in Uganda, the government had spent 2.7 million Ugandan shillings to remove one hectare of the weed from the Owen Falls Dam at Jinja.⁵⁴ In spite of the difficulties and costs involved under the option, local communities will continue to be sensitized to remove the weed at strategic locations particularly water supply areas and beaches.

⁵¹ Ibid. p. 37.

⁵² LVEMP Report Joint Regional Approach for Water Hyacinth Control on lake Victoria 18 November 1998, p.3.

⁵³ Ibid. p. 4.

⁵⁴ Africa Water Network Report, The Lake Basin Hot Spots Study, op cit. p.6.

Due to all these efforts by the Ugandan government, it was reported in 1999 that there is some reduction and change in the level of the water hyacinth manifestation. On the Kenyan side, the level is still the same.

(iii) Biological control

According to the reports that were presented by the EAC Secretariat at the 5th -9th Commission Meeting of Experts (in 1998), Tanzania reported that it had constructed three additional weevils rearing units, two in Mwanza and one in Mara. One in Kagera is still under construction. Tanzania also reported that the steering committee of water-hyacinth control has met several times.⁵⁵ Kenya reported that the Kenya Agricultural Research Institute (KARI) has established a weevil rearing unit at Kibos Research Station in Kisumu.

KARI has released the weevils at 40 sites in Lake Victoria and plans are underway to establish more units. It is also in the process of developing micro-herbicides (fungal pathogens) for use against the water hyacinth.⁵⁶ This will include the use of two weevil species *neochetina eichhorniae* and *n. bruchi*. They are perhaps the most widespread natural enemies of the water hyacinth in Africa. The adult beetles feed on the leaves, which increases transpiration and places the plant under stress. Eggs are laid on the leaves and feed on plant tissues. This creates further stress on the opportunity for the establishment of pathogens as the larvae pupate on the roots in the water high weevil population would result into small hyacinth plants that do not flower and hence set no seed. Secondly, the speed of vegetative reproduction is greatly decreased and the lifetime of a plant is reduced by thirty to fifty percent with the result

⁵⁵ LVEMP Report, Meeting of Experts on Water Hyacinth, op cit. p.4.

of limiting or stopping the spread of the water hyacinth. Uganda reported that a national committee of experts has been formed to review methods and measures for the control of the water hyacinth. The committee is working closely with the member states. In Uganda, the weevils have been released into Lake Kyoga and Lake Victoria at Kitosi, Masese and Masaka.⁵⁷

3.6. Constraints and challenges.

The present control efforts under LVEMP have mainly concentrated on mechanical, manual and biological methods, but the economic or environmental implications of the methods have generally been too costly for the three governments which also have to contribute certain amounts. In addition to these costs, there is also the management of things like pollution. Because the water hyacinth entered Lake Victoria on the Uganda side through the source of the Kagera River and since LVEMP does not include countries like Rwanda, it faces a big challenge in trying to stop the load of water hyacinth emptied continuously in Lake Victoria from the Kagera River.⁵⁸ As earlier stated LVEMP forms the basis for wider investment in environmental management. Therefore its success will determine and influence future investments in similar programmes in the Lake Victoria Basin.⁵⁹ Its major challenge is thus to show the local communities and other stakeholders that such a big resource like Lake Victoria can be effectively managed, exploited and protected from the various problems inflicting it.

⁵⁶ Ibid. p. 6.

⁵⁷ LVEMP Project Document Kenya Uganda Tanzania op cit.12.

⁵⁸ Dribidu E. and E Kasimbazi, Legal Aspects of LVEMP that Require Further Elaboration, National Environment Authority UNEP/UNDP Joint Environmental Law and Institutional Project, East Africa Sub-Regional Project: Uganda Component June 1997, p.11.

⁵⁹ On'gang'a O.M. and Munywra K., A Rapid Assessment of Water Hyacinth in Lake Victoria:

The project encounters several problems that may ultimately influence or cause a low rate of success. Like all other projects in the region, LVEMP is faced with many difficulties and basic realities related to harsh environmental conditions in Africa.⁶⁰ Harsh environmental conditions in the catchment and increasing population pressures drastically modify traditional lifestyles and practices. In some cases, this leads to severe degradation of the resource base.⁶¹ At the preparatory phase of LVEMP, it was realized that the region has unique problems that may take a while before they are fully solved.⁶² These problems include decline in biodiversity, deteriorating water quality, increased industrial and municipal effluent discharge into the lake, poor land use systems, and destruction of wetlands.

Considering the fact that the water hyacinth problem cannot be solved without seeking solutions to these other related problems, LVEMP faces a major challenge and it will take time before positive results are realised. It is imperative that the short-term solutions that have been identified be for example, mechanical control of the water hyacinth be implemented. It is evident that when the water hyacinth was controlled in Lake Naivasha, it was replaced by another invasive weed (*silvinia molesta*).⁶³ The water hyacinth problem clearly shows that more problems and changes are likely to take place in Lake Victoria. Unless the deterioration of water quality and conditions in

Infestation: Current Scale and Trends op cit. p.6.

⁶⁰ Gerhart, S. and V.D. Dijk, Environmental Management Measures for Preventing Further Deterioration of African Freshwater Bodies: The case of the Lake Victoria Basin. (1998), p.4.

⁶¹ EAC Secretariat Report Meeting of Experts on Food Production and Security, Arusha Tanzania, 26th-28th February 1998 (Ref. No. EAC/EX. 4/98), p.4.

⁶² LVEMP Project Document, Kenya Tanzania Uganda op. cit. p.12.

Lake Victoria and its catchment are addressed, what happened in Lake Naivasha might also happen in Lake Victoria, and this presents a big challenge to Lake Victoria Environmental Management Project.

In the context of global lessons learned from regional environmental programmes, it is clear that the greatest challenge lies in making the transition from planning to effective implementation of programmes at the field level. This is because it is usually very difficult to integrate the objectives and priorities of the programme into national and local development plans of co-operating countries.⁶⁴

The difficulty mainly arises from the fact that the water hyacinth problem has not been given the priority it deserves. Despite the fact that funds have been given and numerous experts paid, most activities aimed at by the Project are yet to start.

⁶³ Africa Water Network Report the lake Basin Hot Spots Study op. cit. p.41.

⁶⁴ Linter F. Stephen, Ary Slery and M. Hatzolus The Experience of the World Bank in the legal, Institutional and financial Aspects of Regional Environmental Programs: Potential Lessons Learned for the ROPME and PERSGA Programs. 1996 Washington DC. p. 12.

CHAPTER FOUR

ALTERNATIVE INSTITUTIONAL MECHANISMS FOR THE MANAGEMENT OF THE LAKE VICTORIA WATER HYACINTH AND CONFLICTS GENERATED BY IT

4.1 Introduction

This chapter reviews and examines one convention and various existing institutional frameworks whose experiences can be applied in managing the water-hyacinth problem. They are the 1997 United Convention of the Law of non-navigational water courses, the Kagera Basin Organization (KBO) – 1977, Technical Cooperation for the promotion of the Development and Environmental protection of the Nile Basin (TECCONILE), the East African Cooperation (EAC) and the Lake Victoria Fisheries Organization. In other words, whether the management is done at national, regional, or international levels, the role of those alternative mechanisms will evince certain common conditions and the net results should be similar when looked at from the perspective of managing a shared water resource.

4.2 Significance of international watercourses and measures for their effective management

The importance of watercourses to human life and development cannot be overemphasized. Throughout human development, watercourses have played a major role as the medium of communication, trade, agriculture, fishing, recreation, tourism, culture, and location of human settlements¹. The importance of watercourses has become even more significant in the light of the ever-increasing human population. As the human population increases, a corresponding need arises for fresh water for

¹See Margraw, D. B., Introduction Remarks to the *Doman Colloquim* on the Law of International Watercourses in Review of the ILC Draft Rules on the Non-Navigational Uses of International Watercourses. Colorado Journal of International Environmental Law and Policy. Vol. 3, 1992 p.134.

domestic consumption and for agricultural and industrial uses.² Since the amount of available freshwater is however not increasing there is now more than ever before, an urgent need to take effective measures for proper management of fresh water resources, including their protection and preservation from activities that cause their pollution.³

The importance of cooperation in relation to the utilization of international watercourses and other common natural resources has thus been emphasized repeatedly in declarations and resolutions, adopted by intergovernmental organizations, conferences and meetings. For example, the Helsinki Rules adopted by the International Law Association have made a major impact on the development of rules of international water resources Article IV states that

‘each basin state is entitled within its territory to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin.’⁴

Secondly, the Committee of Ministers of the Council of Europe emphasises the importance of cooperation with regard to international water resources, owing to the physical properties of water in principle XII of the European Water Charter, adopted in 1967. It declares: “water knows no frontiers. As a common resource it demands international co-operation”⁵ Declarations and resolutions of this nature confirm the

² See Idris K. and M. Sinjela The Law of the Non-Navigational Uses of International Watercourses. The International Law Commissions Draft Article Vol. 3 (1995) p.84.

³ Ibid. p. 85.

⁴ FAO, The Law of International Water Resources, (1966).

⁵ See Council of Europe, European Water Charter (1967), Principle XII.

fact that the management of shared water resources like Lake Victoria calls for a concerted effort of all the concerned states. The states are required to apply principles of law as they establish joint institutional structures in managing shared water resources. The Stockholm Declaration on Human Environment 1972 addresses the subject by providing in its principle 24 that

“International matters concerning the protection and improvement of the environment should be handled in a cooperative spirit by all countries, big and small, on an equal footing. Cooperation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all sphere, in such a way that due account is taken of sovereignty and interests of all states⁶.

The Mar Del Plata Action Plan adopted by the United Nations Water Conference, held at Mar Del Plata March 1977 on regional cooperation stated that:

“Countries sharing water resources, with appropriate assistance from International Agencies and other supporting bodies, on the request of the countries concerned should review existing and available techniques for managing shared water resources and coordinated development of such resources. Areas of co-operation may with the agreement of the parties concerned include planning, development, regulation, management, environmental protection, use and conservation, forecasting etc. Such cooperation should be a basic element in an effort to overcome major constraints such as the lack of capital and trained manpower as well as the exigencies of natural resources development”⁷.

The United Nations Environmental Programme 1978 further provided that:

“In order to ensure effective international co-operation in the field of environment, concerning the conservation and harmonious utilization of natural resources sharing such natural resources should endeavor to

⁶ Declarations of the United Nations Conference on the Human Environment - Stockholom, 16 June 1972.

⁷ See Declarations and Resolutions of the United Nations Water Conference-Mar Del Plata, March 1977

conclude bilateral or multilateral agreements between or among themselves in order to secure specific regulation of their conduct in this respect, applying as necessary the present principles in a legally binding manner, or should endeavor to enter into other arrangements, as appropriate for this purpose. In entering such agreements, or arrangements, states should consider the establishment of institutional structures, such as joint international commissions, for consultations on environmental problems relating to the protection and use of shared natural resources.”⁸

As far as transboundary natural resources and environmental interferences are concerned, Article 9 on the reasonable and equitable use of transboundary natural resources can be applied. This article embodies the so called principle of equitable utilization (or apportionment) of transboundary natural resources which stipulates that states are entitled to a reasonable and equitable share in the beneficial use of a transboundary natural resource. The essence of the principle of equitable utilization is that instead of laying down a norm with a more or less specific content, it prescribes a certain technique aimed at reaching an equitable result in each concrete case.

In 1987 the conclusions of the Brundtland Report (also known as World Conference on Environment and Development) stress the need for an integrated approach in development policies and projects which if environmentally sound will lead to economic development in both developed and developing countries. The Report emphasizes the need to give a higher priority to anticipating and preventing problems. It defines “sustainable development” as that which meets the present and future environmental and developmental objectives. It concludes that without an equitable sharing of the costs and benefits of environmental protection within and between

8 United Nations Environment Programme. Governing Council Decision 6/14, Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources shared by two or more states - Nairobi, (9, May 1978).

countries, neither social justice nor sustainable development can be achieved.⁹ The issues of sustainable development using an integrated approach were taken up again in the context of 1992 United Nations Conference on Environment and Development (UNCED). In the process of elaborating appropriate legal instruments for international responses to these issues, the government representatives taking part in the negotiation of such instruments have been reminded by UNCED that,

“they should ensure an integrated approach to environment and development questions. They should also take into account appropriate measures at all levels to stem the degradation of the environment, protect human conditions and improve the quality of life.”¹⁰

Article 3 of United Nations General Assembly- Resolution 3129 provides that:

“In the exploitation of natural resources shared by two or more countries, each must cooperate on the basis of a system of information and prior consultation in order to achieve optimum use of such resources without causing damage to the legitimate interest of others.”¹¹

Finally, in 1997, the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses emphasized in its articles V and VII equitable, reasonable utilization and participation.¹² This will be discussed later in this chapter.

4.3. Rationale for a collaborated and co-ordinated approach to the management of the Lake Victoria water hyacinth.

Lake Victoria Environmental Management Project (LVEMP) has been endowed with the responsibility of dealing with most of the problems afflicting Lake Victoria. Due

⁹ Kiss, A. and Shelton D. Birth and Evolution of International Environmental Law, (1991), p.16.

¹⁰ Ibid.

¹¹ United Nations General Assembly Resolution 3129 (XXVIII) On Cooperation in the Field of the Environment concerning Natural Resources shared by two or more states. New York 13 December 1973.

¹² United Nation Convention on the Law of Non-Navigational Uses of International Watercourses 1997.

to the huge responsibility this entails, it cannot minimize the impact of various economic activities on the quality of the Lake. Success would require an effective collection, processing and distribution of information about the quality aspects of the lake by riparian countries. Additionally, the sustainable and integrated development of the lake cannot effectively be accomplished by national efforts alone, nor by LVEMP as a single initiative, but by close regional cooperation and other appropriate international measures.

Essentially, there is a need for the establishment of a permanent framework to sustain the efforts under LVEMP beyond the life of the project and implement measures emerging out of the project in order to regulate the degradation of the lake.

Given the fact that LVEMP has to deal with many issues including fisheries management and research, water hyacinth control, water quality and ecosystem management, industrial and municipal waste management, land use and management, it is doubtful whether LVEMP would single handedly deal with all of them adequately.

It is against this background that other key organizations like the Lake Victoria Fisheries Organization, Kagera Basin Organization, Technical Cooperation committee for the promotion of development and environmental protection of the Nile Basin and East African Cooperation among others should be actually be involved in the programmes aimed at conservation and protection of the resources of the lake basin. This would address the gaps in the activities of LVEMP and establish a joint

framework for the lake in the national interest of each government. Through the East African Co-operation (EAC), there should be improved opportunities and the political will to cooperate. Generally speaking, there are certain salient features that the East African Cooperation, the Lake Victoria Fisheries organization, the Kagera Basin Organization and the Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of Nile Basin entail. These features can be applied in the management of the water hyacinth problem.

The features that these institutions embrace are a clear indication that their experiences when applied would be useful in solving the problem of the water hyacinth in Lake Victoria and conflicts generated by it. To begin with, their visibility and given the level of inter-governmental commitment, the institutions typically embody the capacity to attract international support. By virtue of their incorporation of high level political authorities in their internal structure, the institutions are likely to muster support for their programmes, even if this may not translate into the required flow of financial resources from the concerned states. The institutions are also perceived as independent of their member states. Such independence, however is more apparent than real. This is because the institutions normally depend on contributions from member states to be able to function. The authority they exercise is also delegated by the member states and is ultimately subject to their sovereign interest. From the functional point of view, such institutions have the advantage of consolidating various sectors such as water, fisheries, and environmental management under one roof.

4.4. The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses

The evolution of the law to govern the Non-Navigational Uses of International Watercourses has been a slow process beginning about 1950.¹³ In 1970, the United Nations General Assembly (UNGA) recommended that the International Law Commission (ILC) “take up the study of the law of non-navigational uses of international watercourses with a view to its progressive development and codification.”¹⁴ As a direct response to this recommendation, the International Law Commission adopted a complete set of drafts on the law of the non-navigational uses of international watercourses.¹⁵ Notably the pioneering work on the progressive development and codification of rules has been carried out by the International Law Association¹⁶ and the Institute of International Law.¹⁷ In particular, the 1966 Helsinki Rules adopted by the International Law Association have made a major impact on the development of rules on international watercourse law.¹⁸ In drafting rules on this subject, the International Law Commission therefore was not navigating in a totally unexplored terrain. But they benefited much from the pioneering work of the two

¹³ Bourne, C. B., The International Law Commissions Draft Articles on Law of International Watercourses: Principles and Planned Measures, Colorado Journal of International Environmental Law and Policy, (Vol. 3 No. 1, 1992), p. 65.

¹⁴ General Assembly Resolution 2669, (XXV) “*United Nations 25th Session*.” Supplement No.28 Paragraph 1, UN Document A/8202 of 8th December 1970.

¹⁵ Idris D. and M. Sinjela, The Law of Non-Navigated Uses of International Watercourses the International Law Commissions Draft Article: An overview, Vol. 3. 1995.

¹⁶ See the Finnish Branch of International Law of International Water Resources, Manner and Veli-Martti Metsalampi ed, (1998).

¹⁷ For a computation of the reports of the Institutes (1979 to 1981), see Dante C., (ed) The Law of International Water Resources 269 (1980) FAO Legislative Study No. 23.

¹⁸ See International Law Association Report of the Fifty-Second Conference, Helsinki (1966), p. 484.

named bodies, and from the experience of a variety of water resources management organizations around the world.

4.4.1 Problems relating to the codification and progressive development of the rules on non-navigational uses of international watercourses

The problems relating to the codification and progressive development of the rules to be applied to all international watercourses stem from the nature of the resource itself. On the one hand, every state has sovereign rights over territorial water resources¹⁹ and on the other hand, a duty lies on every States not to interfere with or cause harm to the rights of other riparian states. In the light of the opposing principles, the question arises as to the extent to which a riparian state should give due consideration to the rights and interests of another watercourse state in using waters of an international watercourse found within its territory.

The critical challenge that the International Law Commission (ILC) had to deal with throughout its consideration of this issue was therefore, how to reconcile these two opposing issues, namely, “the relation between the natural phenomenon of interconnected physical unity of international watercourses and the social phenomenon of independent riparian sovereign rights over territorial water resources²⁰. The other problem relates to the great diversity of physical features of international watercourses. Since “no rivers or lakes are the same”²¹ it has particularly

¹⁹ According to one commentator “one of the reasons for the reluctance on the part of some riparian states to accept a broad scope of international watercourse law is for fear that general principles in a broad context might unduly interfere with established rights of permanent sovereignty over natural resources” Xue Hanqin, *Relativity in International Water Law Colorado Journal of International Environmental Policy* (Vol. 3 November 1992).

²⁰ Ibid. p. 46.

²¹ White G.F., ‘A Perspective of River Basin Development’, *Journal of Law and Contemporary*

been difficult to prescribe rules to be applied to every watercourse without the possibility of modifying them to suit the individual watercourses concerned, and to meet with the factual or prospective interests of the riparian states.

4.4.2. Overview of the Articles

The articles on the Non-navigational Uses of International Watercourses consists of thirty two articles which are divided into six parts or chapters. The question throughout the considerations of the issue by the Commission was whether it was possible to adopt a single instrument to be applied to all the international watercourses given their diversity and different characteristics and the various levels of development of each watercourse state. There was also the problem of political and security considerations and of the specific relations between the various watercourse states, not all of them being likely to agree to the adoption of a binding instrument without the possibility for derogation.

Such an instrument also risked being ratified by only a few states.²² In the light of these considerations, the Commission opted for the drafting of a “Framework Agreement Approach.”²³ A framework Agreement approach was intended to lay down principles on Non-Navigational Uses of International Watercourses, which were cast, in broad terms, to be applied to all international watercourses. At the same time, the agreement would provide the means by which the articles would be applied or modified to take into account the singular nature of an individual watercourse and the

Problems, Vol. 22, 1957, p. 160.

²² K. Idris and M. Sinjela The Law of the Non-Navigational Uses of International Watercourses, op cit. p.186.

²³ See Yearbook of the International Law Commission 1980, Vol II (Part Two) p.109, and p. 95-98.

varying needs of the states in whose territories part of the waters of that watercourse were situated.²⁴ The basic rules were to be complemented with distinct and more detailed agreements between watercourse states regarding a partner watercourse. The rules to be adopted were to be of a general and residual character, and were to be complemented by other agreements.²⁵

In addition, there was the question of the scope of the draft articles to be considered. The question proved quite controversial from the onset of the Commission's substantive consideration of the issue. Since the Commission could not agree on the scope at the beginning, in order not to delay the work, the Commission decided to proceed on the basis of a note it prepared in 1976. This note was termed, "A tentative understanding of what was meant by the term international watercourse system"²⁶ The Commission finally agreed on the scope of the draft articles in 1991. In 1994 it adopted the definition of the term "watercourse" as meaning

"a system of surface waters and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus"²⁷

The Commission also explained the meaning of various terms. This was important since in order for the components to form a common system, there had to be an

²⁴ Op.cit

²⁵ See Yearbook of the International Law Commission, op. cit. pp 99 – 100.

²⁶ The note as to the meaning of the term "international watercourse" read: A Watercourse system is formed of hydrographic components such as rivers, lakes, canals, glaciers and ground water constituting by virtue of their physical relationship a unitary whole, thus any use affecting waters in one part of the system may affect waters in another part.****

²⁷ See Report of the International Law Commission on the work of its Forty-Sixth Session, General Assembly Official Records. Forty-ninth Session. Supplement No. 10 (Document A/41//10), article 2 (Use of Arms), p. 199 (1994).

interconnection between them and they should normally flow into a common terminus.

4.4.3 General principles

The core provisions of the draft articles are found in part II entitled “ General Principles.” Of significant importance are articles 5 on equitable and reasonable utilization and participation, and article 7 on the obligation not to cause significant harm. These two articles define the relationship between, on the one hand, the right of a watercourse state to utilize international watercourse that passes through its territory and its right to equitable participation. Secondly they define its duty or obligation not to cause significant harm to the watercourse. The right of a watercourse state to utilize an international watercourse in an equitable and reasonable manner is well founded in customary international law²⁸. The practice of states in resolving disputes arising from uses of international watercourses shows that states have generally accepted the principle of every watercourse state’s right to utilize an international watercourse in an equitable and reasonable manner.²⁹

As for the obligation not to cause significant harm provided in article 7, watercourse states are called upon to exercise due diligence in their utilization of an international watercourse so as not to cause significant harm to other watercourse states. The commentary on article 7 explains that the obligation of due diligence “ is an obligation to conduct, not an obligation of result.” Thus

²⁸ After a survey of the practice of states, and the various authorities on this question, a former special Rapporteur on the topic, Stephen M. Schwebel concluded that “ the right of each state to share equitably in the uses of waters of an international watercourse system is indisputable and undisputed” See Yearbook of the International Law commission, op cit.

²⁹ See *ibid.* pp. 78-89 on a survey of authorities.

“a watercourse state whose use causes significant harm can be deemed to have breached its obligation to exercise due diligence only when it has intentionally or negligently caused the event which had to be prevented.” This also applies when it “has intentionally or negligently not prevented others in its territory from causing that event or has abstained from abating it.”³⁰

The issues pertaining to the utilization of international watercourses are extremely sensitive and can be a source of conflict between riparian states. This is particularly true in the wake of rapidly degrading fresh water resources and rising populations. Thus, the mechanism for consultation in the event of a use which results in significant harm to another watercourse state is a useful means towards the reduction of conflicts.³¹ In the event of failure to reach agreement, the parties are obliged to resort to peaceful settlement procedures provided in article 33 of the draft. In recognition of the complexities and sensitivities involved in the uses of international watercourses, the Commission has therefore attempted to provide a useful mechanism for ensuring that the parties concerned reach an agreement on the uses that are deemed equitable and reasonable, and where no such agreement is possible, to resort to peaceful settlement of the disagreement between them.³²

With regard to international watercourses, in support of the no harm rule, three judicial decisions are often cited: namely, the judgement of the International Court of

³⁰ See Report of the International Law Commission on the work of its Forty-Sixth Session, “*General Assembly Official Records, Forty-Ninth Session, Supplement.*” No. 10. (A/49/10) paragraph 8 p. 237. See also J.G. Lammers, *Pollution of International Watercourses* (London: Boston), p. 348.

³¹ Idris and M. Sinjola, *The Law of the Non-Navigational Uses of International Watercourses*, op. cit. p. 1990.

³² As noted by a previously Special Rapporteur on the Subject, “the... draft is likely to lead to satisfactory resolution of any conflict in uses because of its requirement that the state concerned enter into consultation and ultimately have recourse to the dispute resolution procedures”. See Stephen C. McCaffrey, “The International Law Commission Adopted Articles on International Watercourses,” *The American Journal of International Watercourses*

Justice in the *Corfu Channel Case* in which the court confirmed “every state’s obligation not to allow knowingly its territory to be used for acts contrary to rights of other states,³³ *The Trail Smelter Arbitration*³⁴ in which the tribunal stated that, under the principles of international law, “no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes or permit the use of its territory or another or the properties or persons therein....”³⁵ and finally the *Lake Lanoux Case*,³⁶ in which the tribunal stated that: “ France may use its rights; it may not disregard Spanish interests.” The tribunal went on to state that “ Spain may demand respect for its rights and considerations of its interests³⁷.” In addition to these authorities, the Commission cited a number of other authorities, including international agreements in support of this rule.³⁸

Another important principle in the equitable and reasonable utilization of international watercourses is the principle of cooperation contained in article 8 of the Convention. It is provided that states are obliged to cooperate in the uses of international watercourse in order to attain optimal utilization and adequate protection of the

³³ Law. Vol. 89, No.2 p.401 (1995).

See *UK vs. Albania*, 1949 I.C.J Reports, and p.4 at p.22.

³⁴ *US V. Canada*, Reports of International Arbitral Awards, Vol 3, 1905, (1938) (Initial Decisions), Vol. 3, 1938, (1941) (Final Decisions).

³⁵ *Ibid*, p. 1965.

³⁶ Translated Version see International Law Reports, Vol. 24. P.101.

³⁷ Reports of International Abitral Awards *Ibid*. p. 285. The tribunal also held “that the upper riparian state, under the rules of good faith, has an obligation to take into consideration the various interest concerned, to seek to give them every satisfaction compatible with the pursuit of its own interests and to show that it has, in this matter, a real desire to reconcile the interests of the other riparian with its own.

³⁸ Generally, *the Third Report on the law of the Non-Navigational Uses of International Watercourses*, by Stephen M. Schwebel, Special Rapporteur Document A/CN.4/348, In Yearbook of the International Law Commission, Vol.11 (Part One), pp. 75-85 (1982).

international watercourse concerned.³⁹ An aspect of the obligation to cooperate is the regular exchange of data and information. Article 9 obliges watercourse states to exchange readily available data and information.⁴⁰ The question of the relationship between uses of an international watercourse is dealt with in article 10.⁴¹ It is stated in general that no use of an international watercourse enjoys inherent priority. The watercourse states may, however, agree to accord priority to one use as against other uses. Part III of the Convention (articles 11 to 19) deals with Procedures for Planned Measures.⁴² The provisions relating to the protection and preservation of the ecosystem are contained in part IV (articles 20 to 26).⁴³ As noted in its commentary, the obligation to protect the ecosystem of international watercourses is derived from the requirements of article 5 which obliges watercourse states to use and develop an international watercourse in a manner consistent with adequate protection of the watercourse concerned.

The obligation to prevent and mitigate harmful conditions such as siltation, erosion and others is provided in Article 27.⁴⁴ Article 28 deals with emergency situations which “ cause or pose an imminent threat of causing serious harm to watercourse states or other states.”⁴⁵ The emergency situation may result from accidental spilling

³⁹ The Law of the Non-Navigational Uses of International Watercourses, *op cit.* p. 1991.

⁴⁰ See the UN Convention on the Law of Non-Navigational Uses of International Watercourses, May (1997) Article 9.

⁴¹ *Ibid.* Article 10.

⁴² *Ibid.* Articles 11-19.

⁴³ *Ibid.* Articles 20-26.

⁴⁴ *Ibid.* Articles 27.

⁴⁵ *Ibid.* Article 28.

of chemicals into an international watercourse. According to article 29 on installations in times of armed conflict, watercourse states are required to use their best efforts to maintain and protect installation, facilities and other works in times of armed conflict.⁴⁶

The provisions on indirect procedures contained in article 30 obliges watercourse states that for example may not enjoy diplomatic relations, to nevertheless fulfill their obligations of cooperation, including the exchange of data and information, notification, communication, consultation and negotiations through indirect procedures.⁴⁷ This could be done, for example, through another state or international organizations, or through armistice or Commissions chosen by the states concerned.⁴⁸

The provisions dealing with data and information vital to national defense and security are contained in article 31 of the 1997 convention on the law of non-navigational uses of international watercourses. It was generally agreed that a state should not be obliged to exchange information that it considered to be vital to its national defense and security. However, states are, by the operation of this rule, encouraged to cooperate in good faith and to provide as much information as possible under the circumstances.⁴⁹ The question of non-discrimination is dealt with in article

⁴⁶ Ibid. Article 29.

⁴⁷ Ibid. Article 30.

⁴⁸ Idris K. and Sinjola, The Law of the Non-Navigational Uses of International Watercourses, op. cit pp. 199-200.

⁴⁹ Ibid.

32.⁵⁰ The provisions on peaceful settlement of disputes arising out of uses of an international watercourse are contained in article 33.⁵¹ Annexed to the draft articles is a resolution adopted by the commission on transboundary groundwater.⁵²

As previously noted, the question of fresh water resources and apportionment of their use among various claimants is a daunting and challenging task.⁵³ This is due in part to the inherently conflicting uses of water by the watercourse states, the different levels of development of various users, the recent increase in the uses of water due to population explosion and industrial activities. The Convention therefore attempts to balance the various interests concerned in the uses of international watercourses, taking into account these factors.

The Convention is an excellent attempt at trying to reconcile all these conflicting interests. It has additional utility and advantage in that watercourse states would adapt its provisions to suit the requirements of individual international watercourses. The International Law Commission has also attempted to address various issues relating to the environment and places corresponding rights and obligations for each watercourse state in the uses of international watercourses. It is one convention that would offer useful values to the three East African countries if they adopt its provisions as a framework convention.

⁵⁰ Op. cit Article 32.

⁵¹ See Article 33.

⁵² The Commission was of the view that not enough was known at the present time about the nature and behaviour of the transboundary groundwater to enable the commission to formulate provisions for inclusion in the draft as a whole.

⁵³ The law of the Non-Navigational Uses of International Watercourses. op. cit. p. 202.

4.5 Kagera Basin Organization (KBO) -1977

Rusumo is a small Rwandese border town located on the Rwanda-Tanzania border, near the confluence of the two main tributaries of the Kagera River. The name Rusumo has now assumed a special significance in the lexicon of international development cooperation. This is mainly because it was at Rusumo that the Heads of State of Burundi, Rwanda and Tanzania signed the Agreement creating the Organization for the Management and Development of the Kagera River Basin (KBO) on the 24th August 1977. Hence the Agreement is often referred to as the "Rusumo Treaty."⁵⁴ The purpose of the agreement was to promote the development of contracting states through the management of the natural resources of the basin, particularly by regulation of the flow of the river to facilitate energy production and transfer of the water to agricultural lands. The parties expect that such an activity would also enhance the development aspects of industrialization and mining⁵⁵ especially the agro-based sector, transport and communication, mineral exploration, environmental management and tourism.

The development plans of Kagera tended to reflect the diversity of the developmental problems of the basin states. For example three out of four basin state, Burundi, Rwanda, Uganda are land-locked and non-oil producers. The recognition of the common development problems in the region induced the three basin states to initiate consultations and studies which led to the conclusion of the Agreement at Rusumo.

⁵⁴ Okidi, C.O. Development and the Environment in Kagera Basin Under the Rusumo Treaty (Institute of Development Studies, University of Nairobi, 1996) p.1.

⁵⁵ Ibid. p. 1.

River Kagera empties its load into Lake Victoria in Uganda territory, slightly to the north of Tanzania-Uganda border, while Lake Victoria has the Nile as its only drainage outlet. In all, River Kagera contributes about 25 percent of the annual discharge into Lake Victoria.⁵⁶ With these problems in mind the basin states decided to create the permanent institutional and legal framework for the management and development in the entire Kagera basin.

4.5.1. The KBO Agreement: its establishment and application

This agreement is called the Kagera Basin Organisation Agreement, and is between Burundi, Rwanda and Tanzania. Contrary to this expectation for wholeness, Uganda, occupying ten percent of the basin did not sign the Agreement in 1977. One would have expected Uganda as the lowest riparian state to have a special interest in the concerted, consumptive use of Kagera waters, especially for irrigation upstream. The reluctance of Uganda to participate actively in the preparatory phases in Kagera could be explained in terms of the political and social chaos in the country which started in 1971. President Nyerere of Tanzania made no secret of the fact that he did not want any dealings with the Government of Idi Amin.⁵⁷

An international drainage basin is a geographical area extending over two or more states determined by the watershed limits of the system of waters, including surface and underground water and flowing into a common terminus.⁵⁸

⁵⁶ Ibid. p. 4.

⁵⁷ Okidi, C.O., Development and the Environment in Kagera Basin under the Rusumo Treaty (1986) p.16.

⁵⁸ FAO, The Law of International Water Resources: International Law Association (Helsinki: 1966).

While an international watercourse “means a watercourse parts of which are situated in different states.⁵⁹” (The latter was adopted in the language of) the International Law Commission and the 1996 Convention because it was felt that the rules of Convention should apply to the entire “system” of surface and underground water constituting, by virtue of their physical relationship, a unitary whole and flowing into a common terminus.

The Kagera Basin constitutes a geographical unit offering a valuable base for cooperation among the riparian states. In article 3 of the Kagera Basin Organization treaty, the probability of extending the application of the treaties to areas beyond the catchment territories is recognized. This is the only way the commercial and social interests may be managed by close involvement of non-basin states. This would further develop and reinforce the existing co-operation between the four countries as expressed in the second preamble paragraph of the Agreement.⁶⁰ The Agreement applies to any activities that may be characterized as developmental. These include water and hydropower resource development, agricultural and livestock development, diseases and pest control, trade, tourism, fisheries and aquaculture development, and environment protection among others.

4.5.2 Principal organs and their functions

While the Kagera Basin Organization (KBO) Agreement makes no provision for the Heads of State and Government as the ultimate authority of the organization, the Heads of State and Government actually meet every year to deliberate on direct

⁵⁹ Okidi, C.O. Development and the environment in Kagera Basin under the Rusumo Treaty. op. cit. p.6.

⁶⁰ See the Rusumo Treaty (24 August 1977) 2nd paragraph of the Agreement’s preamble.

matters concerning the KBO policies. The two principal organs of the organization are the Commission for the Management and Development of the Kagera Basin, referred to as "the Commission" and the Secretariat, headed by the executive secretary. The Commission is composed of one representative from each of the contracting states. It meets three times a year in ordinary sessions. However, extraordinary sessions may be convened at any moment provided that the three representatives make the request. The venues of the meetings may rotate among the capitals of the member states. The representative of the host country who also holds the Chairmanship until the next ordinary sessions chairs each session of the Commission. The general functions of the Commission include determination of projects, their scope and priority for implementation within the framework of the Kagera Basin Organization, and the authority to solicit and negotiate for funds and technical assistance from bilateral and multilateral sources. The soliciting and negotiating for funds can be done directly or through efforts of the executive secretary. Further the Commission is responsible for budgetary control and management, and the authorization of assistance by the secretariat to the governments for the purpose of the implementation of projects which are entirely national.

Since the Secretariat actually prepares the reports and services the commission and its meetings, it is the secretariat, which is by implication responsible for functions to which the commission gives authority. The secretariat is the permanent bureau for the organization and is its executive organ. The Commission appoints the executive secretary. The appointed executive secretary to serve for four years in rotation among the states. Four directors in charge of their respective departments support the executive secretary. The departments include the department of finance and

administration. The director of the secretariat is responsible for personnel management, finance, general services, research and data collection, laboratory, documentation, publication and training; department of planning and project preparation which is responsible for conception, planning and preparation of all projects and programmes including technical design, environmental and ecological matters and finally, department of project implementation and management which is responsible for execution of projects, specification, procurement, operation and maintenance.

The Organization is required to establish regional offices of the secretariat in each member country. Through such offices, the secretariat is maintaining liaison functions with the contracting states to hasten communication between the organization and the member states.

4.5.3 Funding of the organization and its projects

The two broad categories of budgets which the KBO states need are administrative budget, required for the functioning of the secretariat and the other organs of the organization including regional offices, and the programmes on operational budget, required for the implementation of objectives of the organization. These funds are approved by the Commission and contributed by the member states in equal proportions.⁶¹ The payments are made half yearly in advance, and in convertible currency. Its evident that Kagera Basin Organization is one of the most recent efforts to plan and execute development in Africa through the mobilization of resources determined by the ecological unit of a basin. Through proper management it can be a

⁶¹ Ibid., p. 108.

very good example of an organization whose salient features and experiences can be applied in managing the water hyacinth.

4.6. Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE)

International arrangements for management of the River Nile are of growing interest and concern. Many opportunities exist for effective cooperation among basin countries that could provide mutual benefits. At the same time, growing population pressures, limited water resources, and water pollution pose the potential for significant difficulties within and among Nile Basin countries.

These circumstances are well recognized by Nile countries, and by the international community. With the assistance of international agencies, there is now an opportunity for basin countries to move forward with a much more comprehensive cooperative framework than has previously been achieved. The Nile Basin countries already have considerable experience in working together. An excellent example of prior cooperation involving several basin countries is the Hydromet Survey Project, which operated from 1967 to 1992, with international support during some periods from United Nations Development Programme through the World Meteorological Organization. Other examples, such as the Bilateral Utilization Agreement between Egypt and Sudan and bilateral arrangements for technical co-operation between Ethiopia, Sudan and Egypt, have had a lot of interests in the arrangements. This has been taken by basin states as advancing the goals of mutually beneficial co-operation in a substantive and more comprehensive way. It is in the light of this that the ministers responsible for the water affairs in Nile Basin countries met in Kampala on December 7-8 1992. They agreed that future cooperation on water resource matters

should be pursued, at least for a three-year period which could be extended if need arises. And this would be under the name "Technical Co-operation for the Promotion of the Development and Environmental Protection of the Nile Basin," (TECCONILE), which came into being on January 1, 1993.⁶²

4.6.1. Establishment and its present status

The Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of Nile Basin (TECCONILE) was established to succeed the former hydrometeorological survey of the catchment of Lakes Victoria, Kyoga and Mobutu Sese Seko (Hydromet Survey Project). The Hydromet Survey Project which was a cooperative venture between Burundi, Egypt, Kenya, Rwanda, Sudan, Tanzania, Uganda and Zaire, with Ethiopia as an observer operated from 1967 to 1992.⁶³ The contracting parties of Hydromet established a mechanism for cooperation through a technical committee. The Hydromet project technical committee was the only institutional arrangement consisting of representatives of all the governments of the Nile Basin countries. It had the objective of collecting and analysing hydrometeorological data of the catchment of Lakes Victoria, Kyoga and Albert in order to study water balance of the upper Nile. The cooperation through the Hydromet project officially came to an end in December 1992 due to lack of finances.

Consequently, the governments of the Nile Basin decided to continue their cooperation through the establishment of a cooperative institution with an expanded

⁶² The Nile River Basin Action Plan. "Technical Co-operation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin." May 1995 p. 1. It should be noted that the transitional period was expanded by three years to December 1998 at the Third Ministerial Meeting in Arusha, Tanzania in February 1995.

⁶³ Ibid. p. 21.

role to continue the work of the Hydromet project. Ministers from Egypt, Rwanda, Sudan, Tanzania, Uganda and Zaire signed an Agreement establishing TECCONILE. These countries formed the members while Kenya and Ethiopia participated in the activities of the project as observers.⁶⁴

4.6.2. Project objectives

The long term objectives were to assist countries participating in the development, conservation, and the use of the Nile Basin water resources in an integrated and sustainable manner, through basin wide cooperation for the benefit of all. It was also to assist the participating countries in determination of the equitable entitlement of each riparian country to the use of Nile water. The short-term objectives were to assist member states participating in developing national water master plans and their integration into the Nile basin development action plan. They also aim to assist participating member states in developing the infrastructural capacity building and techniques required for the management of the Nile basin water resources.

4.6.3. The structure and activities of TECCONILE

The structure of TECCONILE consists of Council of Ministers of Water Affairs of the Nile basin countries, a Technical Committee (TC) for the promotion of the development and environmental protection of the Nile basin, and a secretariat headed by a director. With the support of the Canadian International Development Cooperation Agency (CIDA), TECCONILE formulated a Nile River Basin Action Plan (NRBAP) which was approved by the Council of Ministers (COM) in Arusha, Tanzania in February 1995. The Action Plan aims at the promotion of a comprehensive, cooperative framework for water management in the whole of River

⁶⁴ Supplementary Report on Existing Water Law, Nile River Basin Cooperative Framework Project (D-3) March 1999. p.27.

Nile basin and includes 22 individual projects with an estimated cost about US \$100 million. These 22 individual projects have been divided into five main components. These include integral water resources planning and management, capacity building, training regional cooperation, and environmental protection and enhancement.

The action plan is based on the integrated development of the Nile basin water resources and their environmental protection in an institutionally, economically and technically sustainable fashion. The five activity areas include interdependent and complementary elements that bind the activities of the Action Plan. This ensures the effectiveness and sustainability of their outputs while at the same time building the capacity of the Nile countries in the main items, such as water resources management, environmental protection, and regional co-operation.

The Action Plan assumes that TECCONILE or a similar successor organization will act as the agent responsible for managing and coordinating all activities of the action plan. The suitability of TECCONILE as such an agent is based on various additional assumptions. Firstly that member countries and observers will agree on strengthening and increasing the scope of TECCONILE. Secondly, that countries which are not members of TECCONILE will join or will be active and cooperative. Thirdly, immediate efforts will be made to provide TECCONILE with support and enhance its capacity to implement this mandate in an effective and efficient manner.

Nile Basin riparian countries are also expected to strive to adopt and observe standards and procedures which will open lines of communication that can ultimately help to achieve the objective of an integrated system of international river basin

development, planning and management. TECCONILE has been operating as an evolving organization for twenty-five years, previously as Hydromet. The development of a regional Co-operation framework (project D3) is, amongst other important reasons, being implemented to emphasize strongly to observer countries that it should be in their interest to be full members of TECCONILE. Project D3 is aimed at studying in depth, the longer-term framework and institutional needs. Consequently, TECCONILE may continue to be in a state of evolution in the future, depending on the outcome of the studies to be carried out in Project D3. The shared vision programme comprises a limited range of essential, but effective activities to create a coordination mechanism and “an enabling environment” for the implementation of the shared vision through action on the ground.⁶⁵

The subsidiary Action programmes, plans and implementation action on the ground at the lowest appropriate level will take into account benefits and effects of planned activities on other countries.

4.6.4 The existing Agreements on shared water resource

Egypt and the Sudan signed an Agreement which ushered in a new era in the history of Nile Basin on November 1959.⁶⁶ This was an agreement for the full utilization of Nile waters. Anticipated projects for the use of Nile waters under the Agreement were to be backed by a system of technical co-operation between the two parties. Paragraph (I) of section (V) commits the parties to a common front in any negotiations with third party states. It states that

⁶⁵ Ibid. p. 28.

⁶⁶ Howell P.P. and Allan J.A., The Nile: Sharing a shared Resource: A Historical and Technical Review of Water Management and of Economic and Legal Issues, (1995) p. 20.

“in case any question connected with Nile waters needs negotiations with the government of any riparian territories outside Sudan and Egypt, they shall agree beforehand on a united view in accordance with investigations of the problem by the commission. The unified view shall then form the basis of instructions to be followed by the commission in negotiations with the governments concerned.⁶⁷”

At this time such an agreement should be considered for the three East African countries but operating autonomously so that the collapse of the community, being a political entity does not jeopardize the initiative. The Headquarters could be elsewhere (Mwanza, Kisumu or any other place) just as the headquarters of LVFO is in Jinja. It is worth noting that all the three East African countries are members of the Nile Basin initiative even though it operates outside the EAC. This could be very positive signal which can lead to the riparian countries of the two Basins forming initiatives which can be beneficial to all of them.

4.7. Lake Victoria Fisheries Organization (LVFO)

The three riparian states of Lake Victoria (Kenya, Uganda and Tanzania) recognized that they share a common interest in the well being of Lake Victoria and its living resources. The three states also share an interest in the management and sustainability of those living resources for the benefit of present and future generations. Consequently, the Lake Victoria Fisheries Organization (LVFO) was established by a Convention signed in Kisumu, Kenya by the contracting parties on 30 June 1994.⁶⁸ This recognition was based on the conviction of the contracting parties that joint action is essential, in order to develop uniform management measures to an

⁶⁷ Ibid. p. 21.

⁶⁸ Final Act of Conference of Plenipotentiaries on the establishment of lake Victoria Fisheries Organization Kisumu, Kenya, 30 June 1994.

appropriate extent. Whatever action is taken is to be implemented by national laws and regulations, and by developing adequate scientific bases for such measures.⁶⁹

4.7.1. Establishment, objectives, functions and responsibilities

The overall goal of Lake Victoria Fisheries Organization is to foster a common systematic resource management approach amongst the contracting states in matters regarding Lake Victoria, with the aim of restoring and maintaining the health of its ecosystem, and assuring sustainable development for the benefits of the present and future generations.⁷⁰ In summary, the main objectives of the Agreement as set out in Article II (2) are to foster cooperation among the contracting parties in matters regarding the lake, and further, to harmonize national measures for the sustainable utilization of the living resources of the lake. And finally, it aims to develop and adopt conservation and management measures to assure the lakes ecosystem health and sustainability of living resources⁷¹.

To achieve these objectives, the Organization's main functions and responsibilities include the promotion of the proper management and optimum utilization of the fisheries and other resources of the lake;⁷² conducting research concerning the waters of Lake Victoria including, without limitation, the quality of such waters. These

⁶⁹ Macha M. and P. Mwidunda, Draft Report on Review of Legal and Institutional Aspects of lake Victoria Environmental Management Programme September 1997, p. 35.

⁷⁰ Dribidu E.M. and E. Kasimbazi, Legal Aspects of lake Victoria Environmental Management that Require Further Elaboration National Environment Management Authority (1997) p. 68.

⁷¹ Final Act, op cit. Article 11 (2).

⁷² Final Act, op cit. Article II 3(a)

would be with respect to supporting the living resources of the lake and the nature, extent and pathways of its pollution and other forms of environmental degradation.⁷³

In all respect of any or all of the endeavours it would adopt budgets, seek funding, formulate plans for financial management and allocate funds to activities of the organization, or to such activities of the contracting parties as it may determine to further the purpose of the Convention.⁷⁴ It would further enhance the capacity building of existing institution, develop additional institutions, provide a forum for discussions, encourage, recommend and co-ordinate and as appropriate, undertake training and extension activities in all aspects of fisheries. The organization would also consider and advise on the effects of the direct or indirect introduction of non-indigenous aquatic animals or plants into the waters of Lake Victoria. LVFO would therefore serve as a clearing house and data bank for information on Lake Victoria fisheries and undertake such other functions as it may determine to be necessary or desirable in order to achieve the purpose of the Convention.

4.7.2. Present mandate, structure and status of Lake Victoria Fisheries Organization (LVFO)

The Lake Victoria Fisheries Organization (LVFO) largely plays an advisory, coordinating and liaison role. It has a complex four-tier structure consisting of a three-member Council of Fisheries Ministers, which provide political guidance. Its main function is to review reports and recommendations submitted to it by the Executive Committee concerning the situation of Lake Victoria fisheries and, on this

⁷³ Ibid., Article II 3 (d).

⁷⁴ Ibid. Article 3 (h).

basis, to determine the policy of the organization and approve its programme of work and its budget.⁷⁵

There is a six-member Executive Committee, which is in charge of the various departments and is responsible for fisheries management and fisheries research.⁷⁶ The two technical committees comprise the fisheries management committee and the scientific committee. Their main function is to advise the Executive Committee on matters within their areas of competence.⁷⁷

Finally, the permanent secretariat is headed by an Executive Secretary who is appointed by the Council of Ministers for a period of five years. The mandate of the Executive Secretary is renewed annually. The position is also subject to rotation among the three countries. The Executive Secretary is the chief executive and legal representative of the organization, and directs the work of the organization in accordance with the policy and decisions adopted by the Council of Ministers and under the guidance of the Executive Committees.⁷⁸

Apart from the four-tier complex structure, each contracting party is required to establish a national committee for Lake Victoria fisheries. This is headed by the Chief Executive Officer (Permanent Secretary) of the ministry responsible for fisheries

⁷⁵ Ibid., Article VI (a).

⁷⁶ Ibid Article III (c).

⁷⁷ Ibid., Article VIII (I).

⁷⁸ Ibid., Article IX (2).

management, or his authorized representative, to serve as a forum for consultation, coordination and information on activities concerning Lake Victoria.⁷⁹ Riparian states directly concerned with the living resources and the management of quality of the water resources of Lake Victoria may be granted observer status by the Council of Ministers. Observer states may participate, without the right to vote in meetings of all the statutory bodies of the organization.⁸⁰ Article XVII (I)⁸¹ states that the organization shall cooperate with other intergovernmental organizations, especially those active in the section of fisheries, which might contribute to the work and further the objectives of the organization. To this end, the Executive Secretary acting under the authority of the Executive Committee, may establish working relations with such organizations or institutions, and make such arrangements as may be necessary to ensure effective cooperation. Any formal agreement or memorandum of understanding proposed to be entered into with such organizations or institutions shall be subject to the approval of the Council of Ministers.

In cases of dispute concerning the interpretation or application of the Convention, which cannot be settled by negotiation, consultation or similar means, the disputes shall be submitted for arbitration at the request of any contracting party. The parties to the dispute shall appoint one arbitrator each. The two arbitrators so appointed should designate by mutual agreement the third arbitrator, who shall be president of the arbitration tribunal. If one of the parties to the dispute does not appoint an

⁷⁹ Ibid., Article X (I).

⁸⁰ Ibid., Article XI (I).

⁸¹ Ibid., Article XVIII (I).

arbitrator within two months of the appointment of the first arbitrator, the decision of the tribunal shall be final. This shall also apply in the case where if the president of the arbitral tribunal has not been appointed within two months.

4.7.3. Collaboration and partnerships

In the spirit of promoting regional co-operation towards the environmental health of the lake ecosystem, the organization has established linkages with several regional and international bodies that have an interest in the lake. The establishment of these linkages is one of the cornerstones in LVFO efforts to encourage participation by everyone in the management and conservation strategies of the resources of the lake and its basin. So far there are formalized partnerships with EAC Secretariat, FAO, United Nations University (Ontario, Canada), University of Zurich (Switzerland), UNEP and IUCN.

4.7.4 Funding

The Lake Victoria Fisheries Organization (LVFO) is an independent intergovernmental organization which has its own operating budget. The organization is funded in equal parts by member states. The organization may receive donor support. These may be donations and legacies from any suitable body, whether governmental or non-governmental, provided that the terms of their use are compatible with the objectives of the organization. The organization has benefited from a grant that was given by the Global Environmental Facility (GEF) through the World Bank. GEF has a mandate to solicit for funds for its programmes at home, in the region, and elsewhere through partnership and other linkages. The Food and Agriculture Organization (FAO) supported the initial establishment of the

organization. Uganda, the host country, is responsible for costs related to offices, houses for employees and for support staff costs.⁸²

4.8. The East Africa Cooperation (EAC)

4.8.1. Background

Kenya, Uganda and Tanzania have enjoyed close historical, commercial, industrial, cultural and other ties for many years. A provision was made by the East Africa High Commission Orders in Council 1947-1961, the East African Common Services Organizations Agreement 1961-1966 and the treaty for East African Co-operation 1967 for the establishment respectively, of the East African High Commission. The East African Commission Common Services Organization and the East African Community are successive joint organizations of the three countries. This was to control and administer certain matters of common interest such as commercial and industrial transactions between countries and by means of a central legislature to enact laws relevant to the purposes of the organization.⁸³

In 1977 the Treaty for East African Co-operation establishing the East African community was officially dissolved. The main reasons contributing to the collapse of the East African Community were lack of strong political will, lack of strong participation of the private sector and civil society in the co-operation activities, and the continued disproportionate sharing of the benefits of the community among the partner states. This was due to their differences in the levels of development and lack of adequate policies to address this situation upon the dissolution of the East African

⁸² EAC Secretariat Report, High Level Seminar on Lake Victoria, Arusha, Tanzania, 8-9 September 1998, p. 8.

⁸³ Permanent Tripartite Commission for East African Co-operation, Draft Treaty for the Establishment of the East African Community p. 1.

Community. Kenya, Uganda and Tanzania signed on the 14th May 1984, at Arusha, in Tanzania the East African Community Mediation Agreement for the Division of the Assets and Liabilities of the former East African community⁸⁴. The countries also agreed to explore and identify areas for future co-operation and to make arrangements for such a co-operation.

The new Commission was to be responsible for the co-ordination of economic, social, cultural, security and political issues among the three countries. The Heads of State of the three countries also made a declaration for closer East African Co-operation on 26th November 1994. This provision was made by the Protocol on the Establishment of a Secretariat of the Permanent Tripartite Commission for Co-operation between Kenya, Uganda and Tanzania, on the 29th of April 1997, in Arusha, Tanzania by the Heads of State of the three East African countries. This was after receiving the report on progress made by the Tripartite Commission, on the development of closer co-operation in fiscal, monetary, immigration, infrastructure and service fields. Additionally after approving the East African Co-operation Development Strategy for the period 1997-2000, the three governments directed the Tripartite Commission to embark on negotiations for upgrading the agreement establishing the tripartite commission into a treaty.

The three countries had the aim of realizing a fast and balanced regional development. Therefore, they resolved to create an enabling environment in order to attract investments and to allow the private sector and civil society to play a leading role in

⁸⁴ *Ibid.*, p. 1.

the socio-economic development activities. The activities were to involve the development of sound macro-economic and sectoral policies and their efficient management. They would also take cognizance of the developments in the world economy as contained in the World Trade Organization Agreement of 1994. With these in mind, the three East African countries are determined to strengthen their economic, social, cultural, political and other ties for fast, balanced and sustainable development of the East African Community with a common market.

4.8.2 Objectives of the Community

The Community is the principal organ of the partner states for the development of policies and programmes aimed at widening and deepening co-operation among the three East African countries in various fields such as political, economic social, cultural, defense, security, legal and external affairs, for their mutual benefit. Secondly, the partner states undertake to establish among themselves a common market, subsequently a monetary union, and ultimately a political federation will be established in order to strength and regulate the industrial, commercial, infrastrutural, cultural, social, political activities and to accelerate relations among the three countries. The Community will promote sustainable utilization of the natural resources of the partner states and take measures to effectively protect the natural environment of the three states.⁸⁵

4.8.3. The institutions of East African Co-operation

The institutions comprise the Summit, the Council, the Co-ordination Committee, Sectoral Committees, the East African Community Court, the East African Community Assembly and the Secretariat.

⁸⁵ Article 4 Paragraph I (c) Permanent Tripartite Commission of the East African Co-operation.

The summit consists of the Heads of the States of the three East African countries. Its main function is to give general directions and impetus to the development and achievement of the objectives of the community.⁸⁶ The Council of the Community consists of the ministers responsible for regional co-operation of each partner state⁸⁷. The Co-ordination Committee comprises the Permanent Secretaries responsible for regional co-operation of each partner state. Its main function is to submit from time to time, reports and recommendations to the Council either on its own initiative or upon the request of the Council on the implementation of the provisions of the treaty.⁸⁸ They are supposed to meet as often as necessary for the proper discharge of their functions. They get their directions from the Co-ordination Committee. Depending on the direction, they may be responsible for the preparation of a comprehensive implementation programme and setting out priorities with respect to their sectors.⁸⁹ They also monitor and keep under constant review, the implementation of the provisions of the treaty that affects their sectors.⁹⁰

The East African Community Court is established under Article 8 of the treaty. It is a judicial body which ensures adherence to the law, and application of the treaty. It may enjoy other jurisdiction conferred upon it by the Treaty. The judges of the court are appointed by the summit from among citizens of the three states. They should fulfill the conditions required for holding a high judicial office, or be jurists who are

⁸⁶ Article 10 (I) Permanent Tripartite Commission of the East African Co-operation.

⁸⁷ Article 12 (I).

⁸⁸ Article 15 (I).

⁸⁹ Article 17 (I).

⁹⁰ Article 17 (b).

competent and recognized. The main function of the court is to accept and adjudicate upon all matters which may be referred to it regarding the treaty.⁹¹ The East African Community Assembly comprises twenty-seven elected members and the Chairman of the Council, the Secretary General and the legal Counsel of the Community who shall be ex-officio members of the Assembly.⁹²

The chairman of the Assembly presides over and takes part in its proceedings in accordance with the rule of procedure of the Assembly.⁹³ The Assembly shall discuss all matters pertaining to the Community.⁹⁴ It shall also liaise with the legislature of the partner states on matters pertaining to the Community.⁹⁵

The Secretariat is the principal executive institution of the Community. It is intended to be an institution of high efficiency and technical competence. The Secretariat comprises, a Secretary General, who is the principle executive officer of the Community and head of the Secretariat,⁹⁶ and two deputy secretaries general of the Community.⁹⁷ There is also the Legal Counsel and an internal auditor of the co-

⁹¹ Article 22.

⁹² Article 44 (I).

⁹³ Article 44 (2).

⁹⁴ Article 45 (I).

⁹⁴ Article 45 (I).

⁹⁵ Article 45 (2).

⁹⁶ Article 63 2 (a)

⁹⁷ Ibid. 2 (b).

operation.⁹⁸ The Secretary General and the Deputy Secretary General are appointed by the summit on the recommendation of the Council and serves for terms of five years and four years respectively, and are eligible for reappointment.⁹⁹ The main functions of the Secretariat are as follows: to implement recommendations of the council, screen and forward the bills to the regional assembly; the strategic planning, management and monitoring of programmes for the development of the community, the undertaking either on its own initiative the collection of information, verification of matters relating to the community; co-ordination and harmonization of the policies and strategies relating to the development of the community, the submission of reports on the council among others.¹⁰⁰

Article 121 of the Treaty refers to the management of the environment. Here the three states undertake to cooperate in the management of the environment.¹⁰¹ They further undertake to develop a common environmental management policy that would sustain the eco-system of the partner states, prevent, assist and reverse the effects of environmental and industrial pollution, declining biodiversity, loss of genetic resources and land degradation.¹⁰² They also agree to take measures to control transboundary air, land and water pollution arising from developmental activities.¹⁰³ The three countries further agree to adopt common environmental control regulation,

⁹⁸ Ibid. 3.

⁹⁹ Ibid. 4.

¹⁰⁰ Article 64.

¹⁰¹ Article 121 (I).

¹⁰² Article 121 (I) a.

¹⁰³ Ibid. I (C).

incentives and standards.¹⁰⁴ Additionally they agree to adopt environmental standards for the control of atmospheric, industrial and water pollution arising from urban and industrial development activities.¹⁰⁵ They would also harmonize and adopt common policies and regulation for the management of shared natural resources¹⁰⁶ as they adopt community environmental management programmes.¹⁰⁷

Article 123 specifically refers to the management of natural resources. As concerns the management of natural resources, the Community undertakes to: harmonize processes to maintain water quality and aquatic ecosystems, cooperate in the actual utilization, protection, conservation and management of water resources and minimize pollution by undertaking prevention control measures.¹⁰⁸

According to ambassador Muthaura, the main objective of East African Co-operation is to maximize the use of Lake Victoria as resource for the benefit of the East Africa people.¹⁰⁹ Before the East African Corporation started incorporating the agenda of LVEMP in its activities, LVEMP had its own reporting mechanisms. But when they were brought to the agenda of EAC, it initiated a very important step towards the institutional and legal framework of Lake Victoria.¹¹⁰ This was done after the

¹⁰⁴ *Ibid.* 2 (a).

¹⁰⁵ *Ibid.* 2 (h).

¹⁰⁶ *Ibid.* 2 (j).

¹⁰⁷ *Ibid.* 2 (I).

¹⁰⁸ Article 123 2 (d).

¹⁰⁹ Ambassador Francis Muthaura, Executive Secretary, EAC (Personal communication), 30th June 1999, Arusha, Tanzania.

¹¹⁰ *Ibid.*

realization that there were many on-going activities in Lake Victoria that lacked proper co-ordination. EAC further felt that there was a need to take an overall study which would streamline these activities. The main aim was not to interfere with ongoing activities but to make them supportive of each other and to adopt the activities of LVEMP within the EAC framework.¹¹¹ Most institutions are usually very sensitive when protecting their own jurisdiction. EAC therefore tries to bring on board all the representatives as to whatever activities it is involving in. For example the co-ordinator of LVEMP and the Executive Secretary of the Lake Victoria Fisheries Organization are some of its advisors.

In 1999 the Permanent Secretaries of the three East African States in the department of water, environment and natural resources toured the Baltic countries like Sweden, to see how these countries co-operate in managing the Baltic seas which were once heavily polluted. One thing these representatives learnt from the Baltic countries was that the community involvement should be clarified depending on what activities can be done at regional and community levels. All the activities should be seen as bringing interaction so that the best results are achieved. Apart from the water hyacinth, the EAC is also trying to solve other problems related to it. This includes the management of the pollution hot spots, industries and catchment areas. In harmonizing these activities the EAC would ensure that they are operated within certain environmental management requirements. For example, the industries should not be left to use the cheapest ways of dumping their wastes into the rivers which are finally washed into the lake.

¹¹¹ Ibid.

As far as utilizing the lake for tourism is concerned, not much has been done. According to Ambassador Muthaura, what is lacking is proper management. He states that with proper rural regimes, such activities can be done by private agencies¹¹². The national administration and local authorities once they become efficient can play a major role towards this. Experiences of management should be shared between the three East African Countries. In case of any problem (s), the three countries should seek for more studies to be conducted. Lake Victoria cooperation should be seen in the broader context of the EAC and all activities taking place in East Africa should be done with intellectual backing and co-operation.

4.8.4 Finances and budget of the Community

The budget of the Community for each financial year is prepared by the Secretary General for consideration and approval by the Council. The Commission is funded from annual contributions from the member states in equal proportions. Other resources include grants, donations, funds for projects and programmes, technical assistance and income earned from activities undertaken by the Community.¹¹³ Despite the fact that the three countries contribute annually, certain activities like fisheries, port and municipal activities and management are self-financing.¹¹⁴ And finally, with respect to the headquarters of the community, Article 144 states that the headquarters of the community shall be in Arusha, Tanzania. The official language of

¹¹² Ibid.

¹¹³ Article 141:3 (a) and (b).

¹¹⁴ Ambassador Francis Muthaura, Executive Secretary, EAC (Personal communication), 30th June 1999, Arusha, Tanzania.

the community shall be English; the community shall also enjoy international legal personality.¹¹⁵

The idea of co-operation among the three East African countries in the form of an EAC is a welcome one. This is because EAC can play the role of consultation and confrontation even if LVEMP plays only the role of institutional duties at the same time is affiliated to EAC without being part of it.

This chapter has examined the salient features that each of the institutions possess and that could be used in supplementing LVEMP in its activities. The next chapter will evaluate the specific institutions and the extent to which their experience can be applied to the management of the water hyacinth problem.

¹¹⁵ Article 146.

CHAPTER FIVE

CRITICAL ANALYSIS OF THE ISSUES EMERGING FROM INTERNATIONAL ENVIRONMENTAL CONFLICTS GENERATED BY THE WATER HYACINTH PROBLEM.

5.1 Introduction

The purpose of this chapter is to analyse critically the emerging issues related to the Lake Victoria water hyacinth in order to draw lessons for effective management of the Lake and its resources. It is posited that the concerns of the water hyacinth should be brought more centrally into consideration for effective future planning and sustainable management of the Lake Victoria ecosystem. Essentially, the study set out to investigate both real and potential conflicts generated by the Lake Victoria water hyacinth, and their implications for the international environment conflict management including the regional and international relations of the East African countries.

It has been established that although the water hyacinth-generated conflicts are latent or covert and may only be evident in a given context, the problem must be tackled from a regional perspective. It is also evident that although a mechanism for managing the water-hyacinth problem and the conflicts generated by it exists (LVEMP), a wider consultative programme encompassing all the riparian countries of the Lake Victoria Basin is required.

It is thus discernible that successful and sustainable management of the water hyacinth problem will require alternative management approaches. Based on the issues established and joint action recommended, the scope of the proposed sub-basin

agreement on Lake Victoria should be primarily widened to cover collaborative measures of conservation and management of the three basins (to deal with degradation of water courses notably from pollution. It is therefore proposed that the East African countries should recognize and promote the need for establishing an inclusive broad based and permanent framework to sustain the Lake Victoria conservation and management efforts beyond the LVEMP'S life span and to implement measures emerging out of the project.

5.2. Critical analysis of conflicts generated by the water hyacinth

Conflicts, as already discussed in Chapter Two, are mainly caused due to unrealistic developmental policies and the water hyacinth control methods that impact negatively on the management of Lake Victoria including its riparian communities and living resources. The impacts of the policies and management approaches has been identified to have far reaching effects on the lower riparian countries of the Lake Victoria basin, thereby exacerbating conflicts in one way or the other. Because of this, the management of the water hyacinth has become central to the question of not only the international relations in East Africa, but also the survival of the riparian communities living around the Lake.

It should however be stressed that conflicts need not arise if local communities and non-governmental stakeholders were involved in decision-making and in the basin's development processes. In order to prevent and effectively manage any conflicts that may arise in the management of Lake Victoria basin and particularly the water hyacinth, new opportunities and inclusive institutions need to be created for local communities and various stakeholders in the evolving development and conflict management processes. It has been observed that in designing some of these

initiatives for managing the Lake Victoria ecosystem, local communities have not been involved in their planning, operations and management and yet, they are the most affected by some of the problems afflicting Lake Victoria including the environmental impacts of the interventions. Usually, the local communities have not been involved in their planning and have been left out for various reasons. Some may argue that they are not sufficiently organised, diversified or strong enough to challenge project developers. But it is also evident that local people impact most negatively on such projects, both in the short and long term. It is therefore important that they are given a voice especially in this era of increasing awareness and political liberalisation.

Secondly, the study has established in chapter two¹ that conflicts generated by the water hyacinth are manifested and expressed in terms of differences in the control and management strategies. These include conflicts between individuals and the state; conflicts between states themselves; those caused by ineffective co-operation and co-ordination on the management of water hyacinth; conflicts due to previous exclusive claims, and those arising as a result of variation in knowledge about the water hyacinth. Most of these conflicts occur because of the lack of shared vision among the three East African countries, as each has different aspirations exclusive of the others. This is expressed in terms of power disparity, seemingly incompatible interests and the lack of appropriate and/or uncoordinated institutional structures or social systems, through which conflicts (potential or ongoing) can be addressed. The

¹ See Chapter two for further discussions on this.

management of these conflicts is rooted in the recognition (or lack of it) of the stakeholder dynamic rights, interests of access, use, ownership, legal and sovereign identity. It is in this regard that it may be very difficult and delicate to prevent water-hyacinth generated conflicts as every intervention adopted contains some hidden conflicting aspects. For example each actor or group may find in it means of legitimisation of its interest in order to exclude other actors or groups. However, whatever option, method or approach is chosen to manage these conflicts, the most important thing to bear in mind is that the various identified manifestations and expressions of conflicts should lead to the identification of the most appropriate resolution strategies.² Thus a critical issue with respect to solving these water hyacinth-generated conflicts is that of the collective understanding of the meaning of participation. Generally, participation is assumed to be only about communities which have a shared vision for resource management, the capacity and the authority to implement resource management responsibilities.³ However, the concept of participation may present a problem to the different states, which have different interests and interest groups, priorities and understanding. Thus participation in the management of the water hyacinth might require much negotiation and re-negotiation between the different stakeholders.

According to Lewis "In resolving conflicts, the underlying interests that are really at stake should be addressed."⁴ Indeed, changing social, environmental, economic and

² Mathieu L. and B.A. Dabire, Conflict Management in Relation to National Resources: Perspective for FTTP West and Central Africa. (FTTP East and Southern Africa Workshop, Mombasa, April 11th – 17th 1999) p.7.

³ Kessy, B.S. Experiences in Conflict Management of Natural Resources in Tanzania (FTTP East and Southern Africa workshop, April 11th – 17th 1999, Mombasa, Kenya) p.12.

⁴ Lewis, C. Resolving Conflicts in Protected Areas. IUCN Draft 8/24/95, p.2.

political conditions in each of the East African countries have created new interests and demands on the lake.⁵ The heightened interest in Lake Victoria has thus in different ways increased constraints or obstacles on its sustainable management. As a result, there is a likelihood of more diverse, potential conflicts. Due to this fact strategies for conflict management must therefore be flexible and equally diverse.⁶ More importantly, conflict management must be based on the assessment of the conditions or settings within which conflicts are occurring to determine the underlying interests that are really at stake in order to develop appropriate approaches and achievable objectives⁷.

Invariably, identifying the sources of conflict in shared water resources allows for a better understanding of both the interests of the parties involved and the incentives that might lead to resolution of the dispute⁸. This also includes managing conflicts through appropriate policy making and larger political process. The management process must ensure that all parties in the conflict benefit from the changes it promotes, and that the resulting processes and choices extend beyond the settlement of the conflict. The process must be very cautious about the potentially negative changes from its activities such as accentuating power disparities.⁹

⁵ FTTP, Basic Document Natural Resource –Based Conflict Management 'Implication for Community Forestry' East and Southern Africa Workshop, April 11th -17th 1999, Mombasa, Kenya, p.6.

⁶ Pendzich, C., Thomas G. and Wohigenant, T., The Role of Alternative Conflict Management in Community Forestry. (1994) p.8.

⁷ Chandrasekharan, D., Proceedings of Electronic Conference Addressing Natural Resource Conflict through Community Forestry Jan-May 1996, p.16.

⁸ Ibid. p.6.

⁹ Ibid. p.7.

It is also important to note that the process of conflict resolution involves effective communication.¹⁰ It is in the light of this fact that it is now widely accepted that the management of natural resources requires the collaborative effort and action of all stakeholders.¹¹ If the LVEMP was to be effective, it must adopt a collaborative management approach emphasizing collective action and calling for the inclusion of organisational structures/mechanisms and patterns of behaviour.¹² These must however be based on an appreciation of the prevailing political economy of environmental conflicts.

It should also be noted that structural conflict is objective, and does not depend on the subjective perception of the parties.¹³ As Schmid observes:

“Conflict is conflict of interest. Interest is not seen as a matter of subjective definition but as determined by the social structure. In other words, conflict is incompatible interests built into the structure or the system where the conflict is located.”¹⁴

This view entails altering the conflict generating structure¹⁵ as the most effective way of managing and resolving conflicts.

Although the conflicts generated by the water hyacinth are largely latent and present rather different set of problems, structural aspects of the water hyacinth-generated conflicts need to be critically appraised. This should be done within the broader

¹⁰ Ibid. p. 20.

¹¹ Ibid. p.22.

¹² Ibid. p.23.

¹³ Webb K., Structural Violence and the Definition of Conflict, World Encyclopaedia of Peace, Vol. 2.(Oxford: Pergamon Press, 1986), pp. 431-434.

¹⁴ Schmid, H. Peace Research and Politics Journal of Peace Research. Vol. 5. (1968). pp. 217-23
¹⁵ Curle, A. Making Peace (1970) p. 34.

context of the political economy of East Africa, and the emerging conflicts. This can only be understood and addressed within the structures of both political and environmental governance of East Africa.

In conclusion, due to the various inter-linkages between the problems affecting Lake Victoria, it would be logical and reasonable to assume that conflicts generated by the water hyacinth will exist for sometime. The best that can probably be done is to mitigate these conflicts and to develop effective adaptation mechanisms, to effectively respond to the problem now and in the future. This is because eliminating the water hyacinth problem while doing nothing about the other problems facing the Lake will serve little purpose in reducing the other conflict-causing problems within the lake.

Secondly, the process of conflict resolution or at least its mitigation requires a deeper understanding of specific and broader processes of international environmental conflict management.¹⁶ It should be noted that all conflicts generated by the water hyacinth began as internal environmental conflicts, but have now become internationalized. Consequently, their management requires that the broader regional and international eco-conflict system be taken into account. Hence the stakeholders in the environmental conflict process need representation to include other parts of conflict system especially where the effects of the internationalised conflict are felt. In this way, it should be possible to have a solution that is not only legitimised

¹⁶ Odhiambo, M.O., Addressing Natural Resources Conflicts Through Community Forestry: The Case of Eastern Africa. (Paper presented for email conference, Jan-March 1996) p.11.

between the internal parties, but also accepted by the parties within the wider international framework of the conflict system.¹⁷

The management of the water hyacinth in Lake Victoria and the resultant conflicts can therefore be only effective and sustainable if the approach adopted encouraged a broader and integrated strategy. Such a strategy should encompass Lake Victoria, Kagera and the Nile Basins which cover ten states in different degrees. These states are Burundi, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda, the Democratic Republic of Congo and Eritrea.¹⁸ Secondly, if the three East African countries are truly committed to solving the water hyacinth problem, then the Kagera catchment area should also be included in the LVEMP portfolio. This is because River Kagera drains into Lake Victoria depositing silt into the lake. It is therefore imperative that a systemic approach is taken based on the acknowledgement of the interconnections of conflicts and actors.

5.3. Critical analysis of institutional and programmatic responses

Although several attempts have been made towards the management of the water hyacinth in Lake Victoria,¹⁹ the problem status seem not to be changing for the better. This is probably because of the lack of equal negotiating abilities between the stakeholders. There is also probably disparities in the exercise of power and representation. This situation has been not made any better by the lack of sensitization of all the uses of the lake about the ecological threats and socio-economic costs and

¹⁷ Abong'o, C. O., Kenya Case Study: The Enoosupukia and Forest Laid Conflict, April 12th - 16th 1999, Mombasa Kenya, p. 13.

¹⁸ Okidi C.O., Environmental Stress and Conflicts in Africa: Case studies of Drainage Basins: ECOPOLICY 6 (1994), p. 26.

¹⁹ Refer to Chapter 3 and 4 for more details.

benefits of the lake. This is further complicated by the absence of alternative, appropriate programmes to complement LVEMP in managing the water hyacinth problem.

In many ways, the infestation of Lake Victoria by the water hyacinth presents radically different meanings to different groups of people. This has given rise to different approaches to the management of the problem. While the problem deprives the communities of their livelihoods, products, services and life support systems, to the government bureaucrats, including LVEMP authorities, the problem represents a different picture²⁰ such as budgetary issues, utilization of donor funds, science and technology implementation of government policy and opportunities for promotion.²¹ This tends to highlight and widen the differences between the conflicting parties rather than emphasize their points of convergence.

5.3.1 Lake Victoria Environmental Management Project: an evaluation

Chapter Three discussed LVEMP as a regional institutional framework put in place to manage the water hyacinth problem and other problems affecting Lake Victoria. However, the study has established that LVEMP alone is not adequate to effectively manage the problem. In order to address the inadequacies identified, there is a need for a fundamental change of policy and attitudes of the government officials towards an inclusive and participatory approach involving various communities living around Lake Victoria to meaningfully take part in decision making on all matters affecting Lake Victoria's ecosystem.

²⁰ Oluka, L. and Akileng, Overview of the Natural Resources Conflict in Uganda, a paper presented at the regional conflict management workshop, April 1999, Mombasa Kenya, p. 7.

²¹ *Ibid.* p 8.

Secondly, the success of the project depends heavily on the political commitment of the involved actors within the three countries.²² After signing the Tripartite Agreement establishing LVEMP on August 1994, each individual government must follow up on the provisions of the Tripartite Agreement in order to ensure that every provision is implemented nationally and regionally.

Thirdly, there still exists an insufficient communication and information flow, which potentially may affect the success of the activities being carried out by LVEMP. Therefore, for LVEMP to succeed, the parties have to maintain an open and transparent approach towards each other. In theory, this might be possible, but in practice, it is very difficult since each country has its own national interests and regulatory systems for the management of natural resources, which have to be met. This makes the exchange of insights and information concerning the use and management of a shared resource such as Lake Victoria very difficult.

Fourthly, the internal conflicts of interests within and between the three governments might also interfere with the agencies implementing certain LVEMP activities. Because of strong competition for the scarce financial resources, it is highly unlikely that the conditions for success will be met automatically. Consequently, there is the likelihood that potential conflicts will still arise between the three governments despite the fact that LVEMP has been put in place as a mechanism for solving such problems. As already discussed in Chapter Two, one major issue that has laid the

²² Gerhart S., V.D., Dijk and Dico, Environmental Management Measures For Preventing Further Deterioration of African Fresh Water Bodies: The Case Of Lake Victoria Basin, (1996), p.10.

ground for conflict is the fact that three East African countries are already managing the water hyacinth problem individually using different approaches. Although LVEMP emphasises an integrated approach to management, it is still quite clear that the three countries are keen to take measures individually by controlling the weed at national levels.²³

It should however be emphasised that the successful management of the water hyacinth inevitably requires an appreciation of the fact that Lake Victoria is a single hydrological unit, and that the water hyacinth does not respect territorial boundaries.

The other complicating factor is the different funds disbursement criteria and procedures applied by the key donor agencies, namely, the World Bank and the Global Environmental Facility. Each country is given funds according to the environmental issue at stake. The use of these funds is co-ordinated by each government at a national level based on their internal disbursement policies and procedures. Due to the bureaucratic and sometimes non-transparent accountability systems that characterise the three countries' government processes, major delays and the opportunities for financial pilferage can greatly slow down the way a country implements LVEMP activities. Given the arrangements therefore, each of the three countries is likely to be at different stages in their levels of implementation. These disparities must be rectified promptly in order to avoid any conflicts that might arise.

Fifthly, LVEMP is a five-year project. Yet managing the water hyacinth problem is very complex since it also involves managing the other problems afflicting the lake

²³ EAC Secretariat Report Background paper on The Harmonization of Strategies and Measures

such as pollution. The problems include water quality and ecosystem management, industrial and municipal waste management, and land use and wetland management. While it may be the wish of the countries to eradicate the water hyacinth as fast as possible, this must go hand in hand with managing pollution in the lake, which calls for a complete clean up of all industries and factories situated along the lake and its tributaries. This definitely cannot be done effectively within five years. Ideally the LVEMP should run for at least ten to twenty years in order to put in place sustainable and well tested and integrated corrective measures. This will mean sensitising the people and involving the communities. At this stage involving communities will be very difficult because initially, the governments ignored them completely, they therefore need a lot of convincing to participate. According to an official of LVEMP²⁴, the environmental problems affecting Lake Victoria were identified correctly, but given the time frame of the project, it can be said that the project's objectives were too ambitious. There is therefore the need for a broader and strategic programme for the management of the lake based on a wider and participatory oriented approach.

The three countries have certainly set the stage and infrastructure for the control of the weed and general management of the lake ecosystem. However this requires strengthening the existing institutions and structures. Regular and on-going consultations on long term resource needs for the management of the Lake Victoria ecosystem will go a long way in ensuring the achievement of this requirement

Control of Water Hyacinth (1998), p.4.

²⁴ Chirchir, Operations Officer, Lake Victoria Environmental Management Project (LVEMP), April 14th 1999.(Personal Communication).

Institutions such as EAC could play a leading role in defining and developing the long term strategy in resource mobilization.²⁵

Sixthly, the different approaches and methods of controlling and managing the water hyacinth by different countries present critical challenges for effective and technically sound responses to the problem. Depending on which method is chosen by a given country, there are high chances of ineffectiveness and unsustainability of the nationally defined initiatives. To begin with, manual control is a very labor intensive and time-consuming exercise, which is only limited to the area that can be cleared. If the plants removed are not placed well above the flood line of the water body, there is a possibility of re-infestation. The manual method thus can only be used as a follow-up measure after another control method has been applied. Secondly, the mechanical method is capital intensive and requires skilled labour for repairs and maintenance. As already discussed in chapter three,²⁶ it is evident that funds under LVEMP do not provide for the purchase of heavy duty, aquatic weed harvesters. Individual countries therefore have to look for alternative sources of funds to finance such activities.

For developing countries like Kenya, Uganda and Tanzania, a long-term commitment for mechanical control would be too costly to be sustained. This amounts to the notion that such a method, while advocated by LVEMP, might not be realistically affordable for the three East African countries. This method is unsustainable in the long run without donor funding, and the likelihood that its use will be abandoned are very high if donors withdraw the funding.

²⁵ EAC Secretariat Report op cit., p.6.

²⁶ See Chapter three.

Thirdly, the biological control method is already being applied by each of the three East African countries. However, the general perception appears to be that it is a very slow method of control.²⁷ This has created a demand for faster action, despite the knowledge that biological control typically provides a gradual and sustained process of weed suppression over a period of several months or years. The scientific concern appears to be that the biological control as currently implemented, is unacceptably slow.²⁸ Accordingly, it is important to examine ways and means of improving its speed and effectiveness and to develop schemes that are suitable for conditions within the three East African countries. The biological control method alone therefore creates uncertainty.

Finally, as for the chemical method, in chapter two,²⁹ it is clear that many committees have been formed to carry out research on its use so far, no conclusive results have been achieved. This has also created uncertainty as decisions on the chemical method have been deferred waiting a comprehensive testing by three East African countries. There is therefore a need for the three East African countries to jointly undertake a critical and comprehensive appraisal of the different methods of control and management of the weed. This will help in building consensus on a common or combination of approaches, which would be applied uniformly, sustainably and cost effectively by each of the three countries.

²⁷ Ibid. pp. 12-13.

²⁸ Dribidu E. and E. Kasimbazi. Legal Aspects of Lake Victoria Management that Require Further Elaboration June 1997, p.67.

²⁹ See chapter 2

5.3.2. Integrated institutional responses to international environmental conflict management

The various institutional mechanisms for the management of the Lake Victoria water hyacinth other than LVEMP were discussed in chapter four.³⁰ The study established that institutions such as Kagera Basin Organization have not been very effective over the years. This is partly attributed to their cumbersome policy and decision-making processes, and to the cost of their regular functioning, let alone the kind of programmes they try to implement.³¹ These bodies are largely dependent on donor funding and this definitely affects their operations. Secondly, an institution like LVFO can prove quite costly to operate, in view of the requirements associated with a permanent secretariat facilities such as attracting and maintaining qualified managerial, technical and administrative staff, structural and other equipment, and securing an adequate flow of office supplies.

In view of the diminishing donor support and declining economic well being of many countries in the region, an increasing strain is put on the member states to support the institution. This generally limits the contributions to the agencies necessary to render them effective in their respective responsibilities.

Whereas each of the organization have respective weaknesses for sustainable management of transboundary watercourses and resources, they nonetheless require either broadening, integration or strengthening to be inclusive of all, if not, most of

³⁰ See chapter 4.

³¹ Dribidu E. and K. Kasimbazi, Legal Aspects of Lake Victoria Management Programme that require further elaboration. Op cit. p.67.

the countries in the Lake Victoria, Kagera and Nile basins. This however, calls for the total commitment of all the member states in the region to move towards greater integration and harmonization of their activities geared towards the management of the shared basins. If the states in the region were politically willing to forge an integrated approach, then each of the existing organizations (KBO, LVFO and TECCONILE) would be strengthened in their respective areas of comparative advantage, and LVEMP would remain a programme that would bring together all the stakeholders. In this sense, LVFO would continue with its advisory and coordination role over the management of the fisheries resources, KBO would continue with the management of the Kagera basin, whereas TECCONILE would concentrate on the development and management of the Nile basin. This would be very important in terms of the application of experiences in the management of the water hyacinth generated conflicts, since this requires greater precision, focus, predictability, unity of purpose and harmony. In this manner both the short and long term objectives would be addressed in a more holistic and systematic way with emphasis on the interdependence of countries in the management and equitable sharing of international watercourses and resources.³²

As was noted in Chapter Four,³³ Lake Victoria, the Nile and River Kagera basins are ecologically intertwined, and any examination and management strategy that ignores their ecological interdependence would be incomplete.³⁴ An institutional framework that recognizes the common interests and divergences of all the countries would

³² See the 1997 UN Convention on the Non-Navigational Uses of International Watercourses, p.5.

³³ See chapter 4.

³⁴ See "Lake Victoria Working Group" Background paper June 1998 pp. 1-4.

provide a sustainable platform for constant interaction among all the riparian states and interested parties.

As regards, the water hyacinth management, while there is sufficient appreciation of the effects of this deadly weed on the Lake Victoria ecosystem, it is surprising that little consensus has emerged among the lake riparian states on how to address the problem. The regional initiatives under LVEMP have not generated the required consensus to address the problem. In practice each of the riparian states tends to take its own approach without due attention to the efforts going on in other countries. If the mandate of an organisation such as TECCONILE which covers all the ten countries of the three basins, and political commitment on the part of the national governments was forth coming, then it would be possible to reduce the time span for consensus building towards a sustainable TECCONILE as the regional platform for addressing the international environmental conflicts that may characterise the management and development of the three basins. Such an institution can therefore ensure independent certification of whether any action is being undertaken to address the environmental conflicts in general. And it would also help to challenge the lack of political action towards realistic actions on the ground.

The institution that recognizes common interests and divergences of all the countries would further widen the scope of participation and the sharing of information relating to the management and development of the basins. In addition, such institutions would thus be able to bring together a broad range of stakeholders both within and outside the government to constantly deliberate on identified management and development problems pertinent to the basins. The ultimate aim would be to reduce

possible tensions and the spectre of conflicts emanating from access, distribution and control of water resources among the riparian states.

The major advantage with this approach would be the fact that it may require a lesser force and input on political will. This is because it incorporates the interests of all the stakeholders. It would be much easier since each stakeholder would not require much time investment to galvanise political support for its expansion and strengthening. Once the integrated management of environmental issues is perceived as primary, then projects such as LVEMP and the sectoral organisations such as LVFO and KBO can easily fit into the broader framework for sustainable development of the three basins.

5.3.3. East African Co-operation (EAC)

It was observed in Chapter Three that although there is no reference in the draft Treaty to the role of the Heads of State, Annex I part III of the draft Treaty states that: "Political will and co-operation at all levels are a prerequisite for the enhancement, promotion and realization of the EAC."³⁵

Political commitment is one very important condition which has to be fulfilled in order for the LVEMP to succeed. The implication of this is that the Heads of State are part of the structure of the Agreement. LVEMP is a mere project whose activities cannot forge ahead without the support of the Heads of the State. The fact that the Heads of State are part of the structure would either facilitate or undermine the pace at which decisions can be taken, by either substantially reducing or increasing the bureaucracy involved. Indeed, the Heads of State of the three countries meet regularly to give impetus to regional co-operation. This is a clear indication that if the EAC

³⁵ EAC Secretariat Report High level Seminar on the Lake Victoria Ecosystem 8th -9th September 1998, Arusha Tanzania, p.6.

Secretariat were to give priority to the management of the water hyacinth given the prevailing political commitment the implementation of management mechanisms would be faster and more effective.

Indeed the EAC Development Strategy 1997-2000 has identified the need to jointly exploit the Lake Victoria resources and to manage its environment under areas of common economic interest in conformity with international legal regimes³⁶. Presently, the activities of LVEMP are implemented at different levels, thus ignoring the fact that the LVEMP is a joint mechanism. What needs to be done therefore, is to incorporate LVEMP activities within the EAC mandate regarding Lake Victoria. Presently the ministers of transport of Kenya, Tanzania and Uganda have proposed formation of Lake Victoria Authority (LVA) to co-ordinate the use and management of Lake Victoria resources. This is a very significant recommendation because until now, it has not been clear what will happen once the first phase of LVEMP is over. If Lake Victoria Authority is formed, then it can continue with the activities of LVEMP. EAC has certain advantages which can be of great significance to the implementation of LVEMP activities and the management of the environmental conflicts generated by the water hyacinth. This include: high level representation by Heads of State, its permanent established secretariat with a framework of continuity of processes and existing political will from the various governments. It is one structure of co-operation which if maintained, can ensure the effective management of the water hyacinth whose management requires a longer time framework. Discussions towards the

³⁶ See the 1997 UN Convention on the Non-Navigational uses of International WaterCourses, Part I: Article 7.

signing of the Treaty were held in July 1999³⁷ in Arusha, Tanzania. It is hoped the Treaty will be ratified that by October 1999. This will mean that all the provisions will be binding on the three East African countries and thus impose an obligation to act upon them.

5.3.4 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (1997)

Chapter Four noted that the fundamental rules of international law concerning the non-navigational uses of international water courses contemplate an on-going process, whose constant aim is the maintenance of balance between the uses made and benefits realised by the states sharing a watercourse.³⁸ The rules include the obligation to utilise an international watercourse in an equitable and reasonable manner, and the obligation not to cause significant harm to another watercourse state among others. When the three East Africa countries have considered the control methods of water hyacinth so far, the use of chemicals has been a major source of controversy. This is because those who advocate strongly for its use have not appreciated the fact that it can contaminate the water and cause significant harm to the other riparian countries.

So far, the Law of Non-Navigational Uses of International Watercourses has not given rise to serious dispute.³⁹ The non-navigational uses of international watercourses have a reasonably developed pattern and rules, which⁴⁰ have stood the test of time and can provide guidelines and analogies for managing the water hyacinth generated conflicts.

³⁷ See for example, the Report on the Meeting of Representatives from the three East African countries towards the signing of the EAC Treaty, June 30th 1999.

³⁸ See the 1997 UN Convention on the Non Navigational Uses of International Water courses.

³⁹ See Bonaya G., Shared Water Resources (1981), p.12.

⁴⁰ Op cit. The 1997 UN convention on the Non-navigational uses of international watercourses.

The states are not however under any obligations to enforce the rules. The most significant point here is that although such rules can apply to measures of protection, preservation and management related to the uses of Lake Victoria, their effectiveness and applicability largely rely on the political will of the respective signatory states.

5.4. Analysis of the study hypotheses

The study produced the following evidence bearing on the three hypotheses.

Hypothesis 1: Effective management and control of the water hyacinth problem depends on the political and economic commitment of the three East Africa states.

That the study established the creation of LVEMP to tackle the problem of the Lake Victoria water hyacinth is a direct reflection of the three East African countries' political and economic commitment to address the problem. However, the study suggests that to a larger extent, the governments of the three countries need to do a lot more in the area of sustainability, as the larger part of the resources for LVEMP comes from the donors even though this is in the form of loans. Both the political and regular contribution to the fund will call for each government to give up its national interest to a certain extent. Often, governments tend to deal with problems affecting them nationally in order to have political, social and economic security, but the management of the water hyacinth calls for co-operation and maximisation of benefits at a regional level. This will allow for the establishment of effective regional co-operation. Any control method used to manage the water hyacinth problem in one country, therefore can easily have negative impacts on the waters of the other two countries as was argued in Chapter One.⁴¹ It is only through their political and economic commitment that the three states can be able to negotiate when such

⁴¹ See Chapter one.

situations arise. This means that they need to take into consideration their national interest at the same time of each other in order for any form of corporation to succeed.

Hypothesis 2: The degradation of Lake Victoria by the water hyacinth affects the livelihoods of communities living around the Lake thereby occasioning conflicts between communities and states.

The study established that the colonisation of the lake by the water hyacinth particularly affects the livelihood of people living around the lake. Apart from the water hyacinth problem, there are also other factors like pollution that affect the livelihoods of these people. It is a fact that if the lake is degraded through pollution and depletion, the economic productivity in the three countries will be affected. Thus all the effects of environmental problems on the lake contribute in a big way to the negative effects suffered by the people living around the lake. The main burdens identified were discussed in detail in Chapter One. It should also be emphasised that the water hyacinth does not only affect the livelihoods of people living around Lake Victoria, but it also increases financial and political demands on the three governments. For example, to mitigate the social and economic impacts of the water hyacinth, the three governments will have to spend large amounts of money in regulating the activities of industries and factories. These factories dump into the lake huge loads of effluence, provide nutrients, and enhance the multiplication of the water hyacinth.

Hypothesis 3: The environmental conflicts arising from the uncoordinated institutional and managerial arrangements of the Lake Victoria Water Hyacinth, can affect the diplomatic and regional relations of the three East African Countries.

It was established in chapter two⁴² that the water hyacinth related conflicts have the potential of leading to political confrontations and disputes. This, like all

⁴² See chapter two for more details.

environmental conflicts, may escalate and turn into violent conflicts. There was also substantial evidence to support the notion that the management of environmental conflicts arising from the management of the lake Victoria water hyacinth can enhance the diplomatic and regional relations of the three East African countries. This is because certain issues involving management are very sensitive and can only be ironed out if the three governments discuss among themselves ways and means of solving the problems facing the lake. This is perhaps the reason behind LVEMP as initially each government was dealing with the problem individually. It is therefore the three governments to work towards reducing the probability and consequences of water hyacinth related conflicts. The LVEMP has been established to manage the problems and conflicts affecting Lake Victoria, specifically the water hyacinth problem. This is a clear indication that the three governments have appreciated the need to work together in managing the water hyacinth problem. By establishing LVEMP, a major step has been taken towards enhancing regional relations.

Furthermore, by establishing institutional frameworks like LVEMP, representatives of the three governments develop acquaintances, which in turn enhance regional relations. This is because such regional institutions bring about an interpersonal network of people (experts, scholars, advisors, and researchers among others) from all the countries involved. These people are likely to meet in international conferences, negotiating sessions and fact-finding missions. They will serve on the same committees and have collectively developed competence in cross-cultural co-operation. There will also be exchanges among the personnel from different countries. Such exchanges are very likely to facilitate communication among the governments. In the new world order, there is an increasing international inter-

dependence based on transnationalism, which in turn leads to transnational bureaucratic relations. This means that there can never be any realistic national decisions which can be taken by any government without considering its international functioning within the modern societies today.⁴³

The water hyacinth is transboundary in nature. Initially, there were numerous calls upon the will and preparedness of the three governments to concretely address environmental problems affecting Lake Victoria. But they did not act promptly. However, the growing evidence of the negative impacts of the water hyacinth on each of them have very quickly changed their attitudes and the three governments are involving themselves with concrete regional and international actions towards managing the problem.

The study has revealed that the three governments in one way or the other are facing difficulties in handling national environmental issues through their own administrative systems, which are organised on a sectoral basis. Such problems can best be addressed if the governments are prepared to support the various environmental programmes. This means that the governments have to start regional, national and local level initiatives in order to co-ordinate activities. The three governments on many occasions have met and negotiated with the aim of addressing and hopefully solving the water hyacinth problem. This is another clear indication that their diplomatic and regional relations have been enhanced.

⁴³ Carrol, J. E., International Environmental Diplomacy (Cambridge: Cambridge University Press, 1990) pp. 123-124.

Evidently, all the existing institutional mechanisms and programmes for the management of the Lake Victoria have a major role to play in the management of the water hyacinth problem. However, there is a need for greater harmony in the efforts that are going on at different levels and layers within the three basins. The approach should be for these efforts to be broadened in scope for the greater participation of all the stakeholders in decision making and information sharing. In this way, they would all complement and fill the gaps within the existing LVEMP framework. There is a broad range of actors with interest in managing the greater Lake Victoria ecosystem and averting the possibility of conflict in the region. This is because they have an interest in accessing and controlling the lake's resources. It is therefore through these institutions that they would get the necessary space to negotiate and settle any disputes that might arise. It is hoped that this would bring sustainable development and peaceful international relations in the region.

CHAPTER SIX

CONCLUSIONS

6.1. Overview of the water hyacinth problem and mechanisms for managing it

The preceding chapters of this study have highlighted the problem of the Lake Victoria water hyacinth and its attendant conflicts. The study has also examined the institutional frameworks put in place to manage the water hyacinth problem. It has also highlighted the impact of water hyacinth problem and how these generate conflicts among the three East African countries. In highlighting the mechanisms put in place to manage the water hyacinth problem, the study points out the major gaps of LVEMP and suggests other possible management strategies.

A substantial portion of the study Chapters one and three¹ was devoted to the historical contexts in which the origins, nature and characteristics of water hyacinth were traced. This was done in order to bring out the nature and characteristics of the water hyacinth and explain substantially the difficulties faced in trying to manage it. The study argues that the water hyacinth does not respect territorial borders and that any control methods applied by one country can impact negatively on the others.

The overriding difficulty has been that of managing the water hyacinth problem and conflicts generated by it. This is because, initially, the three East African countries tried to manage the water hyacinth problem individually, each of them oblivious of the developments in other countries. So far, the different management mechanisms that

¹ See chapters One and Three.

have been applied by each country have not offered effective change. This is because each country's national interests shall still have to be realized.

The study has further demonstrated how the three East African countries instituted Lake Victoria Environmental Management Project (LVEMP). Its appropriateness in managing the water hyacinth problem was analyzed in Chapter three.² The analysis reveals that LVEMP is ill suited to the task especially with regard to long term perspectives. Its major shortcomings were identified and discussed. The study further examined the existing alternative mechanisms that could be used to manage the conflicts in Chapter four.³ The Kagera Basin Organization (KBO), The East African Cooperation (EAC), The Lake Victoria Fisheries Organization and Technical Cooperation Committee For The Promotion of The Development and Environmental Protection of the Nile Basin (TECCONILE) were identified as having salient features and characteristics that can be used to complement LVEMP's activities. The EAC was identified as being able to play a harmonizing role of all activities in lake Victoria in East Africa, while TECCONILE was identified as the most comprehensive organization embracing all the countries of the Nile Basin, with the characteristics necessary for the creation of a framework that would cater for all the interests of the riparian states.

The difficulties of managing the problems brought about by the water hyacinth weed and the conflicts generated by it are accentuated by the fact that solutions to the

² See chapter three.

³ See chapter four.

conflicts generated by the water hyacinth cannot be carried out in isolation. This is because Lake Victoria is a single hydrological unit and thus all the problem affecting it are inter-linked. Solutions should therefore be approached progressively from the local, national, regional and international levels.

6.2. Water hyacinth generated conflicts

This study highlights the potential environmental conflicts that might arise. Although these conflicts are still latent, they are likely to become manifest if the water hyacinth problem is not controlled in time. The potential environmental conflicts call attention to several alternative strategies that would be applied by the three East African countries to address them.⁴ However, the task of reaching an agreement to implement any of additional conflicts of interests must be resolved.

The prospects of managing the water hyacinth generated conflicts would be very bleak were it not for the several developments taking place among the three East African countries. These developments include the East African Co-operation and the establishment of various initiatives such as D-3 to strengthen the TECCONILE objectives. There is an increased interest of donors in the sustainable management of Lake Victoria's ecosystem. Furthermore, there are promising signs of a broad-based political and economic willingness by the three East African countries to manage the water hyacinth problem on a regional basis. LVEMP is one initiative that bears testimony to this. The severity of the impacts of the water hyacinth and conflicts generated by it, and the need to develop a joint approach to managing them is now recognized by the three governments. The Environmental conflicts generated by the

⁴ See chapter two, three and four for more details about these conflicts and institutional framework to manage them.

water hyacinth problem are therefore recognized to pose a special challenge not only to the three East African countries, but also to the of Kagera and Nile Basins. As a result, effective international action to ameliorate or manage these conflicts entails devising strategies that would take into consideration the interests of all parties involved. It should further be noted that the Lake Victoria water hyacinth and the conflicts generated by it are pervasive in nature. As already mentioned in Chapter one,⁵ the water hyacinth transcends territorial boundaries and affects the very basis of states and people alike. In a sense, the problem of the water hyacinth is multidimensional and must be addressed at various levels including local, national, regional and international. Such an approach requires moving beyond discussing issues pertaining to minimizing the impacts of water hyacinth at the national levels and regional levels. This would further move to the broad international frame work for preventing, controlling, managing and enforcing sustainable conservation decisions. The discussion at this stage should thus largely move towards the complete eradication of the water hyacinth in the region based on international laws and principals.

6.3. Major issues on the existing and alternative mechanisms for managing the Water Hyacinth problem and conflicts generated by it

One of the predominant concerns raised by this study is that LVEMP as a mechanism put in place to manage the water hyacinth problem is ill suited to effectively accomplish the task. The main reason for this is that managing the water hyacinth problem calls for continuous, international collaboration and yet, LVEMP is only a five-year project. What happens beyond the five years is not yet clear. Since LVEMP

⁵ See chapter one.

is already existing, what is needed now is to strengthen it and make it self-sustaining in order for it to accommodate the interests of all the parties concerned. In addition, LVEMP should be strengthened to be able to manage certain other factors such as pollution that enhance the growth of the water hyacinth. Direct control measures against the weed should also be applied at the source. The study has confirmed that nutrient availability due to pollution predominately determines the growth rate of the water hyacinth. Failure to address the pollution therefore is tantamount to fighting symptoms rather than addressing the real causes of the problem and hence fighting a losing battle. The management of Lake Victoria therefore is likely to get positive results if it embraces many other aspects like managing the water quality, biodiversity, and the wetlands around it.

On the financial question, LVEMP seems to depend too much on grants particularly from donor agencies. Their major source is the World Bank. With the rising size of bureaucracy over the years, this source may be seriously strained. Furthermore other commitments and changing priorities of the bank will be stretched. This infers that LVEMP may not do more than just keep the secretariat alive. It is therefore imperative that the three East African countries formulate alternative financial arrangements for major sustainable capital investments such as procuring their own harvesters. LVEMP has also correctly identified integrated approach as a crucial method in the Lake Victoria Management Programme. However this cannot be expected to be achieved through over reliance on foreign assistance. In order to ensure the sustainability of the programme, community based organizations (CBOs) and mechanisms should be identified and strengthened. This will ensure that they not only

participate in decision making, but also ensure that their livelihood systems are sustained. This holds the promise of being cost effective in the overall war against poverty in the lake region.

6.4. Co-operation and co-ordination at regional Level

So far, there has not been a significant success in the conservation of Lake Victoria. This is mainly attributed to uncoordinated sectoral approaches to environmental management of Lake Victoria, weaknesses in the legal and institutional framework, and the lack of incentives and enforcement mechanisms which are weak; among others. There is therefore a need to establish comprehensive legal and institutional mechanisms apart from LVEMP for the holistic and integrated management of Lake Victoria at national and sub-regional level. All the three countries individually have taken steps to establish such mechanisms. These national initiatives need to be supported and should run parallel to the sub-regional initiative. There is a need to establish a regional collaborative mechanisms and institutions for the holistic and integrated management of the lake and its related river basins. The mandate and function of such a sub-regional collaborative mechanism may include for example, exchange of data and information on the state of the environment of Lake Victoria, consultation on planned and on-going activities; protection and preservation of the lake's environment, including harmonization of water quality/waste, water management, environment impact assessment and regulation, planning and coordinated implementation of joint development activities such as hydroelectric power, transportation, regulation of lake water levels and water-hyacinth control, research, conflict prevention and dispute settlement, diversification of funding sources, and resource mobilization and consultation with non-riparian countries and

stakeholders. To ensure sustainable cooperation, this cooperative framework has to be acceptable to all the countries of the Victoria, Kagera and Nile Basins. Sustainable cooperative activities among all the basin countries can best be fostered and maintained when all the riparian states have reached comparable levels of technical and institutional capacity. This makes it essential that the riparian countries' planning capacity building and data collection, analysis, compilation and dissemination capacities be augmented and strengthened.

Finally, attention must be focussed on the development of projects that will enhance the economic and social welfare of the citizens within the three basins. Priority projects should be cooperative and joint efforts involving all the basin countries should be encouraged. In specific cases, it may not be necessary for all the riparian countries to reach agreements on projects within a sub-basin. In such cases, a sub basin agreement may be appropriate with only those countries affected including relevant up stream and downstream countries.

6.5. Task for further research

The preceding discussion suggests that a number of critical issues remain unresolved. The first task is a more extensive examination of the plausibility of the theory of community of interest. Some people would argue that the propensity of any of the three East African states to fully cooperate in managing the water hyacinth problem will vary depending on their national interests and how severely they are affected by the impacts of the water hyacinth.

It may be that the theory posited thus far is too demanding on the various states. This is because it requires complete respect for collective or community of interest in sustainably managing Lake Victoria's ecosystem. The implication here is that although the study advanced the community of interests approach, clearly national sovereign interests affect the way countries participate in the management of shared water resources. An important challenge is to weigh domestic, social, political and economic factors in the management process. The study has confirmed the fact that where a country is not keen on cooperation due to national interests, tensions are likely to arise. How tensions between external and internal constraints are resolved will therefore determine ultimately how the water hyacinth is finally managed.

6.6 Future direction.

The future directions that should be taken need to be addressed at three levels: short term, medium term, and long term. The short term should address areas needing immediate attention like updating the current scanty information and scattered information base on water hyacinth generated conflicts. At the regional level, the states would also have to establish a common collaborative platform which would design binding principles to be enjoyed at national level through regional policies, legislation and appropriate institutional arrangement. All sectoral legislation will need to be reviewed, updated and amended in order to harmonize them with national policies and international environmental concerns.

For all these objectives to be realized there should be both economic and political commitment from the three East African states. At the medium term level, institutions like the EAC should effectively harmonize the activities taking place in

the lake basin. In doing so measures should be taken to address the compelling objective of improving the living standards of the Lake Victoria basin habitants and therefore of riparian countries and citizens. They also need to be sensitized on the various impacts on the environment and how best they can be reduced. In this way, those living in the basin will have a better understanding and appreciation of the measures advocated in managing the lake including the water hyacinth problem which will definitely lead to their participation in the management of the ecosystem for sustainable development. It is at this level that dialogue should be initiated amongst specialists and practitioners of different cadres and disciplines. By doing this, community participation in research, policy formulation and implementation, monitoring and evaluation of adopted strategies would be enhanced. All the key actors of the Lake Victoria basin would also be brought together to strategically discuss various issues and problems concerning the conservation and sustainable management of the lake ecology.

In the long term, it is hoped that the basin-wide cooperation will be achieved if all the water resources developments are agreed on. It would therefore be advisable in the long term to have a international agreement to govern integrated management of the three basins. This agreement should be able to assure all countries that the management of the watercourses and conservation of Lake Victoria in any particular country would not result in conflicts with other countries of the basin.

Ultimately, there should be a systematic monitoring and exchange of information and standardization of methods for the management of all water flowing into and out of

Lake Victoria. This would be the only practical approach towards ensuring a sustainable future of the lake and river basins and their resource bases.

In conclusion the words of Tinbergen, the Dutch Nobel Laureate, echoes the potential of the problem to ignite conflict between the three countries,

“More understanding of the poor countries is needed. We should be quite clear about the situation in which our world finds itself. Sociologists have shown us, by careful investigation, that the poorer an area, the more likely it is that conflict will multiply. Moreover, for a man in such a poor area to become a soldier often is relatively attractive. Governments in trouble are often looking for adventurous manoeuvre to distract attention from the problem they face. Unfortunately, national or even tribal rivalries can be easily exploited for such purposes. This means that measures can easily lead to wars!”⁶

Invariably therefore, the East African countries and other riparian states of the three basins need to identify their overall goals as far as the management of the international watercourses and shared water resources are concerned. This would lead to the effective fight against national and regional level of poverty. Indeed, the best way of preventing and resolving both political and international environmental conflicts that affect the region is to redefine clearly the environmental governance system of the region. This would be done by adopting more inclusive participatory and integrated approaches. Whichever way one wants to look at all the conflicts in the three basins, what stands out is the fact that all of them derive their meaning from competition over the natural resources and from internal and external factors. It is against this background that the problem of the water hyacinth should be viewed as an important platform for defining a greater regional environmental agenda involving all the

EAC Report “*High level Seminar on the Lake Victoria Ecosystem*” 8-9 September 1998, Arusha, Tanzania, p. 207.

riparian and non-riparian stakeholders with the management of the three basins. This would lead to better regional and international diplomatic relations.

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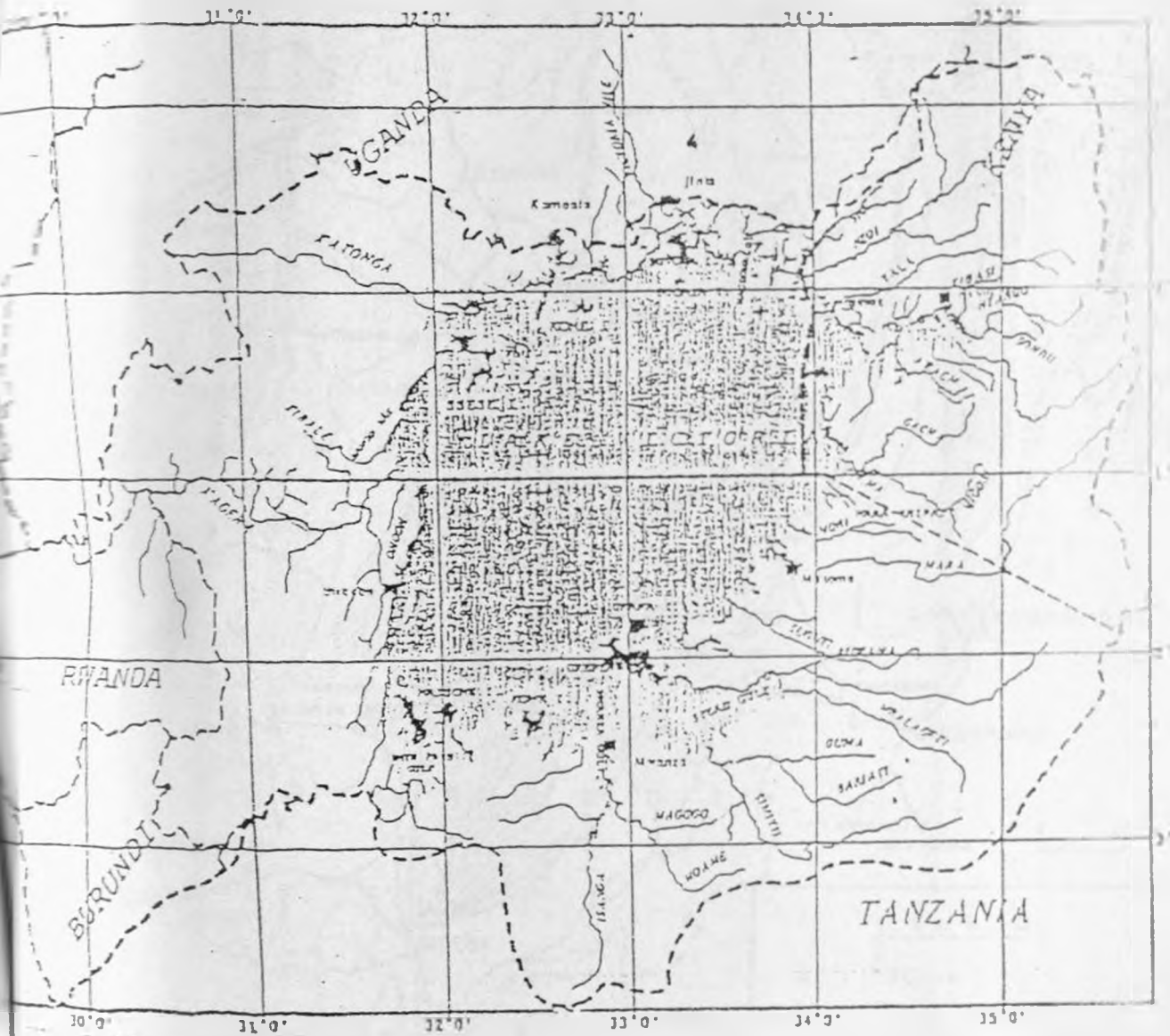
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ANNEX 1 LAKE VICTORIA BASIN.



- Major Urban Centres
- River
- Drainage Basin Boundary
- International Boundary

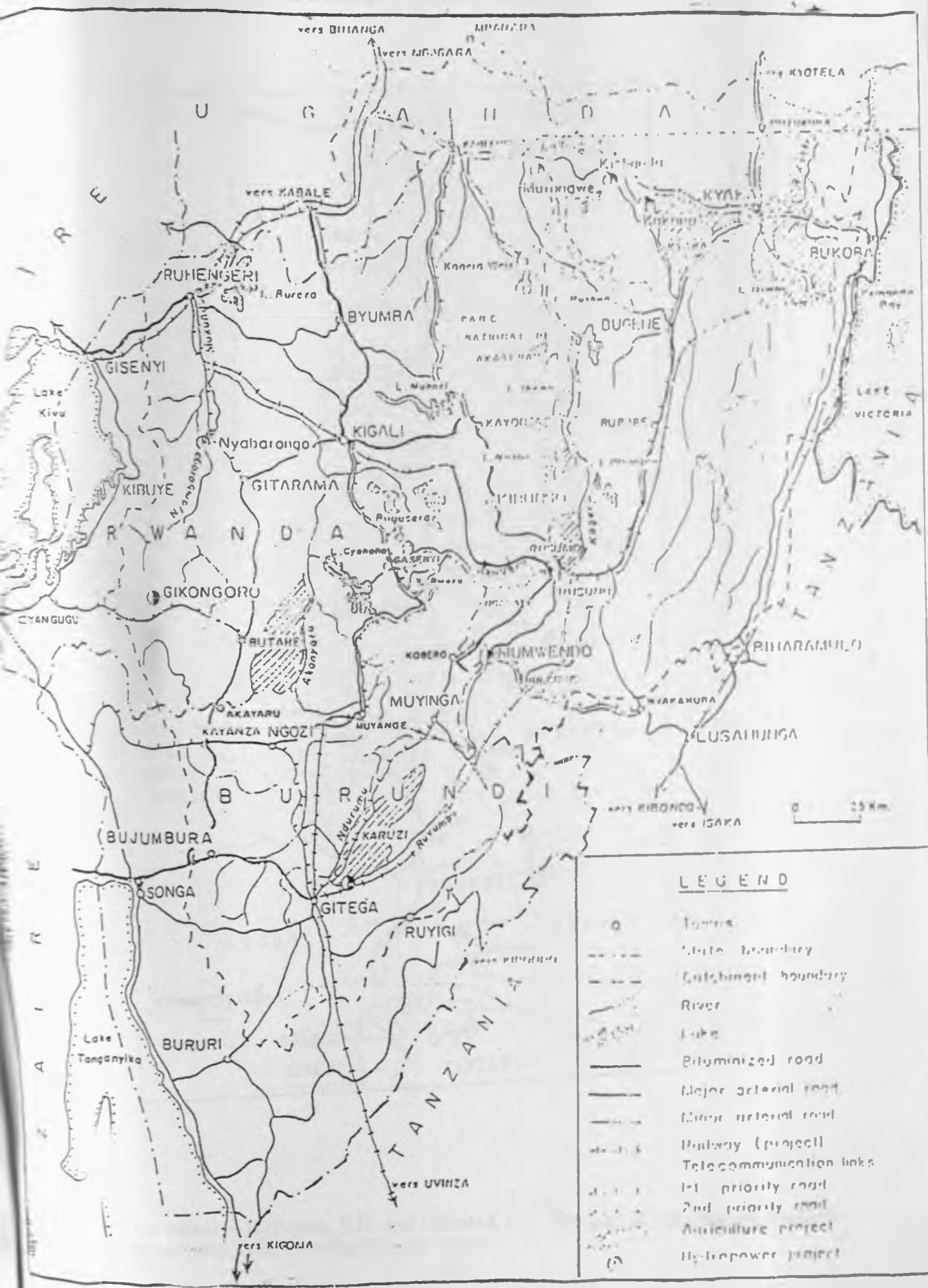
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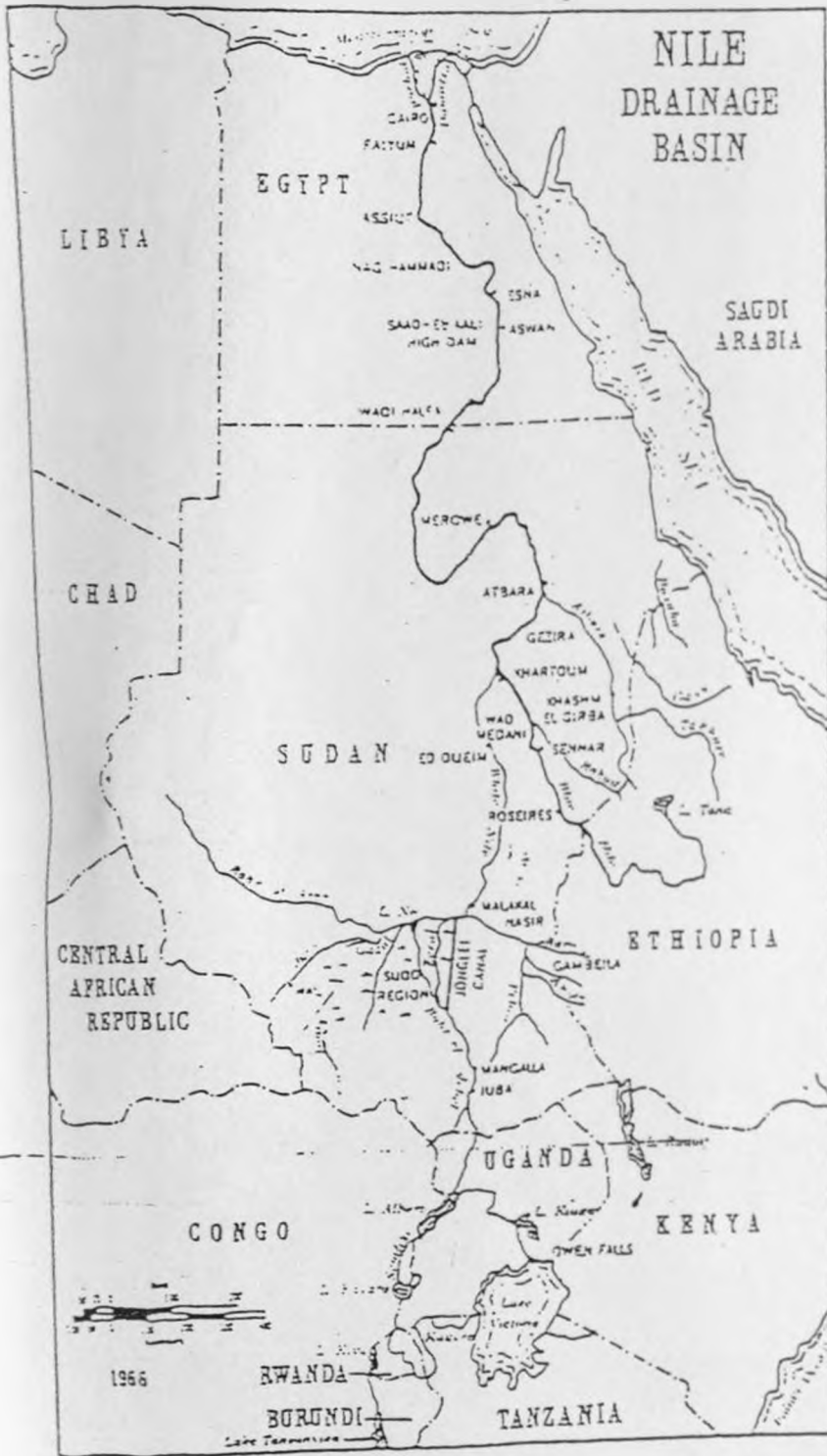
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ANNEX 3: RIVER NILE BASIN



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