AN ASSESSMENT OF BEACH MANAGEMENT UNITS IN COMBATING ILLEGAL FISHING IN LAKE VICTORIA, TANZANIA: A CASE OF BUKOBA DISTRICT

By

Edwin Wakisa Kashililika

A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Science in Environmental Management (MSc EM) of the Mzumbe University

2013

AN ASSESSMENT OF BEACH MANAGEMENT UNITS IN COMBATING ILLEGAL FISHING IN LAKE VICTORIA, TANZANIA:
A CASE OF BUKOBA DISTRICT

2013

CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University a dissertation entitled **An Assessment of Beach Management Units in Combating Illegal Fishing in Lake Victoria, Tanzania: A Case of Bukoba District** in partial/ fulfillment of the requirements for award of the Degree of Master of Science in Environmental Management of the Mzumbe University.

…….

Supervisor

…….

Internal Examiner

Accepted for the Board of Institute of The Development Studies

_____

DIRECTOR

DECLARATION AND COPYRIGHT

I, **Edwin Wakisa Kashililika**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University in a similar or any other degree award.

Signature ……

Date…….

ACKNOWLEDGEMENT

I'm most grateful to the people who have assisted me in developing this work. In particular, I would like to express most sincerely thanks to Mr. Ngowi of the Mzumbe University who supervised this work, for his useful critics, comments and guidance during the time I was developing proposal and writing this research report. His assistance is highly appreciated. Special thanks are also extended to my wife Corodia Godwin Mkisi and my children for their continuous encouragements.

ABBREVIATIONS

BDC	Bukoba District Council
BMU	Beach Management Units
CBD	Convention on Biological Diversity
CIFA	Committee for Inland Fisheries of Africa
CPRT	Common Pool Resources Theory
EAC	East African Community
EAFFRO	East Africa Freshwater Fisheries Organization
EEZ	Exclusive Economic Zones
FGD	Focus Group Discussion
FAO	Food and Agriculture Organization
IFMP	Integrated Fisheries Management Plan
ITCZ	Inter-tropical Convergence Zone
LVFO	Lake Victoria Fisheries Organization
LVFRP II	Lake Victoria Fisheries Research Project Phase II
LVEMP	Lake Victoria Environmental Management Project
MNRT	Ministry of Natural Resources and Tourism
PCCB	Prevention and Combating of Corruption Bureau
SPSS	Statistical Package for Social Sciences
UN	United Nations
URT	United Republic of Tanzania
WB	World Bank

ABSTRACT

The study is about An Assessment of the Beach Management Units in combating illegal fishing with specific reference to Bukoba District. The aim of the study was to identify factors leading to ineffective performance of Beach Management Units in combating illegal fishing in Lake Victoria, Tanzania. Ninety six (96) respondents were interviewed using structured questionnaires also information collected from a fishery officials at District and Regional level by focused group discussion. Descriptive data were analyzed by the descriptive analysis method and SPSS 20 version and presented in frequencies. The findings revealed that the performance of the BMUs is poor because of, lack of boats for patrol (fishery patrol vessel), lack of source of revenue, difficult to get information about illegal fishing, BMUs leaders were found to be part of illegal fishing, also intimidation to BMUs' leaders by big fishers who practiced illegal fishing and lastly voluntarism nature of work demoralizes the BMUs leaders to concentrate in combating illegal fishing. Given the above mentioned reasons fueling illegal fishing, this study recommennds local and Central Government to support the BMUs to improve its performance to achieve the sustainable and equitable exploitation of fishery resources. The basic support recommended include: Adequate funds to support their operations including the purchase of the fishery patrol vessel, awareness raising/sensitization to local authorities and community living along Lake Victoria shores on the importance of these Community-Based Organizations in combating illegal fishing, the impact of illegal fishing and how to provide information to the BMUs leadership about illegal fishing.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER ONE
INTRODUCTION

1.1 Background Information

From ancient times, fishing has been a major source of food for humanity and a provider of employment and economic benefits to those engaged in the industry.The wealth of aquatic resources was assumed to be an unlimited gift of nature. However, with increased knowledge and the dynamic development of fisheries after the second world war, this myth has faded after realizing that aquatic resources although renewable, are not infinite and need to be properly managed if their contribution to the nutritional, economic and social well-being of the growing world's population is to be sustained (FAO, 1995).

Most of the world fisheries today are either overexploited or in a state of full exploitation because of greater fishing efforts and increased competition between fishers, vessels or nations over the resource. National governments, development agencies and development practitioners and scholars around the world are working hard on how best to manage the fisheries resources without compromising the biological, economic and social objectives for the benefit of present and future generations (Salehe, 2008).

Fisheries co-management approaches have been widely adopted internationally in response to the ineffectiveness of government to prevent the devastation of fish stocks witnessed across the world. Increasingly, the nature and performance of governance within fisheries has come to be seen as essential, providing a framework within which fisheries can be more sustainable and effectively managed (Nunan, 2010).

Co-management is defined as the sharing of the management responsibilities between the state and fishing communities (Kateka, 2010). The idea brought to the hope that co-management could lead to a balanced exploitation of natural renewable resources and eradicate illegal fishing in Lake Victoria.

According to Medard (2000), Tanzania occupies about 51% of the total Lake Victoria surface of 68,800 km^2. The period before colonial, fishing was an activity which was closely integrated with the culture and traditions of fishing communities. Fishing activities and traditional fisheries management systems were linked with traditional ownership of resources (Owino, 1999). Local leaders were vested with powers to control exploitation of fish resources. Fishing was limited to inshore areas of the lake. The catch was sufficient for food and subsistence barter trade. The traditional fisheries management system was based on community ownership whereby responsibility for the management of the fisheries resources was in the hands of the communities themselves (Ibid).

During the colonial period, the traditional fisheries management system based on community ownership was replaced by a centralized management system. The centralized system which consisted of restrictions on the exploitation of the resources was imposed on the local users (Ibid). During this period, improved fishing gear such as gillnets, trawl nets and long lines were introduced (Ibid).

After independence, in 1961, the new government established the Fisheries Division under the Ministry of Agriculture and Livestock in 1966. The national policy was based on a socialist ideology where the economy was run by the State. Under this policy, people were mobilized from their traditional settlement to villages where they could live together and work together for the good of all. This new settlement was planned by the central government, called *Ujamaa* villages. Under this new settlement with the government could be able to provide social services such as education, health and other infrastructure (Nyerere, 1968). A top-down approach was maintained in the fisheries management, where decisions and plans were made by the central government and later sent to communities and/or lower levels of government for implementation.

In 1970 Fisheries Act No 6 of 1970 was enacted by the parliament of Tanzania to replace the colonial legislation. Under this Act, the minister responsible for fisheries

was empowered to develop subsidiary regulations (URT, 1970). In general terms, the Government enforces these regulations through a top-down approach (Bulayi, 2001).

In the mid 1980s, the government embarked on a major economic and political reform program. The economic reform program transformed the command based economy into a market oriented type of economy. A corresponding new fisheries policy was developed in 1997. A major component of this policy was the devolution of fisheries management obligations of centralized control to communities. The economic reform was a force factor into the enactment of fishery Act that could replace Act No.6 of 1970, which had been operating during the command based type of economy.

Until the late 1990s, the fisheries of Lake Victoria were managed by regulations developed and enforced by central government, with out-posted fisheries staff. There was very little, or no, participation by fisheries communities in resource planning, management and development, but the need to involve fishing communities in management grew from an observable decline in fish catches from the lake, environmental degradation, and failure of top-down fisheries management (Salehe, 2008).

In 2003, Fisheries Act no. 22 of 2003 was enacted by the parliament of Tanzania and with associated Regulations followed. Overall policy on mainland fisheries was guided by the National Fisheries Sector Policy and Strategy Statement since 1997. Act no. 22 of 2003 was enacted to address problems that had been facing the Lake resources. The implementation provided for the establishment of co-management through Beach Management Units (BMUs). The principal fisheries regulations also reviewed to accommodate new developments in the industry and to cater for the New Act and the Fisheries Policy from 1997.

In 2004, the integrated fisheries management plan (IFMP) project brought the Partner States together to agree on regional guidelines for BMUs which were then used to produce national guidelines in Tanzania (Ogwangi, 2009). A BMU is a community-

based organization which is legally accepted as a representative of a fishing community regarding fishery resource utilization and management. The primary goal of this partnership is the management of the resources where government entered into an agreement with the BMUs on the protection and sustainable utilization of the fish resources (Salehe, 2008). Thus, BMU is a group of devoted stakeholders in a fishing Community whose main function is management, conservation and protection of fish in their locality in collaboration with the Government (URT, 2003).

In order to involve stakeholders, legislation has been enacted to lay down structures make possible a shift from the command and control approach previously adopted by the Government to a co-management approach that involves stakeholders at all levels. Consequently, all members of the fishing community, including boat owners, boat crew, managers, fish processors, fishmongers, local gear makers, villagers from where there are fish landing sites, were to be brought into the co-management through membership of local institutions called Beach Management Units (URT, 2005).

The Lake Victoria Fisheries Organization (LVFO), which was set up to coordinate fishery management across the lake, developed harmonized BMUs guidelines to help govern the operations of these newly created institutions. A total of 1,069 BMUs was formed around the entire lake and have become involved in the co-management of the fisheries (Ogwangi, 2009).

Lake Victoria Environmental Management Project (LVEMP) was prepared and implemented from 1994 to 2006, that made a significant improvement in the knowledge base and environmental management of the lake basin and its resources that include: - Establishment of some 400 Beach Management Units (BMUs) which is the community –based resource management to assist with enforcement fishing regulations and collection of data on fish catch (URT, 2006).

The Kagera region occupies about 10017 sq km of Lake Victoria. The region is flanked by Lake Victoria to the East, Uganda to the North and Rwanda and Burundi to the west.

Kigoma, Mwanza and Shinyanga regions in the south of Tanzania, borders the region. There are 169 formed BMUs. Within the year 2005 to 2010 a total of 653 beach seines/dragging nets and 1111 monofilament nets were destructed due to the fact that these types of fishing gears are not allowed (URT, 2008).

Bukoba District is among seven districts that form Kagera region. It lies between latitude 1° 6′ and 1° 4′ south of the Equator and 31° 16′ east of the Greenwich line. It is approximately 1100 meters above sea level. The District has two councils (Bukoba Municipal Council and Bukoba District Council). The study was conducted in Bukoba District council. The council has eleven (11) formed BMUs. The establishment of BMUs of which its main activity is to fight the use of illegal fishing gears such as beach seines, monofilament nets and undersized gill nets was considered as the salvation mechanism for the control of illegal fishing and that could have been resulted in the sustainability of fish resources and the community's livelihood along the Lake shores. With unknown reasons, the illegal fishing by using the above mentioned gears continue and therefore threatening the sustainability of fish resources and the livelihood of the community whose lives depend on the fishery industry.

1.2 Problem Statement

Fisheries Act no. 22 of 2003 which *inter alia* was enacted to address the problem of illegal fishing that had been facing the Lake Victoria resources. The implementation provided for the establishment of co-management through BMUs in every fish landing place, it was expected that the problem of illegal fishing through the use of illegal gears such as beach seines, monofilament nets and undersized gill nets could have come to an end. But the use of these destructive fishing gears still persists to a large degree. Various studies based on the Tanzania part of Lake Victoria conclude that in spite of conducting expensive patrols as well as confiscating illegal fishing gear, illegal fishing is still a major problem in Lake Victoria (Manhattan *et al,* 2005).

1.3 Objectives of the Study

1.3.1 Main Objective

The main objective of this study was to assess effectiveness of BMUs in combating illegal fishing in Lake Victoria, Tanzania.

1.3.2 Specific objectives

The specific objectives of this study were to:

i. Assess the activities performed by BMUs of Bukoba District in Lake Victoria.
ii. Investigate the reasons for the persistence of illegal fishing practices in the area.
iii. Examine the challenges facing BMUs in combating illegal fishing.
iv. Explore measures to improve the BMUs performance in the eradication of illegal fishing.

1.4 Research Questions

The study aimed at identifying factors leading to ineffectiveness performance of Beach Management Units in combating illegal fishing in Lake Victoria, Tanzania. The study focused on answering the following research questions:

i. What are the activities performed by Bilolo and Mbembe BMUs in relation to combating illegal fishing in the Bukoba District?

ii. What are the causes for the increased illegal fishing practices despite the existence of BMUs?

iii. What are the challenges to BMUs in combating illegal fishing in Lake Victoria

iv. What can be done to improve the BMUs performance?

1.5 Significance of the Study

It is hoped that the results of this study attempt to fill the gap in the existing literature about the effectiveness of BMUs in combating illegal fishing and therefore the sustainability of fish resources in Lake Victoria. Also the results will be informative to district and region fishery department officers with necessary factual information on the performance of BMUs in the eradication of illegal fishing for sustainable fishery and livelihood of the community living along the Lake Victoria shores, lastly the findings of this study can be used by other scholars interested in this area of study as an empirical literature review.

1.6 Limitations of the Study

Bukoba District Council has eleven (11) BMUs. Due to limited time and financial constraints, only two (2) BMUs were covered. The problem faced were; In some areas respondents refused to fill the questionnaire with the reason that they are supposed to be paid. The problem was solved by distributing questionnaires in excess to access those who were ready to fill the questionnaires.

CHAPTER TWO
LITERATURE REVIEW

2.1 Theoretical Framework

An Assessment of BMUs in combating illegal fishing for the sustainability of fisheries is based on Common pool resources theory (CPRT) which states that, common pool resources are the shared resources that are characterized by nonexclusively and divisibility. Nonexclusively implies that resources can be exploited by anyone, while divisibility means that the capture of part of the resource by one group subtracts it from the amount available to the other groups (Tietenberg, 2009). A commercially valuable species is like a double-edged sword. On the one side, the value of the species of humans provides a strong, current reason for human concern about its future. On the other hand, its value may promote excessive harvest. Commercially exploited biological resources can become depleted to the point of extinction if the population is drawn down beyond a critical threshold (Ibid).

Basing on this theoretical perspective, the Government of Tanzania had formulated fisheries policy in 1997 also established a fisheries Law in 2003 and regulations directing the establishment of fisheries community-based management of which its functions could contribute to the sustainability of fisheries. In response to that law and regulation that had been put in place, people along the Lake Victoria shores whose livelihood depends on fishery established BMUs as an instrument for the maintenance of the sustainability of fisheries. Despite the establishment of these BMUs the problem of illegal fishing by using illegal fishing gears continued at an alarming rate as a result threatening the sustainability of the fishery industry.

2.2 Reviews of Empirical Studies

In 1982, the United Nations (UN) Third Conference on the Law of the Sea extended management jurisdiction over fisheries resources to 200 nautical miles (370.4 km), known as Exclusive Economic Zones EEZs (Kaitala and Munro, 1995). It was thought that 90% of marine fisheries would be encompassed by these zones and therefore be

economically managed (Ibid). In spite of this the world's fish stocks continued to decline and many stocks collapsed including those within EEZs. An example of this is the collapses of the Northern cod (Gadusmorhua) at the Grand Banks, Canada, in the 1980s, the cause of which remains under fierce debate (Myers and Hoening, 1997). In 1995 the United Nations Food and Agriculture Organization (FAO) declared; "69% of the world's marine [fish] stocks are either fully to heavily exploited, overexploited, depleted and therefore are in need of urgent conservation and management measures" (Lauck *et al*, 1998).

The obligation to combat threats to global biodiversity is based on one of the most important international agreements, the Convention on Biological Diversity (CBD), prepared in Rio de Janeiro in 1992 (Ogutu and Ohwayo, 2003). In ratifying the CBD, Governments agreed to take action to: conserve biological diversity; ensure sustainable use of its components, and ensure fair and equitable sharing of benefits from genetic resources. In this regard FAO has recognized the vulnerability of aquatic ecosystems and associated biological, and noted that the myth that fisheries were an unlimited gift of nature was fast fading with increased exploitation pressure to meet the explosion in demand for aquatic ecosystem products and increasing to meet the nutritional, economic and social well being of the world's growing human population.

Lake Victoria was discovered in 1858 by the British explorer John Speke, while on his search for the source of the river Nile (Chege, 1995). Lake Victoria, covering an area of 68,000 km², it is the second largest lake in the world. It is shared by the three East African countries with Tanzania occupying 51%, Uganda 43% and Kenya 6%. (Kiwale, 2003). It is the largest freshwater lake in Africa and second Superior Lake in the world. The lake lies across the equator and has a shoreline of 3,450km with a catchment area of 194,200km² extending into Rwanda and Burundi. Lake Victoria's basin supports a population of 35 million people who derive their livelihood directly or indirectly from the resources within the basin. Lake Victoria's total fish production is estimated at one million tones, worth US$650 million of which US$340 million is generated at the shore and US$310 million is generated from fish exports estimated at

86,000 tones (LVFO, 2007). The Lake Victoria fisheries sub-sector provides employment to over 3 million people of whom about 200,000 are fishermen. Lake Victoria fisheries contribute much to GDP: 0.5 per cent in Kenya, 2.5 per cent in Tanzania and 2.6 per cent in Uganda, in terms of food, income, employment and foreign exchange earnings. Per capita fish consumption is 5kg in Kenya, 8kg in Tanzania and 10kg in Uganda (Ibid).

The three East African partner states have long recognized the economic importance of fisheries and the need to jointly manage the resources for socioeconomic growth for the present and future generations of the riparian communities. The three partner states cooperation on the fishing matters of Lake Victoria dates back to 1928, when an authority was established to collect fishing statistics. Collaboration was strengthened with the formation of the East African Freshwater Fisheries Organization (EAFFRO) in 1947 and later with the formation of the East African Community (EAC) in 1967.

With the collapse of the EAC in 1977, the partner states lost a platform to address common fishing concerns. Under the auspices of the Food and Agriculture Organization (FAO) of the United Nations and the Committee for Inland Fisheries of Africa (CIFA), the Partner States established a sub-committee for Lake Victoria to collaborate on fisheries matters. On 30th June 1994 the Partner States, signed a Convention in Kisumu, Kenya for the establishment of the Lake Victoria Fisheries Organization (LVFO) (FAO 1995). The LVFO is an intergovernmental technical organization responsible for the joint management of Lake Victoria fisheries resources. With the rebirth of the EAC in 1999, the LVFO became a specialized institution of the East African Community under Article 9 of the EAC Treaty.

The history trace reveals that the livelihood of the peoples around the shores of Lake Victoria at the beginning of the twentieth century depended a great deal on their fishery, using simple gear like spears, basket traps and seines made out of papyrus stalks. Their major pre-occupation then was management, planning because at the time, the stocks were predominantly virgin and plentiful (Twongo *et al* , 1991). Fishing pressure on the lake began to intensify in 1905 when the British introduced flax gill nets, which soon

replaced the local simple gears. With overfishing, catch sizes began to drop, fishermen turned to nets with ever smaller mesh sizes and thus decimated both the breeding adults and young of many native species. By the 1950s, popular species, such as ngege - *Oreochromis esculentus,* had diminished so severely that they had become commercially extinct. To remedy the situation, British officials introduced new fish in the lake's waters that was, the Nile tilapia - *Oreochromis niloticus,* and Nile perch - *Lates niloticus* (Chege, 1995).

The regeneration of the new introduced species was high to the extent that in 1980, a survey of the Lake revealed an abrupt and unexpected change a total reverse in biomass composition. Cichlid numbers which were at 80% before the introduction of new species had fallen drastically, comprising only 1 per cent of fish weight, while those of the Nile perch had suddenly jumped to constitute 80 per cent (Ibid). This situation led to the huge boom in the fisheries in the 1990s, and attracted fish processing plants.

The increase of human population in the World has led to the increase demand for fish resources on one side, but on the other side, the World economic liberalization led to the establishment of fish processing industry around Lake Victoria shores to meet the World increased demand for fish resources. The result of this situation led to competition in fishing to both large scale and small scale fishers. The consequences were the rapid depletion of the resources, the destruction of ecosystems and fish habitats due to the absence of appropriate management of fishery practices (Drammeh, 2000).
Tanzania is located in Eastern Africa between longitude 29^{o} and 41^{o} East, Latitude 1^{o} and 12^{o} South. The country is bordered by Kenya and Uganda on North, Rwanda, Burundi and the Democratic Republic of Congo in the west, Zambia, Malawi and Mozambique in the south, and the Indian Ocean in the East. The total area of the country is 945,090 km^2 made up of 30 administrative regions. The country has a spectacular landscape featured by physiographies regions of islands, and coastal plains to the east, an inland saucer-shaped plateau and the highlands. The human population of the country is 44,928,923 million people with a growth rate of 2.7 % per annum (URT, 2013). This study is about An Assessment of the BMUs as the fishery co-management

instrument for combating of illegal fishing for the sustainability of fish resources, the aim is to reveal out the implementation impediments that lead to the increasing rate of illegal fishing.

The study is based on Common pool resources theory (CPRT) which states that, common pool resources is a resource that benefits a group of people, but which provides diminished benefits to everyone if each individual pursues his or her own self interest. The value of a common-pool resource can be reduced through overuse because the supply of the resource is not unlimited and using more than can be replenished or can result in scarcity. Overuse of a common pool resource can lead to the tragedy of the commons problem (Ostrom, 1995). Common pool resources are often managed by a combination of governments and other stakeholders. A common-pool resource is such that which it is costly to exclude individuals from using the good either through physical barriers or legal instruments and the benefits consumed by one individual subtract from the benefits available to others" (Ibid). And, therefore a common-pool resource is subject to problems of congestion, overuse and potential destruction.

The central government policies and global markets are some of the key factors that cause change in the commons. In this regard, an analysis of social-ecological systems whether it is on a micro level or macro-level should recognize that drivers of change both internal and external (Folke *et al*, 2007). In this context, although governance may begin at the community level, attention to the community level alone is not likely to be sufficient to provide the whole management picture because of cross-linkages. Governance of the commons is a complex systems problem (Berkes, 2006).

The theoretical justification for the State generally revolves around a set of assumptions concerning human behavior, collective interests and the capabilities of the State to pursue such interests. The origin of the State in natural resources management can be attributed to the perceived failure of individuals to behave in a socially responsible manner in the use and control of natural resources (Bryant & Bailey, 1997). It is argued that in pursuing individual interests, people inevitably become entangled in conflicts

with one another over resources in the absence of the State capable of imposing order in the collective interest. Hobbes (1651) in *Leviathan* in his book he describes how in a Stateless World people pursue their individual interests resulting in what he referred to as social anarchy. He argues that this was so because of the scarcity of environmental and social resources which forced people to acquire power over the labor and environments of others so as to achieve social and economic well being. He further observes that, since each person sought power over others, a highly destructive process ensued in which extreme social and economic uncertainties were the norm. Drawing on social contract theories, Hobbes argues that to avoid such a fate, rational individuals would recognize the need for a State to impose order on people, and that people should surrender some of their liberty in order to allow the state to do so. The price of the order is therefore, a state is a monopoly of the means of coercion (Hobbies, 1968).

Lake Victoria Fisheries Organization (LVFO) objectives are to promote better management of fisheries on Lake Victoria, to coordinate fisheries management with conservation and use of the lake resources, to collaborate with agencies and programs on the lake, to coordinate fisheries extension and to advise on introduction of exotic organisms. The Lake Victoria Environmental Management Program (LVEMP), begun in 1997, to support catchment protection in ten districts around Lake Victoria and aquatic biodiversity in the lake (Baer , 2001).

Co-management is broadly defined as a collaborative and participatory process of regulatory decision-making between representatives of user groups, government agencies and other stakeholders (Jentoft, 2003). The Fisheries Management Plan of Lake Victoria is based on the co-management approach, which the plan defines as increasing local participation and involvement in decision-making, implementation, monitoring and enforcement. The plan recognizes that legislation, new institutions and resources are all needed to support co-management. The foundation of fisheries co-management in East Africa are the community-based BMUs, which have been formed all around the lake in accordance with regionally agreed Harmonized Guidelines for BMUs (URT, 2005).

The primary advantages of co-management are that, the *only legal right of access* to exploit fisheries resources and designated landing sites is through joining a BMU. If a fisher does not join then he/she cannot operate legally in fisheries. The BMUs allow for active involvement in decision-making processes governing the management of fishery resources in partnership with Government; they allow control of access to fishery resources by limiting numbers and types of fishing boats and gears in partnership with the Government, able to set management rules locally and at lake wide level through by-laws and ordinances Provides a powerful lobbying force especially within a larger lake wide management organization that can influence, where necessary, national policies and regulations, attracts government and other funding because of clear poverty focus, gender sensitivity and participatory decision-making, able to raise local revenue for its operations and for fisheries management and development; Attracts training to improve various management skills of local people; Improves fisheries information collection, use and transfer for planning and management purposes; improves sanitation and fish quality at landing sites; improves safety during fishing operations; provides institutional focus for mobilization and wider development program; provides an institutional focus for addressing HIV/AIDS in fishery communities and attracting external support to help communities tackle this challenge; increases productivity of fishery resources and leads to less harmful and illegal fishing and fish trading through co-management; improves and secures fishery livelihoods through increased productivity; improves food security in very many rural communities through increased productivity and improved fishery resource management (URT, 2005).

Basing on the above analyzed advantages a wide range of measures can be taken to protect the fishery resources whereas the BMUs have great potential in the fight of illegal fishing so as to save the lake's biological diversity (Lam, 1998). A survey of fish stock in Lake Victoria carried out by The East African Freshwater Fisheries Research Organization (EAFFRO) in collaboration with UNDP/FAO in 1969 and 1977 indicated a reduction in stocks of species of commercial importance (Munyaho, 2004). The reasons for the decline was stated by Munyago (2004) that with increased catches,

fishers voluntarily shifted to larger mesh sizes targeting large Nile perch that was then dominant in the lake. Large fish were quickly over-fished and fishers reversed mesh sizes. For example, in 1989, 45% of the gill nets used in the Nile perch fishery were 203 mm but by 2000 it was only 2.7% (Katurole and Wadanya, 2001). The result is continued harvesting of small fish as demonstrated by the amount of juvenile Nile perch that is constantly landed all over the lake (Lake Victoria Fisheries Research Project Phase II (LVFRP II). This situation was called upon for the urgent action to be taken to improve management of fishing practices.

World fisheries are a major source of food and employment, providing the world's growing population with 16% of its animal protein intake and serving as a source of employment for an estimated 35 million full- and part-time fishers (FAO, 2004). But a growing number of challenges are calling into question the future of this important food production sector and its ability to continue making these contributions to world food security (Ibid). Fishermen are using nets that trap mature as well as young fish in large areas of Lake Victoria (Baer, 2001). The August 2010 framework survey conducted by LVFO around Lake Victoria's beaches revealed that fish-breeding grounds were under systematic destruction. This has negatively affected fish species with the Nile Perch being the hardest hit. Use of illegal fishing gear like beach seines, monofilaments and gillnets was on the rise. Reports say that a total of 991 beach seines, 2,116 monofilaments and169, 747 gill nets are in use at various fish landing sites which must be destroyed to save Lake Victoria's resources from extinction (Mikaili, 2011).

Despite worldwide efforts in finding a possible solution for the management of the marine and freshwater resources, the state of the resources in developing countries continues to deteriorate and the living conditions of fishers are still poor. The use of destructive fishing methods and lack of adherence to fisheries regulations still persist to a large degree. An empowered community can address both the need for economic development and the conservation of natural resources. The sustainability of community-based organization like BMUs and the active participation of the fishing communities in resource management will depend to the perceived benefits of the

organization to its members. While the overall goal of co-management in fisheries, particularly in developing countries, is to get the community to participate in resource management and having sustainable fisheries as a benefit of this partnership (Pomeroy, 1995).

This benefit cannot be seen directly to fishing communities like in Lake Victoria, where there is a serious problem of poverty since currently such partnership has no direct impact on their daily income from fisheries they depend on. The co-management approach at the Lake Victoria (Tanzania) should be integrated with market issues like management of first-hand sales in order to increase the market performance of fishing communities which in turn will lead to improved income and standard of living. With market oriented fisheries co-management arrangements, fishers will actively participate in resource management since they will be no longer be fished as an employment of last resort as their organization (BMUs) will struggle and lead to a better business environment and improved fish prices. Resources are subject to consultation among multiple users and conflict between multiple uses (Adams *et al*, 2002).

It is commonly assumed that management problems of common pool resources are self-evident, whether they are of resource depletion or environmental degradation, lack of appropriate institutions for management, or conflicting claims over resources. However the definition of the policy 'problem' for key stakeholders may be contested. What may be seen as a 'problem' by one group of resource users (such as official perceptions about the 'illegal' use of state forests for fuel wood by local villagers) buy may be interpreted by others (such as non-governmental organizations and advocacy groups working with such villagers) as a basic need or an inalienable right. This is a critical problem in policymaking (Ostrom, 2009).

Research findings of recent years show the downward trend of the Nile perch fish stocks, catches and fish exports while the Lake has continued to attract more people in fishing and other related activities. The major challenges include: (i) How to reverse the decline of the Nile perch stocks and sustain the export market (ii) Use of destructive and

illegal fishing gear and methods, capture of immature fish, and increasing fishing effort on all fish stocks (iii) Sustainable funding of fisheries program and institutions (iv) Vulnerability and marginalization of fishing communities (v) Improvement of service delivery and infrastructure for the fishing communities (vi) Sustaining BMUs networks and co-management structures (vii) Environmental changes such as global warming, environmental degradation, fluctuating water levels and others that may affect fish breeding and growth The challenges are of great concern to all stakeholders, particularly with regard to resource use and conservation, livelihood, food security, fish export market, economic growth and development of the Lake Victoria basin (Aliro,2009). The community is heavily dependent on its fishing grounds for their livelihood and illegal fishing has become a major problem (Hepworth, 2011). It is believed that through community participation resource users will be in a better position to understand the vital issues regarding their fishery, such as the state of the resources, their roles as stakeholders and why certain laws and regulations are imposed. All these are mostly achieved through the sensitization program (Salehe, 2008).

The government of Tanzania recognizes the poverty situation in fishing communities and under its fisheries policy and strategy statements it states that, *"Given the situation that the majority of the people in Tanzania lives in the rural areas and are poor, the role of the government is to assist the local communities to become aware of their own situation and support them to become responsible for their own destiny by making better use of the fishery resources" (URT, 1997 pg 5).*

Different studies have been conducted on illegal fishing that threatens the sustainability of fish resources in the Lake Victoria. For example, the Controller and Auditor General carried out Performance Audit where result revealed that there was an increase in the use of illegal gears in Lake Victoria. In financial year 2010/2011 and 2011/2012 the increase of different types of gears was from 6,415 to 146, 657 respectively in all three regions of lake zone. This increment was contributed to the acute increase in the use of Beach seines by 368% from394 to 145,302 because of the high demand of local factory and communities (URT, 2013). Also the recent data on fishing issued by Fishery

department in Kagera Region shows that; In the year 2009/2010, beach seines caught were 175, monofilament 289 and gillnets 7549. In the year 2010/2011 beach seines were 249, monofilament 492 and gillnets 5220. In the year 2011/2012 beach seines were 156, monofilament 349 and gillnets 820. In the year 2012/2013 beach seines were 156, monofilament 1470 and gillnets 1465. Table 2.1 below provides summary of illegal fishing gears confiscated.

Table: 2.1 Illegal Fishing Gears Confiscated from the Year 2009/10 to 2012/13

Year	Gillnets (Nets bellow 5' mesh)	Beach Seines	Monofilament
2009/2010	7,549	175	289
2010/2011	5,220	249	492
2011/2012	820	156	349
2012/2013	1,465	156	1470
Total	**15,054**	**736**	**2,600**

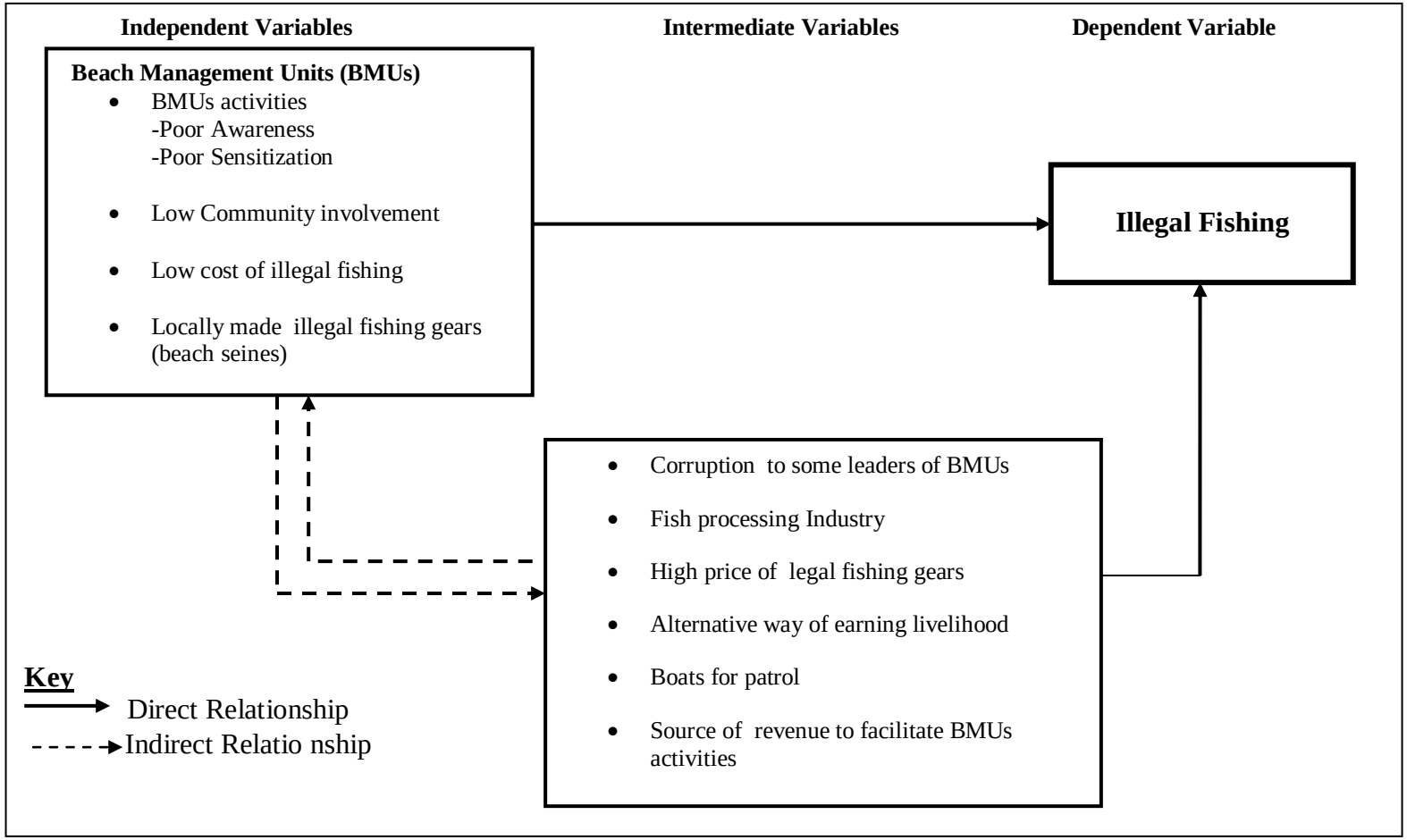
Source: Kagera Region Fisheries Department, 2013

The above data proves the existence of illegal fishing in Lake Victoria. Therefore, this study aimed at identifying factors leading to ineffective performance of Beach Management Units in combating illegal fishing in Lake Victoria, Tanzania.

2.3 Conceptual Framework

Figure 2.1 below are simplified the systematic structure of interrelated elements in schematic form which describes the relationship between independent, intermediate and dependent variables used in this study. The status of illegal fishing was conceptualized as a dependent variable which change depending on the performance of the BMUs through the use of different variables such as activities of the BMUs, community involvement, low cost of illegal fishing gears and locally made of illegal fishing gears (beach seines). Moreover, the interrelationship between independent and dependent variables that is to say the relationship between the performance of BMUs and illegal fishing was directly or indirectly influenced by intermediate variables such as, corrupt of BMUs leaders, fish processing industry, the high price of legal fishing gears, alternative way of earning livelihood, boats for patrol and sources of revenue to facilitate the BMUs activities.

Figure 2.1 Conceptual Framework



Source: Generated by the Researcher, 2013

From figure 2.1 above, also entail that the performance of the BMUs influence changes on the status of illegal fishing either to increase or to decrease in the study area. On one hand, the effective performance of the BMUs decreases the magnitude of illegal fishing and thus contributes to sustainability of fishery in the study area. On the other hands, the ineffective performance of the BMUs may result in the increase on illegal fishing and thus contributes to unsustainable fishery. These changes are directly or indirectly supplemented by intermediate variables as described in figure above.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

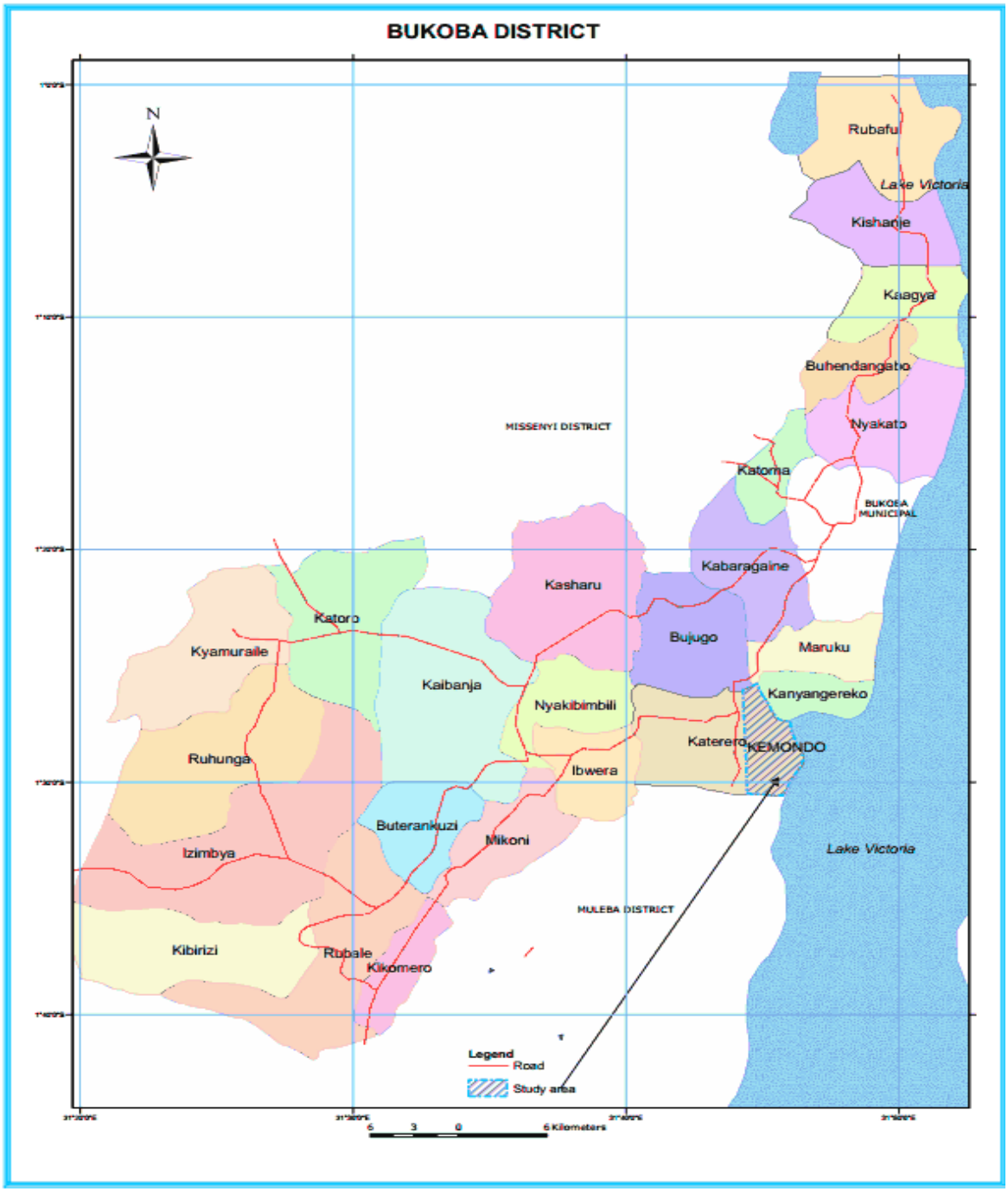
This chapter deals with the description of the methods that were applied in carrying out the study. It is organized under the following sections; Study area, research design, sampling techniques, Methods of data collection and Data analysis and presentation of findings.

3.2 Study Area

The study was conducted in the Bukoba District Council in Kagera Region, specifically in two selected BMUs from Kemondo Ward. The Bukoba District Council (BDC) covers an area of 2,844 square kilometers, it is found between 30^0 45' and $32^0$00 East $1^0$00-$3^0$00 South of the Equator, Potential agricultural land is 1,045 (37%) sq km, Grazing 620 (22%) sq km, Forest and Rock area 879 (30.5%) sq km and Water 300 (10.5%) sq km . In the North, it borders Missenyi District Council, in the East Lake Victoria, North East Bukoba Municipal Council, in the South Muleba District Council and in the West Karagwe District Council.

The BDC is subdivided into 4 divisions, namely, Bugabo, Kyamtwara, Katerero and Rubale and consists of 29 wards, 92 villages, 508 Hamlets. The 2012 National Population Census the District had a population of 289,697of which females are 141,142 and Males are 148,555. The District is classified as tropical savanna area but due to the influence of Lake Victoria which is situated on the Eastern corner of the District the climate varies considerably. The rainfall is bimodal with two rainy seasons namely: - Long rain season (Masika) caused by the passage of the Inter-tropical convergence Zone (ITCZ) which starts from March to June. A short rainy season (Vuli) caused by the Southward movement of the ITCZ, usually found in the months of September up to December (BDC profile, 2011/2012). Bellow is the Map of Bukoba Distrct Council.

Figure 3.1 The Map of the study Area



Source: Modified Map from Bukoba District Council Map, Showing the Study Area

3.3 Research Design

This is an arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure

(Kothari, 2008). This research was based on, time and focus of the research. The cross sectional research design was applied through asking questions to the sample representative by using questionnaires (paper containing questions), interview and focus group discussion. It is the hope that this method have assisted greatly in collecting /getting required information for analysis.

The reasons for cross sectional research design are:

i. It generalizes the findings from the sample responses to the entire population.
ii. Attempted to deal with information collected as views and perception of individuals regarding the role of the BMUs in combating illegal fishing for the sustainable fishery.

3.4 Sampling Techniques

Sampling is a scientific process of selecting representative of the total population as possible in order to produce a miniature cross-section. (Kothari, 2008). The study was conducted in the Bukoba District which is formed by two District councils, that are, Bukoba Municipality and Bukoba District Council, together there were sixteen (16) BMUs whereas five (5) from Bukoba Municipality and eleven (11) from Bukoba District Council (Bukoba District fisheries department report, 2011). This study collected information from the Bukoba District Council in Kemondo ward in two selected Beach Management Units. These areas were selected because of the comparatively high level of fishing activity taking place in this area, also Mbembe BMU had a high incident of illegalities reported to the regional fisheries office, as well as due to the scatteredness nature of fish landing sites, selected area had strong formed Mbembe BMU and Bilolo BMU was formed due to increased number of fishers at Mbembe. Bilolo was in the process of electing leaders. The study involved purposive sampling.

The Fishery officers, Village and the BMUs leaders were selected purposely due to their capacity in the village and the BMUs. Fishers/ crews were selected randomly to fill up the prepared questionnaire.

The sample size was determined by using the following formulae by Yamane (1967).

$$n = \frac{N}{1+N(e)2}$$

Where: n = is the sample size

N= is the total population of the study area

e = is the sampling error: The range in which the true value of the population is estimated to be (The level of Precision).

The total population in the study area (BMUs, the village leader and villagers) is estimated to be 1,980. Basing on the above Yamane formula, the sample size would be:-

$$n = \frac{1,980}{1+1,980\ (0.1)2}$$

$$n = \frac{1,980}{1+1980\ (0.01)}$$

$$n = \frac{1,980}{20.6}$$

$n = 96.11650 \approx 96$

Therefore the sample size was 96.

Table 3.1 shows categories of respondents from among the: Village leaders, BMUs/Members and fishers/Crews.

Table 3.1 Categories of Respondents

S/N	CATEGORY OF RESPONDENTS	NO.OF RESPONDENTS		
		MALE	FEMALE	TOTAL
1	Village leaders (VEOs) two villages @ 3	6		6
2	BMUs leader/members from two BMUs @ 3	6		6
3	Fishers/Crews from Rwagati village (Bilolo-BMU)	30	3	33
4	Fishers/Crews from Kanazi village (Mbembe-BMU)	44	7	51
	Total	**86**	**10**	**96**

Source: Field Data, 2013

3.5 Methods of Data Collection

Both qualitative and quantitative data were collected by using questionnaires, interviews, focused group discussion, direct observation, and review of relevant literature on An Assessment of BMUs in combating illegal fishing for the sustainability of the fishery industry.

3.6 Data analysis and Presentation of Findings

Data analysis is a process of making sense out of the data. In other words, it means making by consolidating, reducing and interpreting the data. More ever, data analysis has been a process that involves classifying, coding, tabulating and editing of collected raw information and then the percentages and frequencies are calculated in order to show the response in a clear picture (Bodgen & Biklen, 1998).

In this study, data was organized according to the research questions and categorised through mixed methods which were quantitative and qualitative approaches. Analysis was done with the aid of statistical package for the social science (SPSS Version 20) and Ms excel. Qualitative data on the other hand was analyzed by using content analysis in line with the research questions. Observed data including photographs of the fish landing site were presented.

CHAPTER FOUR
PRESENTATION AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents the analysis and discussion of findings on characteristic of the respondents and four specific objectives that reflect the main objective of this study. The characteristics of the respondents are; Age of the respondents, activities of respondents, age group involved or not involved in fishery activities, gender, education level and marital status of respondents. Specific objectives are; Identification of the activities performed by Mbembe and Bilolo BMUs of the Bukoba District Council in Lake Victoria; the reasons for the persisted of illegal fishing practices in the area, the challenges facing BMUs in combating illegal fishing and exploring measures to be taken to improve the BMUs performance in the eradication of illegal fishing.

The findings are presented by the simple statistical methods like simple frequencies and percentages that are interpreted in the table. Frequency analysis was used to analyze the response from the respondents on the role of BMUs in combating illegal fishing for sustainable fishery resources at Bukoba District.

4.2 Characteristics of Respondents

The investigation on charecteristics of respondents was based on the age group of respondents, activities of respondents, involvement in fishery industry by age group, respondents by sex, education level of respondents and marital status of the respondents.

4.2.1 Age of Respondents

The researcher investigated the age cohort of respondents to establish the age groups which were involved in this study. The total number of the respondents was 96, the results indicate that 26 percent of respondents were aged between 34-38 years followed by 22.9 percent who were aged between 39-43 years. Others were 18.8 percent aged 44 years and above, while 14.6 percent were aged between 29-33 years, in the mean

time 10.4 percent were aged between 19-23 years, 6.2 percent were aged between 24-28 years and 1 percent were aged under 18 years. These findings indicate that all age groups were involved in the study at different degree. Thus, the information collected from this type of respondents were reliable enough to establish reasons for the persisted illegal fishing despite the existence of BMUs. Table 4.1 shows the age of respondents, their frequencies and percentages.

Table 4.1 Age of Respondents

Age of Respondents	Frequency	Percent
Less than 18 yrs	1	1.0
19-23yrs	10	10.4
24-28yrs	6	6.2
29-33yrs	14	14.6
34-38yrs	25	26.0
39-43yrs	22	22.9
44yrs And above	18	18.8
Total	**96**	**100.0**

Source: Field Data, 2013

4.2.2 Activities of the Respondents

Table 4.2 shows the activities of the respondents. Two types of activity emerged that is a fishery and a non fishery. The aim was to establish the number of respondents whose activity was fishery and those whose activity was not fishery. The result reveals that out of 96 respondents, 85.4 percent were fishers and 14.6 percent were not. The term "fishers/crews" means an individual or a group of people who take part in fishing, conducted from a fishing vessel , a platform whether fixed or floating or from the shore (URT, 2003).

These findings show that 85.4 percent of the respondents were fishers/crews, therefore, it is the researchers hope that the information provided by these respondents were more

reliable because they have an extensive experience in fishery industry. These results are not supported by any previous studies. The table 4.2 summarise this information.

Table 4.2: Activities of the Respondents

Activities	Frequency	Percent
Fishers/Crews	82	85.4
Non fishers/Non crews	14	14.6
Total	**96**	**100.0**

Source: Field Data, 2013.

4.2.3 Involvement in Fishery Industry by Age Group

The researcher investigated the age group of the respondents to establish the age group which was highly involved in fishery activity. There was no doubt that information from fishers/crews were more reliable than those from non fishers; this is because the fishers had an extensive experience in fishery industry and were the members of co-management known as BMUs. Table 4.3 shows involvement in fishery activity by age group.

Table 4.3: Age Group in Relation to Fishery Actvity

Age	Involved (a)	Not involved (b)	% (a)	% (b)
Bellow 18Yrs	1		1	-
19-23Yrs	13		13.5	-
24-28Yrs	7	1	7.3	1
29-33Yrs	15	3	15.6	3.1
34-38Yrs	25	2	26	2.1
39-43Yrs	17	5	17.7	5.2
44Yrs and above	4	3	4.2	3.1
Total	**82**	**14**	**85.5**	**14.5**

Source: Field Data, 2013.

Table 4.3 indicates that 26 percent of the respondents were aged between 34-38 years , 17.7 percent were aged bwetween 39-43 years, 15.6 percent were aged between 29-34 years, 13.5 percent were aged between 19-23 years, 7.3 percent were aged between 24-28 years, 4.2 percent were aged 44 years and above and 1 percent were under 18 years. These were age groups which were involved in fishery activity, while, 5.2 percent, 3.1

percent, 3.1 percent, 2.1 percent and 1 percent of respondent age groups were not involved in the fishery activities.

These findings indicate that fishery activities were conducted by fewer people who were 18 years old as compared to people who were more than 44 years old. The higher the age group the more involvement in the fishery activities, eg. 34-38 years. These findings are supported by a study conducted by Kateka (2010) that shows the majority of crew members were between the ages of 15 and 29 years old.

4.2.4 Respondents by Sex

Table 4.4 shows distribution of respondents by sex. Sex means the state of being identified as male or female. The aim of establishing the respondents by sex was to know the degree of involvement in the fishery industry by sex.

Table 4.4 Sex of the Respondents

Sex of the respondents	Frequency	Percent
Male	86	89.6
Female	10	10.4
Total	**96**	**100.0**

Source: Field Data, 2013.

Table 4.4 shows that 89.6 percent of respondents were males and 10.4 percent were females. The lower participation of female in fishery activity was because of culture and gender roles. Where the gender role categorizes that Women were bound to take care of the family when men were in fishing during the day and night. These findings are supported by findings from the study by Kateka (2010) that states "Although the state has made it possible for women to engage in fishing, poverty has reduced their role from that of being processors (before the export of the Nile perch) to struggling to make both ends meet. Women are mainly found on the margin of the Nile perch fishing industry, only frying juveniles to feed fishermen in the community".

4.2.5 Education Level of Respondents

The researcher established this component to know the education level of respondents. Table 4.5 shows that most of the respondents of this study had an education level of Primary school by 88.5% percent followed by secondary education for form four by 9.4 percent and 2.1 percent with no formal education. This finding reveals that people who were mostly involved in fishery activity were those with primary education level. These findings are supported by those of URT (2007) which reported that the net enrollment rate of primary schools by 2007 were 97.3% and 20.6% of secondary schools.

Table 4.5: Education Level of the Respondents

Education Level	Frequency	Percent
Illiterate	2	2.1
Primary Education	85	88.5
Secondary Education/Form four	9	9.4
Total	**96**	**100.0**

Source: Field Data, 2013

Also this finding is supported by the study done by Onyango (2005) which indicates that 82.4 percent of fishers had primary education and 12.3 percent had secondary level.

4.2.6 Marital Status of the Respondents

Table 4.6 provides a summary of respondent marital status. A researcher established the marital status of the respondents to know which group is highly involved in fishing.

Table 4.6 Marital Status of the Respondents

Marital Status	Frequency	Percent
Single	11	11.5
Married	78	81.2
Widow	4	4.2
Divorce	3	3.1
Total	**96**	**100.0**

Source: Field Data, 2013

The results show that 81.2 percent of respondents were married, 11.5 percent were single, 4.2 percent were widowed and 3.1 percent divorced. This is a blessing result that fishers have the responsibility to their family and disprove the assumption that most fishers are not married.

4.2.7 Categories of Respondents

Researcher distributed a total of 96 questionnaires with close follow up all questionnaires were returned, making 100 percent response rate. The aim of distributing questionnaires was to get data from the people who directly benefited from Lake Resources, but also they had an extensive experience in the fishery industry. The term 'Crews' here refers to fishing laborers who do not own boats (URT, 2005). Table 4.7 provides a summary of this information.

Table 4.7: Categories of Respondents

No.	Category of Respondents	Male	Female
1	Village Leaders	6	0
2	BMUs Leaders	6	
3	Crews from Kanazi village	44	7
4	Crews from Rwagati village	30	3
	Total	**86**	**10**

Source: Field Data, 2013.

4.3 Activities Performed by Mbembe and Bilolo BMUs, Bukoba District in Lake Victoria

This section presents and discusses data collected and analyzed on activities that were performed by the BMUs. It starts by looking at the awareness of the people about the existence of the BMUs, the sensitization on the roles of the BMUs, the activities performed by Mbembe/ Bilolo BMUs in eradicating illegal fishing in Lake Victoria; the last part of this section looks at the positive impact of forming the BMUs in combating illegal fishing.

4.3.1 People Awareness on the Existence of the BMUs

This part assesses the respondent awareness about the existence of the BMUs in the area. The respondents were asked to respond by saying YES or NO to the question asked. Table 4.8 gives a summary on respondent awareness on the existence of the BMUs.

Table 4.8 Awareness on the Existence of BMUs

Awareness	Frequency	Percent
Yes	80	83.3
No	16	16.7
Total	**96**	**100.0**

Source: Field Data, 2013

Table 4.8 shows that 83.3 percent of respondents mentioned that they were aware of the existence of BMUs while 16.7 percent of respondents clearly indicated that they were not aware of the existence of the BMUs. This suggests that many fishers 83.3 percent were well informed about the established BMUs. This implies that those who were not aware of the existence of the BMUs were those who did non-fishery activities. Moreover, this finding implies that the communities living along the Lake Victoria are aware of the existence of the BMUs, but data on the sensitization on the role of the BMUs bellow shows that 64.6 percent of the respondents were not sensitized on the role of the BMUs.

4.3.2 Sensitization on the Roles of BMUs

The respondents were asked to show whether they were sensitized on the role of the BMUs. The aim of this item was to know whether the formation of the BMUs was followed by the community sensitization about the role of the BMUs in combating illegal fishing. It was found that 64.6 percent of respondents said that they were not sensitized. The remaining 35.4 percent of respondents said that they were sensitized. Sensitization here means the process or attempt to make someone react to something that previously had no effect.

Table 4.9 Sensitization on the Roles of BMUs

Sensitization	Frequency	Percent
Yes	34	35.4
No	62	64.6
Total	**96**	**100**

Source: Field Data, 2013

Table 4.9 shows that many people living along the Lake Victoria are not sensitized about the role of the BMUs. This implies that the BMUs leaders and other stakeholders had not played their role to sensitize people. The indepth-interview with the former Secretary of the Mbembe BMU Abbakery (2013) indicates that the provision of education to the people was possible during the formation of the BMUs in 1999 to 2006 when the World Bank (WB) through the Lake Victoria Environmental Management Project (LVEMP I) phase one were funding the project. That, the end of the project was the end of providing education to the people due to lack of financial support from the Government. This situation may hinder people from being aware of the role of the BMUs, and therefore, not giving support to this community based organization. These findings are supported by those of URT (2013) which reported that the awareness campaigns in Lake Victoria were not adequately conducted. Although awareness activities were planned in each Monitoring, Control and Surveillance centres visited but, those plans were not fully implemented. Plans for conducting awareness campaigns were rare in areas where awareness campaigns were important on controlling illegal fishing.

4.3.3 Activities to be Performed by Mbembe/ Bilolo BMUs in Eradicating Illegal Fishing

In regards to the responsibilities of the BMUs in relation to eradication of illegal fishing in Lake Victoria, the respondents were asked to mention the activities/responsibilities of the BMUs. The aim was to assess respondents' knowledge on activities that the BMUs were supposed to perform in relation to eradication of illegal fishing. Table 4.10 indicates that the respondents mentioned 46 times, that the first responsibility of the BMUs is to arrest illegal fishers, " we don't know", was mentioned 31 times, "to sensitize the community", was mentioned 18 times, "the conservation of the environment" was mentioned 9 times, "to collect and keep catch data" was mentioned 4 times, the statement that the BMUs had " nothing to do with illegal fishing" mentioned 3 times, lastly "inspection of fishery boat licenses" was mentioned only once.

Table 4.10 Activities Performed by BMUs

Activity	Frequency	Percent
Arrest illegal fishers	46	41.1
Inspection of fishing boat license	1	.9
Sensitizations on negative impact of illegal fishing	18	16.1
Conservation of the Environment	9	8.0
Collect and keep catch data	4	3.6
Don't know	31	27.7
BMUs have nothing to do with illegal fishery	3	2.7
Total	**112**	**100.0**

Source: Field Data, 2013

BMUs are the community based organizations that were supposed to be the property of the people. Knowing the activities of this organization was quite important to enhance a sense of ownership.

This multiple response results implies that the majority perceived that people were aware of the activity of the BMUs in combating illegal fishing, which was followed by

those who mentioned that they did not know. These findings show that many people were lacking knowledge on the importance of the BMUs to the fishery Industry so that they could become sensitive enough to support the BMUs direct or indirect in combating illegal fishing.

4.3.4 Impact of forming BMUs in Combating Illegal Fishing

An attempt was made to know whether there was some impact from the BMUs in combating illegal fishing. Table 4.11 provides a summary of the respondents' views about whether there were some impacts from the BMUs or not. It was found that 60.4 percent of respondents mentioned that there was no positive impact from the formed BMUs in relation to eradication of illegal fishing, whereas, 39.6 percent mentioned that there was some positive impact.

Table 4.11 Impact of BMUs

Positive Impact of BMUs	Frequency	Percent
Yes	38	39.6
No	58	60.4
Total	**96**	**100.0**

Source: Field Data, 2013

The respondents were the people who benefited directly from the Lake resources; therefore, they had a responsibility to follow up the performance of the BMUs and evaluate it so as to be aware on whether their organization was performing well. It was found that, the majority 60.4 percent mentioned that there was no positive impact of the BMUs in combating illegal fishing, only 30.6 percent supported that there was positive impact. These findings imply that the BMUs performance was poor. And because its performance was poor that is why illegal fishing continued.

4.4 Reasons for the Persistence of Illegal Fishing Practices in the Area

This section presents findings and analysis based on the reason for the persisted illegal fishing practices in the area despite the existence of the BMUs. The section starts by looking at the involvement of the community in the activities of the BMUs specifically

in combating illegal fishing, the major type of illegal fishing, the causes of illegal fishing, people who are involved in illegal fishing, the time in which the illegal fishing activities are done and the place/shops where illegal fishing are made/sold.

4.4.1 Involvement of the Community in Activities Performed by the BMUs in Combating Illegal Fishing

The aim was to assess the extent to which the inshore community was involved in activities performed by the BMUs, specifically, in combating illegal fishing. Table 4.12 indicates that 66.7 percent of the respondents mentioned that they never been involved in activities that were performed by the BMUs, and 33.3 percent agreed that they used to get involved in activities that were performed by the BMUs.

Table 4.12: Involvement in BMUs Activities

Involvement	Frequency	Percent
Yes	32	33.3
No	64	66.7
Total	**96**	**100.0**

Source: Field Data, 2013

The involvement of the community direct or indirect in the activity of the BMU was vital. The findings show that the majority were not involved in the BMUs activities. This findings implies that the BMUs operate as an independent or isolated entity from the community as a result its performance is weak. To obtain greater compliance to fishery rules requires closer involvement of these stakeholders in managing the resources upon which their livelihoods depend (URT, 2005).

4.4.2 Major Type of Illegal Fishing

The aim of this section was to assess the major types of illegal fishing practices in the area. Table 4.13 gives a summary of the respondents' views on the major types of illegal fishing. The results show that "Beach seines" was mentioned 80 times, "small

sized fish nets (less than 5" mesh size) was mentioned 68 times and the use of" monofilament nets" was mentioned 51 times.

Table 4.13: Major Types of Illegal Fishing Practices

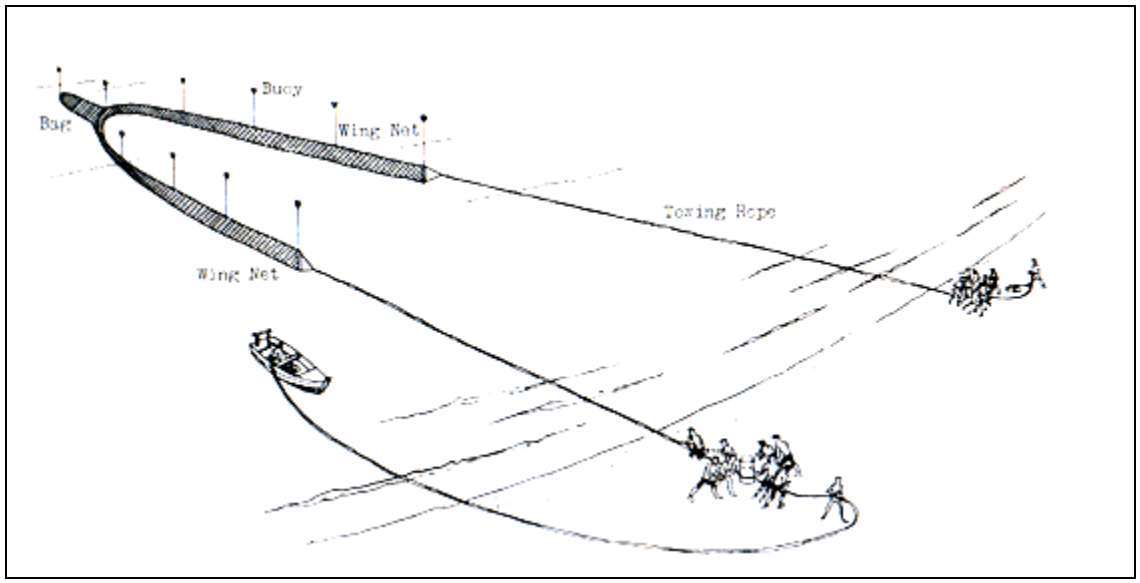
Illegal fishing practices	Frequency	Percent
Use of Beach seines	80	40.2
Use of Monofilament nets	51	25.6
Use of small sized fish nets (less than 5" mesh size)	68	34.2
Total	**199**	**100.0**

Source: Field Data, 2013

A researcher finds it necessary to identify the major types of illegal fishing practices and gears used. The aim was to reveal the type of illegal fishing practices. Mainly, respondents mentioned three major types of illegal fishing practices. The mentioned practices were, beach seines, the use of small sized fish nets (less than 5"mesh size) and use of monofilament. The mentioned practices/gears were identified to be illegal fishing because:

- Beach seines; means fishing net designed to hang vertically in the water, the ends being drawn together to the beach while the foot rope drags through the fishing ground (URT, 2003). Figure 4.1 shows one of types of beach seines. This is the commonest type of beach seines used in Lake Victoria.

Figure 4.1 Type of Beach Seines used in Lake Victoria



Source: Kateka, 2010.

This fishing method is very destructive because of its small mesh size that is non-selective (Kateka, 2010). A researcher observed this type of illegal fishing taking place almost at all communities living along Lake Victoria in Kemondo ward. I openly observed people hauling just 10 meters from the fish landing site where there was a Mbembe BMUs' office.

- The use of small sized fish nets (less than 5"mesh size)
- Monofilament gillnets; Means a fishing gear made of thread with standard measurement of 26 meshes deep and ninety meters long used for capturing fin fish by a gill operculum (URT, 2003).

The Tanzania fisheries regulation of Fisheries ACT no. 22 of 2003 prohibits the use of beach seines, monofilament and undersized fishing nets. This findings implies that people were aware of the type of illegal fishing practices that were taking place in their area. It was revealed that people were reporting these incidences to the BMUs leaders, but no appropriate measures were taken, as a result this type of illegal fishing has now become the common practice in the area. Since this practice had become common to

the community it was difficult for the BMU to combat this type of illegal fishing gears, because BMUs leaders were living within the same community.

4.4.3 Causes for Persisted Illegal Fishing

The aim of this section was to find out the causes for the persisted illegal fishing in the Lake Victoria. A researcher wanted to know whether the respondents knew reasons for illegal fishing practices in the study area. Table 4.14 indicates that respondents mentioned at different levels of frequency, five causes of the persisted illegal fishing. Those included: " High price of recommended fishing gears" was mentioned 59 times, "lack of alternative way of earning livelihood" was mentioned 58 times, "corruption among the BMUs leaders" was mentioned 58 times, "wise decision made by the Government to allow private investors in the fish processing industry" was mentioned 44 times and the "low cost of illegal fishing that led to high catch" was mentioned 19 times. Table 4.14 summarise this information.

Table 4.14: Causes for Persisted Illegal Fishing

Causes for illegal fishing	Frequency	Percent
Fish processing industry	44	18.5
The high price of Legal fishing gears	59	24.8
Lack of alternative way of earning livelihood	58	24.4
Low cost of illegal fishing but high catch	19	8.0
Corruption of BMUs Leader	58	24.4
Total	**238**	**100.0**

Source: Field data, 2013

The results show that illegal fishing is due to the high price of legal fishing gears, lack of alternative way of living, corruption among the BMUs leaders, fish processing industry has opened up a market for fish, therefore many people had joined the fishery activity where the aim was to get fish by using any means/gears and low cost of illegal fishing practices, but high catch. This findings imply that the majority of the respondents were aware of the causes for the persisted illegal fishing. The question that

remains unanswered if the people were aware of the causes for the persisted illegal fishing it means that the BMUs leaders were also aware of this evil practice because they were living within this community, why does it continue? In an interview with the regional and District fishery officers they indicated that poverty and lack of education about the impact of illegal fishing, available market for fish, the improved transportation infrastructure, the increased human population, especially men and lack of permanent employment were major causes to persisted illegal fishing. These findings from government officials were not called into questions because the government had not invested enough in this industry to enable the BMUs to perform their duty adequately.

4.4.4 People Involved in Illegal Fishing

The aim was to get the answer to the question that wanted to know the people who were involved in illegal fishing. Table 4.15 provides a summary of respondent responses with regards to the above question. The results show that, "big fishers from the area", was mentioned 65 times. "Small fishers from within the area", was mentioned 61 times. "Big fishers from outside the area", was mentioned 20 times and "small/poor fishers from outside the area", was mentioned 9 times.

Table 4.15: People Involved in Illegal Fishing

Illegal fishers	Frequency	Percent
Big fishers from within the area	65	41.9
Big fishers from outside the area	20	12.9
Small/poor fishers from within the area	61	39.4
Small/poor fishers from outside the area	9	5.8
Total	**155**	**100.0**

Source: Field Data, 2013

A researcher wanted to know the type/group of people who were dealing with illegal fishing to identify the type of people who the BMUs had to deal with. The results indicated that big fishers from within the area were involved in illegal fishing; followed by small fishers from within the area were also involved in illegal fishing; others were

big fishers from outside the area and small fishers from outside the area were involved in illegal fishing. These findings imply that people were aware of the major groups of people who were involved in illegal fishing. In an interview with Government officers from District and Regional fishery department it was found that big fishers were involved in illegal fishing by using monofilament, undersize mesh nets and beach seines. And that they were secretly conspiring with crews to execute this evil practice. The crews willingly disclosed that they were employed by big fishers where payment was determined by the rate of catch per day, that is to say the higher the catch the higher the pay. And the lower the catch the lower the pay. Furthermore, they said that, that situation force them to comply with the employer's need to use illegal fishing gears that ensures them high catch and therefore high pay. They added by saying that all big fishers were involved in illegal fishing because if they would use the recommended fishing gear catches would become lower to the extent that crews would decide to look for another employer who could practice illegal fishing. All these facts raises the question as to where is the Government and the BMUs?. Basing on the results it is obvious that big fishers used their wealth to corrupt those who went against their practices. Big fishers refer to people who own fishing boats/Vessel and employ crews.

4.4.5 Time Illegal Fishing Activities Practiced

The researcher wanted to know the time when illegal fishing was practiced. The results indicated that "night hours", was mentioned 93 times. "Evening hours", was mentioned 35 times. "Noon" was mentioned 19 times and "morning hours", was mentioned 8 times. Table 4.16 provides a summary of responses on the time in which the illegal fishing was practiced.

Table 4.16: Time Illegal Fishing Activities Practiced

Time	Frequency	Percent
Morning	8	5.2
Noon	19	12.3
Evening	35	22.6
Night	93	60.0
Total	**155**	**100.0**

Source: Field Data, 2013

To know the time at which the illegal fishing was done helps to ascertain how it was difficult or easier to deal with illegal fishing practices. The findings imply that illegal fishing was carried out in twenty four hours of a day at different rates. "Night hours" was mentioned most where, BMUs leaders could not afford to reach the area where fishing activities were taking place, because they did not have patrol boats; also, it was high risk for the BMUs leaders to deal with rich illegal fishers during night. Under this situation big fishers were free to fish using of monofilament and small sized mesh nets.

Therefore, since illegal fishing was done all the time of a day it means that illegal fishing was then considered as the culture of the people/community whose life depended directly on fishery activity.

4.4.6 Place where Illegal Fishing Gears Sold

This investigative question was asked to know where the illegal fishers get illegal fishing gears. The results show that illegal fishing gears were "made by fishers themselves" (Locally made) this was mentioned 72 times. "Illegal fishing gears are sold in various shops in Mwanza region", was mentioned 54 times. Lastly, "illegal fishing gears were illegally imported from neighbouring country, such as Uganda", was mentioned 29 times. Table 4.17 provides a summary of respondents' knowledge on the place where the illegal fishing gears were sold.

Table 4.17: Availability of Illegal Fishing Gears

Availability of illegal fishing	Frequency	Percent
Locally made	72	46.5
In various shops in Mwanza	54	34.8
Illegally imported	29	18.7
Total	**155**	**100.0**

Source: Field Data, 2013

Illegal fishing practices use illegal fishing gears, a researcher wanted to know the place or shops where illegal fishing gears were made and/ or sold. The aim was to find out how the availability of illegal fishing gears contributed to the persisted illegal fishing. The results show that large amounts of illegal fishing gears were locally made. This implies that fishers they were an experts in making illegal fishing gears. In interview with one crew disclosed that all beach seines that were used by big and small fishers were locally made, that, only small sized mesh were sold in various shops. Other respondents indicated that illegal fishing gears were available in various shops in Mwanza town. Another respondent indicated that illegal fishing gears were illegally imported from neighbouring countries (Uganda). A research was also interested to know the type of illegal fishing gears which were illegally imported. Crews quickly answered that monofilament were always illegally imported. A regional fishery officer (2013) indicated that monofilaments were illegally imported by big fishers from neighbouring countries. Furthermore, he said that this monofilament were manufactured in CHINA and they were packed in such a way that it was difficult to identify because, they would labelled as clothes, so it become easy to penetrate the market (illegal market). Basing on the above discussion it is obvious that easy availability of illegal fishing gears contributes to the persisted illegal fishing.

4.5 Challenges BMUs Facing in Combating Illegal Fishing

This section aimed at assessing the respondents' knowledge about the challenges faced by the BMUs in combating illegal fishing. The respondents were asked to mention BMUs challenges, in response, they come up with four major challenges to the BMUs. The first was the "lack of boats with its engine that could have been used in patrol", was

mentioned 71 times. “BMUs leader/members are involved in corruption from the big fishers”, was mentioned 62 times. “Lack of source of revenue that could have been used in various BMUs activities/operations”, was mentioned 57 times and “difficult to get information from the community about illegal fishing”, was mentioned 47 times. Table 4.18 shows a summary of frequency of mentioning to every challenge.

Table 4.18: Challenges BMUs are Facing in Combating Illegal Fishing

Challenges	Frequency	Percent
Lack of boats for patrol	71	30.0
Lack of source of revenue	57	24.1
Difficult to get information about illegal fishing	47	19.8
BMUs leaders are involved in illegal fishing	62	26.2
Total	**237**	**100.0**

Source: Field Data, 2013

Any established organization is subjected to various challenges. A researcher wanted to know the challenges that hindered the performance of the BMUs as a result illegal fishing continues.

The respondents indicated four challenges that BMUs were facing as a result its performance was poor. The mentioned challenges at different level of frequency include:

i. Lack of boats for patrol
ii. Lack of source of revenue
iii. Difficult to get information about illegal fishing
iv. BMUs leaders are involved in illegal fishing

The results imply that if the BMUs did not have boats it would be difficult for them to do patrol and even if they would get information about illegal practices they could not respond proactively; also, lack of source of revenue. National Guidelines for Beach Management Units (2005) states that the BMUs will generate some of the funds from the fishing industry for funding their operations. The mentioned possible sources of funding include:

i. Membership fee, as approved by the BMU Assembly;
ii. Where a Local Authority operates fishery tendering systems, BMUs may compete
iii. To operate such tenders;
iv. Service charges for the use of BMU assets;
v. Landing site user fees;
vi. Fines levied for infringements of internal BMU rules;
vii. Establishment of micro-projects e.g. Transport of cargo/passengers, fishing project for income generation.

The focused group discussion revealed that the BMUs did not have any source of fund/revenue, that all sources stipulated in the BMUs guideline were owned and collected by the Bukoba District council.

The allegation that BMUs leader were involved in corruption were not proved beyond reasonable doubt, but grounds indicate that these people were involved in corruptions and it was difficult for them to get information about illegal fishing because many people including fishers had doubts on whether the BMUs were able to combat illegal fishing. Also they clearly indicated that they did not have boats for patrol and they were not paid. The tasks of combating illegal fishing need commitment, patrol boats, funds and good relationship with the community so as to impart a sense of ownership. Generally, results established that the BMUs performance was poor due to the following:

Lack of boats for patrol, Lack of source of revenue, Difficult to get information about illegal fishing; BMUs leaders are involved in illegal fishing and that there is no payment to BMUs leader.

4.6 Measures taken to Improve BMUs Performance in Eradicating Illegal Fishing

This section presents comments from the respondents as to what measures could be taken to improve the BMUs performance in eradicating illegal fishing in the Lake Victoria.

Table 4.19 provides a summary of the respondent views on the measures to be taken to improve the BMUs performance. " Provision of equipment (fisheries patrol vessel) to the BMUs may improve the workability of this community institution", was mentioned 28 times. "A high need for the BMUs to have a sustainable source of revenue", was mentioned 19 times. "Creation of awareness on the importance of BMUs", was mentioned 16 times. "The BMU to be free from being controlled by the government", was mentioned 7 times." Eradication of corruption among the BMUs leaders and extend credit to fishers", each was mentioned 5 times. "Closure of the fish processing industry, Establishment of an institution to oversee the BMUs and assurance of security to BMUs Leaders", each was mentioned 4 times. "Motivation to BMUs with good performance" was mentioned 3 times and "to ensure joint patrol between District/Region fisheries department and BMUs leaders", was mentioned only once.

A researcher wanted to hear from the respondents on measures that could be taken to improve the BMUs performance in eradicating illegal fishing. They mentioned several measures to revamp the performance of the BMUs in the eradicating illegal fishing in Lake Victoria at Kemondo ward in the Bukoba District. The measures include:

(i) Provision of equipment (boats) that were to be used in patrol (ii) Look for source of revenue (iii) Creation of awareness to the people about the role and importance of BMUs (iv) Motivation to BMUs with good performance (v) Extend credit to fishers (vi) Eradication of corruption (vii) The BMUs should be free from the bondage of the Government (viii) The closure of processing industry (ix) Establishment of an institution to oversee the BMUs (x) Assurance of security to the BMUs Leaders, and (xi) To ensure joint patrol between the region/district fishery department and the BMUs.

Table 4.19: Measures to Improve the BMUs Performance

Measures	Frequency	Percent
Provision of equipment (boats) that are to be used in patrol	28	29.2
Look for a source of revenue	19	19.8
Creation of awareness to the community about the role and importance of BMUs	16	16.7
Eradication of corruption	5	5.2
Motivation to BMUs with good performance	3	3.0
Extend credit to fishers	5	5.2
The BMUs should be free from the bondage of the Government.	7	7.3
Closure of the fish processing industry	4	4.2
Establishment of an institution to oversee the BMUs	4	4.2
Assurance of security to BMUs Leaders	4	4.2
To ensure joint patrol between the region/district fishery department and BMUs	1	1.0
Total	**96**	**100.0**

Source: Field Data, 2013

The above mentioned measures number (i) up to (v) were very important for improving the BMUs performance, but all needed financial funds. Therefore the major challenge was lack of funding sources. Number (vi) up to (xi) Could be dealt with administratively by involving the Local and Central governments. The setup of the BMUs indicates that it was the community based organization that collaborated with the government to protect the Lake resources for sustainable use. The community is aware with measures to be taken, but the research did not reveal any effort from the community and Local/Central Government to reduce the BMUs problems so as to improve its performance.

4.7 Information Collected through Interview and Focused Group Discussion

A researcher conducted an interview with the BMUs retired Secretary, District fisheries officer, Regional fisheries department officer, and focus group discussion. The aim was to explore and probe participants togather more in-depth information about the BMUs and illegal fishing. Interview guide questions and focus group discussions were

developed to guide discussions. The retired BMU Secretary asked only one question that guided the discussion. The question was "why illegal fishing despite the existence of the BMUs?"

District and regional fishery officers discussion were based on the following questions:

i. What are the causes for the persisted illegal fishing despite the existence of BMUs?
ii. What are the types of illegal fishing gears used by illegal fishers in your area?
iii. Who are the main illegal fishers in the area?
iv. What are the Challenges that the BMUs are facing in combating illegal fishing?
v. What can be the measures to improve the BMUs performance? And

Focus group discussion (FGD), had two questions "The role of the BMUs and challenges to the BMUs performance"

4.7.1 Interview with the Retired Mbembe BMU Secretary

The aim was to get in-depth information about the background of BMUs performance and why illegal fishing continues despite the existence of the BMU . The interview was conducted on 7th May 2013 in Bukoba. According to Abbakary (2013), the Mbembe BMU started in 1999 after the two years sensitization carried out by the regional fisheries officer the late Kayungi. The program was funded by World Bank (WB) through the Lake Victoria Environmental Management project I (LVEMP. I). The aim was to create awareness to the people about the negative impact of illegal fishing and the need to conserve the Lake Victoria resources through community based organizations. That the concept of illegal fishing was well understood by many people whose life depended on fishery activity. This particular education was followed by the formation of the BMUs where those who aspired for leadership had a very high hope to collaborate with the community to combat illegal fishing; also, they expected good payment. Initially, BMUs performance was high and contributed to the decline of illegal fishing because patrols were conducted in collaboration with the regional fishery

officers who had modern boats for patrol. That, the World Bank funded the program which ended in 2006. From that time, the BMUs had no fund that could enable them to provide education on legal fishing and the impact of illegal fishing. Arguing that in 2007 the regional fishery officer who had a good relationship with the BMUs leaders retired from a civil servant; then he was replaced by another officer whom didn't maintain the relationship with the BMUs that existed from 1999. He established a new system of patrol, which did not involve the BMUs leaders. This situation demoralized the BMUs leaders as a result till then they did not see the need to invest their efforts to eradicate illegal fishing.

Additionally, he indicated that the major challenges to the BMUs were lack of revenue and committed BMUs leaders/members were threatened by the big fisher who were mostly dealt with illegal fishing. This view was supported by the assumption given by the Government that states "Possibility of the BMU Committees who follow legal management measures being compromised or threatened by illegal fishers" (URT, 2005). The retired BMUs Secretary thanked the WB for the fund that contributed to the creation of awareness to the people also funded the construction of the Mbembe fish landing site. Figure 4.2 illustrates the statement.

Figure 4.2 Fish Landing Site Buildings and Special Vehicles for Transporting Fish to Fish Processing Industry

Source: Field Data, 2013

Figure 4.3 shows the Mbembe landing site with fish storage facility distributed by fish processing industry to their agents who sale fish to these industries. This was the place where the fish were inspected by the fish quality control department before taken to the processing industry. All fish bellow the required standard were sold to the vendors. Basing on Abbakerys' (2013) statement is that, the amount of fish taken to the processing industry every day was less than the amount of fish that were sold to the vendors. He added by saying that the catch data that the government got from these BMUs were not accurate at all. To prove this, a researcher spent five days to observe how and what type of data were recorded for the government consumption, the observation revealed that BMUs recorded only fish that were taken to the industry, whereas all fish that were bellow required standard/length were not recorded. Figure 4.4 shows fishing boats landed at Mbembe site having back from fishing.

Figure 4.3 Fish Storage Equipment at Mbembe Fish Landing Site

Source: Field Data, 2013

Figure 4.4 Fishing Boats Landed at Mbembe Fish Landing Site

Source: Field Data, 2013

4.7.2 Interview with District and Region Fisheries Officer

The aim was to get an information from the Governments' side as to whether they were aware of the illegal fishing took place in their area of jurisdiction. Five issues were discussed as follows:-

4.7.2.1 Causes Leading to the Persisted Illegal Fishing

According to interview held on 7th March (2013) with a district fishery officer indicated that poverty and lack of education about sustainable fishery among the people living along Lake Victoria were the main causes leading to the persisted illegal fishing. And an interview held on 20th March (2013) with region fishery officer indicated that the available market for fish, the improved transportation infrastructure, the increased human population, especially men and lack of permanent employment were the major causes for illegal fishing in Lake Victoria. Table 4.20 gives a summary of what Government fishery officers commended on the causes for the persistence of illegal fishing.

Table 4.20: Causes for the Persisted Illegal Fishing in Lake Victoria

Levels	Causes for the persistence of illegal fishing
District Level	• Poverty among the people living along Lake Victoria • Lack of education about sustainable fishery
Regional Level	• Available market for fish • The improved transportation infrastructure • The increased human population especially men and • Lack of permanent employment

Source: Field Data, 2013

4.7.2.2 Awareness on Illegal Fishing Practices in their Area of Jurisdiction

A district fishery officer indicated that his office was aware of the illegal fishing practices in their area of jurisdiction. He mentioned that the illegal fishing were; the use of beach seines, gill nets less than 5"mesh size and monofilament as the main fishing gears known in their area. And that they failed to combat particular illegal fishing because of inadequate funds from their District Executive Director **(**DED). Table 4.21 provides a summary of type of illegal fishing they were aware with.

Table 4.21: Type of Illegal Fishing Gears Confisticated in the Year 2010 to 2012

Year	Beach Seines	Gillnets less than 5" mesh size	Monofilament
2010	35	837	2
2011	19	65	9
2012	26	12	32
Total	**80**	**914**	**43**

Source: Field Data, 2013

The regional fisheries officer indicated that there were many types of illegal fishing in Lake Victoria in Kagera region, he mentioned the following; Beach seines , the use of nets bellow 5" mesh, the use of monofilament and double netting that were the most common illegal fishing practiced.

4.7.2.3 Group of Fishers Commonly linked with Illegal Fishing

A district fishery officer indicated that small fishers were mostly involved in illegal fishing, while a regional Fisheries Department officer indicated that the big fishers were the most involved in illegal fishing directly or through the hired small fishers.

4.7.2.4 Challenges to the BMUs leading to poor Performance

The district fishery officer indicated that lack of fishery patrol vessel, lack of revenue and involvement of the BMUs leaders in illegal fishing were the main challenges to the performance of the BMUs. The region level fisheries officer indicated that, BMUs leaders were involved in illegal fishing, BMUs leaders were not paid and lack of fishery patrol vessels were the main challenges to curbing illegal fishing. Table 4.23 provide a summary of the above stated challenges.

Table 4.22: Challenges to BMUs leading to Poor Performance

Levels	Challenges to BMUs that leads to inadequate performance
District level	• Lack of fishery patrol vessel. • Lack of revenue. • Involvement of BMUs leaders in illegal fishing .
Region level	• BMUS leaders are involved in illegal fishing. • BMUs leaders are not paid (voluntarily) and, • Lack of fishery patrol vessels.

Source: Field Data, 2013

4.7.2.5 Measures to improve BMUs performance

District fisheries officer mentioned the following measures that when considered would improve the performance of the BMUs. These included: Education to fishers about sustainable fishery and provision of fishery patrol vessels. Region fishery officers indicated that, education, aquaculture and combating illegal fishing from the source were the best measures that if considered could result in sustainable fishery industry.

4.7.3 Focus Group Discussion

Focus group discussion (FGD) was conducted to the BMUs leaders on 19th May, 2013. The aim was to know whether the BMUs leaders were aware of their roles in combating illegal fishing. Discussion was guided by the following issues;

- The role of BMUs and
- Challenges to the BMUs performance

4.7.3.1 The role of BMUs

In the discussion, the participants mentioned the following activities that the BMUs are supposed to undertake;

i. To fight illegal fishing
ii. Environmental protection and beach sanitation
iii. Handling of fish quality and hygiene
iv. Recording catch data at the landing site

v. Conflicts resolution at the beaches
vi. Community's sensitization on acceptable fishing methods and practices
vii. Protect fish bleeding areas
viii. Participate in the registration of fishers and fishing crafts
ix. Issue an introduction letter to fishers who want to transfer to other beaches
x. Gather information from migrant fishers at the beach about the number and, type of their fishing gears, and number of crews they went with.

4.7.3.2 Challenges to the BMUs Performance

In the discussion, participants indicated clearly that their BMU was recording catch data at the landing site only. That the remaining activities among the mentioned above had never been undertaken/executed by their BMUs. They gave reasons as, it was due to lack of fishery patrol vessel, lack of revenue, their life was threatened by big fishers who were involved in illegal fishing and they were paid nothing; therefore, they did not see the need to get involved in combating illegal fishing. They openly insisted that the role of combating illegal fishing would directly be vested in the government that had apparatus to deal with these big fishers who used their wealth to threaten the life of BMUs leaders. Figure 4.5 shows the BMU leaders and a researcher during discussion.

Figure: 4.5 Focus Group Discussion at Mbembe Fish Landing Site on 19/03/2013

Source: Field Data, 2013

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter covers three items, which are the summary, conclusions and recommendations. The chapter presents the major findings in brief, and then it presents the conclusions arrived in the study. Finally, the chapter gives recommendations on illegal fishing in Lake Victoria.

5.2 Summary

The study basically was carried out with an intention to identify factors for the ineffective performance of BMUs in combating illegal fishing in Lake Victoria, Tanzania with specific reference to Bukoba District. Areas of concentration included: The Identification of the activities performed by Mbembe and Bilolo BMUs, Bukoba District in Lake Victoria, the reasons for the illegal fishing practices in the area, the challenges facing the BMUs in combating illegal fishing and exploring measures to be taken to improve the BMUs performance in the eradication of illegal fishing.

The findings revealed that the causes for the persisted illegal fishing included: The high price of legal fishing gears, but low catch; lack of alternative way of earning livelihood; the establishment of fish processing industry had created a market for fish; low cost of illegal fishing gears, but high catch and the corrupt BMUs leaders. Also, it was revealed that the performance of the BMUs in combating illegal fishing was poor due to the following challenges: Lack of boats for patrol; lack of source of revenue; difficult to get information about illegal fishing from the community and BMUs leaders were involved in illegal fishing.

5.3 Conclusions

Beach Management Units (BMUs) means a group of stakeholders in a fishery community whose main functions are fishery planning, management, conservation and development in their locality, in collaboration with the local and national governments. Illegal fishing takes place where vessels operate in violation of the laws of a fishery. This can apply to fisheries that are under the jurisdiction of a coastal state or to high seas fisheries regulated by regional organizations.

The introduction of the BMUs in every fish landing site was considered by the local and Central government leaders to be the curative medicine to the illegal fishing. The research findings from selected BMUs revealled that illegal fishing continues because of unforeseen causes and challenges during the establishment of these community based organization. The study on An Assessment of BMUs in combating illegal fishing in Lake Victoria, Tanzania, focused on finding out factors for the persisted illegal fishing despite the formed BMUs to eradicate this evil practice over God given resources. To get answers, the following questions were asked; The activities performed by Mbembe and Bilolo BMUs, Bukoba District in Lake Victoria, reasons for the persisted illegal fishing practices in the area; contribution of the BMUs in combating illegal fishing; challenges facing BMUs in combating illegal fishing and measures to be taken to improve the BMUs performance in eradicating illegal fishing.

5.3.1 Activities Performed by Mbembe and Bilolo BMUs, Bukoba District in Lake Victoria

One of the BMUs' role *inter alia* is to sensitize the community on its' activities in the conservation of Lake resources. The findings point out that the majority of respondents 64.6 percent are not sensitized due to inadequate financial resources. The formation of the BMUs is considered to be a solution to illegal fishing practices, but 54.8% of the respondents have some doubts if at all, BMUs can contribute towards sustainable fishery because of the existence of illegal fishing.

5.3.2 Causes for the Persisted Illegal Fishing Practices in the Study Area

The respondents indicate that they are aware of the causes for the persisted illegal fishing. The mentioned causes include: the high price of legal fishing gears; lack of alternative way of living; corruption among the BMUs leader contribute to the illegal fishing; fish processing industry has opened up a market for fish therefore many people have entered this fishery activity and the low cost of illegal fishing practices but high catch; Poverty among the people living along Lake Victoria; lack of education about sustainable fishery; The improved transportation infrastructure; the increased human population; and lack of permanent employment.

Furthermore, it is revealed that the major types of illegal fishing are the use of beach seines, the use of small sized fish nets (less than 5"mesh size) and the use of monofilament nets. And the people who are involved in illegal fishing are big and small fishers from within the area. Furthermore, the illegal fishing practices are identified to be done mostly during the night and evening, and that the illegal fishing gears are locally made (beach seines) small sized mesh are available in various fishing gears shops.

Lastly, there is less support or involvement of the fishing community in the BMUs activities.

5.3.3 Challenges Facing BMUs in Combating Illegal Fishing

The findings point out that the performance of the BMU is weak because of the following challenges; Lack of boats for patrol (fishery patrol vessel), Lack of source of revenue, Difficult to get information about illegal fishing, BMUs leaders are involved in illegal fishing, the life of BMUs leaders are threatened by big fishers who are involved in illegal fishing and lastly BMUs leaders are involved in a task of combating illegal fishing without payment, this situation reduces the working morale.

5.4 Recommendations

The study explored possible solutions to improve the performance of the BMUs for the sustainable fishery industry.

First, in order to have effective performance of the BMUs need to have a fishery patrol vessel that can be used for patrol and effectively respond whenever they get information about illegal fishing. Since it is difficult for the BMUs to get funding/money to purchase modern boats for patrol within a short time, the government should give directives to fishery departments at all levels in the District and the Region to strengthen the relationship with the BMUs in combating illegal fishing. Patrols should be conducted in collaboration with BMUs leaders and District/Region fishery department.

Second, the task of combating illegal fishing needs money/funds, therefore, it is high time now the Government, specifically, Bukoba District Council to deliberately ensure supply of adequate financial resource to the BMUs that could facilitate the creation of awareness to the community about the role and importance of BMUs for the sustainable fishery sector.

Third, in order to eradicate corruption among the BMUs leaders the provision of financial resources, provision of boats and allowances to BMUs leaders and motivation to BMUs with good performance will contribute to the eradication of corruption also the Prevention and Combating Corruption Bureau (PCCB) Department should be informed about this evil practice.

Fourth, assurance of security to BMUs Leaders. BMUs are the legally formed community based organizations, anybody threatening the life of leaders of this organization is committing crime and he is liable for punishment. Community through the sensitization program should be informed on the act of threatening the life of BMUs leaders, that, it is criminal.

Involving community in resource management is inevitable, whereas, the formulation of fishery Act no 22 of 2003 and regulations made under the Fishery Act and the National

Guidelines for BMUs aimed at enhancing the involvement of community in resource management. These mechanisms put down the standard of fishing gears and the size of catches of which are to be adhered by all fishers. The implication of this situation is that people cannot afford to buy fish of that standard only fish processing industry can; Consequently, common people think that the Act and its regulations is made to serve the interest of the fish processing industry. This area is recommended for further study, another area is the BMUs performance evaluation.

REFERENCES

Adams, B., Brockington, D., Dyson, J & Bhaskar, V. (2002). Analytical Framework for Dialogue on Common Pool Resource Management. Retrieved August 16, 2012 from WorldWideWeb: http://www.geog.cam.ac.uk/research/projects/harda/framework/framework.pdf

Aliro, E. B. (2009). Information and Communications Officer, Lake Victoria Fisheries Organization (LVFO). Retrieved on August 5th, 2012 from World Wide Web: http;//www.firstmagazine.com/DownloadSpecialistPublicationDetail,486.ashx.

Baer, A. (2001). Aquatic Biodiversity in the National Biodiversity Strategy and Action Plans of Signatories to the Convention on Biological Diversity Part 2: Country Thematic Reviews1: Tanzania to Zambia World Fisheries Trust, Victoria BC, CANADA. Retrieved August 20, 2012 from World Wide Web: http://www.unep.org/bpsp/Fisheries/Tanzania%20-%20Zambia.pdfon

Berkes, F. (2006). From Community-Based Resource Management for Complex Systems: The Scale Issues and Marine Commons. Retrieved August 21, 2012 from World Wide Web: http://www.ecologyandsociety.org/vol15/iss4/art38/main.html

Bogdan, R.C. & Biklen, S.K. (1998). Qualitative research for education: An introduction to theory and methods. Retrieved May 22, 2013 from World Wide Web: http://www.ncsu.edu/assessment/old/presentations/assess_process/qualitative_methods.pdf

Bryant, R. & Bailey, S. (1997). *Third World Political Ecology*. Routledge London and New York.

Bulayi, M. E. (2001). Community based cooperative fisheries management of Lake Victoria fisheries in Tanzania. Ministry of Natural Resources and Tourism, Fisheries Division- Dar-Es-Salaam Tanzania**,** University of Iceland: Retrieved August 19,2012 from World Wide Web: http://www.unuftp.is/static/fellows/document/bulayiprf.pdf

Chege, N. (1995). People and the planet, World watch Institute. Retrieved July 19, 2012 from World Wide Web: http://www.cichlid-forum.com/articles/lake_victoria_sick.php

Drammeh, O. K. L. (2000). Illegal, unreported and unregulated fishing in small-scale marine and inland capture fisheries. Retrieved August 18, 2012 from World

Wide Web:
http://www.fao.org/docrep/005/y3274e/y3274e09.htm

FAO, (1995). Code of Conduct for Responsible Fisheries Rome. Retrieved January 20, 2012 from World Wide Web:
ftp://ftp.fao.org/docrep/fao/005/v9878e/v9878e00.pdf

FAO, (2004). Excess capacity and illegal fishing: challenges to sustainable fisheries. Retrieved August11, 2012 from World Wide Web:
http://www.fao.org/newsroom/en/focus/2004/47127/index.html

Folke, C, Pritchard, L., Berkes, F., Colding, J. & Svedin, U. (2007). The Problem of Fit Between Ecosystems and Institutions: Ten Years Later. Ecology and Society 12 (1): 30. Retrieved February 17 , 2013 from World Wide Web:
http://www.ecologyandsociety.org/vol12/iss1/art30/.

Hepworth, L. (2011). A thesis submitted to the University of Brighton in partial fulfillment of the requirements for the degree of MSc Environmental Assessment and Management. Retrieved September 09, 2012 from the World wide Web:
http://www.c-3.org.uk/pdf/Hepworth_2011_illegal_fishing_on_kia.pdf

Hobbes, T. (1651) (1968). *Leviathan*. Penguin Harmondsworth Retrieved February 18,2012 from World Wide Web:
http://www.peacejustice.msu.edu/exhibits/show/democracy/readings.

Jentoft, S. (2003). Fisheries Co-Management Experience. Retrieved May 05,2013 from World Wide Web: http://link.springer.com/content/pdf/10.1007/978-94-017-3323-6_1.pdf

Kateka A, G. (2010). Co-Management Challenges in the Lake Victoria Fisheries, Stockholm University, Sweden; US AB Stockholm Sweden.

Kaitala, V & Munro, G. (1995). The Economic Management of High Seas Fishery Resources: Some Game Theoretic Aspect : Retrieved May 22,2013 from Word Wide Web: http://link.springer.com/chapter/10.1007%2F978-1-4612-0841-9_13#page-1

Katurole, G. & Wadanya, J. (2001). A study of the impacts of fishing pressure on the Nile perch fishery on Lake Victoria (Uganda) using fisher folk community collected data.

Kiwale, (2003). Sector Diagnostic Report. Board of External Trade. Retrieved August 18,2012 from World Wide Web:
http://www.tantrade.or.tz/docs/FishDiagnostic.pdf

Kothari, C.R. (1985). Research methodology-methods and techniques, New Delhi Wiley eastern limited

Lam, M. (1998). Consideration of Customary Marine Tenure System in the Establishment of Marine Protected Areas in the South Pacific. *Ocean & Coastal Management*. Retrieved March 13, 2013 from World Wide Web: http://www.sciencedirect.com/science/article/pii/S0964569198000179:

Lauck, T. Clark, CW., Mangel, M., & Munro, GR. (1998). Implementing the Precautionary Principle in Fisheries Management Through Marine Reserves. *Ecological Applications.* 8(1). Supplement: Ecosystem Management for Sustainable Marine Fisheries. The ecological society of America

LVFO, (2007). Lake Victoria Fisheries Organization, *Implementation of a Fisheries management plan for Lake Victoria,* Annual report of October 2006 to September 2007, Jinja, Uganda

Manhattan, A. Okwach, R & Katuramu, J (2005). Status of Fisheries Surveillance, Law Enforcement and Monitoring Compliance to agreed measures for fisheries management. Proceedings of the Regional stakeholders' conference, 24th – 25th February 2005, Entebbe, Uganda.

Medard, M.N. (2000). Community-based organizations in Lake Victoria: a lesson from the Tweyambe Fishing Enterprise in Malabo District, Kagera Region, Tanzania. Retrieved May 17, 2013 from World Wide Web: http://aquaticcommons.org/3743/

Mikaili, J. (2011). The Guardian on Sunday 2nd October, 2011. Retrieved August 25, 2012 from World Wide Web: http://www.ippmedia.com/frontend/index.php?l=33992

Munyaho, T. A. (2004). Assessment of the Status of the stock and fishery of Nile perch in Lake Victoria, Uganda, Marine Research Institute, – Iceland. Retrieved September 10, 2012 from World Wide Web: http://www.unuftp.is/static/fellows/document/taabuprf04.pdf

Myers, R.A. & Hoeng, J.M. (1997). Direct estimates of gear selectivity from multiple tagging experiments. Retrieved June 17,2013 from World Wide Web: http: //www.globalshark.ca/ramweb/papers-total/gear_select_multi_tag.pdf

Nunan, F. (2010). Mobility and fisherfolk livelihoods on Lake Victoria: Implications for vulnerability and risk. Retrieved May 24, 2013 from World Wide Web: http://www.birmingham.ac.uk/staff/profiles/government-society/nunan-fiona.aspx

Nyerere J, K. (1968). Freedom and Socialism, Oxford University Press.

Ogwang1, V. O., Joyce Ikwaput Nyeko & Radhmina Mbilinyi. (2009). Lake Victoria Fisheries Organization (LVFO). Implementing Co-management of Lake Victoria's Fisheries, Achievements and Challenges. African Journal of Tropical Hydrobiology and Fisheries **12**: 52-58

Ogutu Ohwayo, R. (2003). Efforts to incorporate Biodiversity Concerns in Management of the Fisheries of Lake Victoria, East Africa. National Agricultural Research Organization, Fisheries Resources Research Institute, Jinja, Uganda.

Onyango, P.O. (2005). Socio-economics of Lake Victoria fisheries. In: Salehe M.A, **(**2008), Master thesis in International Fisheries Management Department of Social and Marketing Studies Norwegian College of Fishery Science University of Tromsø Retrieved on10th sept, 2012 from World Wide Web: http://munin.uit.no/bitstream/handle/10037/1428/thesis.pdf?sequence=1

Ostrom, E. (2009). Beyond Markets and States: Polycentric Governance of Complex Economic Systems. Retrieved August 16, 2012 from World Wide Web: http://www.nobelprize.org/nobel_prizes/economics/laureates/2009/ostrom_lecture.pdf

Ostrom, E. (1995).Governing The Commons: The Evolution of Institutions for Collective Action. Retrieved May 24, 2013 from World Wide Web: http://www.cooperationcommons.com/node/361

Ostrom, E. R. Gardner, & J. Walker. (1994). *Rules, Games, and Common-Pool Resources.* Ann Arbor: University of Michigan Press.

Owino J.P. (1999). Socio-economics of the Lake Victoria Fisheries: traditional and Centralized Management systems of the Lake Victoria Fisheries in Kenya. IUCN Eastern Africa Program Report no 4 pp 1-19.

Pomeroy. R.S. (1995). Community based and co-management institutions for sustainable coastal fisheries management in Southeast ASIA. *Ocean & Cosastal Management*, Vol 27, NO3. pp143-162.1995.

Salehe, M. A. **(**2008). Master thesis in International Fisheries Management Department of Social and Marketing Studies Norwegian College of Fishery Science University of Tromsø. Retrieved September10, 2012 from World Wide Web: http://munin.uit.no/bitstream/handle/10037/1428/thesis.pdf?sequence=1

Tietenberg, T. & Lewis, L. (2009). Environmental and natural resource economics. *9th Edition* Pearson Education, Inc. United States of America.

Twongo, T. Reynolds, J.E. & Peter Mwene-Beyanga (2008). Management issues, options, and strategies for Lake Victoria fisheries. Retrieved on may, 14th 2013 from World Wide Web:

http://www.fao.org/docrep/006/AD147E/AD147E05.htm

URT, (2013). National Bureau of Statistics, Dar-Es-Salaam, Tanzania. Retrieved June 12, 2013 from World Wide WEB: http://www.nbs.go.tz/sensa/index.html

URT, (2008). Ofisi ya Mkuu wa Mkoa wa Kagera, BUKOBA. Retrieved August 31,2012 from World Wide Web: http://www.kagera.go.tz/kurasa/maliasili_mazingira/maliasili/index.phpon

URT, (2007). Poverty and Human Development Report 2007. (The Research and Analysis Working Group). Dar- Es- Salaam: Mkuki na Nyota Publisher

URT, (2006). The United Republic of Tanzania State of the Environment Report, Vice President's Office-Division of Environment Dar-Es-Salaam, Tanzania

URT, (2005). MNRT, The National guidelines for Beach Management Units, Dar-Es-Salaam, Tanzania

URT, (2003). Ministry of Natural Resources and Tourism, The Fisheries ACT, 2003 (ACT NO.22 OF 2003), Dar-Es-Salaam, Tanzania

URT, (1997). National Fisheries Sector Policy and Strategy Statement, Dar-Es-Salaam Tanzania

URT, (1970). Ministry of Natural Resources Tanzania, Fisheries Act no 6 Laws of United republic of Tanzania. Government printer , Dar-Es-Salaam, Tanzania

Yamane, T. (1967). *Statistics: An Introductory Analysis*, 2nd Ed., New York: Harper and Row. Retrieved July 19, 2013 from World Wide WEB: http://edis.ifas.ufl.edu/pd006

APPENDICES

APPENDIX 1: QUESTIONNAIRES FOR VILLAGE LEADERS

Dear Respondent;

The responses of this study will be used for the academic purposes only and not otherwise.

SECTION 1

A : BACK GROUND INFORMATION OF RESPONDENT

(Put tick where you find convenient.)

1. Name……. Position……

2. Village……. Ward…….

3. Sex: Male [ ] Female [ ]

4. Your age:

Bellow 18Yrs	[ ]		
19- 23Yrs	[ ]	24-28Yrs	[ ]
29-33Yrs	[ ]	34- 38Yrs	[ ]
39-43Yrs	[ ]	44Yrs and above	[ ]

5. Education level:

- Class 0 [ ]
- Primary education [ ]
- Sec education, o-level [ ]
- A-Level [ ]
- Certificate/Diploma [ ]
- Degree (University) [ ]

6. Marital status:

- Single [ ]
- Married [ ]
- Widow/widower [ ]
- Divorced/separated [ ]

7. What are the daily activities of the village community…….

8. Have you ever heard about the existence of the BMUs?

YES [ ]

NO [ ]

9. Have you ever been sensitized on the role of the BMUs?

YES [ ]

NO [ ]

10. What are the activities that BMUs perform in relation to the elimination of illegal fishing in Lake Victoria?

1……

2……

3……

4……

5……

11. Is there any impact of the formed BMUs in combating illegal fishing?

YES [ ]

NO [ ]

C. The reasons for the persistence of illegal fishing practices in the area.

12 Are you involved in the activities performed by the BMUs?

YES [ ]

NO [ ]

13 What are the major types of illegal fishing practices in your area? (*You may tick more than one type*)

- Use of beach seine [ ]
- Use of monofilament [ ]
- Use of small sized fishing nets [ ]
- Others [ ]

14 What are the causes for illegal fishing (*put tick/write where you find convenient*).

- Establishment of the fish processing industry that has created a good market for fish
- The high price of legal fishing gears. [ ]
- Lack of alternative way of earning livelihood. [ ]
- The low cost of illegal fishing but the higher the catch [ ]
- Corruption among the BMU leaders [ ]

15 Who are the main illegal fishers in your area: (*put tick/write where you find convenient*).

- The rich fishers from within the area [ ]
- The rich fishers from outside the village [ ]
- The poor people from within the area [ ]
- The poor people from outside the village [ ]

16 At what time does the illegal fishing activity done:

Morning [ ]
Noon [ ]
Evening [ ]
Night [ ]

17 Where do they get those illegal fishing gears?

- …….
- …….
- ……..
- ……..
- ……..

18. Which among the following aspects are the challenges to the BMUs in combating illegal fishing? (*You may tick more than one factor*)

- Inadequate working tools and equipment [ ]
- Inadequate Funds [ ]
- Difficult to get info about illegal fishing [ ]
- Many BMUs members are involved in illegal fishing [ ]
- Any other [ ]

19. What measures should be taken to improve the BMUs performance?
(Mention only one and give explanation on it)

……..
……
……
……
……..

Thank you for your cooperation.

APPENDIX 2:

QUESTIONNAIRES FOR BMUS LEADERS

Dear Respondent;

The responses of this study will be used for the academic purposes only and not otherwise.

SECTION 1:

A: BACK GROUND INFORMATION OF RESPONDENCE

(*Put tick where you find convenient.)*

1. Name……..Position……

2. Village…….Ward…….

3 Sex: Male [ ] Female [ ]

4 Your age:

Bellow 18Yrs [ ]

19- 23Yrs [ ] 24-28 Yrs [ ]

29-33Yrs [ ] 34-38 Yrs [ ]

39-43 yrs [ ] 44Yrs and above [ ]

5 Education levels:

- Class 0 [ ]
- Primary education [ ]
- Sec education, o-level [ ]
- A-Level [ ]
- Certificate/Diploma [ ]
- Degree (University) [ ]

6 Marital status:

Single	[ ]
Married	[ ]
Widow/widower	[ ]
Divorced/separated	[ ]

7. The name of the BMU you're leading …….

- Total number of BMUs member…….
- Types/total number of working equipment such as boats……

B: Activities of BMUs

8. When did your BMU start? …….

9. Have you ever been sensitized on the role of the BMUs?

YES [ ] NO [ ]

10. What are the activities that BMUs perform in relation to the elimination of illegal fishing in Lake Victoria?

1……

2……

3……

4……

5……

11. Is there any positive impact of the formed BMUs in combating illegal fishing?

YES [ ]

NO [ ]

C. The reasons for the persistence of illegal fishing practices in the area.

12 Are you involved in the activities performed by the BMUs?

YES [ ] NO [ ]

13 What are the major types of illegal fishing practices in your area? (*you may tick more than one type*)

- Use of beach seine [ ]
- Use of monofilament [ ]
- Use of small sized fish nets [ ]
- Others [ ]

14 What are the causes for illegal fishing (*put tick/write where you find convenient*).

- Establishment of the fish processing industry that has created a good market for fish
- The high price of legal fishing gears. [ ]
- Lack of alternative way of earning livelihood. [ ]
- The low cost of illegal fishing but the higher the catch [ ]
- Corruption among the BMU leaders [ ]

15 Who are the main illegal fishers in your area: (*put tick/write where you find convenient*).

- The rich fishers from within the area [ ]
- The rich fishers from outside the village [ ]
- The poor people from within the area [ ]
- The poor people from outside the village [ ]

16 At what time does the illegal fishing activity done:

Morning [ ]

Noon [ ]

Evening [ ]

Night [ ]

17 Where do they get those illegal fishing gears?

- …….
- …….
- ……..
- ……..
- ……..

18. Which among the following aspects are the challenges to the BMUs in combating illegal fishing? (*You may tick more than one factor*)

- Inadequate working tools and equipment [ ]
- Inadequate Funds [ ]
- Difficult to get info. About illegal fishing [ ]
- Many BMUs members are involved in illegal fishing [ ]
- Any other [ ]

19. What measures should be taken to improve the BMUs performance?

(Mention only one and give explanation on it)

……..

……..

……

……

Thank you for your cooperation.

APPENDIX 3:

QUESTIONNAIRES FOR CREWS

Dear Respondent;

The responses of this study will be used for the academic purposes only and not otherwise.

SECTION I

A. BACKGROUND INFORMATION OF RESPONDENCE

(Put tick where you find convenient).

1. Name……..

2. Village…….. Ward……..

3. Sex: male [ ] female [ ]

4. Age category: Bellow 18Yrs [ ] 19- 23Yrs [ ]
24-28Yrs [ ] 29-33Yrs [ ]
34-38Yrs [ ] 39-43Yrs [ ]
44Yrs and above [ ]

5. Education level: Class 0 [ ]
Primary education [ ]
Sec education : o-level [ ]
A-Level [ ]
Certificate/Diploma [ ]
Degree (University) [ ]

6. Marital status:
Single [ ]
Married [ ]
Widow/widower [ ]
Divorced/separated [ ]

B: Activities of BMUs

8. Have you ever heard about the existence of the BMUs?

YES [ ]

NO [ ]

9. Have you ever been sensitized on the role of the BMUs?

YES [ ] NO [ ]

10. What are the activities that BMUs perform in relation to the elimination of illegal fishing in Lake Victoria?

1……

2……

3……

4……

5……

11. Is there any positive impact of the formed BMUs in combating illegal fishing?

YES [ ]

NO [ ]

C. The reasons for the persistence of illegal fishing practices in the area.

12 Are you involved in the activities performed by the BMUs?

YES [ ]

NO [ ]

13. What are the major types of illegal fishing practices in your area? (*You may tick more than one type*)

- Use of beach seine [ ]
- Use of monofilament [ ]
- Use of small sized fish nets [ ]
- Others [ ]

14. What are the causes for illegal fishing (*put tick/write where you find convenient*).

- Establishment of the fish processing industry that has created a good market for fish [ ]
- The high price of legal fishing gears. [ ]
- Lack of alternative way of earning livelihood. [ ]
- The low cost of illegal fishing but the higher the catch [ ]
- Corruption among the BMU leaders [ ]

15. Who are the main illegal fishers in your area: (*put tick/write where you find convenient*).

- The rich fishers from within the area [ ]
- The rich fishers from outside the village [ ]
- The poor people from within the area [ ]
- The poor people from outside the village [ ]

16. At what time does the illegal fishing activity done:

Morning [ ]
Noon [ ]
Evening [ ]
Night [ ]

17. Where do they get those illegal fishing gears?

- …….
- …….
- ……..
- ……..

18. Which among the following aspects are the challenges to the BMUs in combating illegal fishing? (*You may tick more than one factor*)

- Inadequate working tools and equipment [ ]
- Inadequate Funds [ ]
- Difficult to get info. About illegal fishing [ ]

- Many BMUs members are involved in illegal fishing [ ]
- Any other [ ]

19. What measures should be taken to improve the BMUs performance?

(Mention only one and give explanation on it)

……..

……..

……

……

……

Thank you for your cooperation.

APPENDIX 4:

GUIDING QUESTIONS FOR REGIONAL AND DISTRICT FISHERIES DEPARTMENT BUKOBA

1 What are the causes for the persistence of the illegal fishing despite the existence of BMUs?

2 What are the type of illegal fishing gears used by illegal practices in your area?

3 Who are the main illegal fishers in the area ?

4 What are the Challenges that BMUs are facing in combating illegal fishing?

5 What can be the measures to improve the BMUs performance?

APPENDIX 5:

GUIDING QUESTIONS FOR FOCUS GROUP DISCUSSION (BMUs LEADERS) BUKOBA

1. The role of BMUs and
2. Challenges to the BMUs performance

APPENDIX 6:

GUIDING QUESTIONS FOR INTERVIEW WITH RETIRED MBEMBE BMU SECRETARY

- Why illegal fishing despite the existence of BMUs?