

**ENVIRONMENTAL SCARCITY AND TRANS-BOUNDARY  
CONFLICTS: THE CASE OF LAKE VICTORIA, 1994 - 2011**

**BY**

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## DECLARATION

The research project is my original work and has not been presented for an award of a degree to any other University.

Signature\_\_\_\_\_

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The project has been submitted for examination with my approval as a University Supervisor

Signature-----

Date-----

**Dr. Ibrahim Farah**

## **DEDICATION**

This project is dedicated to my husband, Mr. Barrack Oyuga, for entirely standing by me, our daughters; Eisteen, Elzeever and Erleen and my late father, Mr. Gerald Omondi Ayugi for always believing in me.

## **ACKNOWLEDGEMENTS**

I wish to express my sincere gratitude to my supervisor, Dr Ibrahim Farah for his tireless effort, motivation, and advice without which this research would not have been successful.

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My gratitude further goes to my colleagues and class mates for being supportive and collaborative during various group discussions that we had together in the entire period of our study and the insights you gave me during this project. Your comments and pieces of advice were very instrumental to the completion of this project.

Finally I wish to pass my appreciation to the fishermen both from Kenya and Uganda, the government official based in Lake Vitoria and the NGOs who participated in this study as respondents and made it successful. This specifically goes to all the respondents who participated at various stages and for various reasons. Your contributions were very valuable and will go a long way in helping to find lasting solutions to the conflicts in Lake Victoria and in fostering peaceful coexistence between Kenya and Uganda at large. And above all, I am very grateful for God's guidance and provision of life throughout this programme. Your name will always shine in my life and my entire family.

## **ABSTRACT**

There has been an upsurge of conflicts between Kenya and Uganda over resources in Lake Victoria, more so due to water as a shared resource. This study therefore intended to establish the root causes of these conflicts, the nexus between the shared resources around the lake and environmental scarcity and the conflicts and the interventions that have been employed in finding a solution to these conflicts. The study was guided by Homer Dixon's theory of environmental scarcity in order to clearly demonstrate the relationship between environmental scarcity and trans-boundary conflicts. The study data was obtained from both primary and secondary sources. Primary data was collected using questionnaires while secondary data was obtained from e-library, ordinary libraries, dissertations and books. Simple random sampling technique was used in selecting the respondents from the fishermen on the fishing grounds and the government agents working around the lake who were treated as the key informants.

The findings show that, the major triggers of conflicts around Lake Victoria are mainly water as a shared resource, the controversy between Kenya and Uganda over Mbingo Island, environmental degradation of resources around the lake, lack of clear demarcation between Kenyan and Ugandan boundaries and failure to create institutions that can successfully manage the shared natural resources around the Lake. The shared resources posed a challenge because of competing local and national interests and limited mechanisms for cooperative action between the fishermen from Kenya and Uganda hence leading to perennial break out of conflicts around the lake.

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## **LIST OF ABBREVIATIONS**

AIDS	Acquired Immuno Deficiency Syndrome
CBOs	Community Based Organizations
EAC	East African Community
HIV	Human Immuno Virus
IFIs	International Fund Initiatives
LVEMP	Lake Victoria Environmental Management Project
LVFO	Lake Victoria Fisheries Organization
NBI	Nile Basin Initiatives
NGOs	Non-governmental Organizations
U.S	United States
UN	United Nations
UNEP	United Nations Environmental Programme

## CHAPTER ONE

### INTRODUCTION TO THE STUDY

#### 1.1 Background of the Study

Conflict being endemic in the society does not exclude the communities that live around Lake Victoria. Galtung posits conflict as having both symmetric and asymmetric attributes in a triangular model that encompasses contradiction, attitude and behavior at its vertices.

He asserts that in symmetric conflict, the contradiction is defined by parties, their interests and clash of interest while asymmetric conflict is defined by the parties, their relationship and the conflict of interests inherent in the way they interact with one another.<sup>1</sup> Conflict arises because of contradiction in actual or perceived goals which affect the emotive and cognitive elements that may be signified with cooperation or coercion and gestures signifying conciliation or hostility by the parties, their relationship and the conflict of interests.<sup>2</sup>

There has been an upsurge of conflict between Kenya and Uganda over resources in Lake Victoria as a result of shared resources among the three countries as riparian countries, i.e Kenyan, Uganda and Tanzania. Okidi define environment as the totality of

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<sup>1</sup> J. Galtung peace by peaceful means: Peace and conflict, Development and Civilization. Sage London 1996 pp 72

<sup>2</sup> Ibid, J. Galtung pp 72.

nature and natural resource as well as cultural heritage and the infrastructure essential for socio-economic activities.

Central to the notion of environment is nature, including the earth's geosphere, biosphere and associated processes although natural resources are components of nature which can be used for socio-economic activities by man and other species.<sup>3</sup> The intervention of human beings in the use of the available natural resources coupled with emission of effluents has resulted in interruption of environmental processes. This situation has led to severe environmental degradation, depletion or at worse extinction of some natural resources, with water being the greatest causality in form of environmental stress.<sup>4</sup>

Wess posits that, a natural resource is a renewable resource, if it is replaced by natural processes and if replenished with the passage of time.<sup>5</sup> This point may therefore, be used to qualify the water in Lake Victoria as a renewable resource by the virtue that it is surface water that is replenished by the numerous rivers that drain into the lake. This, by extension, can bring into focus the important issue of the water catchment areas that are important to Lake Victoria and that are found within Eastern Africa and water catchment areas around the lake.

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<sup>3</sup> Okidi C.O The Working Party Meeting Meeting at the Environmental Law Centre in Bonn convened by its secretariat to deliberate on a draft covenant on sustainable development, 14 -16 March 1991

<sup>4</sup> Ibid Okidi pp 2 1994

<sup>5</sup> Weiss P. "Renewable Resources, a report to the committee on natural resources"; (1962, National Academy of Science, National Research Council, Washington D.C USA).

Mwiturubani observes that the lake has been faced with unprecedented cases of degradation, development of riparian farming, urbanization, industrialization, over utilization of water for hydroelectric power generation and industrial use, both human and industrial waste disposal and diseases such as HIV/AIDS and malaria. These are likely to cause tensions between the countries that share Lake Victoria and ultimately lead to water- use conflicts.<sup>6</sup>

Steady growth of human population around the lake, reduction on the volume of water in the lake and the continued environmental degradation leading to pressure on water resources or water stress according to Falkenmark <sup>7</sup> calls for an evaluation on the leading causes and the best strategies to be employed in order to restore water resources.

Amery argues that water ignores political boundaries, evades institutional classifications and has a tendency to dodge legal generalizations. He further posits that “surface water supplies are increasingly getting contaminated while the delivery and treatment infrastructure are fast becoming outdated hence the need to consider water security. This will aid in avoiding water related conflicts in Lake Victoria.”<sup>8</sup>

Lakes whether natural or artificial are important for human development and preservation of sound eco-system and the bio-diversity of our planet, therefore any stress on the lake or its resources may lead to violent conflicts. The locals have given

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<sup>6</sup> D.A Mwiturubani & J. van Wyk *Climate Change and Natural Resource Conflicts in Africa* (Pretoria South Africa Institute for Security Studies 2010) pp 65

<sup>7</sup> M. Falkenmark, *Fresh waters as a factor in Strategic Policy and Action, in Global Resource and International Conflict: Environmental Factors in Strategic Policy and Action*, ed 4(A.H Westing, New York, OUP.1996) pp 85-113.

<sup>8</sup> H.A. Amery, “Water War in the Middle East: a Looming threat.” *Geogr. J* vol 168 no 4( 2002 )pp 313-323

preference to two major ways of economic sustainability: fishing and farming. This is due to the fact that, natural resource availability gives identity to the inhabitants who share proximity to the resource; tapping and making use of the available resource to the best of their ability.

It is the researcher's conviction that the underlying triggers of resource conflicts are wrapped in poverty, wrong policy choices made by states and the failure of institutional framework aimed at averting environmental stress and by proxy, environmental scarcity. Water being an important resource and equated to life globally, cannot be taken for granted. It is a renewable and finite resource and therefore, stands a higher chance of eliciting if not exacerbating conflicts between communities that share it.<sup>9</sup>

Upreti describes conflicts over resources as resource conflicts because of source disputes, water for irrigation, sharing of drinking water and uneven treatment of different water users by authorities that have interest in it.<sup>10</sup> However, the researcher argues that other natural resources conflicts are also important and should be considered on equal measures if communities have to resolve conflicting interests.

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<sup>9</sup> C.P Kumar, Fresh Water Resources: A Perspective. National Institute of Hydrology Roorkee 247667( Uttaranchal) India.( July 2003) – a draft paper presentation

<sup>10</sup> B.R. Upreti, *The Price of Neglect: From Resource Conflict to Maoist Insurgency in the Himalayan Kingdom* (Nepal: Bhrikuti Academic Publications, 2004) pp 6-7

## 1.2 Statement of the Research Problem

The communities that live around Lake Victoria from both Kenya and Uganda inhabited the lake as early as the beginning of 13<sup>th</sup> century.<sup>11</sup> This is because the lake is a habitat for several fish species. The two states share the nutritional, physical and the economic resources found around the lake i.e fish, the surrounding climate, the vegetation and the water, which they have been scrambling and fight for and over all through.

It is important to note however, that the states have not had large scale violence or conflicts, except frequents fights between a few groups or individual, negative attitudes toward each other, perceived stereotypes and deep seated grievances and grudges that sometimes break into verbal confrontations, all happening specifically around the lake. These forms of conflicts are referred to as structural violence according to Alwange and Ong'ang'a.<sup>12</sup>

Statistics shows that there has been a decline on the resources in and around the lake and more specifically, the fish stock has dwindled over the years, giving rise to the need to scrutinize the causal factors and their nexus with the perennial conflicts between communities that reside around the lake from the two countries. The changes that have taken place within Lake Victoria are numerous. The human population has increased as well as the industries, coupled with climate change, and the need for the communities residing there to be economically and nutritionally stable. These factors have placed a lot

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<sup>11</sup> J.L Alwange & O.O Ong'ang'a, Lake Victoria: ecology, resources, and environment.( Netherlands, Springer 2006) pp12

<sup>12</sup> Ibid J.L Alwange & O.O Ong'ang'a. Lake Victoria: Ecology,resources and environment.(Netherlands, Springer 2006) pp 14.

of pressure on Lake Victoria leading to unprecedented stress on the environmental resources around the lake.

From a general perspective, environmental stress has been found to cause conflicts rather than security between communities. This is due to its hidden aspect on the resources that are shared between communities. Because some of these resources such as water transcend the known boundaries, they have been shown to be a major cause of confrontations and counter accusations between neighboring communities if there is no mutual agreement on their use and management. This therefore leads to what Kumar defines as social conflicts.<sup>13</sup>

The interaction between Kenyan and Ugandan fishermen therefore cannot deviate from Kumar's definition of social conflict - a process of interaction between persons or groups with incompatible goals. They come from different countries with different policies and ideologies as well as believe. Their conflicts might not be violent but are hard to define because the incompatibility of their goals hinge on water as a shared resource and also an economic pillar between them.

Degradation of resources and management of water resources arising from the growing population, climate change and decentralization of the economies are factors considered in this research because they can escalate systemic conflicts if not rekindle

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<sup>13</sup> C.P Kumar, Fresh Water Resources: A Perspective. National Institute of Hydrology Roorkee 247667( Uttaranchal) India.( July 2003) – a draft paper presentation



already existing ones due to economic pressures on the fishermen. This paper therefore examined the conflicts between Kenyans and Ugandans around Lake Victoria and their relationship with the resources within and around the lake.

The focus was on the fishing grounds and particularly the fish stocks as shared natural resources. The purpose of exploring the conflicts verses resources around the lake was to establish the influence of environmental scarcity on trans-boundary conflicts. What is the influence of environmental scarcity on trans-boundary conflicts around Lake Victoria?

### **1.3 Objectives of the Study**

The overall objective of the study was to establish the relationship between the conflicts between the Kenyan and Ugandan fishermen and the natural resources around Lake Victoria. More specifically the study aimed to;-

- i. Identify the triggers of environmental conflict in and around Lake Victoria
- ii. Analyze the nexus between environmental conflicts and natural resources in and around Lake Victoria.
- iii. Examine the conflict mitigation measures employed in the management of the trans-boundary conflicts in and around Lake Victoria.

## **1.4 Literature Review**

The literature is instrumental in analyzing the case study through theoretical insights. The themes are environmental scarcity, trans-boundary conflicts, and Lake Victoria as shared resource. Literature on conflict over fishing grounds is instrumental to this research as it is helpful in exploring the theoretical linkage between conflicts over fishing grounds within Lake Victoria and the environment. The literature reviewed has geared towards identifying the linkage between environmental scarcity and resource conflicts between different countries.

### **1.4.1 Environmental Scarcity**

Environment by all means encompasses all that surround us. Libiszewski defines environmental conflict as a conflict caused by environmental scarcity of a resource, which implies that the conflicts results from human- made disturbance of the normal regeneration rate of a natural resource. Environmental scarcity can result from either overuse of renewable resources or overstrain of ecosystem to reduce its capacity to regenerate more so because of pollution. This can then destroy the space of living <sup>14</sup> which may lead to social conflict as a result of the need to survive by the inhabitants of the destroyed living space.

However, some scholars such as Conca are of the contrary opinion and argue that environmental constraints create incitements for cooperation between communities. For instance in the pluralities of environmental agreements that have been made in the past

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<sup>14</sup> S. Libiszewski, What is Environmental Conflict? A paper presented from center For Security Studies, ETH Zurich/ Swiss peace foundation 1995 pp 6

decades, both bilateral as well as globally, cooperation on environmental management has seen many countries come together to ensure effective utilization of shared resources.

His main argument is that there is a gap in the discussion regarding environmentally induced conflict and ecological insecurity. Therefore if environmental degradation can trigger violent conflicts then maybe, environmental cooperation can just be as effective in decreasing tensions, stabilizing, demilitarizing, broadening cooperation and promoting peace. His suggestion is that environmental cooperation can produce concrete and specific political opportunities to build more broadly peaceful international relations.<sup>15</sup>

It was believed that environmental factors would be responsible for future wars from as early as 1982 when Galtung found that ‘destruction of environment may lead to more wars over resources. He adds that environmental effects make a country to be more insecure because it is more vulnerable to attack and since it may wish to make up for the deficit.

The process of making up then extends the ecocycles abroad, diluting and hiding the pollution with the aim of getting access to the new resources.<sup>16</sup> The case of Lake Victoria may however not lead to an overt war but given the fact that there is a scramble

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<sup>15</sup>K. Conca, "Environmental Cooperation and International Peace" in *Environmental Conflict*, edited by Diehl, Paul F. – Gleditsch, Nils Petter (Westview Press: Boulder. 2001) pp 225-227

<sup>16</sup>J. Galtung, 1982, *Environment, Development and Military Activity: Towards Alternative Security Doctrines* (Oslo: Norwegian University Press) pp 99

for the islands within the Lake, there is need to identify the issues underlying the conflicts and find sustainable measures for arbitration.

Barnett argues that “environmental conflict considers that depletion and contamination of various resources as well as rapid population growth will induce violent conflict. He asserts that the national security can be undermined by environmental degradation.”<sup>17</sup> This, in my opinion might be the factor that is instigating conflicts within Lake Victoria between Kenya and Uganda but it might be over the islands. Opschoor emphasizes this point by positing that ecological stress and the consequences that emanate from the stress may exacerbate tensions within and between countries.<sup>18</sup> Such tensions may be present within Lake Victoria due to environmental degradation from the activities of human beings in their quest to satisfy their financial and nutritional needs to the detriment of the shared resource.

Lodgaard argues that the presence of environmental degradation or acute scarcity of vital resources may cause war.<sup>19</sup> In as much as this may be viewed as a pessimistic standpoint, researchers may use the findings to mitigate conflicts that might arise over environmental degradation or scarcity way before they break out. Holst asserts that environmental stress seems likely to become an increasing potent factor in major conflicts between nations due to environmental degradation which is viewed as a

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<sup>17</sup> J. Barnett, “Destabilizing the Environment-Conflict Thesis”, *Review of International Studies*, 26 (2000), pp. 271-88.

<sup>18</sup> J.B. Opschoor. *Ecological economics stresses the importance of evolution; Arguments for the conservation of natural resources* (International Institute for Applied Systems Analysis, A-2361 Laxenburg, Austria 1988) PP 137

<sup>19</sup> Lodgaard, Sverre, 1992. 'Environmental Security, World Order, and Environmental Conflict Resolution', in Nils Petter Gleditsch, ed., *Conversion and the Environment. Proceedings of a Seminar in Perm, Russia, 24-27 November 1991*. PRIO Report, no. 2, May (115-136). Pp 119

contribution to armed conflicts by exacerbating conflicts or bringing a new dimension to the conflicts.<sup>20</sup>

According to Mc Michael, the end results of unequal power relations and economic exploitation in the world will be tensions and struggle over life sustaining resources that include fossil fuels, freshwater, farming land and fish which have already become the epicenter of armed struggles.<sup>21</sup>

To Mc Michael, conflict over scarce resources, such as minerals, fish, water, and particularly territory, is a traditional source of armed struggle. Recently, wide ranging claims have been made to the effect that environmental degradation increases resource scarcity and therefore contribute to increase in armed conflict.<sup>22</sup> Lonergan on the scarcity issue quotes the Habitat Secretary General in a conference as having articulated that “the scarcity of water is replacing oil as a flashpoint for conflict between nations.”<sup>23</sup>

Renner et al argues that “throughout human history, but particularly since the system of sovereign nation, states struggle over access to and control over natural resources have been root causes of conflicts and nations were severely destabilized by

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<sup>20</sup>J.J. Holst, “Security and the Environment: A Preliminary Exploration.” *Bulletin of Peace Proposals* 20:2 (1989): PP 123

<sup>21</sup>J.A. mc Michael, ‘*Environmental Conflict and the Democratic Peace*’ (1993. Planetary Overload) pp 321..

<sup>22</sup> N. P. Gleditsch *Armed Conflict and The Environment: A Critique of the Literature International Peace Research Institute, Journal of Peace Research* Oslo (PRIO) & Norwegian University of Science and Technology, Trondheim ( May 1998) vol. 35 no. pp 3 381-400

<sup>23</sup> S.C. Lonergan, the habitat conference in 1996 in the book “*Water resources and conflict: examples from the Middle East.*” In: N-P. Gleditsch (ed.) *Environment and Conflict*, (Amsterdam: Kluwer 1997) pp 375

environmental collapse.<sup>24</sup> This is worsened by the state's need to possess and allocate the resources that may otherwise be deteriorating in quality and or quantity.

Diehl and Gleditsch suggest that in order for scholars to establish the theoretical and empirical connections between conflicts and environmental scarcity, it is important to assess the point at which environmental factors lead to conflict. This is because environmental degradation and scarcity may prompt groups or states to cooperate rather than fight over the diminished resources through trade, treaties and international organizations.<sup>25</sup> The idea of cooperation with the aim of solving a common problem can go a long way in finding solutions to the conflicts that exist between Kenya and Uganda over the Lake Victoria.

Val Percival and Homer-Dixon concurs by arguing that 'South Africa, during the later apartheid period and beyond had numerous violent conflicts emanating from scarcity of renewable resources because environmental scarcities and the outbreak of violent conflict is complex. Environmental scarcity emerges within a political, social, economic, and ecological context and interacts with many of these contextual factors to contribute to violence.<sup>26</sup> Homer-Dixon however, contradicts that scarcity should not be seen as a reason for conflict but proper management of the shared resources.<sup>27</sup> It is the researcher's conviction that if there is proper management of resources in and around

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<sup>24</sup> M. Renner, M. Pianta, and C. Franchi; International *Conflict* and *Environmental Degradation* in Raimo Väyrynen, *New directions in conflict theory: conflict resolution and conflict*. International Social Science Council (Sage Publication London 1991) pp 109

<sup>25</sup> L.P.F Diehl and N.P Gleditsch *Environmental Conflict* (2001 Westview Press Colorado USA) pp 4

<sup>26</sup> Val Percival and T. Homer-Dixon, *Environmental Scarcity and Violent Conflict; The Case of South Africa*. Peace and Conflict Studies Program, University of Toronto *Journal of Peace Research*, Vol. 35, No. 3, Special Issue on Environmental Conflict (May, 1998), pp. 279-298

<sup>27</sup> T. Homer-Dixon, *Environment, scarcity, and violence*. (Princeton University Press, New Jersey, U.K, 1999) pp 20-22

Lake Victoria, then conflicts between the fishing communities will subside by default or be wiped out completely.

#### **1.4.2 Trans-Boundary Conflicts**

Trans-boundary conflicts are conditions in which two or more countries have incompatible goals over a shared resource. These resources include but are not limited to water, forests, minerals, pasture, wild animals, and land. From Bertram's view, shared resources between communities pose a challenge because they have the capability of bringing cooperation or damaging relationships between such communities.<sup>28</sup>

Jarvis and Wolf define conflict between two states as a social situation in which a minimum of two parties strive to acquire at the same moment in time, an available set of resources in which there are disputes over territorial integrity of a state and the extent of government control.<sup>29</sup>

Giordano observes that trans-boundary resources have a characteristic of violating the borders on which sovereignty concepts have been traditionally based and possess some characteristics that make them vulnerable to conflict.<sup>30</sup> The causes of such conflicts could range from insecurity if the use of the resources benefits one consuming country while the degraded costs are shared by all the countries involved.

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<sup>28</sup>I. Bertram, "Global Environmental Politics" vol 2 No 3 *MIT press journals* (Aug 2002 ) pp 40-62

<sup>29</sup> T. Jarvis and A. Wolf *Managing water Negotiations and Conflicts in Concept and in Practice in Trans-boundary Water Management: Principles and Practice* edited by Anton Earle, Anders Jägerskog, Joakim Öjendal (2010 Earthscan, Washington D.C) pp 125

<sup>30</sup> M.F.Giordano, and Giordano M.A, "International Resource Conflict and Mitigation," *International Water Management Institute*, Colombo, Sri Lanka Vol 42 no 1 ( 2005) pp 47-65:56

Such states would struggle with one another because of the fear that other nation overuse the trans-boundary resource hence overexploitation and overcapitalization. This is also worsened by the complexity in formation of agreements especially in cases of trans-boundary Rivers such as the Nile and the Ganges in India which could be overwhelming one country at the expense of the others included in the agreement.<sup>31</sup>

According to Wijkman, the presence of some natural resources where no single nation has a generally recognized jurisdiction could have long been global commons, free of national or international regulations. The problem is coupled with the growing world population and improving technology. However, the absence of exclusive property rights and well-defined management rights is inevitably leading to economic inefficiency and to international contention.<sup>32</sup> This eventually leads to what Hardin's calls 'the tragedy of the commons' especially when there is depletion of resources such as that of fishing stock.<sup>33</sup>

On the other hand, cooperation on water use and management can act as a unifier rather than irritant even when countries are in war over other issues as Israeli and Jordan demonstrated by having talks on the common management of the river Jordan.<sup>34</sup> The conflict over who owns the islands of Migingo and Ugingo between Kenya and Uganda can also be solved through finding common grounds on the management and cooperation of the water and its resources. This is because it water is used to energize all sectors of

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<sup>31</sup> A.K. Biswas, Hashimoto, and T. *Asian International Waters: From Ganges-Brahmaputra to Mekong* (Oxford. OUP.1996)pp 40

<sup>32</sup> M. Wijkman., 'Managing the Global Commons' *International Organization*, Vol 36 No. 3 (Summer 1982) pp 511 – 512.

<sup>33</sup>G. Hardin , The Tragedy of the Commons ' *Science*, (13 December 1968) pp 3

<sup>34</sup>S.S, Kirmani." Water Peace and Conflict Management: The experience of the Indus and Mekong river Basins," *Water int* vol 15( Dec 4 1990,) pp 200-205



society such as food production, industrial technologies apart from the fact that it is a fugitive resource with unpredictable variation in volume over time and space in complex fashions.<sup>35</sup>

Allan adds that trans-boundary water requires equitable and reasonable utilization in order to avoid significant harm to other co-riparians.<sup>36</sup> The tragedy may arise when there is scramble for the fish and water more so invention of dubious means by parties to obtain more access compared to the competitor. This form of competition therefore results into structural scarcity as a consequence of unequal distribution of resources. This, according to Malthus is due to the rise in population growth and environmental degradation.<sup>37</sup> However, Homer-Dixon contracts that scarcity is not the issue but management while Sills posit that human beings can avoid conflict over resources through the reasoning capacity to cooperate.<sup>38</sup>

Matthew argues that states are often guilty poor managing of their natural resources. This is either by allowing exploitation by specific classes and foreign elite or forcefully controlling access to resources by military means or bureaucracy without taking the interest of the common people. He adds that increase of scarcity to an extent that the state cannot meet its basic needs worsens the situation.<sup>39</sup> This can however be challenged by the arguments that common problems inevitably result in cooperation

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<sup>35</sup> A. Jagerskog and D. Phillips, *Managing Trans-boundary Waters for Human Development* (2006 London Oxford)

<sup>36</sup> J.A Allan "Virtual water: A strategic resource. Global solutions to regional deficits of water Vol 369 (4) 1999), pp 545-546

<sup>37</sup> T. Malthus, *An essay on the principle of population*. (1970 New York; Penguin) pp 6-8

<sup>38</sup> D.L. Sills (ed) *International Encyclopaedia of the Social Sciences*, 16, (The Free Press. 1968) pp 463.

<sup>39</sup> J.T. Mathew, "Redefining Security", *Foreign Affairs* vol 68 no. 2( spring 1989) pp 162

between states of which Elkin emphasizes that proper use of a shared resource enriches both communities and threatens neither while its abuse damages both.<sup>40</sup>

It is therefore important to cooperate in the sharing of trans-boundary resources because water scarcity is the epitome of a common problem since it transcends national boundaries. Solomon on the other hand observes that common problems will not necessarily lead to global cooperation and that shared natural resources are likely to increase conflicts as the resources become scarce leading to increased competition.<sup>41</sup>

Water insecurity together with underdevelopment may lead to conflict due to lack of technological sophistication, unprofitable use of resource and lack of formal agreements for regulating water rights and its usage between and among the countries.<sup>42</sup> This however, may be addressed by creating property rights on water. Dellapenna identifies four principles for sustainable and ecologically sound water management including: equitable use, integrated environmental management, environmental precaution and sustainable development.<sup>43</sup> This implies that cooperative agreements can be arrived at through the parties sharing water and its resource.

Wolf asserts that the exponential growth of the population worldly and the threat of environmental change will likely affect the quality and the quantity of natural

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<sup>40</sup> P.A. Ekins, *New World Order: Grassroots Movements for Global Change*, (Routledge and Kegan Paul, London, 1993,) pp 16-23 in Nathan L, *Beyond Arms and Armed Forces: A New Approach to Security*, (South African Defence Review, 4 1992,) pp 15-17

<sup>41</sup> H.Solomon, *Towards the 21<sup>st</sup> Century: A New Global Security Agenda*. IDP Papers, 6 (Institute for Defence Policy, Halfway House, June 1996) pp 3

<sup>42</sup> A. Swain "Displacing the Conflict: Environmental Destruction in Bangladesh and Ethnic Conflict in India," *Journal of Peace Research*, Vol 33 No 2(1996,) pp 189-2004.

<sup>43</sup> J.W. Dellapenna, "The Customary International Law of Trans-boundary fresh waters." *International Journal of Global Environmental Issues* Vol 1 no.3( 2001) pp 264-305

resources. This therefore depends on how the states peacefully resolve conflicts over internationally distributed water resources, since water has been a cause for political tensions between the Arabs and Israeli; Indians and Bangladeshis; Americans and Mexicans among others.<sup>44</sup>

This however, faces a caveat-lack of an internationally accepted criterion for shared water resource allocation. The trans-boundary conflict over shared resources can be managed through the introduction of water related benefits. These benefits are the negotiation for the shared water conducted based on both the rights and the needs of the sharing communities with emphasis placed on needs because they are easy to quantify.<sup>45</sup>

Gleick argues that competing stakeholders' interest over a finite quantity of resources lead to unavoidable conflicts that vary from verbal confrontation to armed engagement.<sup>46</sup> On the other hand, Wolf adds that under certain circumstances the struggle over limited natural resources can lead to a series of arrangements beneficial for all involved parties which promotes collaboration and peace building.<sup>47</sup>

Gleick then concurs that there has been a decline in the amount of water available for use both domestically and economically giving rise to inadequate access to safe water; inadequate access to sanitation and demise of an average of seven and a half

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<sup>44</sup> A. T. Wolf "Criteria for Equitable Allocations: The Heart of International Water Conflict," *National Resource Forum* Vol 23 (1999) pp3-30

<sup>45</sup> Ibid Wolf, pp 14

<sup>46</sup> P.H. Gleick, 'Water and Conflict: Fresh water resources and International Security,' in *International Security* vol 18 no 1 ( 1993) pp 79-112

<sup>47</sup> A. Wolf, "Shared Waters: Conflict and cooperation," in *Annual Review of Environmental Resources*, (2007) vol 32 pp 251-265

million globally from water related diseases and inadequate sanitation.<sup>48</sup> With increasing frequency, conflicts over water resources may create unrest as water resources become scarcer due to growing water demand associated with increased human population and variability in global climate change.

The conflicts may take place between countries, sub-national governments within countries or between competing sectoral users or groups within countries. The situation is further complicated by the fact that a large portion of major freshwater basins in the world fall within the jurisdiction of more than one nation. For the lakes, the management of trans-boundary resources is a bit complicated since it involves surface water hence the issue of benefit sharing between and among countries. The idea of benefit sharing leads to cooperation and reduces doubts on relative deprivation and by extension, the basic human needs is satisfied.

Heathe et al argue that as global population continues to grow exponentially and with the environmental change threatening the quality and quantity of natural resources, the ability for nations to resolve the conflicts peacefully over internationally distributed water resources will increasingly be at the very heart of stable and secure international relations. Water has been a cause of political tensions between and among countries.<sup>49</sup> This could be a factor that is creating friction and tension between Kenya and Uganda –

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<sup>48</sup> P. Gleick, "Basic Water Requirements for Human Activities: Meeting Basic Needs." *Water int* vol 21 no 2 (1996) pp 83-92

<sup>49</sup> Heathe et., *Trans-boundary Fresh water Dispute Resolution Theory, Practice and annotated references*. (N.Y Oxford University Press 2000) pp 72

states that have enjoyed comfortable diplomatic relations which are now engaged in a bitter war of words over fishing grounds.

Just et al argue that trans-boundary water resources are often a cause of conflict among riparian entities. This increasing demand for water resources and deterioration of existing water sources underscore the need to resolve conflicts over the allocation of consumption and pollution rights among conflicting uses and users.<sup>50</sup> It is therefore important that proper measures are put in place to ensure that trans-boundary conflict over shared resources are prevented in all aspects of social, economic and environmental growth.

### **1.4.3 Shared Resources**

Duda explores that the issue of interlinked crises of land degradation, food security, ecosystem decline, the quality of water and the fact water proper utilization is the way of poverty reduction and sustainable development. These crises are worsened by increased fluctuations in climatic regimes.

He asserts that international conventions tackle these crises in a piecemeal, sectoral fashion and may not meet their objectives without greater attention to policy formulation, legal, and institutional reforms. These is done on the context of balancing competing uses of land and water resources within hydrologic units; adopting integrated

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<sup>50</sup> E. R. Just; Netanyahu Sinaia, "Conflict and cooperation on Trans-Boundary Water Resources" *Natural Resource Management and Policy*, Vol 11 (1998) pp 460.

approaches to management; and establishing effective governance institutions for adaptive management within trans-boundary basins.<sup>51</sup>

Hatton argues that rivers, lakes and coastal seas have been documented to be overexploited, sometimes undergoing phase shifts to less productive states. The problems of overexploitation of fisheries are as human as much as biological. Fisheries exemplify the 'tragedy of the commons' where anyone has access, with no rights of ownership. Weak regulatory and legislative controls have resulted in a race for exploitation with no provision for sustainability. In most countries in the region, fishery legislation is antiquated, inappropriate or weak, and surveillance and enforcement almost nonexistent.<sup>52</sup>

This however, can be managed if proper guidelines on fishing and the use of fisheries are put in place by both governments. Kenya and Uganda should show readiness to apply the rules on international law on shared waters. Fisheries are deemed to be complex arrangements of social and ecological systems. This is because they are uncertain, unpredictable, and cross scale in nature and therefore a need for strong policies over fishing rights to avoid conflict. This encourages the security of the community because of the necessity to access protection from threats and hunger and assure the communities' of their security legally, physically and socially.

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<sup>51</sup>A. Duda, "Integrated Management of Land and Water Resources Based on a Collective Approach to Fragmented International Convention." *Philosophical Transactions: Biological Sciences, Freshwater and Welfare Fragility: Syndromes, Vulnerabilities and Challenges* Vol. 358, No. 1440, (Dec. 29, 2003), pp. 2051

<sup>52</sup>J. Hatton, 2000. *East African Marine Eco-region, Policy, Legal and Institutional Framework Reconnaissance*. Dar es Salaam, WWF. 2000)

Neomalthusian et al feel that increase in population leads to conflict due to the decrease of non-renewable resources and this poses a great danger on the stability of the groups involved. This is leading to growing and increasingly, serious water scarcities in a number of countries and more so, a country that share resources that include water even though water is renewable.

Gleick argues that in the case where water is scarce, competition for limited supplies can lead nations to view access to water as a matter of national security', 'an increasingly salient element of interstate politics, including violent conflict'. This is more so for states that have put themselves at an advantage of having or enjoying hydro-hegemony at the expense of the rest of the countries with an example being Lake Victoria in which Tanzania claims hegemonic status.<sup>53</sup>

#### **1.4.4 Lake Victoria**

Ahmed et al argue that conflicts over resource use in fisheries have been escalating all over the world and particularly in Southeast Asia. They add that fisheries provide a resource system of much needed employment and protein for the population. Thus that increased fishing pressure and over-harvesting of fishery resources have resulted in tense competition for resource between small-scale and large-scale fishing operations and reduction of import viable fish population.<sup>54</sup> This in some instances has led to the use of unacceptable and otherwise destructive fishing methods.

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<sup>53</sup> H.P. Gleick, 'Water and Conflict: Fresh Water Resources and International Security', *International Security* vol 18 No 1 (1993): 79–112:79

<sup>54</sup>M. Ahmed et al "Management of Fishing Capacity and Resource Use Conflicts in Southeast Asia : A Policy Brief; *The World Fish Centre* (Malaysia 2006) PP 3

Odada *et al* argues that over the years, Lake Victoria has come under considerable pressure from a variety of interlinked human activities such as overfishing, growth and invasion of the deadly water hyacinth, eutrophication and industrial pollution. This is because the lake is shared among three countries that is; Kenya having approximately 6%; Uganda has about 43% while Tanzania boasts of 51% ownership of the lake. River Kagera – the principal affluent river runs through the countries of Rwanda and Burundi<sup>55</sup> has inevitably been the bone of contention among these three East African countries that share the lake.

Okedi argues that the case of Lake Victoria, has been worsened by the fact that the Lake supports a population of over 31 million with a depleted fish species from over 500 (most being cichlids) species to three species of Nile Perch (*Lates Niloticus*) Nile Tilapia (*Oreochromis niloticus*) and the Dagaa (*Rastreneobola argentea*) – to serve as a delicacy and a reliable source of economic empowerment to the locals.<sup>56</sup> The situation around the lake is further complicate due to the fact it is used by the three countries for domestic, transport and industrial use and is a source of the Mighty Nile which is a life line to ten riparian countries.

He further expounds that the threats to Lake Victoria has been the decline of fisheries as a result of disappearance of endemic fish species; decline in catch per unit of

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<sup>55</sup> E. Odada. et al., “ Mitigation of Environmental Problems in Lake Victoria, East Africa: Causal Chain and Policy Options Analyses “ *Ambio*, Vol 33, No.1/2 *Trans-boundary Issues over Shared Resources* ( Feb 2004) pp 13 – 23 accessed on 23/03/2011

<sup>56</sup> J.O. Okedi, *A Historical Perspective of the Challenges and Opportunities in Management of the Lake Victoria Fisheries: Lessons for the future*. (LVFO secretariat, Jinja Kampala.2005) pp 1



effort; reduction in size at first maturity of fish; fall in minimum mesh size for gill nets; eutrophication among others.<sup>57</sup> These threats, however, can be turned into strengths and opportunities for the benefit of all if the existing bodies embrace cooperation to cater for the biodiversity that exists in the Lake.

Awange observes that Lake Victoria's wetlands are habitats for various species of birds and insects as it acts as an ecotourism center in the greater East African region. The Lake Victoria Management Environmental Programme was founded in 1994 with the aim of checking and managing the challenges around the lake.<sup>58</sup>

Resource availability is frequently linked with historic and potential international conflict. Giordano argues that conventional wisdom holds that international resource conflict occurs in locations where growing resource demand and declining supplies are greatest. While relative scarcity is undoubtedly an element driving international resource dispute, a focus on supply and demand measures alone is insufficient to understand international conflict potential, because of the pervasive willingness of nations to construct regimes, structures, and frameworks - that is, institutions - for dispute mitigation.<sup>59</sup>

From Uitto and Duda view, commercial fishing in Lake Victoria is responsible for the dwindling fish population within the lake leading to conflict over the time

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<sup>57</sup> Ibid Okedi pp 4

<sup>58</sup> Awange et al., *Lake Victoria: Ecology, Resource Environment* Springer Nairobi (2006) pp2

<sup>59</sup> M. Giordano, Meredith A. Giordano, Aaron T. Wolf., "International Resource Conflict and Mitigation." *Journal of Peace Research*, Vol. 42, No. 1 (Jan., 2005), pp. 47-65Published

available for fishing and access to the equipment required to increase fishing productivity. The difference arises from the fact that commercial fishermen are full time professionals with subsistence fishing as a necessity to meet their basic needs. Therefore conflict arises when commercial fishermen take advantage of the time available to maximize their productivity at the expense of subsistence fishermen.<sup>60</sup>

There have been reports that conflict within the East African region over Lake Victoria may arise from lack of effective government coordination and law enforcement escalating between economic actors, sectors and levels of governments. A case in point is the fact fishing in the lake, increased competition among fishers and fish processing agents. This has given rise to conflict over national control of lake waters which has led to the formation of Lake Victoria Environmental Management Project (LVEMP ) and Lake Victoria Fisheries Organization (LVFO) with the aim of enhancing the governance from the early 1990's.

Verschuren *et al* posits that the lake that was initially large with many species of fish has had over 500 species of endemic cichlid fishes being extinct due to severe eutrophication.<sup>61</sup> These scholars also argue that the introduction of species such as the Nile Perch in the 1950's has contributed towards the dwindling population of fish in the lake since Nile Perch is a predator to the other fish. On the other hand, the lake faces environmental and biological challenges to that also affect fish productivity.

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<sup>60</sup> I.J Uitto and Duda A.M., "Management of Trans-boundary Water Resources : Lessons from International Cooperation for Conflict Prevention", vol 168 No 4 (Dec 2002) pp 365-378

<sup>61</sup> D. Verschuren., et al " History and Timing of Human Impact on Lake Victoria," East Africa Proceedings : *Biological Sciences*, Vol 269, No 1488 (Feb 7, 2002) pp 289

### **1.4.5 Research Gap**

The literature on environmental scarcity gives its definition from various scholars. It shows the different perspectives presented by scholars on the area and various sources of environmental scarcity. It further demonstrates the harmful effects of human activities on the environment as well as the benefits from extraction of resources for human consumption.

The literature on trans-boundary conflicts presents the concept of incompatibility of goals when two or more countries share resources. It gives examples of the resources that breed conflicts when shared by two or more countries for they lead to cooperation or conflicts if not managed properly. In this section conflict has been defined as a social situation in which a minimum of two parties, strive to acquire at the same moment in time, an available set of resources in which there are disputes are over territorial integrity of a state and the extent of government control.

The literature on shared resources explores on the issues of interlinked crises of land degradation, food security, ecosystem decline, the quality of water and the way water flow depletion stands in the way of poverty reduction and sustainable development. It further shows that these crises are worsened by increased fluctuations in climatic regimes. While literature on Lake Victoria argue that conflicts over resource uses in fisheries have been escalating all over the world and particularly in Southeast Asia and presents the situation as it is on the lake.

It shows that fisheries provide a resource system of much needed employment and protein for the populations which are heavily affected by the increased fishing pressure and over-harvesting of fishery resources. These have resulted in intense competition for resource between small-scale, large-scale fishing operations and reduction of importation of viable fish products. However none of the above scholars presented literature on the link between trans-boundary conflicts and water as a share resource. The current study therefore was premised on filling this gap. Its purpose was to establish the relationship between the perennial conflicts around Lake Victoria and water as a shared resource between Kenya and Uganda.

### **1.5 Justification of the Study**

This study was aimed at exploring the link between environmental scarcity and trans-boundary conflicts. The project aimed to identify the triggers of conflicts between Kenya and Uganda fishermen within Lake Victoria, the link with environmental scarcity and the measures that have been employed in resolving the conflicts.

The researcher noted that conflicts over fishing grounds between Kenya and Uganda have been growing with intensity and there is a serious need to identify the reasons for the perennial conflicts within the lake. There was need for the perception of water by these communities to be put into serious consideration; the question was; is water a commodity, a 'commons' for common pool resource; a basic right or a sacred resource? It was the researcher's intention to highlight the importance of obtaining theoretical linkage of environmental scarcity and conflict over shared resources.

Conflicts between Kenya and Uganda over Migingo and Ugingo Islands almost threatened the cordial relationship that has existed between the two countries with the politicians taking it a notch higher by using the issue to gain publicity. Kenya and Uganda both lay claim to Migingo and Ugingo islands. With this study, it was my hope that policy makers would put more effort towards resolving the standoff on the ownership of the two islands with sobriety and seriousness that it deserves.

The study was based in the years from 1994 to 2010 because it marked the beginning of the adoption of the proposed regional shared vision of providing equitable opportunities and benefits through LVEMP. The year 2010 marked the climax of the war of words on who owns the islands between the two countries. In that case conflict managers would be able to apply the correct strategies in resolving the conflicts and pursuing available diplomatic resolutions measures.

The issue of boundary and how the fishermen are supposed to identify the boundary need to be addressed in order to avoid unnecessary trespasses. Shared resources such as the Lake Victoria have been a challenge on how to share resources equitably to avoid conflicts. Therefore there is need to put mechanisms in place to popularize the shared benefit of the resource since the economies of the two countries and their foreign policies are influenced by the relationship that they share. What are the environmental triggers of conflicts within Lake Victoria and why is that they persisted over the years?

Finally, this project aims to assist academicians and future researchers to add on to their references on trans-boundary conflicts and the pacific ways of managing these conflicts, more so those resulting from environmental stress over trans-boundary resources. The policy makers can come up with cooperative policies aimed at win-win situation with every state in mind. There is need to emphasize on the importance of conserving the resources for the benefit of all and manage the concerns on the disparity that exists not only on availability but on distribution and conservation of natural resources.

## **1.6 Theoretical Framework**

Lake Victoria is a lifeline to the fishermen of Kenya, Tanzania and Uganda as protein supplement and for economic stability and sustainability. Economically, states have to manage the conflict over fishing grounds within the lake since it affects the foreign policies of these countries.

Homer-Dixon argues that environmental stress act together with social, political, economic, military, ethnic and cultural factors to lead to conflict but that management could be the major problem. Environmental scarcity is rarely the sole and direct cause of violent conflict except in the case of shared river waters, rather environmental struggles influence conflict indirectly through secondary, political, social and economic sources.<sup>62</sup>

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<sup>62</sup> T.F Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from cases." *International Security*, Vol 19 No 1 (1994) pp 5 - 40

Conflict over shared resource can also be prevented if the resources are adequately shared without considering demographic growth and environmental degradation. These two conditions lead to resources scarcity that is induced by demand and leads to what Collier and Hoeffler term as greed and grievance of human beings driven by feelings of ethnic or political marginalization.<sup>63</sup> This however, does not limit the chances of conflict arising over resources. The changes that may cause trans-boundary conflict over resources are degradation, scarcity, misdistribution and disaster which could be man-made or natural.

Identity goes beyond a psychological self and it becomes a problem when one's identity is termed as illegitimate or when it is considered inferior or threatened by others with different identification. This could be the exact issue that is causing friction between the two groups of fishermen since it creates a feeling of insecurity.<sup>64</sup> This can however be managed by the concept of benefit sharing for both human and non-human genetic resources as Schroeder would put it.<sup>65</sup> Benefit sharing will also make the groups comfortable because it encourages the feeling of security and acceptance.

Resources conflicts could also occur due to the need to experience cultural security on cultural values, ideas and concepts coupled with freedom restraints of physical, political or civil. These escalates conflicts because they have the capacity to exercise choice and a fair allocation of resources within the shared resource with all its goodies.

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<sup>63</sup> P. Collier, and Hoeffler, A. "Greed and Grievance in Civil Wars." *Working Paper WPS* (2000 b) 2000- 18, World Bank, Washington. D.C.

<sup>64</sup> Ibid, Collier and Hoeffler, pp 7

<sup>65</sup> D. Schroeder, "Benefit sharing; it's time for a definition." *Global Medical Ethics* (2006) pp 205

The fishermen around Lake Victoria feel that their needs have not been met as expected and therefore their identity is threatened by invasion that has become very rampant in the lake hence harboring a feeling of insecurity.<sup>66</sup>

The conflicts within this Lake needs a proper framework to be put in place to satisfy the unmet needs and therefore. This study therefore calls for the application of interest based negotiation to achieve a win-win approach and workshops aimed at achieving consensus based solutions to attain a zero-sum perspective on the conflicts. The governments of both countries should practice an open system of resource management with emphasis on cooperation for benefit for all.

## **1.7 Hypotheses**

The study tested the following hypotheses;-

- i. There are numerous factors that lead to conflicts around lake Victoria
- ii. There is a strong linkage between environmental scarcity and trans-boundary conflict.
- iii. The conflict resolution mechanisms practiced around lake Victoria are not effective

## **1.8 Research Methodology**

This study aimed to explore the link between environmental scarcity and trans-boundary conflicts within Lake Victoria, especially over fishing grounds between Kenya and

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<sup>66</sup> C. A. Roger and J. Rossati, " Human Needs in World Society," in the Power of Human Needs in World Society , (ed). Coate A. Roger and Rossati Jerrel (Boulder, CO: Lynne Rienner Publisher 1988) pp 1 – 20.



Uganda. The data was collected using both primary and secondary sources. Primary data was collected using questionnaires containing both open ended and close ended questions and interview schedules from the key informants. The questionnaires were administered personally by the researcher with the assistants to the respondents at the fishing ground. Secondary data was sourced from e-library, ordinary libraries, journals, dissertations and books.

Simple random sampling technique was used in selecting the respondents from the fishermen on the fishing grounds and the government agents working around the lake who were treated as the key informants. From an estimated target population of 10000 fishermen operating around the lake, the researcher picked on 100 fishermen as the study sample. The sample size was picked by applying Mugenda and Mugenda's<sup>67</sup> recommendation of selecting a sample size of 10-30% from a target population of 10000 and above. Therefore the sample represented 10% of the target population. The data collected was analyzed and interpreted using content analysis to clearly outline the findings, test the hypotheses, and make conclusions and point out the areas that emerged for further research.

The scope of the study was Lake Victoria and the fishermen operating along the lake. The fishermen were drawn from Kenya and Uganda together with the government agents operating in the area. The study was limited to the triggers of conflicts around Lake Victoria, the link between the triggers of the conflicts and environmental scarcity,

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<sup>67</sup> Mugenda, O.M and Mugenda, A.G (2003) Research Methods-Quantitative and Qualitative. Acts Press.

the measures that have been employed in resolving the conflicts and what needs to be done to promote peaceful coexistence between the fishermen from the two countries and ensure long term peace both in Kenya and Uganda.

### **1.9 Chapter Outline**

The first chapter introduces the research topic; environmental scarcity and trans-boundary conflict with focus on Lake Victoria. It presents review of the, background of the study, statement of the research problem, research objectives, review of literature from other scholars on environmental scarcity, trans-boundary conflict, shared resources and Lake Victoria and conflict between of Kenya and Uganda, research hypotheses and the methodology of the research.

Chapter two presents theoretical discussion on environmental scarcity and the nexus that exists between scarcity and trans-boundary conflicts. Chapter three is a case study on Lake Victoria. It presents information on the nature of the conflicts around the lake and the measures that have been used to solve the conflicts. Chapter four gives a critical analysis of the issues that arose from chapter three while chapter five presents the conclusions on the key findings of the study, recommendations and provides suggestions on areas for further study.

## **CHAPTER TWO**

### **ENVIRONMENTAL SCARCITY AND TRANS-BOUNDARY CONFLICT: AN OVERVIEW**

#### **2.1 Introduction**

In the previous chapter, the researcher has set the stage for the beginning of this study on the relationship between environmental scarcity and trans-boundary conflicts. The chapter has presented the background of the problem focusing on the conflicts around Lake Victoria. This has been presented by giving definition of the key study words and the current scenarios surrounding the key concepts of the study. In this chapter, the research problem has shown that Lake Victoria as land mark boundary between Kenya and Uganda has undergone numerous challenges which have highly degraded the resources within and around it.

The highest causality of this degradation has been water which is the main resource shared between the two countries. The literature review has presented the views given by various scholars on the subject of the study, highlighting on their relevance and the divergence with the current study. This has also been backed up by Homa Dixon's theory of scarcity leading to the study hypothesis. The methodological section has presented the various methods that have been used in carrying out this study, their relevance and how they have been applied to achieve the study objectives. The section wound up by describing the structure of the entire study.

Having been introduced to the study through the above chapter, this section now presents the theoretical basis for understanding the intricate of environmental scarcity and trans-boundary conflicts. These aspects have been looked into based on the scarcity theory, resource scarcity and ingenuity, environmental scarcity and conflict, understanding on the concept of renewable natural resources and the contextual link between environmental scarcity and trans-boundary conflicts. The chapter then concludes by summarizing all the aspects covered.

## **2.2 Applying Scarcity Theory**

Previous statistics shows that, demographic and economic growth has impact on freshwater. In fact the volume of freshwater in Lake Victoria has been declining steadily due to reduced precipitation, pollution and climate change. This has led to environmental stress that may lead to water wars because of competition for the available resource.<sup>68</sup> It is however important to note that so far, no pronounced water wars have been witnessed among the communities living in Lake Victoria.

It has been pointed out by the United Nations that despite immense quantity of water in the world, 97.5% is salty and 1.75% locked is in ice caps therefore leaving the growing population with a mere 0.007% for economic and domestic use.<sup>69</sup> This can be

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<sup>68</sup> H.A, Amery, Water Wars in the Middle East: a looming threat. Geogr J (2002) 168 (4) 313 -323

<sup>69</sup> United Nations Water in the 21<sup>st</sup> Century: Comprehensive Assessment of the Fresh water Resources of the world. Geneva VMO/ Stockholm. Environment Institute .1997

the cause of negative conflict if cooperation and proper management is encouraged between communities that share water.

Mwagiru posits that the definition of conflict is not easy even though conflict is endemic in the society. He further points out that conflict relates to cultural setting and the perception of the parties involved although a common anatomy of conflict may cut across internationally.<sup>70</sup> Bercovitch et al on the other hand argue that conflicts are ubiquitous and unavoidable in a society because it is inherent as well as useful to human beings.<sup>71</sup> Conflict is therefore not always a villain as we usually like to paint and that it can lead to a positive outcome if well handled at its emergence and only becomes harmful when poorly handled.

Classical works have two distinct tradition of conflict theory. These are political philosophy theory that advocates for power relations with the states as the central objects of analysis (Machiavelli, Bodin, and Hobbes) On the other, is the theory on competitive struggle in classical economics with units of analysis being economic competition as advocated for by Smith and Malthus. Therefore that study will be carried under the assumptions that, the conflicts between Kenya and Uganda over Lake Victoria may have both attributes but which will be proved after the study.

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<sup>70</sup> M. Mwagiru, *Conflicts in Africa; Theory, processes and Institutions of Management* (Nairobi. CCR Publications, 2006) pp 1-2

<sup>71</sup> J. Bercovitch, V. Kremenyuk and I.W. Zartman. *The Sage Handbook of Conflict Resolution*. (London: Sage Publication. 2009) pp 3

The world is facing growing scarcity of vital renewable resources such as cropland, fresh water and forests as a result of rapid growth in human population. Unfortunately this is expected to exceed the eight billion mark by the year 2025, spurring increasing demands for natural resources. Homer-Dixon further argues that these environmental scarcities have profound social consequences, contributing to insurrections, ethnic clashes, urban unrest, and other forms of civil violence, especially in the developing world.

From a detailed model on sources of environmental scarcity from a synthesis of a wide range of international research,<sup>72</sup> Homer-Dixon refers to water shortages in China, population growth in sub-Saharan Africa, and land distribution in Mexico as the reasons behind these conflicts. Such factors stem from degradation and depletion of renewable resources, increased demand for these resources and or unequal distribution.

They lead to deepened poverty, large-scale migration, sharpened social cleavages, and weakened institutions and cites the conflicts in Chiapas, Mexico and the ongoing turmoil in many African and Asian countries, as partly a consequence of resource scarcity.<sup>73</sup> The effects of environmental scarcity are indirect and act in combination with other social, political, and economic stresses.

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<sup>72</sup> T.F Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from cases." *International Security*, Vol 19 No 1 (1994) pp 5 - 40

<sup>73</sup> Ibid Homer-Dixon , pp 123.

Human ingenuity can reduce the likelihood of conflict, particularly in countries with efficient markets, capable states, and an educated populace. But the violent consequences of scarcity should not be underestimated especially when about half the world's population depends directly on local renewable natural resources for their day-to-day well-being.

In the next decades growing scarcities will affect billions of people with unprecedented severity and at an unparalleled scale and pace.<sup>74</sup> This point is put across by Okwach et al who observes that increased interaction between man and lakes has resulted in degradation of the lake's ecosystem and depletion of biodiversity. This then gives rise to the need to strengthen the weak institutions and institutional processes among the states that share the lake.<sup>75</sup>

According to Homer-Dixon, there are three causal paths by which scarcity produces conflict. Decreasing supplies of physically controllable resources might provoke inter-state conflicts or resource wars, massive population movements caused by environment stress might induce conflicts such as ethnic clashes and scarcity could simultaneously increase economic deprivation and disrupt social institutions. This then causes deprivation conflicts in form of civil strife and insurgency among communities.

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<sup>75</sup> R. Okwach, A. Mahatane and J. Katuramu, ' Status of Fisheries , Surveillance, Law Enforcement and Monitoring Compliance to agreed measures for Fisheries Management: in the State of the Fisheries Resources of Lake Victoria and their Management, proceedings of Entebbe Regional Stakeholders conference (Feb 2005) pp 45, LVFO 2005 Entebbe, Uganda.

Environmental scarcities are already contributing to violent conflicts in many parts of the developing world, Lake Victoria is not spared. These conflicts are probably the early signs of an upsurge of violence in the coming decades that will be induced or aggravated by scarcity. The violence is usually sub-national, persistent, and diffuse.

Poor societies will be particularly affected since they are less able to cushion themselves from environmental scarcities and the social crises that come along with the conflicts. These societies are, in fact, already suffering acute hardship from shortages of water, forests, and fertile land<sup>76</sup>. It is interesting to note that there has been numerous complaints over water scarcity in Kisumu town, an area that borders Lake Victoria, which paradoxically is the second largest fresh water lake in the world.

Social conflict is not always a bad thing if there are positive strategies towards its management. For perennial conflicts between warring communities, mass mobilization and civil strife produces opportunities for beneficial change in wealth distribution and in governance processes. This fact notwithstanding, scarcity can sharply increase demands on key institutions, such as the state, while simultaneously reducing their capacity to meet the demands.

The negative effects of severe environmental scarcity are therefore likely to outweigh the positive<sup>77</sup>. The reduction of water volume in Lake Victoria and the hyacinth

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<sup>76</sup> R. Okwach, A. Mahatane and J. Katuramu, ' Status of Fisheries , Surveillance, Law Enforcement and Monitoring Compliance to agreed measures for Fisheries Management: in The State of the Fisheries Resources of Lake Victoria and their Management : proceedings of Entebbe Regional Stakeholders conference (Feb 2005) pp 45, LVFO 2005 Entebbe, Uganda.

<sup>77</sup> J. T. Mathews, "Redefining Security," *Foreign Affairs* 68, No. 2 (Spring 1989): 162-177.



menace can have far reaching effect on the resources if proper control and eradication mechanisms are not put in place.

Environmental change is only one of the three main sources of scarcity of renewable resources alongside population growth and unequal social distribution of resources. Deudney characterized environmental degradation as resource scarcities<sup>78</sup> and adds that resources can be roughly divided into two groups: non-renewable, such as oil and iron ore, and renewable, such as water, forests, soils, and the earth's ozone layer. The latter category includes renewable "goods" such as fisheries and timber, and renewable "services" such as regional hydrological cycles and a benign climate.

Reduction in the quantity or quality of a resource reduces its value, while population growth naturally distributes the resource among each individual. Therefore unequal resource distribution means that some groups get disproportionately larger shares while others get smaller portions or miss out completely. A fall in the quality and quantity of renewable resources can combine with population growth to encourage powerful groups within a society to shift resource distribution in their favour.

At the same time unequal resource access can combine with population growth to cause migrations to regions that are ecologically fragile, such as steep upland slopes and tropical rain forests. Therefore due to the high population densities in these areas and a

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<sup>78</sup> Daniel H. Deudney, "Bringing Nature Back In: Geopolitical Theory from the Greeks to the Global Era," Deudney and Matthew, eds., *Contested Ground*, 25-61.

lack of knowledge and capital to protect local resources, causes severe environmental damage which then leads to chronic poverty and severe competition for the few resources that are available.

### **2.3 Resource Scarcity and Ingenuity**

Homer-Dixon points to another potential relationship between innovation and resource availability. He argues that an economy's supply of ingenuity may itself be constrained by resource scarcities, especially in low-income countries. He defines ingenuity as the stock of ideas applied to solve practical, social and technical problems. An increase in the level of technical ingenuity is similar to the technical innovation discussed by endogenous growth theorists. Social ingenuity therefore consists of ideas applied to the creation, reform and maintenance of institutions such as markets, funding agencies, educational and research organizations and effective government.

If well managed, this system of institutions provides psychological and material incentives to technological entrepreneurs and innovators. It aids regular contact and communication among experts and channels resources preferentially to those endeavours with the greatest prospects of success. The process of generating and implementing social ingenuity is both separate from and necessary for technical innovation. Therefore, social ingenuity is a precursor to technical ingenuity<sup>79</sup>. This could be what is lacking in the management of resources around and in Lake Victoria especially water, a resource that is a lifeline to the greater East Africa.

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<sup>79</sup>Homer-Dixon T.F, "Environmental Scarcities and Violent Conflict: Evidence from cases." *International Security*, Vol 19 No 1 (1994), pp 34

Homer-Dixon further describes two mechanisms by which resource scarcity can limit both the total supply and the rate of supply of ingenuity. First, increased scarcity often provokes competitive action by powerful elite groups and narrow social coalitions to defend their interests or to profit from the scarcity through "rent-seeking" behaviour.<sup>16</sup> These actions can hinder efforts to create and reform institutions and generally make it harder to focus and coordinate human activities, talents, and resources in response to scarcity.

Second, severe scarcity causes social turmoil and violence, which directly impede the functioning of ingenuity-generating institutions, such as markets. This means that resource scarcity often reduces the availability of human and financial capital for the production of ingenuity by shifting investment from long-term adaption to immediate and short-term management and mitigation of scarcity.<sup>17</sup>

Scarcity exacerbates social friction and conflict, which results in an undersupply of social ingenuity. Social friction and conflict interferes directly with the smooth functioning of markets, while reduced supply of social ingenuity perpetuates market, policy, and institutional failures.

These failures in turn undermine the innovation process, in particular by disrupting the ability of poor economies to generate sufficient human capital, to build research and development capacity, to exploit existing technological knowledge available domestically and internationally and to produce and disseminate new technologies

throughout the economy. In short, while resource scarcity often induces mitigating market and endogenous technological responses, it also disrupts the stable social and policy environment necessary for these responses to occur automatically.

## **2.4 Environmental Scarcity and Conflict**

Environmental scarcity is increasing the demand for ingenuity which interferes with supply. Poor countries begin at a disadvantage because they are under endowed with the social institutions such as productive research centres, efficient markets, and capable states that are necessary for ample supply of both social and technical solutions to scarcity. Moreover, their ability to create and maintain these institutions may be diminished by the very environmental threat they want to address, because scarcity can also weaken states and cause intense rivalries between interest groups and elite factions.

Allied to this, is Marxist social conflict theory, which states that individuals and groups within a society have differing amounts of material and non-material resources and that the more powerful groups use their power in order to exploit groups with less power<sup>80</sup>. The two methods by which this exploitation is done are through brute force and economics. Through these methods, earlier social conflict theorists argued that money is the mechanism which creates social disorder and therefore a society is created from ongoing social conflicts between various groups.

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<sup>80</sup>K. Marx, Preface to A Contribution to the Critique of Political Economy, Tr. S. W. Ryazanskaya, edited by M. Dobb. 1971, London

According to Marxism, human history is all about this conflict, a result of the strong rich exploiting the poor-weak. From such a perspective, money is made through the exploitation of the worker. It is argued thus, that in order for a factory owner to make money, he must pay his workers less than they deserve<sup>81</sup>. In the context of conflict within Lake Victoria, the fishermen might not be maximally gaining economically from the resource as a result of the middlemen who exploit the fishermen to the extent that they do not achieve economic independence. While on the other hand, one given country may be yearning to gain advantage economically from the resources around the lake by denying the other country access to the equally deserved resource.

The Marxist conflict approach emphasizes a materialist interpretation of history, a dialectical method of analysis, a critical stance toward existing social arrangements and a political program of revolution or, at least reform<sup>82</sup>. The materialist view of history starts from the premise that the most important determinant of social life is the work that people do to provide the basic necessities of life, food, clothing and shelter. Marx thought that the way the work is socially organized and the technology used in production will have a strong impact on every other aspect of society. He maintained that everything of value in society results from human labour.<sup>83</sup> The researcher assumed that it is this human labour that has been and is still exhausted by the fishing group of Lake Victoria who could have by now devised better or other survival mechanisms.

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<sup>81</sup> Ibid Marx pg 23-55

<sup>82</sup> W. M. Immanuel . *States and Social Revolutions: A Comparative Analysis of France, Russia, and China*. (1994) New York: Cambridge University Press.

<sup>83</sup> Ibid Immanuel, pp, 28 - 33

This arrangement leads to two opposed classes, the owners of capital and the workers whose only property is their own labour time, which they have to sell to the capitalists. Owners are seen as making profits by paying workers less than their work is worth and, thus, exploiting them. Economic exploitation leads directly to political oppression, as owners make use of their economic power to gain control of the state and turn it into a servant of bourgeois economic interests. Police power, for instance, is used to enforce property rights and guarantee unfair contracts between the capitalist and the worker. There the researcher wondered whether this sounds like what Uganda recently did over the Migingo and Ugingo islands?

Typical grounds for disagreement over a cross-border river, for example, include a downstream state's objection to pollution, excessive irrigation, or the construction of dams by an upstream state, which will decrease or degrade the quantity or quality of water available to the downstream state. Critchley and Terriff assert that direct conflict over renewable resources will be rare, but competition over scarce resources will have a strong indirect effect on the propensity for conflict. This is because limited availability of resources places stress on a society, which makes the society less stable and more conflict-prone. They believe that the probability of conflict arises due to decreased agricultural production, economic decline, population displacement, and disruption of legitimate institutions and social relations. These societal effects of environmental change might often be interlinked, sometimes with reinforcing relationships.

The idea that resource scarcity enhances prospects for conflict in the study of international relations is old. One finds arguments linking resources to conflict in most major schools of thought in the field, including realism, liberalism, and marxism. Realists contend that states are often compelled to acquire resources through force, especially if resources to state boundaries are essential for maintaining a state's security and survival.

Realists also emphasize the idea of relative gains and the security dilemma. They argue that acquisition of resources by one state could be viewed by other states as threatening or could lead to conflict directly if two or more states are in conflicts or induce efficient trade for resources. Hence states that are lacking important resources can simply trade for these goods in the international market. Finally, marxists emphasize the importance of inequalities in economic systems. They argue that resource scarcity can produce inequalities both globally and internally, which enhances the prospects for both interstate and intrastate conflicts.

While all three schools of thought raise important arguments, they are missing an important part point in the concepts. They assume that resource scarcity and institutionalization do not vary significantly across geographical regions of the world, because it creates different local environments with potential conflicts. In other words one should not expect similar patterns of conflict management across different geographical regions in the world, especially with respect to riparian conflicts, because there are significant regional differences in levels of freshwater scarcity.

Resource poor regions create environments that are highly competitive, where creation of institutions to manage the conflict may be lacking and/or ineffective. Resource rich regions, on the other hand, are faced with fewer potential conflict situations overall, which enhance prospects for creation of institutions to manage conflicts that do arise in these regions.

MacDonald presumes that everything only benefits the ruling class, working class do not realize their subordination, the working class do not rebel against the norms and values set by the ruling class, it doesn't explain how the individual is affected and very deterministic. Critics of the functionalist theory, presumes that a society benefits everyone and doesn't see how a single individual is affected.

They further presume that every institution is beneficial to the whole of society and doesn't see the negative aspects of society and its institutions<sup>84</sup>. Conflict theory directs attention away from labeling and its consequences for generating deviant identities and deviant careers. Focusing on issues such as who makes the rules and laws, who decides who is deviant and which groups benefits or suffers from these decisions. Dominant groups in the society have the power to decide which norms and laws govern the society and ensure that these norms favor their own values, their interest and standards of morality<sup>85</sup>.

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<sup>84</sup> K.B MacDonald *The culture of critique*. Westport, CT: Praeger; reprint: Bloomington, IN: (Authorhouse.2002)

<sup>85</sup> P.G Devine, , Plant, E. A., Amodio, D. M., Harmon-Jones, E., Vance, S. L. (2002). The regulation of explicit and implicit race bias: The role of motivations to respond without prejudice. *Journal of Personality and Social Psychology*, 82, 835–848.



Stanovich advances that the theory deals with the issues of making rules, especially the criminal law, arguing that laws are passed and rules approved because they support the customs or the interest of the most powerful members in the society. Powerful groups are able to impose their will on the rest of society and make sure that the rules and laws favorable to them and detrimental to others who are less powerful are instituted<sup>86</sup>. It was the researcher's hope such a scenario could not be the case in the conflicts occurring in Lake Victoria.

He continues to argue that the theory does not adequately explain the specific processes by which a person becomes a criminal or a deviant. The law does not always operate for the exclusive benefit of the elite of powerful and that conflict theory has not been supported by sufficient body of empirical evidence. The conflict theory challenges the wide spread view that consensus regarding values, morality and deviance exists in the society and law is simply the embodiment of this consensus. It also rejects the notion that law serves to benefit and protect everyone in the society<sup>87</sup>.

## **2.5 Overview of Renewable Natural Resources**

Miller defines natural resource based conflicts as conflicts originating from competition amongst human beings, having incompatible interests, over the utilization and management of natural resources such as land, forests, water points, wildlife and minerals among others.<sup>88</sup> The survival and maintenance of the entire human population is highly

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<sup>86</sup> KE, Stanovich, (1999). Who is rational? Studies of individual differences in reasoning. Hillsdale, NJ: Erlbaum

<sup>87</sup> KE, Stanovich, (1999). Who is rational? Studies of individual differences in reasoning. Hillsdale, NJ: Erlbaum

<sup>88</sup> C.E Miller, "A glossary of Terms and Concepts in Peace and Conflict Studies ( 2<sup>nd</sup> ed) pp 23

dependent on natural resources. Therefore conflict over the resources tend to diminish contribution of these resources to economic growth, food security and trade both locally and internationally.

A natural resource is a renewable resource if it is replaced by natural processes and if replenished with the passage of time. Renewable resources are part of our natural environment and form our eco-system. Renewable resources are endangered by industrial developments and growth. They must be managed carefully to prevent a situation in which the natural resource cannot replenish as expected.<sup>89</sup>

Some of the natural resources are limited to freshwater, land, air, minerals and forests. Renewable natural resources are animal, vegetable or mineral resources that people use because they can be replenished. For example, people breathe in oxygen and breathe out carbon dioxide. So the resource, oxygen, gets used but, because plants take in carbon dioxide and release oxygen, the oxygen that people need is replenished by the plants.

Trees, the source of timber and paper are another renewable natural resource because of forest management, planting more trees to replace the ones that are cut down. We also depend on farms to replenish and adequately manage our renewable natural food resources by good animal husbandry and agricultural practices. Solar energy which is the energy derived directly from the sun, along with nuclear energy, are the most abundant

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<sup>89</sup> Renewable Resources, a report to the committee on natural resources"; by Paul Weiss chairman of renewable resources study, (1962), National Academy of Science, National Research Council, Washington D.C USA).

source of energy on Earth. The fastest growing type of alternative energy, increasing at 50 percent a year, is the photovoltaic cell, which converts sunlight directly into electricity. The sun yearly delivers more than 10,000 times the energy that humans currently use<sup>90</sup>.

Wind power is derived from uneven heating of the earth's surface from the sun and the warm core. Most modern wind power is generated in the form of electricity by converting the rotation of turbine blades into electrical currents by means of an electrical generator. In windmills wind energy is used to turn mechanical machinery to do physical work, like crushing grain or pumping water<sup>91</sup>.

Hydropower is energy derived from the movement of water in rivers and oceans (or other energy differentials), and can likewise be used to generate electricity using turbines, or can be used mechanically to do useful work. It is a very common resource. Hydropower appeared centuries ago with the first use of a power turbine to produce electricity<sup>92</sup>.

Geothermal power directly harnesses the natural flow of heat from the ground. The available energy from natural decay of radioactive elements in the earth's crust and

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<sup>90</sup> J. Sawin, "Charting a New Energy Future." State of the World 2003. By Lester R. Brown. Boston: (W. W. Norton & Company, Incorporated, 2003) pp 236

<sup>91</sup> J. Krzeminska, Are Support Schemes for Renewable Energies Compatible with Competition Objectives? An Assessment of National and Community Rules, Yearbook of European Environmental Law (Oxford University Press), Volume VII,(Nov. 2007), p. 125

<sup>92</sup> J. Krzeminska, Are Support Schemes for Renewable Energies Compatible with Competition Objectives? An Assessment of National and Community Rules, Yearbook of European Environmental Law (Oxford University Press), Volume VII,(Nov. 2007), p. 126 - 127

mantle is approximately equal to that of incoming solar energy<sup>93</sup>. Alcohol derived from corn, sugar cane, switch grass, is also a renewable source of energy. Similarly, oils from plants and seeds can be used as a substitute for non-renewable diesel. Methane is also considered as a renewable source of energy. Techniques in agriculture which allow for minimal or controlled environmental damage qualify as sustainable agriculture, and they are also known as sustainable farming.

Biomass comes from renewable organic materials such as residues from agriculture, like crops, animal waste, human waste and industrial sectors of wood manufacture and food industries<sup>94</sup>. Biomass is available everywhere, making its supply unlimited. It helps to sustain climate change, increase energy efficiency, and decrease greenhouse gas emission.

Water can be considered a renewable material and at the same time, non-renewable. When water usage is carefully controlled, by proper treatment its benefits are easily realised and this ensure long utilization. If not, it would become a non-renewable resource at that location. For example, groundwater is usually removed from an aquifer at a rate much greater than its very slow natural recycle, and so groundwater is considered non-renewable. Removal of water from the pore spaces may cause permanent compaction that cannot be renewed<sup>95</sup>.

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<sup>93</sup> M. E. Soulé and B. A. Wilcox. Conservation Biology: An Evolutionary-Ecological Perspective. (1990 Sinauer Associates, Sunderland, Massachusetts.)

<sup>94</sup> Hunter, M. L. (1996). Fundamentals of Conservation Biology. Blackwell Science Inc., Cambridge, Massachusetts.

<sup>95</sup> M.J. Groom, G.K. Meffe, . and C.R Carroll,. (2006) Principles of Conservation Biology (3rd ed.).Sinauer Associates, Sunderland, MA.

Renewable resources such as solar energy, wind, hydropower, and geothermal energy have many benefits. They can reduce carbon dioxide emission, water consumption, and waste. Clean air is essential globally because it can reduce human health problems such as asthma and lung disease. Renewable resources can also lead to environment sustainability because these resources will not be depleted and stimulate the economy by creating more job opportunities<sup>96</sup>. When the resources are not depleted, then we are able to avert what Hardin calls the tragedy of the commons which emanate from the overuse of the available resource. Population explosion has been related with depletion of resource that results from competition on the use of the natural resource.

Renewable natural resources, such as land, forests and water, are universally important to poverty reduction and development, and are facing increasing pressure in many parts of the world. Global economic and environmental problems, along with increasing social disparities, serve as risk multipliers in the context of increasing resource competition.

Unlike non-renewable, scarcity is greatly impacted by environmental quality, which is linked to a myriad of human activities. Risks connected with changes in renewable natural resources are of general importance to development, but the need to understand these dynamics and apply pro-activity comes into sharp focus. This focus emanates when considering the potential impacts of global trends, such as climate change, population growth, urbanization and the food crisis.

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<sup>96</sup> The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century. (New York: Academic Press. 1990)

The poor are most vulnerable to these conditions, and face particular challenges protecting themselves, their families, and their livelihoods against environmental and economic risks. This means they are, in turn, more vulnerable to risks of conflict and violence. Current discussions on the social impact of climate change, for example, emphasize the risk of a negative trajectory towards social conflict in poor countries.

This is a consequence of trends toward renewable resource shortages, increased population movements, and thus greater competition over renewable natural resources. Conflict affected and fragile states face particular challenges in managing the negative social impacts of environmental change and climatic variability. This is because environmental and social stress can exacerbate existing grievances and social divisions in these already complex environments where societies face distinct challenges in breaking out of the poverty-conflict trap.<sup>97</sup>

Renewable natural resources management and improvement are most relevant to post conflict recovery as well, as water supply, food, and agriculture. They are frequently identified as priority areas for improving livelihoods and building stability. Despite the focus on resources and conflict, experience suggests that societies can be resilient to these risks. Communities facing fragility and violence are still capable of constructively managing localized conflicts. Furthermore, renewable resources present special opportunities for cooperation in managing integrated ecosystems and enabling peace building across a spectrum of stakeholders and socioeconomic groups.

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<sup>97</sup> P.Collier “ Natural Resource and Conflict in Africa” Crimes of War project magazine (2004 ) pp 25

A holistic approach to conflict and violence prevention, is an integral part of sustainable development programming. It considers the catalytic role that renewable natural resources play in fostering social cohesion at one end of the social spectrum, and violence at the other. While many practitioners recognize the potential risks of dispute over renewable resources, there exists a limited documented practical experience and technical guidance to demonstrate modalities for addressing these risks pre-emptively through conflict-sensitive development approaches.

Mismanagement can turn a renewable natural resource into a non-renewable one. Whenever an animal becomes extinct, it goes forever. Whenever there is depletion of the ground water reservoir, the time it takes to replenish the underground natural reservoir makes it virtually irreplaceable.

Natural life cycles like photosynthesis, the nitrogen cycle, birth and death, seed-time and harvest all function to produce renewable natural resources. However, pollution, extinction and greed all contribute to their destruction. It takes commitment to the environmental management practices and stewardship of renewable natural resources to ensure the living things continue to live on earth.

## **2.6 The Nexus between Environmental Scarcity and Trans-boundary Conflicts**

Inter-state tensions over trans-boundary waters are too sophisticated and complex to be adequately understood. It borrows heavily from the assumption that “absence of war does

not mean absence of conflict in any situation”<sup>98</sup>. Water conflict varies significantly in intensity across basins and across time, and ranges from internal grudges to public displays of hostility, attacks and counter attacks, affecting all levels of society, often in non-riparian states.

Most relevant is that tensions almost without exception occur alongside some form of cooperation<sup>99</sup>. Most scholars on trans-boundary conflicts assert from the onset that conflict and cooperation over water co-exists in one spectrum. However, when it comes to the analysis, the two are treated separately where the less negative impacts of conflict are overlooked<sup>100</sup>.

The political and strategic aspects of trans-boundary water cooperation in particular remain un-understood. The trans-boundary resources governance literature has identified the role of asymmetric power<sup>101</sup>. In particular, Wolf has clarified the structural role of power in the basin. He posits that relative power differences can cause various forms of conflicts inform of hydro-hegemony if the trans-boundary resource is water. That is if a basin state with superior power acts for the collective good of the basin, there is leadership in this form of hydro-hegemony. On the other hand, if the hegemony captures and controls the water resources or coerces other states to produce situations that are beneficial to it only, there may be skewed water allocation outcomes<sup>102</sup>.

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<sup>98</sup> P. David, M. Daoudy, J. Öjendal, A. Turton and S. McCaffrey *Trans-boundary Water Cooperation as a Tool for Conflict Prevention and Broader Benefitsharing*. Global Development Studies No. 4.(2006) Stockholm, Sweden: Ministry of Foreign Affairs

<sup>99</sup> Ibid David et al pp 98

<sup>100</sup> M.A Falkenmark, A. Berntell, J. J. Lundqvist, M. Matz and H. Tropp, *On the Verge of a New Water Scarcity: A Call for Good Governance and Human Ingenuity*. Brief, S. P.( 2007 Stockholm, Stockholm International Water Institute.)

<sup>101</sup> Ibid Falkenmark et al pp 45

<sup>102</sup> A.T Wolf, ‘The Trans-boundary Freshwater Dispute Database Project’, *Water International* 24(2): (1999a) 160–163.



It is very important to understand that trans-boundary water relations evolve under circumstances of asymmetric power<sup>103</sup>. Effective international adaptive management or integrated water resource management is not possible without taking into account the dynamics of power. In order to observe how the dynamics of power play out in water governance, it is important for the management to institute the initial strategies to analyze the differently endowed and differently institutionalized trans-boundary basins.

Relations of basin states evolve over time, experiencing periods of both interaction and non-interaction. More specifically, relations evolve through coexisting conflictive and cooperative interactions. In some cases, states may not have to go through interactions over water allocation and management, as they can solve their water resources needs<sup>104</sup>.

Considering conflict and cooperation as opposing concepts misleadingly simplifies the complexity of interactions. As Falkenmark explained, conflict is a concept that is independent of co-operation; not always the opposite. In certain circumstances, conflict may be an integral part of inducing and sustaining co-operative behaviour, and the two may coexist in various social settings<sup>105</sup>. Falkenmark's conceptualization indicates that conflict and cooperation are not just on a continuum progressing from irrational individualistic conflict to rational collective cooperation. An implication of

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<sup>103</sup> A.T. Wolf, "Water Wars and Water Reality:" Conflict and Cooperation along International Waterways', in Steve Lonergan, ed. *Environmental Change, Adaptation, and Human Security*. Dordrecht: Kluwer Academic (1999b)251–265

<sup>104</sup> *Ibid* Wolf (1999b) pp 68

<sup>105</sup> M.Falkenmark, 'Global Water Issues Facing Humanity', *Journal of Peace Research* 27(2)(1990) 177–190

such understanding is to show how explicit agreements are not necessarily accurate indicators of cooperation<sup>106</sup>.

Agreements have been regarded as tangible benchmarks of cooperation in trans-boundary waters. It can be argued that explicit agreements can make the intention of the involved agents clear. However, in international basins, it is difficult to come to concrete arrangements. In some cases, cooperative outcomes can emerge from situations without agreements.

For example, in the Rhine River basin, Beaumon noted how the industrial sector voluntarily acted towards reducing pollutants of the river despite the fact that there was no strong enforcement of regulations by the state authorities. In situations of low cooperation and conflict, there is little interaction between actors. However, once levels of conflict rise, relations become unstable. On the other hand, if levels of cooperation rise, relations become “stable and comfortable”<sup>107</sup>.

The way international relations over water are shaped need to be understood in the context of co-existing conflict and cooperation. This is determined by power relations and the status of the political economies of the respective engaged riparians power plays an essential role. In addition, there are driving forces that specifically enhance conflictive or cooperative tendencies of a relationship<sup>108</sup>. Population growth within a basin increases

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<sup>106</sup> M.Falkenmark, ‘Global Water Issues Facing Humanity’, *Journal of Peace Research* 27(2)(1990) 177–190

<sup>107</sup> P. Beaumont,, ‘Water and Armed Conflict in the Middle East – Fantasy or Reality?’, in Nils Petter Gleditsch, ed., 1997. *Conflict and the Environment*. Dordrecht: Kluwer Academic (1997)355–374

<sup>108</sup> *Ibid* . Beaumont, pp 355- 374

water demand, leading to water scarcity or even basin closure. In these cases, the quantitative aspect of water resources becomes a focus.

Increased water use may also partially contribute to degradation of the water environment, giving rise to water quality issues. As such social measures, such as population policy, to reduce the pressure on water resources and conflict with other riparian states can be put into place. The drivers of cooperation are often found in the initiatives taken by basin parties and third parties. In most cases basin regimes and river basin commissions have often been put into place to facilitate joint management<sup>109</sup>.

Effective trans-boundary water governance that facilitates adaptation is rare. It is rare because the context in which the regional public good of trans-boundary water management exists is one of asymmetric power. In asymmetric circumstances, the hegemon riparians dictate the pace of cooperative adaptation and engage in fake cooperation that dresses up domination as cooperation<sup>110</sup>.

Hydro-hegemony can choose to diminish the effectiveness of the regional public good. The international community can encourage the hegemony to exercise leadership. A leadership hegemon can maintain and further augment the range of international, regional, national and private goods possible from having trans-boundary water management institutions. However, donors, IFIs, NGOs, and water scientists must be

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<sup>109</sup> P. Ashton 'Avoiding Conflicts over Africa's Water Resources', *Ambio* 31(3): (2002)236–242.

<sup>110</sup> Villiers, *Marq De Water: The Fate of our most Precious Resource*. (Mariner Books Boston New York (2000))

aware of and committed to addressing the high transaction cost of establishing and sustaining the institutions<sup>111</sup>.

Freshwater resources are distributed very unevenly around the world. Regions such as Europe and the Americas generally contain ample freshwater resources, while other regions such as the Middle East face increasingly severe water shortages<sup>112</sup>. There are also significant differences in terms of the creation and success of institutions to manage cross-border rivers.

For example, Europe has had longstanding regional organizations to oversee the Danube and Rhine Rivers. On the other hand North America has seen more than 50 years of bilateral U.S.e Canadian and U.S.e Mexican institutions for the management of cross-border water resources, while there has been little success in managing rivers in the Middle East<sup>113</sup>.

In 2002, the United Nations Environmental Programme (UNEP) identified the many challenges facing Africa and concluded that an increasing number of African countries face water stress scarcity and land degradation<sup>114</sup>. The rising costs of water treatment, food imports, medical treatment, and soil conservation methods are not only

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<sup>111</sup> M. Eriksson, P. Wallenstein & M. Sollenberg, 'Armed Conflict, 1989–2002', *Journal of Peace Research* 40 (5): (2003) 593–607

<sup>112</sup> J. Delli-Priscoli, (1996) *Conflict Resolution, Collaboration and Management in International Water Resource Issues*. Alternative Dispute Resolution Series, IWR Working Paper 96-ADR-WP-6

<sup>113</sup> Ibid Delli-Priscoli pp177

<sup>114</sup> E. Feitelson, (2006) 'Impediments to the management of shared aquifers: A political economy perspective'. *Hydrogeology Journal* 2006 (14): 319 - 329.

having a negative impact on Africa's peoples, but are also draining African countries of their economic resources.

The Nile is the longest river in the world (6 825 km, about 4 266 miles) in terms of both drainage area and the quantity of water it carries in its watercourse. The Nile has more riparian states (Burundi, Egypt, Ethiopia, Eritrea, Kenya, Republic of Congo, Rwanda, Sudan, Tanzania, and Uganda) than any international river basin in the world<sup>115</sup>. This puts too much stress on the water in the river especially if the hydro-hegemons continue to be overprotective over water use rather than considering benefit sharing for all the riparians.

While other countries may have alternative energy sources, a significant percentage of the peoples of the Nile riparian states depend directly on the river for their livelihood and as a source of energy for industrial and domestic needs. The countries surrounding the Nile have an estimated population of 300 million, which accounts about 40 per cent of the African population, with an average per capita income of US \$282<sup>116</sup>. By 2025 the number of people who depend on the Nile River will probably increase to 859 million. The population of Egypt (70 million) is the second highest in Africa and is 10 per cent higher than Ethiopia. However, by 2025, it is projected that Ethiopia will have 20 per cent more people than Egypt<sup>117</sup>.

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<sup>115</sup> M Hulme, R Doherty, T Ngara et al "African climate change:1900–2100," *Climate Research* , 145–168; and IPCC, (2001) *The scientific basis*.

<sup>116</sup> M. Mark, *Global warming: A very short introduction*, Oxford: Oxford University Press, 2009.

<sup>117</sup> Ibid Mark, pp33

Ramaswamy posits that environmental scarcity may lead to conflicts and violence and eventually to security implications. The security could finally translate into regional security problems. This could be because of increased pressure on the vital resources and or the competing claims over the scarce natural resources could lead to tensions between and within the countries. This can be managed to avert security issues.<sup>118</sup> The Israeli and Palestinian conflict over water has brought them to the table to discuss the best way forward just like the Nile riparians are doing in order to avert a looming crisis and enhance cooperation over the use of a shared natural resource.

In addition to population growth, migration, and over-grazing, which have contributed to deforestation and land degradation, the Nile Basin is now experiencing serious environmental pollution as well as drought and desertification. This is especially true of Ethiopia where water and food security are closely related. Reliable access to water increases agricultural yields; lack of it can be a major cause of droughts, famine and undernourishment. Under these harsh conditions, the competition for scarce water resources is intense, especially when the resources are less developed and are shared by other countries<sup>119</sup>.

One reason for environmental degradation, recurrent drought and famine in this region is lack of water management. Therefore, an important strategic plan for overcoming the problem of recurrent drought and famine is for the upper riparian states

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<sup>118</sup> R.I Ramaswamy, "Scarce Natural Resource and Language of Security" *Economic and Political Weekly*, (1998) perspectives

<sup>119</sup>T. Homer-Dixon, *Environmental Scarcity and Violent Conflict: The Case of Gaza*. Project on Environment, Population and Security. (1995a Washington, DC, USA, American Association for the Advancement of Science and the University of Toronto.)

to concentrate on water development of the Nile<sup>120</sup>. In this context, it is essential for the governments not only to develop water resources, but also to protect their country's environment and natural resources by cooperating with other countries that have a share, in order to ensure environmentally sound sustainable development in the region.

Water scarcity has attracted the attention not only of the Nile Basin states, but also of the international community and is considered one of the major issues of the 21st century<sup>121</sup>. Anderson and Snyder argue that if resources are scarce relative to the demand for those resources, nations are more likely to conflict, because the imbalance tends to impinge on the economic health and the basic needs of human well-being. They further add that there might be a rise in conflicts in the future due to the rise in populations and increase in populace demands against the supplies of basic resources which continues to decline qualitatively and quantitatively.<sup>122</sup>

World Water Day, speakers concluded that demands for freshwater exceeded supplies by 17 percent and that over the next 25 years, two thirds of the world's population will experience severe water shortages. In addition, the World Resources Institute in Washington predicts that by 2025 about a billion people or nearly 50 per cent of the world's population will face scarcity<sup>123</sup>. Therefore allocation of water resources to meet basic human needs, including social and economic development, while maintaining

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<sup>120</sup>A.T. Wolf, S. Yoffe and M. Giordano International Waters: identifying basins at risk. *Water Policy* 2003: 29-60

<sup>121</sup> Homer-Dixon T.F, "Environmental Scarcities and Violent Conflict: Evidence from cases." *International Security*, Vol 19 No 1 (1994) pp 89

<sup>122</sup> T.L Anderson and P.Snyder, *Water Markets: Priming the Invisible Pumps* .( 1997 Washington D.C cato Institute )pp 1

<sup>123</sup>K. Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building*. (2006 Cambridge, MA, USA: Massachusetts Institute of Technology.)

the integrity of aquatic ecosystems, should be the priority of the Nile Basin riparian states. This should also be reflect in the Lake Victoria riparians as an effort to save Africa from scarcity induced conflicts.

It is not so much the amount of fresh water available on the surface of the East African region that makes it scarce and a source of conflict, but uneven distribution and utilisation among the riparian countries. Although there is plenty of water in the region, the problem is that in many cases it is either in the wrong place or it is available at the wrong time. In other words, some regions in the basin suffer from severe drought, while others are heavily flooded.

Fresh water is abundant, for each human inhabitant there is now an annual renewable supply of 8 300m<sup>3</sup>, which is enough to sustain a moderate standard of living<sup>124</sup>. Water harvesting mechanisms can go a long way in mitigating conflicts emanating from the environment. The foreign policy applied by both Kenya and Uganda in regards to the conflicts that are experienced within Lake Victoria can be geared towards identifying the triggers of conflict with the aim of encouraging cooperation.

Giordano and Giordano argue that despite the establishment of sovereign boundaries, additional international resource management institutions come in handy in the presence of trans-boundary resources which by nature violate the borders of the countries. This is because the nations are attracted to over exploit trans-boundary

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<sup>124</sup> Hulme, M., Doherty R, Ngara T. "African climate change: 1900–2100," *Climate Research* , 145–168; and IPCC, (2001) pp 214



resources due to the benefits enjoyed by the consuming states whereas the degraded supplies are shared among the countries.

The other two issues that are raised are over-exploitation of the resource by each country resulting from the fear of losing out on the shared resource. There is also complication on the formation of agreements between states as the nature of resource movement and national geography can predefine intractable negotiations between states.

If the riparian states are to improve and expand their agricultural production, there must be a coordinated management of river flows and transfer of water for irrigation, hydropower development in the context of cooperation and equal utilisation of the Nile water. History has proven that a trans-boundary river or body of water is more difficult to manage than one that falls entirely or predominantly within the frontiers of a single country and this remains a major source of conflict between the countries that are naturally forced to share the water<sup>125</sup>.

Brown links natural resource conflict to the widening gap between supply and demand based on population pressure. He further outlines that international wars have been fought over access to land and water since time immemorial. He claims that contemporary conflicts over resources are triggered by the pressure that comes from

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<sup>125</sup> Homer-Dixon, Thomas (1995b) On the Threshold - Environmental Changes as Causes of Acute Conflict. In: Lynn-Jones, S. M. and S. E. Miller, *Global Dangers: Changing Dimensions of International Security*. Cambridge, USA: MIT.

population growth in fomenting conflict and the distinction between non-renewable and renewable resources.<sup>126</sup>

Kenya and Uganda have recently experienced direct international conflict emanating from competition over access to resources around Lake Victoria. This is so since resource scarcity interacts with other economic and social factors to inflame tensions between states. This could be because of overfishing within the lake, contamination of water, climate change and other ecological and environmental degradation. The results are mass migration, deteriorating human health conditions and chronic poverty. Interaction of these social effects with smoldering hostilities between nations may lead to escalation of grievances between nations which may at worst result into armed conflict.<sup>127</sup>

## **2.6 Conclusions**

This chapter has shown that some poor economies may face resource-scarcity constraints on their economic development that have not been adequately explored in the theoretical or empirical literatures on growth, natural resource scarcity, or innovation. Various analysts have generally addressed separately the relationships between resource scarcity and economic growth and, on the other, innovation and growth. The chapter has further presented the reasons why water as a renewable resource is a fertile ground for conflicts especially if it is shared between different countries as is always the case.

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<sup>126</sup> D. Schwartz & A. Singh *Environmental Conditions, Resources and Conflicts: An Introductory Overview and Data collection.* (1999 UNEP, Nairobi ) PP 6-7

<sup>127</sup> P. Gleick ,” Water and Conflict: Freshwater Resources and International Security” Vol 18(1) ( summer) 1993 pp 79-112

## CHAPTER THREE

### ENVIRONMENTAL SCARCITY AND TRANS-BOUNDARY CONFLICT: THE CASE OF LAKE VICTORIA, 1994-2011

#### 3.1 Introduction

The preceding chapter has shown that there is a very delicate but crucial link between environmental scarcity and trans-boundary conflicts. This is because different basins differ in their international trans-boundary relations as relations shift in intensities for both conflicts and cooperation over time. This then leads to a typology of international trans-boundary water relations and a means of illustrating the dynamics of co-existing conflict and cooperation.

The typologies also show how the different regimes of power are played out in asymmetrical power structures. The approach provides a more textured understanding of how cooperation or conflict in a certain basin is actually formed and sustained. Therefore low levels of cooperation may be impeding efficient management of the water resources under the demise of a collective agreement which easily leads to unprecedented cases of violence between riparian states.

With this scenario, this chapter presents a critical analysis of the research data as well as an elaborate discussion of the findings of the study in trying to assess whether the experiences of the fisher men around Lake Victoria are the same with those found in the

preceding chapter. The study analysis has been discussed in the context of the conflicts between the Kenyan and Ugandan fishermen fishing around Lake Victoria. The occurrence of the conflicts between the fishermen along the lake have been presented on the basis of the major triggers of conflicts around Lake Victoria, their relationship with environmental scarcity and the methods of interventions that have been employed in the management of these conflicts together with the suggestions that have been proposed by various stakeholders on how to end the conflicts.

### **3.2 Triggers of Trans-boundary Conflict around Lake Victoria**

There have been numerous occurrences of conflicts around Lake Victoria. The fishermen from Kenya and Uganda who have been working around the lake long enough have witnessed unprecedented cases of violence. The most interesting feature of these conflicts is that they are blamed on mismanagement of the resources that are within and around the lake. The opinion of the fishermen who have been in the industry for less than 2 years was informed by the fact that they have been in the fishing industry for less than two years and have witnessed numerous cases of hashed grudges and misunderstandings which sometimes break into full fledged fighting.

The study found that the perennial conflicts in Lake Victoria are fought over the grabbing of the Migingo Island by the Ugandan government, disagreements on the ownership of the fishing grounds, political ideologies coupled by the high levels of poverty among the fishermen. Another significant sources of conflict are the declining natural resources around the lake especially reduction in the fish and water levels. This

has further been worsened by the invasion of the lake by the hyacinth weed. There are also no clear boundaries between the Kenyan and Ugandan fishing grounds and therefore the fishermen in most cases find themselves in their neighbours fishing grounds leading to quarrels and in some cases physical fights. The conflicts are further escalated by the poor management of resources around the lake especially water and corruption by the government agents operating along the lake (through collection taxes and asking for bribes) when the fishermen are seeking services from these government agents.

The conflicts have been worsened by the fact that the Ugandan government through its president, announced that they own the waters in Migingo Island and therefore the fish inside are theirs. As such the Ugandan fishermen have taken that as an advantage and are always driving Kenya fishermen away if they try to fish around the island. This is happening despite the fact that Migingo Island is geographically in Kenyan soil. The political angle taken by the conflicts has also been caused by similar statements and therefore they have led to more feelings of frustrations among the Kenyan fishermen.

### **3.3 Nexus between Water as Scarce Resource and Conflicts around Lake Victoria**

From these findings it is clear that the respondents have a good understanding of the causes of trans-boundary conflicts save for their experience with the perennial conflicts along Lake Victoria. Top among these causes are creation of unsustainable institutions to manage fishing activities around the lake without proper management skills or invasion of corrupt deals in the management of the institutions, declining resources and lack of

understanding of the international relationships in the context of water as a shared resource.

Further, the fishermen observed that through their experience, failure to create successful institutions to manage water as a shared resource between the two countries and declining natural resources around the lake are entrenching the conflicts further. The drastic increase in population being witnessed between the two countries has led to environmental stress and competition between the fishermen and therefore presents a fertile ground for conflicts. From the findings, it is clear that international relations between Kenyan and Uganda fishermen over water as a shared resource has not been understood in the context of existing conflicts. These conflicts have been determined by power relations, status of the political economies and relative power differences between the two countries and therefore this has led to numerous violence between the fishermen.

The greatest source (currently) of conflicts between the Kenyan and Uganda fishermen fishing along Lake Victoria is the grabbing of the Migingo Island by the Ugandan government worsened by lack of clearly delimited and demarcated borders between Kenya and Uganda. The conflicts are also as a result of competition posed to the small scale fishermen by the heavily capitalized fishing operations, reduction of fish population in the lake due to water pollution, steady growth of human population and reduction of the amount of water available for use. The poor management framework around the lake is a result of lack of proper policies to protect natural resources by both the people working around the lake and authorities from the two governments. The

fishermen working around Lake Victoria lack professional skills to venture into other professions due to lack of proper education and therefore are over-exploiting the fishing industry for lack of alternative sources of income.

### **3. 4 Mitigating of the Conflicts around Lake Victoria**

#### **3.4.1 Measures Put in Place to Mitigate the Conflicts**

To establish the measures put in place, key informants were interviewed. From the interviews, it was evident that the government authorities operating around the lake had put in place some measures with little success in dealing with the conflicts between the Kenyan and Ugandan fishermen. One respondent noted:

*“Both the Kenyan and Ugandan Governments have put in place some officials to resolve the boundary issue. There are also attempts to deal with the issue diplomatically”*

This was confirmed in the affirmative by the other three key resource persons. Apart from the attempts, the Kenyan Government has also asserted its place on the controversial Migingo Island by posting some police officers. An informant noted:

*“The Government appears to have taken the Island issue seriously. Before the conflict started, there were no Kenyan police officers on sight. Today, it is different,*

*the Government has deployed police officers and even an Assistant Chief. The Government presence on the Island can be felt”*

However, it was notable that even the Ugandan Government had deployed her police officers to the Island. This made some of the informants feel that Kenya’s sovereignty was at risk. To the respondents, the Island was Kenyan and Ugandans were intruders. A key informant noted:

*“Absolutely, no real attempt has been made to resolve the conflict. What we have are some public relations exercises for the Kenyan Government to save face. Provided Ugandan troops are in the Island, we have lost, we cannot have foreign troops on our land yet we are not at war”*

Another key informant noted that any interventions were not yielding the anticipated results. She noted:

*“Nothing tangible has taken place since the conflict on the island started. The Island even has a Ugandan Government flag hoisted there. The Ugandan officers arrest Kenyan fishers’ everyday despite appeals for peaceful co-existence. After a team of Cabinet Ministers visited the Island, shortly thereafter, Kenyan fishermen were mistreated and some deaths have even been reported as a result of this”*

Some of the informants noted that for the interventions to yield long lasting solutions to the conflict, there was need for the Government to bring all stakeholders on board and address the Migingo issue objectively without trying to management perceptions and



compromise on the country's welfare at the expense of the fishermen's livelihoods and conservation of natural resources.

### **3.4.2 Stakeholders in Conflicts Management around Lake Victoria**

The study sought to determine the role of various stakeholders in mitigating the conflict in Lake Victoria. The stakeholders that were considered include the Kenyan and Ugandan Governments, fishermen from the two countries, fishing organizations and NGOs/CBOs/churches/international community. The findings are presented in the following sections.

### **3.4.3 Role of Kenyan and Ugandan Governments**

Among the strategies employed in dealing with the conflicts, the fishermen feels that the Kenyan and Ugandan Governments to collaborate in finding a lasting solution to the impasse especially on the ownership of Migingo Island. The people and especially the government agents from both countries were also requested to respect existing boundaries and stick to their legitimate fishing grounds.

Protection of the lake as a shared resource was also proposed and regular peace meetings between the fishermen to be conducted. The other strategies suggested for mitigation of the conflicts was to encourage and empower the fishermen to pursue alternative sources of income, educating the fishermen on sustainable fishing practises

and proper managing of fish resources, controlling pollution in the lake, sharing of taxes generated from the fishermen and controlling the spread of hyacinth.

#### **3.4.4 Role of the Fishermen and Fishing Organizations**

In order to prevent occurrence of conflicts around the lake, the fishermen have been asked to be responsible in their fishing activities by ensuring that they do not use chemicals and herbs during fishing. They should work peacefully with each other and strive to find themselves alternative and sustainable sources of income other than fishing. The fishermen should also get trained on sustainable methods of conserving the resources around the lake in order to protect the lake from pollution.

According to the respondents, the fishing organizations have been very instrumental in advocating for better terms of services for the fishermen. The organizations were also found to educate fishermen on the management of available fish resources while others felt that the fishing organizations protects the fishermen against sea pirates and encourage them to pursue alternative sources of income, financing the fishermen, controlling the use of herbs and chemicals in the lake and the methods of fishing employed by the fishermen while at the same time advancing the grievances of the fishermen around the lake to the relevant authorities.

### **3.4.5 Other Stakeholders**

In order to reduce and perhaps eradicate the conflicts, the NGOs / CBOs / churches / international community have been developing and empowering the fishermen with alternative means of livelihood. They have also been educating the fishermen and locals on environmental conservation and training services on modern fishing methods which do not affect breeding of the fish. These organizations were further found to encourage peaceful co-existence between the fishermen. They have also been training the fishermen on adding value to fish products and providing funds to the fishermen for improving on their businesses. Finally the organizations were found to work on collaboration with other stakeholders to find solutions to the conflicts and assist in providing security to the fishermen.

### **3.5 Conclusions**

The data presented in this chapter has shown that Lake Victoria has not been spared the wrangles facing trans-boundary borders across the world and therefore numerous conflicts have characterised co-existence between Kenyan and Ugandan fishermen all along. This situation has further been worsened by the unclear demarcation of Migingo Island boundary in which both Kenya and Uganda are claiming ownership. This scenario has continues to damage the relationship between the fishermen from both countries with the Ugandan security reinforcing their ownership by stationing their officers in the Island.

This then angers the fishermen from Kenya who feel deprived off their right because Migingo is geographically in Kenya. All in all there have been some efforts from

various quarters such as the fishermen themselves, Government authorities, fishing organizations around the lake, NGOs, CBOs, religious organizations and the international community to cool off the conflicts although they are not very effective.

## **CHAPTER FOUR**

### **ENVIRONMENTAL SCARCITY AND TRANS-BOUNDARY CONFLICTS IN THE LAKE VICTORIA: A CRITICAL ANALYSIS**

#### **4.1 Introduction**

From the above chapter, the study has identified the main features of the conflict around Lake Victoria. In the chapter, it has been shown that the main bone of contention is the water which is shared by the fishermen from Kenya and Uganda. This has further been worsened over the years by the Migingo Island which remains controversial between the two countries on who owns it.

The Kenyan fishermen were found to be facing a lot of discrimination from their Ugandan counterparts because the Ugandan fishermen have been fighting and evicting Kenya fishermen banking on the remarks by their President Yoweri Museveni that Kenya owns the land around Migingo but the waters belong to Uganda. The chapter finally presented the cases of intervention that have been witnessed to end the conflicts from various parties that operate around the lake but unfortunately they have not been very successful.

With this understanding on the issues surrounding the conflicts around Lake Victoria, this chapter discusses the major issues that have emerged from chapter three. These issues have been presented based on the major triggers of conflicts around Lake

Victoria, their relationship with environmental scarcity and the forms of intervention that have been used to resolve the conflicts together with the various parties involved.

## **4.2 Emerging Issues**

### **4.2.1 Triggers of Conflicts around Lake Victoria**

#### *Water as a trigger of Conflicts around Lake Victoria*

Naturally, water is the biggest resource in Lake Victoria. Being fresh and abundant makes it even more valuable. To date, it appears to be more sort than before among the three countries that territorially share the lake (Kenya, Uganda and Tanzania) due to the rapid increase in population and more people moving towards the lake. The primary resource binding in the waters is fish, specifically the Nile perch, tilapia, *dagaa* (*Rastrineobola argentea*) species among others. The lake is surrounded by deep waters, providing an ideal habitat for these huge fish species. This means that the fishermen don't have to sail far or wide for their catch.<sup>128</sup> Therefore there is a very stiff competition between fishermen from the two Kenya and Uganda, with each side trying to outdo the other.

They have even marked territories within the lake which are believed to harbor more and better of the popular fish species. Under the territorial marking system, the fishermen have put embargoes and do not allow the other side to sail to these points. In fact most of the time, fights break between these groups because both sides feel that the rival's territory harbor more and better fish catch and therefore, they are always looking

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<sup>128</sup> Oyugi, M. A. (2009). Migingo Island Sources of conflict, approaches and assessment of intervention efforts by Kenya and Uganda. In Climate change and trans-boundary water resource conflicts in Africa

for ways to invade these territories. At the same time they have to ensure that these territories are well guided and severely punish any intruder. Still there are fights that arise because fishermen from one side way lay their counter parts and take away their catch. Such scenarios have led to sour relationships between the fishermen and are always in constant quarrels and grudges which easily break into physical fights and to some extent even deaths.

#### *Controversy Over Migingo Island*

The study further shows that the contemporary cause of the conflicts between the Kenyan and Ugandan fishermen along the lake is due to the uncertainty on the ownership of the Migingo Island. The Kenyan Fishermen insist that Migingo Island is in Kenya but have been denied their right to fish there unconditionally. The same issue has led to a political connotation in which the Ugandan government said that they own the fish and waters in Migingo Island and therefore Kenyan fishermen have been frustrated when trying to fish. This has also led to growing of deep seated grievances among the Kenyan fishermen leading to frequent conflicts with their Ugandan counter parts.

#### *Poor Methods of Fishing*

The use of herbs and chemicals by the fishermen is another major threat to effective fish production leading to destructive fishing practices. According to Odada et al reduced capacity to meet human needs can account for up to 40% of the destructive fishing

practices across the world.<sup>129</sup> As traditional fishing methods are now often considered inadequate for landing a sufficient catch, fishermen increasingly resort to deploying illegal fishing methods such as cast nets, fish poison and wires to improve their catch<sup>130</sup>. Some of the gears used to fish are fallout from other sectors such as the flower industry, where fine mesh nets that are used to protect flowers from birds are now being used in the fishing industry<sup>131</sup>

There is also lack of awareness among some of the fishermen on the mid-to long-term consequences of destructive fishing methods. Since most of the fishermen have learned on their jobs, they have a limited understanding on the dangers of employing certain methods of fishing or using chemicals which only makes their situation worse by destroying their fishing capacity. The policy of free and unrestricted access to the Lake Victoria fisheries appears to be a major loophole that has been exploited by the fisherman and therefore they feel that they the right to fish anywhere in the Lake without facing any restrictions.<sup>132</sup>

This situation has led to the frequent conflicts because fishermen from both countries do not allow that free access to their perceived territories. Overfishing and the use of damaging or illegal fishing gear is only in part a reflection of the failure of centralized management strategies on the lake, and are symptomatic of broader social,

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<sup>129</sup> Odada, E., Olago, D., Kulindwa, K., Ntiba, M. & Wandiga, S. (2004). Mitigation of Environmental Problems in Lake Victoria, East Africa: Causal Chain and Policy Options Analyses. *Ambio* Vol. 33 No. 1-2, 13-23

<sup>130</sup> Ntiba, M.J., Kudoja, W.M. and Mukasa, C.T. 2001. Management issues in the Lake Victoria watershed. *Lakes Reservoirs: Res. Mgmt* 6, 211-216.

<sup>131</sup> Ibid Odada et al, pp. 15-24

<sup>132</sup> Odada, E., Olago, D., Kulindwa, K., Ntiba, M. & Wandiga, S. (2004). Mitigation of Environmental Problems in Lake Victoria, East Africa: Causal Chain and Policy Options Analyses. *Ambio* Vol. 33 No. 1-2.



economic, and developmental dislocations such as poverty, lack of employment, etc. Theft (of fishing gears, vessels, etc.) and piracy are rampant along the lake, and may become worse as the disparity in distribution of benefits from the fishery becomes more polarized.<sup>133</sup>

#### *Poor Interventions by Authorities*

Both the local and government officials have also been blamed on their inability to ensure viable fishing methods along the lake. The services provided by these bodies according to the fishermen are some of the poorest and hence have led to destruction of natural resources that are in and around the lake. The municipal untreated sewage, runoff, and storm water, direct discharge of municipal untreated effluent rivers into the lake directly contribute to microbiological pollution which reduces the ability of fish to multiply as expected.

There are also low standards of health in the region caused by a general lack of awareness of good hygiene practices, direct contamination of beach waters through bathing and washing, and uncontrolled waste disposal around the shore line killing the fish species.<sup>134</sup> There is another aspect of poor management of the resources especially by the government agents operating along the lake leading to corruption and degradation of fish species as a result of over-fishing.

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<sup>133</sup>Bwathondi, P.O.J., Ogutu-Ohwayo, R. and Ogari, J (2001) Lake Victoria Fisheries Management Plan. LVFRP/TECH/01/16, Technical Document No. 16, 64 pp. Edited by I.G. Cowx and K. Crean

<sup>134</sup> Karanja, D.M.S. 2002. Health and diseases: a case study of Lake Victoria basin. In: The Lake Victoria Training Project, Annual Report 2002. Pan-African START Secretariat, Nairobi.

### *Environmental Degradation and Over Population*

According to Teshome's view, the Nile basin is characterized by environmental degradation, extreme poverty, high population growth and political instability at the same time some of the world's poorest nations are found in this area.<sup>135</sup> Population increases, economic development, and changing regional values have intensified competition over scarce water resources in and around lake leading to predictions of greater future conflicts over the shared water supplies.

Degrading water quality has not only infringed upon human health, economic well-being, and the environment but has also effectively reduced the overall availability of the resource itself. Such a situation has integrally linked this particular element of water resource equation to the more commonly emphasized supply and allocation components according to Giordano (2003).

Lake Victoria, a lake the size of Ireland, is the African continent's single most important source of inland fishery production.<sup>136</sup> However the lake was attacked by water hyacinth which led to serious decline in fish production. This scenario has led to a significant socioeconomic and environmental impact for the communities around the lake. These impact range from disruption of transport services, disruption of lakeside recreational business; reduction of water supply; poor water quality for human consumption and livestock and spread of waterborne diseases.

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<sup>135</sup> Teshome, W. (2009). Trans-boundary Water Cooperation in Africa: The Case of the Nile Basin Initiative (Nbi). *Review of General Management*, 10(2): 129-138

<sup>136</sup> Balirwa, J. S. et al, (2003). Biodiversity and Fishery Sustainability in the Lake Victoria Basin: An Unexpected Marriage? *BioScience*, 53(8): 703-716

### *Gender Disparity in the Fishing Industry*

The study findings shows that majority of the fishermen are men while very few women are the in business but play other roles other than the actual fishing. The women are involved in other small scale businesses along the lake like buying the fish from the fishermen at whole sale and reselling at retail prices. According to Geheb et al a key point to note at this stage is that virtually all of those involved in the actual harvest of the fish are men. Women tend to work peripherally, buying up fish supplies that are not otherwise taken by the fish filleting factories or, indeed, growing numbers of animal feed industries that exploit the daga.<sup>137</sup> Women often process fish to add value to it and/or are involved in other petty trade along the lake.

#### **4.2.2 The Relationship between the Triggers of Conflicts and Environments Scarcity**

One of the greatest challenges facing the Kenyan and Ugandan fishermen along Lake Victoria is the fact that they have to share the fishing grounds since the lake runs through the two countries. This has threatened the existence of demarcations and boundaries that would naturally prevent access to other peoples' country. Therefore it is not very easy to end the impasse without trying to promote understanding between the fishermen, that they have equal access to the lake and all its resources.

In the words of Phillips, et al the concept of benefit-sharing is sometimes criticized as idealistic approach but detached form the situation in the existing real world.

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<sup>137</sup> Geheb, K., Kalloch, S., Medard, M., Nyapendi, A., Lwenya, C. & Kyangwa, M. (2007). Nile perch and the hungry of Lake Victoria: Gender, status and food in an East African fishery. *Food Policy* 33 (2008) 85–98

Hence, its viability or applicability is questioned.<sup>138</sup> However, other researchers like Sadoff and Grey have attempted to indicate how benefit-sharing could be practically used in trans-boundary cooperation by grouping it into four categories, (environmental, economic, political and catalytic).<sup>139</sup>

Teshome opines that though the riparian countries in the Nile Basin (in principle) agree on water sharing, the question of how to share the water is very complicated and controversial. This complex nature of water-sharing has always been the source of arguments and counter arguments among the Nile riparian states.<sup>140</sup> For instance, Egypt argues that water-sharing should include the assessment of all water resources (“blue” and “green”) available to a country.

On the other hand, Ethiopia argues that any calculation on water-sharing should take into account all useable resources including all inputs, uses and loses. The country insists that it has the right to use the Nile River run-off though water loss through evaporation has to be considered in the assessment of water-sharing. In general, the Nile riparian countries follow different views in assessing their water shares. That is why another scheme of benefit-sharing instead of water-sharing has been suggested with the aim of simplifying the problems and solving the conflicts over water.<sup>141</sup>

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<sup>138</sup> Phillips, D., Marusa D., Stephen, Mc. C., Joakim, O. A. T., (2006), Trans-boundary Water co-operation as a tool for conflict prevention and Broader Benefit Sharing, Global Development studies no.4. Ministry for foreign Affairs, Stockholm

<sup>139</sup> Sadoff, C.W., Grey, D., (2002), Beyond the river: the benefits of cooperation on International rivers, in: “Water Policy”, no. 4

<sup>140</sup> Teshome, W. (2009). Trans-boundary Water Cooperation in Africa: The Case of the Nile Basin Initiative (Nbi). Review of General Management, 10(2).

<sup>141</sup> Teshome, W. (2009). Trans-boundary Water Cooperation in Africa: The Case of the Nile Basin Initiative (Nbi). Review of General Management, 10 (2).

Oyugi indicates that Migingo Island's location on the common border makes it strategic as a potential 'listening' post and patrol base from a security perspective. It also offers a vantage point for control over fishing and other commercial activities in the vicinity. Kenya and Uganda have both claimed ownership of Migingo. The government of Kenya has argued that Migingo is clearly a part of its territory, having been determined early in the colonial period. Britain, the colonial authority, set the boundary between Kenya and Uganda in Lake Victoria and recorded it in The Kenya Colony and Protectorate (Boundaries) Order in Council, 1926.<sup>142</sup>

While verbal pronouncements made by, or attributed to, senior government officials have re-affirmed this claim. The immediate former president of Kenya, Honorable Mwai Kibaki while on a tour of one of the districts on the Kenyan side of the lake, was reported to have assured the fishing community that the Island belongs to Kenya. These claims have been supplemented with physical presence of the governmental authorities on the disputed territory. Kenyan administrative personnel, including police, have been deployed to the island irregularly to ensure cooperation between the fishermen.

The most recent of these were census officials who reportedly conducted a count on the number of Kenyans residing in the Island and other census activities that have taken place before especially in August 2009 although this was a country wide project. Uganda has also laid a strong claim on the island. This has been done partly through

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<sup>142</sup> Ibid, M. A Oyugi, (2009). Migingo Island Sources of conflict, approaches and assessment of intervention efforts by Kenya and Uganda. In Climate change and trans-boundary water resource conflicts in Africa

pronouncements by senior officials where Uganda has left no doubt about its claim by hoisting its national flag and deploying, inter alia, security and administrative personnel on the Island.<sup>143</sup> They are also banking on their president's stand that Uganda owns the water and fish in Migingo Island while Kenya owns the Island.

The study further established that most of the fishermen have adopted destructive fishing methods in the name of increasing their catch and hence profits. But such practices have made the situation worse by killing the fish and therefore preventing further reproduction but escalated competition between the fishermen over the diminishing catch. Bwathondi et al concurs that changes in the efficiency of fishing gears, motorization of canoes and increase in total fishing effort to maintain production have contributed to the decline of the Nile perch since the mid-1990s.<sup>144</sup> This form of fishing has also led to reduced capacity to meet human needs and therefore increased poverty among the fishing families. Finally, there has been a reduction in mesh size of nets used and an increased proportion of immature fish in the catches which means that the fish are never left to mature up.<sup>145</sup>

The findings further indicate that, the municipal by-laws, such as those of Kisumu City, did not predict the growth and type of the industries existing today in Kisumu, Homabay and towns that border the Lake and so there is no capacity to manage the increased wastage from these industries. The industries have consistently flouted the by-

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<sup>143</sup> Ibid Oyugi, M. A. (2009). Migingo Island Sources of conflict, approaches and assessment of intervention efforts by Kenya and Uganda. In Climate change and trans-boundary water resource conflicts in Africa

<sup>144</sup> Bwathondi, P.O.J., Ogutu-Ohwayo, R. and Ogari, J. 2001. Lake Victoria Fisheries Management Plan. LVFRP/TECH/01/16, Technical Document No. 16, 64 pp. Edited by I.G. Cowx and K. Crean

<sup>145</sup> Ibid Bwathondi et al

laws and regulations as there is no monitoring and enforcement mechanism to ensure proper disposition of their discharges. Poor planning, maintenance, and inadequate investment in municipality wastewater-treatment systems have also contributed to the increased untreated effluent discharge into the lake reducing the fish population.<sup>146</sup> This leaves the fishermen competing and scrambling for the few fish that are available hence frequent squabbles and grievances.

The other cause of conflicts between the Kenyan and Ugandan fisher men are the declining environmental resources around the lake, poverty among the fishermen which has pushed most of them into the business without any basic training. As a matter of fact most of the fishermen are still under age while others have joined the business as the only means of survival available after clearing secondary school education. This has also led to a very high population growth leading to congestion of families around the lake and competition for the few available resources.

### **4.2.3 Forms of Interventions**

#### *Environmental Management as a conflict Mitigation Strategy*

Environmental benefit derives from cooperation that contributes to better management of ecosystems and hence giving benefit to the river. This also includes improved water quality and soil conservation. Economic benefits derives from effective and fruitful cooperative management and development of trans-boundary rivers that result in getting

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<sup>146</sup> Odada, E., Olago, D., Kulindwa, K., Ntiba, M. & Wandiga, S. (2004). Mitigation of Environmental Problems in Lake Victoria, East Africa: Causal Chain and Policy Options Analyses. *Ambio* Vol. 33 No. 1–2.

important benefits from the river such as increased food and energy production, flood-drought management and increased navigation. Political benefits derive from minimizing tensions among countries and people due to cooperation. The fourth benefit (catalytic) derives from trans-boundary rivers as catalytic agents that stimulate for greater cooperation and economic integration between states including trade.<sup>147</sup>

#### *Peaceful Co-existence to Reduce Conflicts around Lake Victoria*

One of the most viable suggestions on the mitigation of the conflicts is to promote peaceful co-existence between the fishermen. This would reduce the perennial conflicts and more structured fishing process without causing tensions between the fishermen. This could also lead to more development opportunities hence reduce on the high levels of poverty experienced by most of the fishermen. Trans-boundary water cooperation is usually helpful in reducing poverty, preventing tensions and conflicts, and protecting natural resources. Moreover, it encourages riparian states to establish strong cooperation in sectors other than water development paving a way for more fruitful and peaceful political relations among countries.<sup>148</sup>

The location of Migingo Island seems to be strategic from a security and general trade perspective. It lies on the lake routes that link Kenya and Uganda. Indeed Ugandan authorities assert that its officials first moved on to the island in 2004 to ‘check smugglers and criminals who were using the rock as a stage to carry out their criminal

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<sup>147</sup> Sadoff, C.W., Grey, D., (2002), Beyond the river: the benefits of cooperation on International rivers, in: “Water Policy”, no. 4

<sup>148</sup> Teshome, W. (2009). Trans-boundary Water Cooperation in Africa: The Case of the Nile Basin Initiative (Nbi). Review of General Management, 10 (2).



activities on territorial waters'. The strategic location makes the island an attractive spot to establish an administrative base. Thus, besides generating revenue from taxes levied on fishing and support activities, the surrounding lake routes and trade in non-fish commodities can be controlled from there.

However the two countries have taken a number of actions separately and jointly in addressing the controversy over the Island. Furthermore, the actions have been taken and implemented at different levels where official pronouncements have come from the highest levels in government.<sup>149</sup> The first major joint step taken by Kenya and Uganda to resolve the Migingo dispute was at the level of ministers. In this case representatives of the two countries, led by cabinet ministers, met in Kampala from 12 to 13 March 2009 to tackle the issue though there was no much realized.

There are two main problems or issues that underlie the Migingo dispute. One is fish stocks. Fish from the lake has become popular as a dish and is appreciated widely in Eastern Africa and beyond. Therefore stocks are diminishing. This is due not only to increasing demand, but also to the effects of environmental degradation. Thus fishermen are pressed to seek new fishing areas.

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<sup>149</sup> Oyugi, M. A. (2009). Migingo Island Sources of conflict, approaches and assessment of intervention efforts by Kenya and Uganda. In Climate change and trans-boundary water resource conflicts in Africa.

The other problem is the boundary line. Demarcation along the maritime border between Kenya and Uganda has not been done. There are no beacons or any form of marking of the boundary line. The rising demand for fish, the resultant depletion of stocks and lack of borderline demarcation make for a potentially explosive situation. Hence to stem the current conflict and avoid a recurrence, the boundary should be demarcated as an immediate measure. This should be feasible since the line is well described in the basic common reference document.

#### *External Interventions*

Kenya, Uganda and Tanzania founded the Lake Victoria Fisheries Organization (LVFO) in 1994 in the context of the Lake Victoria Environmental Management Plan. As its name suggests, cooperation efforts first focused on the fish resources. Currently, the LVFO forms part of the East African Community (EAC) that has extensive plans about regional integration. In 2003, Kenya, Tanzania and Uganda signed the Protocol for Sustainable Development of Lake Victoria Basin on the basis of which a Lake Victoria Commission established. Since the lake is also the source of the White Nile it is an important asset for all countries within the Nile Basin. In spite of these recent, positive developments, there remains tension between the management of the lake to benefit the riparian communities and managing the lake to benefit the downstream countries of the Nile. According to Oloo, one of the initiatives to promote co-operation among the riparian states is the Nile Basin Initiatives (NBI). The NBI contends that it is only through comprehensive planning, management and utilization of natural resources,

principally water, in a non-conflictual regional environment, that African countries can address the perennial problems of widespread famine and general lack of development.<sup>150</sup>

### **4.3 Conclusion**

From the analysis above, the findings have shown that the issues surrounding the perennial conflicts around Lake Victoria are numerous and very intricate. These issues are water as the major shared resource, controversy over Migingo Island, poor methods of fishing, poor interventions by authorities, environmental degradation and over population. Because these issues have created a situation in which the warring communities have to compete in order to get fish and other resources around the lake, they have developed deep seated grievances, frequent fights and grudges amongst themselves. These conflicts have gone on for a very long time and viable solutions seems to have failed. These conflicts however, could be addressed through programmes on environmental management, demarcating administrative and political boundaries between the two countries, promoting peaceful co-existence among the fishermen. The stakeholders should also provide training programmes for the fishermen on diversifying their livelihood strategies, so that they do not have to depend on fishing only. They should help the fishermen in practicing effective use of the Lake Victoria Fisheries Organization (LVFO) together with the other organizations that are operating around the lake.

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<sup>150</sup> Oloo, A. (2007). The Quest for Cooperation in the Nile Water Conflicts: The Case of Eritrea. *African Sociological Review*, 95-105

## **CHAPTER FIVE**

### **CONCLUSION**

#### **5.1 Summary**

This study sought to establish the relationship between environmental scarcity and trans-boundary conflicts. It focused on the Kenyan and Ugandan fishermen around Lake Victoria. It has been done in five stages which forms the study chapters. The first chapter is the introduction which gives the background of the study, the research problem, and objectives of the study, the literature review on the various concepts of the study and the research gaps, justification of the study, theoretical framework and winds up with the research hypotheses and methodology. Chapter two is a critical review of the key concepts underlying environmental scarcity and trans-boundary conflicts. These concepts have been looked into based on the scarcity theory, resource scarcity and ingenuity, environmental scarcity and conflict, the concept of renewable natural resources and the contextual link between environmental scarcity and trans-boundary conflicts.

In chapter three the researcher analyzed, presented and interpreted the research data. This was done on the context of the occurrence of the conflicts between the fishermen along Lake Victoria and their relationship with the concept of shared resources, the methods on interventions that have been employed in the management of these conflicts and suggestions that have been proposed by various stakeholders. Chapter four is a discussion on the issues that have emerged from the field data presented in chapter three. These issues have been found to be the major triggers of conflicts around

Lake Victoria, their relationship with environmental scarcity and the forms of intervention that have been used to resolve the conflicts together with suggestions from various stake holders.

## **5.2 Key Findings**

The study findings shows that most of the respondents were male who are mainly involved in the actual fishing while the women do other businesses along the lake. Such business are like retailing on the fish and other smaller businesses that have come up along the lake. Majority of the fishermen in lake Victoria are young persons (mainly youths) who are just beginning to take responsibilities in the society. The results showed that they have found fishing along the lake as the most immediate and viable source of income to sustain their livelihoods with most of them having cleared secondary level education. This has been coupled by the fact that the business does not require any formal skill and so the secondary school graduates can easily venture into it without going through formal training as the skills are acquired while on the job.

The study found that most of the respondents have been in the fishing industry for 6-10 years and therefore are people who are experienced in fishing. In relation to age groups, the study concludes that most of the fishermen in Lake Victoria did not go through the “O’ levels of education since most of them seem to have joined the industry when they had not acquired the adulthood age which also coincides with the period they are supposed to have cleared secondary school education.

The results further show that the fishermen's earnings were quite minimal in the scale of up to Ksh. 3000 per month and therefore they earn just enough to sustain them through their basic livelihoods. This is so despite the fact that a good number of them supplement their earnings with farming although at a low level. This is a clear indication that fishing is the immediate form of employment for the youths especially secondary school graduates and primary school drop outs and those who cannot continue with their education.

Majority of the respondents reported that there have been several cases of conflicts along the lake between the fishermen more so from Kenya and Uganda. They have been there for more than two years and have experienced several of cases of conflicts around the lake. These conflicts are mainly fought over the grabbing of the Migingo Island by the Ugandan government, disagreements over the ownership of the fishing grounds, political differences, the high levels of poverty among the fishermen, declining natural resources around the lake especially reduction in the fish and water levels. This situation has been made worse by the invasion of the waters by the hyacinth weed.

There are also no clear boundaries between the Kenyan and Ugandan fishing grounds and therefore the fishermen in most cases find themselves in their neighbours fishing grounds hence leading to conflict at 55.6%. The conflicts are further escalated by the poor management of resources around the lake especially water at 53.7% while the

government agents operating along the lake by collecting taxes were blamed on the conflicts at 11.1%.

The findings are a pointer that the fact that the Ugandan government through its president, announced that they own waters in Migingo Island and therefore the fish inside is for Ugandans, their people have taken that as an advantage. They keep on causing conflicts with the Kenyan fishermen who try to fish around the island despite the fact that Migingo Island is geographically in Kenyan soil. The political angle taken by the conflicts has also been caused by the same statements and therefore leading to more feelings of frustrations among the Kenyan fishermen.

The study further established that failure to create successful institutions by the two governments to manage water as a shared resource is another source of conflicts in the area. This has also led to mismanagement of the institutions through corruption and bribery. The conflicts are further fought due to the decreasing supplies of physically controllable resources around the waters and poor implementation of the international relations policies.

Further the triggers of trans-boundary conflicts are the relative power differences between the two countries, environmental stress due to population growth, resource depletion, and creation of unsustainable institutions without proper management skills or invasion by corrupt deals in the management of the institutions. From the findings, scarcity of water as a shared resource played a significant role in the conflict between the

two countries because everybody is scampering for the ownership of the fishing grounds and other resources around the lake.

The shared resources pose a particular management challenge because of competing local and national interests and limited mechanisms for cooperative action between the fishermen from Kenya and Uganda. Majority of fishermen are poor and can hardly sustain their livelihoods. Therefore as a form of survival tactics some of their strategies to cope with poverty in the light of inadequate resources and viable source of income have resulted in improper use of resources around the lake and environmentally unsound social practices leading to degradation of the resources.

However the conflicts have not gone without attempts to intervene. For instance there were suggestions that the fishermen should be responsible in their fishing activities by ensuring that they do not use chemicals and herbs during fishing. They should work peacefully with each other and strive to find alternative and sustainable sources of income other than fishing.

The fishing organizations have been very instrumental in advocating for better terms of services for the fishermen. They educate the fishermen on the management of available fish resources and protect the fishermen against sea pirates and encourage them to pursue alternative sources of income. They also help in financing the fishermen, control the use of herbs and chemicals and the methods of fishing employed by the fishermen as well as advancing the grievances of the fishermen around the lake to the



relevant authorities. The NGOs/CBOs/churches/international community have been developing and empowering the fishermen with alternative means of livelihoods, educating the fishermen and locals on environmental conservation and offering training services on modern fishing methods and other economic opportunities for diversification of income sources.

### **5.3 Recommendations**

Based on the findings above, the researcher recommends that;

Since trans-boundary water cooperation is usually helpful in reducing poverty, preventing tensions and conflicts, and protecting natural resources, the two governments should establish strong cooperation in other sectors other than water development in order to pave way for more fruitful and peaceful political relations among the countries. Differing levels of development, infrastructure and financial capacity complicate the already difficult task of coordinating effective regimes among the two countries therefore the governments should work towards empowering the youths with other professions in order to prevent over-dependence on fishing.

Towards this end, Kenya expects Uganda to cooperate and understand that water needs are best served through cooperation and conservation of the Lake Victoria Basin catchment. Kenya would like to see the people of Uganda contributing meaningfully to conserving catchment in the upper riparian state to save Lake Victoria and assure the livelihood of the 15 million habitants on its side of the basin. International water laws address the basic interests of the international community to maintain global peace and

security. Their application nevertheless remains limited, since they still lack maturity, sophistication, clarity, and enforceability, and hence are rendered powerless when a country chooses to ignore the laws in question.

Therefore there is need for increased emphasis on the roles of governments, NGOs, and local authorities in monitoring and enforcing both national and international regulations regarding water quality and equitable allocation. As well as overtly supporting trans-boundary collaboration, promoting funds and awareness and capacity building, and encouraging community involvement. The process should take into account the formulation of goals by independent riparian governments for the involvement of inhabitants. This should involve defining their rights, responsibilities, and roles within an extensive institutional framework for contributive planning and management at various levels and across sectors.

For this reason, the concept of benefit sharing should be encouraged among the states and the individuals who share the lake to cultivate the culture of shared responsibility towards the resource and the need to build capacity towards management of Lake Victoria. Water is the most common and important substance to the extent that it is equated to life. Water is a renewable and a finite resource not putting into consideration that less than three percent of water in the universe is fresh therefore, the need for proper management. This is coupled by the fact that it supports life of both flora and fauna.

As such the researcher recommends that further studies should be done to examine the current level of fish catchment in Lake Victoria in order to establish its sustainability to the fishing communities. There other area that has been suggested for further research is on the means to provide effective and sustainable training on fishing around the lake so that it can be adopted as a career by those who are interested in it.

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