MODERN BOATS IN AFRICAN GREATLAKES: Local Ecological Knowledge and the Management of Fisheries Resources in Lake Victoria, Uganda.

Stevens Aguto Odongoh

Thesis submitted in partial fulfillment for the requirements of the award of Masters of Philosophy in Anthropology of Development, Department of Social Anthropology, University of Bergen, June 2010.

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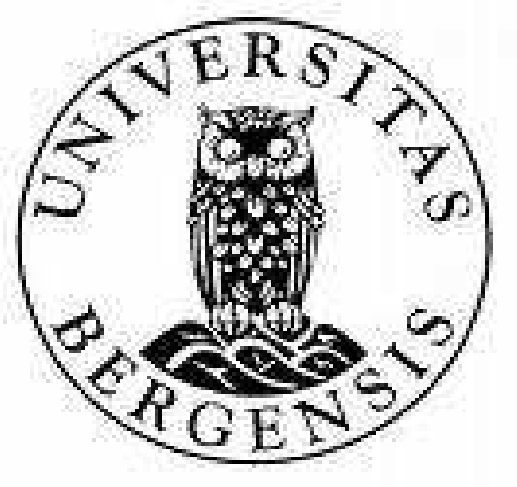

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Abstract

Traditional access to resource utilization and management in Lake Victoria is currently under attack. The customary system rules and regulations are being impaired through the adoption of conventional science, foreign technology and centralization of power. This thesis explores the place of Local Ecological Knowledge (LEK) among fishers on the Ugandan side of Lake Victoria.

In this era, LEK is under threat from global forces especially on environment. Local fishers had for decades managed Great Lakes fisheries under customary right-based systems. Fisheries therefore are not only seen as a source of livelihood but also a way of life. However, with global connectedness and increased demand for fish and fish products especially in the foreign markets, new-comers are joining fisheries every day. This has led to the race for fish and fishing space.

In Great Lakes fisheries, governments with the help of other stakeholders such as the EU and the WB have designed new institutions, ideas and technology for "better management." The new approaches give priority to conventional science more than LEK. *Modern Boats in African Great Lakes* focuses on the implications of these new systems upon local settings. A place that was once solely for local fishers is now inflated with many new- comers both from within and overseas. What impact does that have on the people's livelihood and the environmental situation of the lake?

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Acronyms

ATR African Traditional Religion

BIDCO Bhimji Depar Edible Oil and Hygiene Products Company

BMU Beach Management Unit

CAS Catch Assessment Surveys

CBD The Convention on Biological Diversity

CF Cage Fisheries

CHRI The Commonwealth Human Rights Initiative

CITES The Convention on the International Trade on Endangered Species

CPR Common Pool Resources

DANIDA Danish International Development Agency

DFID Department for International Development

DFO District Fisheries Officer (Uganda)

DFR Department of Fisheries Resources (Uganda), Ministry of Agriculture, Animal Industry & Fisheries

EAC East African Community

EU European Union

FAO Food and Agricultural Organization of the United Nations

FBA Fish Breeding Area

FMA Fish Mongers Association

FIRRI Fisheries Research Institute (Uganda)

FMP Fisheries Management Plan

GEF Global Environmental Facility

GEI The Green Economy Initiative

GIS Geographical Information System, A computer system for capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the Earth's surface.

HACCP Hazard Analysis of Critical Control Points

IDA International Development Association

IFAD International Fund for Agricultural Development

IFMP Implementation of a Fisheries Management Plan

IK Indigenous Knowledge

ILO International Labor Organization

KYSOMU Kisima Fish Mongers Union

LC Local Council

LEK Local Ecological Knowledge

LVEMP Lake Victoria Environmental Management Project

LVFO Lake Victoria Fisheries Organization

LVFRP Lake Victoria Fisheries Research Project

MCS Monitoring, Control and Surveillance of Fisheries on Lake Victoria

MPA Marine Protected Area

MSY Maximum Sustainable Yield

MW Megawatt

NAADS National Agricultural Advisory Services (in Uganda)

NaFFIRRI The National Fisheries Resources Research Institute (in Uganda)

NARO National Agricultural Research Organization (in Uganda)

NEAP National Environmental Action Plan (Uganda)

NEMA The National Environment Management Authority (Uganda)

NGO Non-Governmental Organization

NWP The National Wetlands Policy

OGOPA Farmers association in Masese

PEAP Poverty Eradication Action Plan (Uganda)

PMA Plan for Modernization of Agriculture (Uganda)

PRSPs Poverty Reduction Strategy Papers

TAC Total Allowable Catch

TECCONILE Technical Cooperation for the Promotion of the Development and Environmental Protection of the Nile Basin

TEK Traditional Ecological Knowledge

TQM Total Quality Management

UEGCL Uganda Electricity Generation Company Limited

UIB University of Bergen

UNEP United Nations Environment Programme

USD United States Dollars

WB World Bank

WLP Wild Life Policy

Figure 1 shows Great Lakes region of Africa

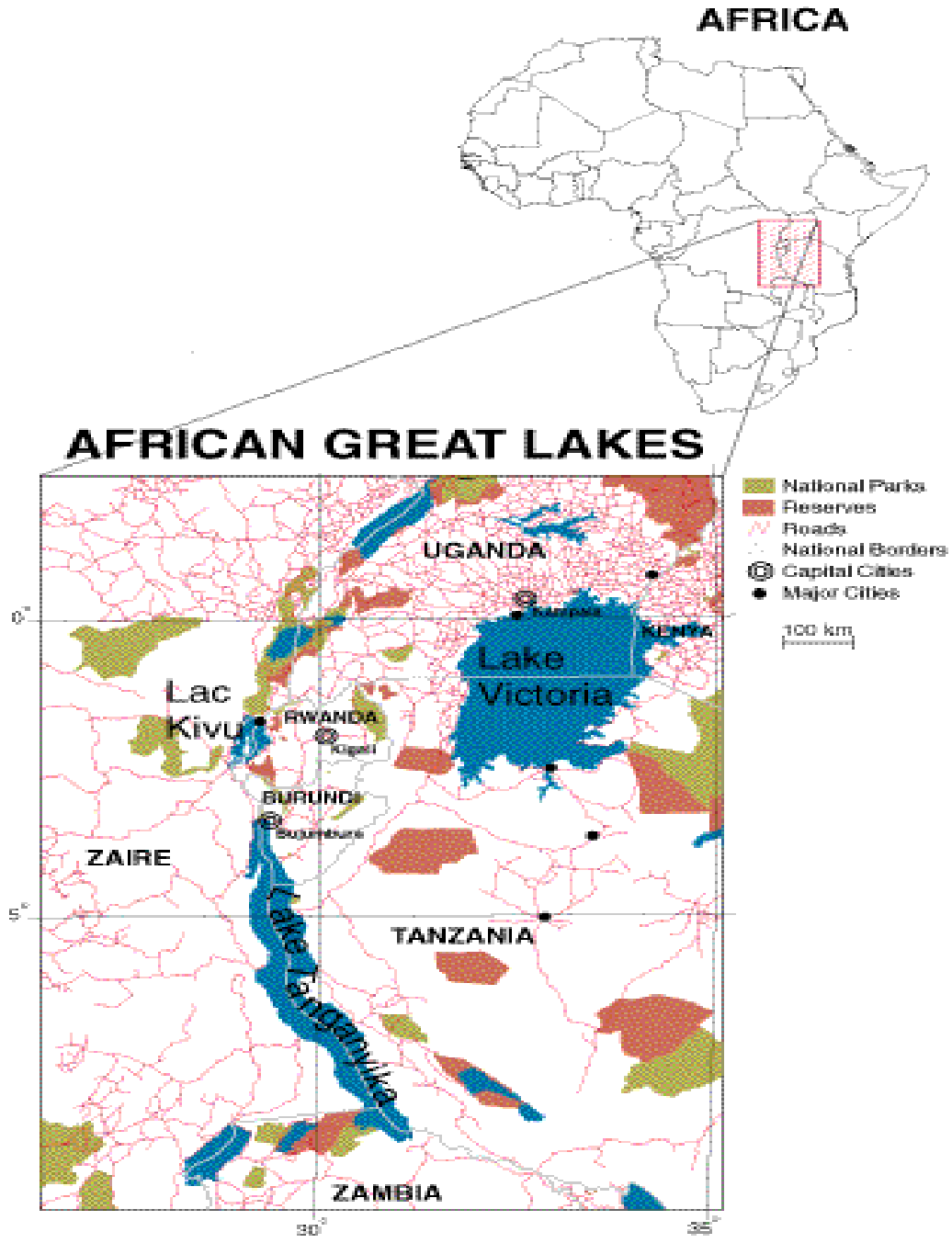

Figure 2 Map of Uganda showing location of Lake Victoria and Field site.

Source http://geography.about.com/library

Chapter One

General Introduction

Fisheries and Natural Resource Management in Uganda and Lake Victoria

This work looks at the state of Lake Victoria fisheries with a special focus on local ecological knowledge. Fishing and fishers in Lake Victoria are directly faced with global discourses on environment. This has led to the introduction of new management measures. External actors such as the European Union (EU) and the World Bank (WB) through the Ugandan state have been at the forefront of proposing and introduction of new management approach to fisheries resources. The introduction of Marine Protected Areas (MPAs) is one such attempt to conserve the lake's bio-diversity. However, depending on how they are introduced, such new establishments come with new regulations and rights of access for marine-resource users. If not introduced harmoniously, new regulations to marine resources often does not go well with traditional systems of management.

Lake Victoria is believed to have had over 300 species according to studies. This number has tremendously declined over the last few decades impacting on the diversity. Some species are even presumed to have gone extinct. (LVFO Edf Project No. 8 Acp Ror 029). Before the introduction of Nile perch, most of the fishing boats were owner-operated. The owner worked on the boat, controlled fishing operations and managed the sale of fish. The fishery was managed along traditional guidelines and local communities benefited accordingly. However, this pattern has changed during the last two decades as a result of the expansion and development of the fishery. The development of the fishery provided opportunities for investment by individuals outside the fishing communities, who now have won fishing right from the state. These developments have created changes in the fisheries of Lake Victoria. (Reynolds et al 1988; Harris et al 1995; LVFO). "Originally the fishery was exploited using basket traps, hooks and seine nets made of papyrus. These fishing methods had little impact on the fish stocks. The pressure on the fishery increased with the introduction of more efficient gill nets"(Oguttu-Ohwayo and J.S. Balirwa 2004:31).

The fisheries of lake Victoria is organized under two economies thus – local fishers and Nile perch fishers. The former are mainly what we can refer to as indigenous fishers or local fishers who live in either Ekizinga (island) or Mwaalo (landing site), own small boats, have meager capital, and their catch is largely for domestic consumption. Nearly all their catch is marketed with the country. The later are mainly private individuals backed by fishing companies with government concessions. This second group as we shall see later, deal mostly with Nile-Perch. These are two different economies participating in fishing and fish circulation.

The creation of monetary economy and the eventual commoditization of fish led to the establishment of fish processing plants which fillet especially Nile perch for export. The fillets are exported to the EU, Israel, and Japan etc. There is now general believe among several stakeholders, that the activities of the fillet factories fueled the increase in fishing effort. Statistics from the fisheries department show that, Uganda has over 22 fillet factories exporting over 30,000 tons of fish especially Nile perch per year, and attractive foreign exchange earnings of $150million annually.[1] This growing fish industry led to migrations[2] around the lake and centers of fish trade.

According to The National Fisheries Policy, Uganda can approximately produce 300 000 metric tons of fish on a sustainable basis annually. The national figures show that the number of artisanal fishermen is on the increase. They were estimated at about 140 000 in 1997. Currently, according to the Department of fisheries in Uganda, over 700 000 people are involved in fisheries related activities such as fish processing, fish vending and boat building. Some people are involved in industrial fish processing, fish gear making, fish equipment trade, fisheries research and administration.

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[1] See *New Vision* (Friday, 21st September), 2007.

[2] For migrations into lake areas and other centers, see Chapter four

Table 1 Table showing Estimated catches of all fish pooled in the Ugandan side of Lake Victoria per annum.

Year in tones	**2005**	**2006**	**2007**	**Total**
Nile perch *(Mputa/Sangara)*	94,902.6	91,039	86,655	272596.6
Tilapia *(Ngege)*	29,415.0	27,061	24,356	80832
Silver fish *(Mukene/Omena)*	106,399.3	95,734	113,791	315924.5
Others	7,815.3	2,109	2,685	12609.3

Source: NaFFIRI Uganda

Some researchers hold that Lake Victoria is currently facing several environmental stresses, which are adversely impacting the basin`s ecosystem as well as the region`s economy. Among the noticeable changes is decreasing level of the lake's waters. According to Odada *et al* 2004, Lake Victoria has come under increasing and considerable pressure from a variety of related human activities such as over fishing, species introductions, industrial pollution, eutrophication, and sedimentation. The waters of Lake Victoria and its shoreline are shared between three countries; Kenya (6%), Uganda (43%), and Tanzania (51%) (Ogutu-Ohwayo et al 2005; Odada et al 2004). On top of being home to a wide diversity of flora and fauna, the basin also supports a large fishing industry for export and local consumption, fresh water supply, lake transport and trade routes and hydropower generation, tourism and sport (Ogutu-Ohwayo 1990).

"Many discount fishermen's suggestions regarding fisheries management on the ground that fishermen have no 'scientific' background and thus cannot be expected to know much. Others, like Hardin and the common-property theorists, are convinced that fishermen are driven to overexploit the resource" (Acheson 1988:150). However, Anthropology has demonstrated that there are many other ways of knowing and also shown what happens when different knowledges meet.

This study explores the different ways in which local fishers in the Ugandan sector of Lake Victoria manage common pool resources, what the challenges are for management of the lake's resources; and the significance of 'local ecological knowledge' in the management of fisheries resources. I attempt to assess whether the reduction of fish is due to open access.

The study is guided by questions like; what impact does the involvement of external actors such as World Bank through state institutions have on management and the wellbeing of the commons? How do local fishers cope with environmental change, including decreased water level? Do they have alternative resource when fish levels get depleted? What is the role of the state in fisheries management? How do local people perceive the status of the lake? And how do fishers organize the fisheries? What is the role of rituals and taboos in organizing and restricting the fishing effort? Are there informal ways of management? What is the economic importance of fisheries for local populations/households?

My main objective therefore, is to understand local ecological knowledge systems and the way local people managed/manage common pool-resources within the Victoria basin. And also to examine the place of indigenous/local knowledge in the management of natural resources today.

To answer the above objectives and questions, it was necessary to look at the socio-economic and political organization of the fishers, and generally, the economy of the fishers especially from a historical point of view. It was also necessary to investigate the relationship between local inhabitants, resource utilization, ecological change, history and sociality, which this study endeavors to demonstrate. This is a story of fish and fishing in Lake Victoria. I try to bring out different voices from the fish folks and other dwellers of Lake Victoria having spent about half a year living with fishers in Masese fish landing site in Jinja, Uganda. Therefore, much of this work comes from the experiences and encounters with the fishing community of Masese. Also included in the study are specific issues like ethnic dimension, gender dimension and how such factors relate to fisheries management in Lake Victoria. I try to tress the territories and mapped up areas of the lake; different groups of fishers, gender division of labor, both at household level and community gender roles, taboos and different beliefs and traditions connected to fishing.

Current Resource Management Policies in Uganda

There had been several concerns expressed that the Fisheries Sub-sector had operated without an explicit national policy. However, the Ugandan state through the Ministry of Fisheries and Natural Resources is licensing procedures provided for by the 1967 Fish Act.

The amended act (2003), proposes to empower the minister in charge to make decisions in what has been termed 'emergency situations' such as suspending fishing in breeding areas and over-fished waters where it is thought that certain species need to be allowed time to regenerate. Under the National objectives and directive of the Constitution, the Ugandan State is obliged to protect important natural resources including water, wetlands, fauna and flora on behalf of the people. Among others, the policy will now on investigate issues pertinent to fisheries and develop appropriate technologies; control overfishing by limiting the total number of fishers and the quantity of gears used.

In the 1980's, Uganda adopted the Structural Adjustment Policies before it could obtain loans from the IMF and the World Bank. The idea was to restructure the economy to become more free market oriented. The policies included among others, promotion of foreign investment, trade liberalization and privatization. As a result of the above, in Uganda, the policies stimulated investments in fish processing (Odongkara and Okaronon 1999). This increased the demand by the factories and has resulted in increased fish catches exerting pressure on fish stocks.

Developments in the Region from the 1940s

Introduced Species

There are controversies surrounding developments that have occurred in Lake Victoria especially after the 1940s. Some of these developments are now believed to be having a direct effect on the lake's ecosystem. For instance, some scientists hold that, the introduction of new species especially from the 1950s by the colonial authorities to enhance local fishery has caused devastating effects in the lake's eco system. The Nile perch industry is a giant multi-billion dollar export to EU and other foreign markets. As for now, it is even believed that Nile perch and Tilapia are also declining at an alarming rate following the disappearance of several native species.

Stock Assessments

Lake Victoria's fish stock assessment was first carried out by the East Africa Freshwater Fisheries Research Organization with support from a UNDO/FAO Project in 1969-1971. This resulted into the foundation of management and investment plans for years ahead.

During the last two decades, however, many features of the Lake and its surroundings have changed. The water quality worsened, the fish species changed, the fisheries developed with increasing human population pressure and deforestation of large parts of the catchment took place (LVFRP 2000).

Lake Victoria provides livelihoods for an enormous number of people. Most of these are living in fishing communities comprised of fish mongers, boat owners, boat crew, boat builders and local gear makers. The fisheries provide almost 2 million people in East Africa with their household income and provide much of the protein needed by almost 22 million people in the region. (LVFO Information Sheet No. 1)

There has also been construction of dams over the years which is also believed to be causing a negative impact on the fishery and water quality. At present, Uganda is constructing a second hydroelectric power plant at Bujagali falls shortly after the extension of the Owen falls dam – now called Kiira dam. I will come back to the impacts of dam construction in the region later

The EU-funded project, Implementation of a Fisheries Management Plan (IFMP) for Lake Victoria through LVFO is supporting the implementation of regionally harmonized Catch Assessment Surveys CAS in the lake. At a more international level, the three Partner States are signatories to the FAO Code of Conduct for Responsible Fisheries

Linking Fisheries Crisis to Common Property School

By the end of the 1980s, reports from fisheries and environmental studies were already showing that "major marine fisheries are in a state of crisis" (McGoodwin 1990). "On current trends, some researchers estimate that virtually all commercial fisheries will have collapsed by 2050 unless urgent action is taken to bring far more intelligent management to fisheries north and south" (UNEP Press Releases May 2010).

The most common explanation is that as "common property" or "open-access resources," fisheries are not under the stewardship of any private owner and are subjected to escalating overexploitation. This kind of discourse has led many states and governments to set up policies for management and conservation of natural resources. The introduction of

such policies has often affected the organization of the indigenous/local fishers and how they relate to the lake.

Scholars like Acheson argues that: "Regulations are usually proposed by biologist from federal and state agencies charged with managing the fisheries; their only concern is the resource and 'scientific management' of that resource."(1988:150) Therefore: "The idea that fishermen do not care about the conservation of the resources on which their livelihood is based" (Acheson 1988:150) is entrenched. Many biologists, environmental scientists and natural resources managers, for long have disregarded the native fishermen who know the local currents, the boat, the fish, the movement and behavior of marine life in the waters (Johannes 1989:5; Knudsen 86-87).

However, "anthropologists have demonstrated that there exist in fisheries around the world complex and sometimes resource conserving management forms that are not informed by Western science…" (Knudsen 2009:5-6). It is against this background that I attempt to understand how the 'commons' manage fisheries resources.

Organization of the Thesis

The thesis is arranged into six chapters and each Chapter handles specific theme(s) as events unfold. Briefly; chapter one will give a general introduction; location and study population; the problem, current developments and resource management policies in Lake Victoria. It will also present the structure/focus of the study, research questions, background, theory, methodology as well as the field work.

In Chapter two, I discuss relevant theoretical positions. The legitimization of modern science as a source of knowledge for management of natural resources like fisheries is discussed here. Drawing from the theory of "common pool resources" of E. Ostrom I try to show how indigenous communities are capable of conserving the environment in which they live. This is contrasted with G. Hardin's "Tragedy of the commons thesis" which argues otherwise. I also discuss issues of knowledge in relation to the general critique of state epistemology that legitimates an official knowledge neglecting other, competing accounts of nature. I look at the hierarchy of knowledges as a factor leading to hegemonic

relationship. This is built from empirical cases i.e. Scott 1998; McCay 2001; McCay and Acheson 1987; Knudsen 2009, Jentoft 2004; 1998 and others.

In Chapter three, I try to assess the role of the state together with external partners in shaping the present day economy of Lake Victoria fisheries. I explore the activities of the World Bank (WB) as well as regional organizations such as LVFO, LVEMP among others. The state involvement in the activities of Beach Management Units (BMUs), the introduction of MPAs in lake, the management and activities of fillet factories; the control of fish landing sites and fishing methods/gears. Some regional documents containing laws and conventions about fishing and fisheries is also included in the discussion. For instance, the Fish Act of Uganda. Specific international conventions concerning environmental management are also referred to. The materials are discussed comparatively.

Chapter four will focus on the organization of fisheries of Lake Victoria. This part starts with a critical look at the economy of the fishers. An examination of how fishers cope with household economy is done here. Also discussed are; gender roles, ethnicity, how fishers manage the day to day affairs of the fisheries trade.

Local ecological knowledge (LEK) is the major theme discussed in chapter five. I examine the place of LEK today with a special focus on Lake Victoria fisheries. Also explored is the conservation methods that fishers apply and how they cope with environmental change. This is done among others by looking into their different customs, beliefs and traditions and how they conduct their daily affairs. At this point, an analysis is made concerning knowledge as a contested issue today. I show how LEK is not only present but also important to the lives of fishers. Here, I build from the common property theory and in the process; I assess the argument that if resources are not put under private ownership or strictly controlled by the state, then the outcome could be extinction of that resource. Empirical cases from the field and various fisheries studies are also used. i.e. (Knudsen 2009, McCay 2001, Jentoft) etc.

This then leads us to the last chapter, the conclusion. The conclusion discusses how local fishers employ LEK and how LEK has been ignored by different state agencies and policy

makers. It explores the assumption that traditional communities do not care about their environment in which they live. How both internal and external intervention into the fisheries has changed the industry. It emphasizes the need to incorporate LEK and science by showing that these two knowledges could work better when combined.

Methodology

Having left Norway during summer, I headed straight away to the field to collect data. This field work took close to six months, from July to December. Using the traditional anthropological approach of participant observation, I plunged myself into the fishing community on the shores of Lake Victoria, starting with building rapport. The initial month was used for movement around the lake initiating introductions, setting up contacts, and generally getting acquainted with the authorities, the people and the geographical set up and to get an overview of fishing activities and its organization. In the process acquainted with the local dialects used by the fishing community. Data collection was done mainly through participant observation. I spent most of my time (July – December) with the fishers in Masese, I went fishing, repairing boats, attended village meetings especially BMU meetings, participated in local market activities especially during fish vending. In the process, I also gotten familiar with local dialects, jargon, and other unique terms used by the different groups of fishers.

Much as I had thought that, the indigenous people who have lived in and around Lake Victoria are the Bantu peoples who speak several dialects of Bantu languages of Uganda – notably, Luganda and Lusoga, this was not generally the case. Findings show that, there are several other ethnicities from the Luo and Sudanic speaking groups.

However, there is a language of communication and trade and this is the area language (Lusoga) and in some cases Luganda which all the fishers generally spoke well irrespective of their ethnic backgrounds. These Bantu languages together with their dialects are mutually intelligible. In some extreme cases, Kiswahili plays the part of a neutral language since no group can wholly claim it. This is used when visitors, traders from distant areas and generally with people from Kenya and Tanzania. But fishers themselves irrespective of their ethnic background use the area language (Lusoga) as a medium of communication.

The study was conducted in Masese fishing village, Walukuba Division, Butembe county Jinja district in Eastern Uganda. Masese has islands such as Rwabitooke, Kisima I, Kisima II and Samuka. The mainland areas includes Masese I village which houses mainly the fish landing site and Masese II village which is the main residential place for fishers. *(See figure below)*

Figure 3 satellite image of Masese fishing grounds

<u>Key</u>

B Source of the Nile

A Masese Landing Site

Equipped with a note book and keeping track of events as they occur, I was writing down as much as possible my practical observations. Observing the way fishing is carried out especially the various processes taken was very important. It was one of the immediate ways to discover issues related to, gender roles/gender division of labor, type of fishing gear used, how long fishing is carried out, and the catchment per day *inter alia*. Continuous observation of these events led to new discoveries. In terms of participation, I went fishing and in the processes, also engaged in discussions concerning different topics about fishing and fisheries and how fishers perceive environmental change. Key informant interview and

focused group discussion were also used especially with members of BMU, Fisheries Department, fishermen and leaders of different interest groups such as representatives of the state, private investors, local area authorities, cooperative leaders and women group leaders at the site. Photography and documentary reviews were also employed.

To be a fisher is not just to go to the lake to catch fish. From the emic perspective, fishers include all persons who own boat(s), including women own personal boats. Much as they do not practically participate in the catching business, owning a boat graduates one into a fisher. It also includes fish mongers, boat builders and gear makers/repairers, all the BMU members, fishers' wives and children. They are locally referred to as *Abavubi* (by several Bantu groups) or *Ju' rech* by the Luos.

Before my field work, I put in place necessary materials and stationeries like flip charts for group discussions. Specific interviews were carried out with fishermen and leaders of different interest groups such as representatives of the state, private investors, local area authorities, cooperative leaders and women group leaders. I engaged them in issues related to fishing and environmental change.

Other field work gadgets such as cameras, sound/tape recorders were also applied. Using photography as one of the methods, was also very interesting I did not only take pictures from my point of view, but also got captions from the emic perspective. For instance, I left a camera with my informants and allowed them to take captions that interest them.

Studying the movement/ structure of fisheries right from the lake till the end process, knowing how fisheries are organized was also very important. Specific issues were noticed in the process; such as ethnic dimension, gender roles, and the role of the state *inter alia.* This also gave me a clue on the consumption pattern which was very important in explaining issues related to environmental stress, local/domestic consumption and foreign consumption.

Following the movement of fish from the lake to the factories was very interesting and challenging. For instance, when it came to fillet factories, the investors were not so cooperative. I was not allowed to talk to the factory workers, the managers would simply

tell me: “Ask us anything you want to know because we know this business better than you and the people you want to talk to.” I was prohibited from talking any photograph or even using any electronic device. When I realized that the factory managers were so protective, I started making private appointments with factory employees outside working hours and in private places.

It was October; I had already spent over three months living with fishers. By this time I was already acquainted with events at the lake and landing site. I had for all this period witnessed fish being offloaded from boats and reloaded on trucks. So after the experience with the fishers, it was time now to follow the trucks. To do this I had to come up with a method. The interviews and the discussions I had had with the Fisheries Department made me realize that it was not going to be easy to get information from the factories. Indeed when I randomly tried with one factory along Jinja – Kampala road, I was not making any headway. When I reached the gates of ‘this factory,’ I was made to sign a visitor’s book specifying the reason(s) for the visit. After some phone calls by the askaris[3] to factory bosses I was finally let in under escort by one of the gatemen. He led me to an office where I found men of Asian origin, I introduced myself to them. One of the men then introduced himself as the productions manager. Speaking with strong Asian accent, he then asked me, “How can I help you?” I then handed him a copy of my letter of introduction from UIB. After reading through my letter, he paused for a while and then said, “Okay, ask me what you want to know about us”. I then told that I appreciate all his time and efforts but I would also love to talk to the other workers. He responded by saying, “that is absolutely not accepted. All visitors are strictly forbidden entry to production areas and any kind of conversation with employees is also not allowed.” I was also stopped from taking any photograph.

Having realized that the situation was getting tougher for me here, I started relying first on observation. Right from the office where the askari left me was a giant glass window that I presumed is used to watch the workers in the production unit. Because from this point, I could see how people were working in a rather hostile condition. In fact I was not surprised when I was stopped from taking any shot. Women who seemed tired and weary from their

[3] Swahili word meaning security guard (singular, askari)

looks were continuously making movements, men were loading and offloading boxes trucks without any protective gear, others were piling *mugongo wazi* in *kavera* bags.

After this, experience, I had to improvise a way in which I could talk to the factory workers without causing any harm to no body. While at the landing site, I had met a truck driver on several occasions as he came to collect fish. When Ojubi met me again in their factory along Jinja – Kampala high way, I knew I had now found a starting point. It was through him that I got to know other factory employees.

Before, I started; I had to get clearance from the local area authorities. Equipped with my letter of introduction from the University of Bergen (UIB), I set off to meet the authorities. This letter put me at a vantage point because of its independent nature; there was hardly any connection to state activities. But at the same time, the letter seemed to attach me to something else which my hosts hurriedly raised. Since I was coming from Europe, people associated me with some sort of development agent; other attached me with NGOs activities. As the officials read my letter, I could see a smile in their faces. He is from the 'land of things', said one official. What are you going to give our people? He asked me. You see, we need development, we do not trust the government. All the government does is politics, nothing comes out of it. NGOs work better than the government. Support should come directly to the people and not through the government. Shortly, I realized that the people have been made to believe that Europe and the west generally is meant to be wealthy and whoever goes there, should be in a better economic position to support his people. However, I was able to convince them that I was there only for study purposes, and whatever, they would tell me, will be used to generate knowledge. And if there is anything they want me to write about then that will be much welcome. Yes, get people's troubles and go and tell Bazungu[4]

Having cleared with the authorities, I then realized the need for an assistant. Much as I had thought that I would find different ethnic groups living together, this was not the case. I

[4] Bazungu is a word that is commonly used in Eastern Africa to refer to Europeans (plural), in singular, it is Muzungu. Sometimes, it can also be used to refer to anybody with light skin complexion, and sometimes to someone who is fond of Western life styles no matter the race. Its usage is not derogatory.

soon discovered that I was faced with people from different ethnicities and speaking different languages. I was eager to get myself accepted among the people. Ojara who later became my close associate is a 27 year old college graduate in fisheries and Aqua Culture. His father was a fisherman too and he himself started fishing at the age of 9. Now working for the DFR in Jinja district as a support staff, Mr. Ojara has never left fishing. Ojara himself is Lou, and on top of English, he spoke 6 other Ugandan languages fairly well. These are languages that are spoken around Masese fishing village i.e. Kiswahili, Lusoga, Lugbara, Luo, Lunyakore, Ateso, Luganda, Luuya and Samia. Born on the Island, Ojara was able to learn all these languages first hand through interaction with members from other groups especially as a young boy. This was very necessary for me as my new companion was qualified for the job. Also since he was not fully employed at the DFR, he had enough time for me.

From Ojara I made a lot more other friends who in turn introduced me to other friends. It was a kind of snow ball sampling initially, but later on, I was embraced by the main stream community. By mid July, we were meeting members of BMU, fishermen, community self-help group members, fish vendors, boat makers and boat repairers, and women groups. It was also at this time that I started going into the water to fish. I was very keen to know what happens before fishing and after, the catchment per day at least on average, the types of gear used, gender roles, fishing territories, rituals and taboos connected to fishing etc. I participated and followed events closely as they unfolded.

I would like to conclude this chapter by saying that this field work did not go without obstacles. I was faced with a couple of intriguing challenges and ethical considerations.

When I visited the first fillet factory, I actually sensed that I would not be allowed to get any closer to the employees. This is because of the inhuman treatment that anybody would easily notice at first glance. People are made to work as if they were machines. They stand for very long hours. You see women looking very weary with tired faces, men sweating as if they have just come out of a hot bath. The respondents I talked to, complained of long working hours more over with little pay. The big majority of the workers who are mainly locals and women, are given less than 2 US dollars a day. The majority of factory owners

are of Asian origin. Even when I showed them letters from the authorities in Uganda and my letter of introduction from UIB, still they could not trust and give the assistance I needed. I was associated with journalistic work of some kind. To get more information, I followed to the employees to the residents.

On the issue of sex and sexuality, It was hard for women fishers to talk to me on some of the sensitive topics such as; things to do with sex and sexuality, personal income and also some women could not respond and interact freely to a man unless they got permission from their husbands. If she freely interacted with men, then she risked being accused of promiscuity.

However, I had to involve the help of one Madina, a college graduate. Madina's mother, a fisher toiled to see her through college. Since she had just finished school and was still without a job, she dedicated a lot of her time to helping me talk and interview women respondents. Later on after about four months of fieldwork, I was visited by two course mates from my programme in Bergen. Fortunately for me, they were all females so immediately I made them engage the women and even the men fishers on topics that we had discussed earlier. This also acted as counter check especially on sensitive issues that Madina and I had tackled early in the field work.

Another sensitive issue was revealing personal income. Women were not willing to disclose their income. This was common among the married women. In many patriarchal societies of Africa, the head of the household has authority over virtually everything within his household. I was not surprised when the women tended not to be comfortable unveiling their earnings. But after observation and interactions for months, I got to know the, fishers' household better, the fishing process and what happens at every stage especially as far as transactions are concerned. For instance, I could observe and later record daily sales which then I totaled after every month. I discuss gender issues in chapter four.

This research has been done in consideration of the ethics and codes of conduct of the anthropological researcher. Hence, all the rights and moral values of the participants have been treated with respect. To ensure that this research is not used to harm the participants,

all the names used here are pseudonyms. I ensured that their data will not only be treated with privacy but also all the information given will not be used in any manner that would damage their personality. I first sought permission from the participants before publishing their information including such things as photographs that were shot during the course of the study.

Chapter Two

Theoretical Perspectives

Small Scale Fisheries

Small scale fisheries is often referred to as artisanal, coastal, native, inshore, tribal, peasant, traditional or local fisheries. No matter, how it is called, what all these have in common is their small capital base (see McGoodwin 1987, 1990:8-12). For instance: "The importance of the family-oriented form of organization, as well as the participation of the family members in fisheries related activities should be mentioned as important characteristics of these traditional fishing communities" (FAO 2006).

Presently, it is widely accepted that, in most developing countries, small-scale fisheries play an important role as a major source of animal protein and in the provision of employment. In these countries there are estimated to be around 20 to 30 million small-scale fishermen, to which must be added their families, fish traders and a large number of people employed in related activities, all of whom depend on small-scale fisheries for a livelihood (FAO 2006). Most small-scale fisheries are located in rural areas, on lakes, estuaries, lagoons, and coastal areas. FAO further confirms that artisanal fisheries are mainly labor-intensive and their level of income is low, but which may be supplemented by other non-fishing activities conducted by family members.

However, the introduction of modern technologies into the traditional systems has frequently upset the traditional ways of doing things, not always for the better. (ILO 2000). For instance, "nearly 30 percent of the world's total catch goes not to feeding people, but for reduction to fish meal and fish oils, which are used mainly in feeds for poultry and livestock" (McGoodwin 1990:2-3).

FAO 2006 asserts that, many states are frustrating traditional approaches to resource use and management. The customary rules and regulations governing resource use have been

made dysfunctional through the centralization of government control. Current institutions, policies and processes in many countries work to the detriment of small-scale fisheries. Small-scale fisheries are often marginalized or ignored in national and regional planning and policy development. Recent analyses have shown that many of the national Poverty Reduction Strategy Papers (PRSPs) that are being developed do not, in general, include small-scale fisheries.

Almost nowhere in the world today are untouched by global forces such as the discourse on environment and climatic change, capitalism, media and the activities of the United Nations. We cannot ignore in environmental analysis the ways these relationships of local to global systems lead to particular outcomes. The role they play in determining human uses of the environment, particularly the impact of capitalism on developing societies (Moran 2000:68- 71).

Common Pool Resources (CPR)

Fisheries is one of the common-pool resources that are of great concern in this era of major ecological challenges. Others include irrigation systems, groundwater basins, pastures and grazing systems, lakes, oceans, publicly owned parks and forests, the earth's atmosphere (Ostrom 2008; Acheson 1988). Having observed a number of common pool resources throughout the world, Elinor Ostrom noticed that a number of them are governed by common property regimes - arrangements different from private property or state administration - based on self-management by a local community. Her observations are in challenges the claims that common-pool resources if not privatized or strictly controlled by the state can be destroyed in the long run due to collective action problems.

Garret Hardin in his *The Tragedy of the Commons* thesis, (1968: 1245-46) suggested that resources are destined for extinction if individuals are not controlled. In Hardin's case, the state or some private control must intervene in order to prevent the 'commons' from ruining the resource. "In the case of climate and fishing, privatization through the use of quotas has emerged as one of the major management tools" (Knudsen 2009:4).

"Economists have largely adopted the Hardin paradigm, as they share the basic assumption of rational choice and methodological individualism that are concealed in his

theory. It is perhaps even fair to say that economists also pioneered it" (Jentoft 2004:97). They hope that property rights will save the fisherman from his dire situation for good. Hardin has largely been criticized for assuming that there are only two ways of management – private and government control. He ignores the community as a potential contributor to solving the problem. (Acheson 1988:143).

Modern fisheries management theories have embraced a bio-economic approach and that's why we now have such coinages as maximum sustainable yield (MSY), stock advice, total allowable catch (TAC), fishing quotas etc. And Science has always been used as the yard stick for implementing management decisions (see McGoodwin 1990; Knudsen 2009; Jentoft 2004;). However, this model has not lived to the expectations of its designers. Many fisheries managed according to this model have declined or even collapsed, for instance, the Grand Banks Cod fisheries as well as many fisheries managed by the European Union. This led to the formation of other alternative strategies. The decline and collapse of cod fisheries in both Canada and Norway reignited social science interest in environmental issues. Anthropologists and the others alike shifted focus to local ecological knowledge in pursuit of the reasons for the fall of the cod fisheries (McCay 2001:257-258).

Studies especially from maritime anthropology now show that small scale coastal communities are in fact capable of generating conservation rules and regulatory practices (Berkes 1989; Jentoft 2004 McCay and Acheson 1987). For instance, coastal marine populations normally organize themselves in territories which are important for conserving resources. (Acheson 1981; Berkes 1989). Fishers also compete by seeking more effective innovations, and by the strategy of combining occupations and switching fisheries accordingly (Barfield ed. 1997:191-192). Hardin assumes that satisfying self interest is the goal of every resource user ignoring the role of the community in bringing restraint. For instance, the Miskito fishing community of Central America use their culture regulate resource use. It is culture that guarantees ones acceptance to a fishing territory (Jentoft 2004:104-108).

Basing on the above arguments, it is clear that the Hardin theory is not justifiable and cannot be use as a standard to determine resource management approaches. There is need

to look into specific circumstances following the history of a people in relation to their resources. Fisheries management policies must therefore take into account processes that lie beyond the influence of local fishermen. (Jentoft 2004:98; Marquette et al 2002: 324).

Co-management

Proponents of co-management assert that the resource users should equally participate in the management process. According to Jentoft *et al* co-management agitates for independence of users where the people can freely decide in matters regarding the management of their resource. This would be a system where resource management is not centered only in the hands of the state and other private stake holders. It involves consensus on all concerned parties (see Jentoft 2004; Jentoft et al 1998). This view is based on two aspects: "First, users possess knowledge, based on their experience that may fruitfully add to fisheries science and, hence, produce more enlightened, effective and equitable remedies and solutions to the management challenge. Secondly, participation of users enhances the legitimacy of the regulatory regime, and, hence, compliance" (Jentoft *et al* 1998:423).

With the postmodern turn especially after 1980, "a new developmental discourse which holds that the success of development projects depends upon local participation and knowledge" (Knudsen 2007:14) took shape. The local resource user was now to have a fair share of control of management process if sustainable resource management was to be achieved. This is in the hope that when the bottom up approach is followed in which the resource users are part and parcel of the plan and management system, they will embrace the rules and regulatory practices. Advocates of co-management say this has worked in many cases bringing social cohesion through shared aims, increase in stock and increased management capacity at all levels. "By incorporating users in the decision-making process as co-authors and as co-responsible for design, implementation and enforcement, they are expected to acquire a sense of ownership of rules and regulations. Also their experience based expertise is then made relevant…" (Jentoft: 2004:112-113).

However, according to Jentoft 2005, there can never be co-management without empowerment. There must be devolution of power which must then be distributed evenly

among the resource users. And empowerment must occur at all levels – institutionally and individually. Different state bureaucracies must relinquish power such that not only the community but also the individual should be in a position to decide their future. Co-management has been instrumentally implemented by different governments because among others, the state has an obligation to fulfill public interest in fisheries management, legislative powers, financial resources and educational support. This has always left local fishers feel they are still recipients of instructions.

Therefore, like democracy, co-management should be left to develop gradually and in the process, confidence will be built on all stakeholders. And above all, there is need to level the playing ground such that all partners can act evenly in the management procedure.

Modernization and Knowledge

According to FAO report 2004, there is a long-held view which still stands in some countries; that small scale fisheries could be 'modernized' and this has led to a situation whereby larger-scale industrial fisheries have been systematically favored in the belief that the benefits derived from the newer fisheries would flow through the economy to the original participants. "Modernization and technological change in the fisheries have often come about fairly rapidly, as when new competitors force local fishers to adopt new types of fishing gear, or when larger markets for production present themselves"(McGoodwin 1990:14). Moreover, large commercial fisheries often benefit from government favors such as tax holidays, direct subsidization etc. Modernization also fuels market demands in excess of what marine environments can produce. It also increases the rate of pollution which has been detrimental in many waters and has in some cases made many fisheries to close down (McGoodwin 1987, 1990). For instance, the Uganda government is modernizing[5] its agricultural sector including the fisheries sector. In the early 1990s, Uganda started industrial fish processing in response to the lucrative markets in the EU. Currently, reports on increased fishing effort and the inability of the fishery to sustain the carrying capacity have been recorded (Namisi 2004). The government responded by

[5] See PMA – Plan for Modernization of Agriculture in Uganda

introducing new laws and regulations[6]. These restrictions have dire impacts on the local resource users who for a great deal survive on the fisheries.

A living example of the impact of modernization can be seen in the Zambian mines. In *Expectations of Modernity,* Ferguson discusses the impact of the modernization process in a Zambian copper belt. He shows how in this community, modernization is not seen as a "process of moving forward or joining up with the world, but a process that has pushed them out of the place in the world that they once occupied." Ferguson uses the word 'abjection' – "a process of being thrown aside, expelled or discarded" (1999:236-238). Another case was in East Africa Scott argues that "in Tanzania during ujama villagization, peasants were moved from annually flooded lands that were vital to their cropping regime and shifted on poor soils on high ground, they were moved to all weather roads where the soil was unfamiliar or unsuitable for the crops envisaged, village living placed cultivators far from their fields thus thwarting the crop watching and pest control that more dispersed homesteads made possible" (Scott 1998).

Modernization 'discarded' local Zambians and rural Tanzanians out of a place they once occupied because the propagators of development largely ignored the local cultures. In the same vein, modernization possesses a danger for local fishers because the latter's knowledge of their fishing grounds, their life styles and identity is in most cases not considered. I show later on in Chapter five how local fishers' knowledge has often been overlooked during decision making by different state organs. Proponents of development have in most cases failed to realize that fishers' "cumulative familiarity with various elements - the bottom topography, the fish, the net, the boat and the engine, the sea currents, navigation, the weather, and even other fishers' activities and market prices – which is typical of small boat fisher's skills" (Knudsen 2009:86-87) play an important role in resource conservation. For instance, these "traditional marine environmental knowledge can also play an important role in the citing and managing of Marine protected areas." e.g. egg laying sites, nursery areas for young fish, and also determining extinct species, fish migration and life cycle of various species. Local fishers often know the precise timing and

[6] The new fisheries laws and regulations are discussed in Chapter three.

location of these phenomena (Johannes 2003, 1989: 5-7; 111-114). "Local interpretations of natural history may be at loggerheads with established facts but most researchers hurriedly dismiss interpretations of natural phenomena. This poses a danger of overlooking the empirical knowledge underlying it" (Johannes 1989:6-7).

"The social Anthropologist Bronislaw Malinowski was an early ethnographer of fishing in a tribal, non western setting, the Trobriand Islands of the Western Pacific. Fishing was for local consumption, and trade, and to some extent, was regulated by ritual beliefs and the power of local clans and chiefs" (McCay 2001:255-256). But today: "even the most remote islanders are likely competing for fish or fishing space with highly mobile, heavily capitalized fishing vessels from distant places" (McCay, p. 256). Although globalization and increased fish trade is lauded by some as having many benefits for national and global economies, In contrast, some see globalization as part of a process by which the industrialized countries will exercise trade advantages over less developed economies. Liberalization of market access, trade and investment has allowed goods from industrial countries to enter into and take over a significant portion of the markets of developing countries, or to alter demand trends (FAO 2004). In most cases, local know-how is given little attention.

McCay (2001:255) argues that: "Fishing takes place in a multidimensional space, only a tiny proportion of which is easily visible to and knowable to human beings…it depends on natural processes rather than managed ones,…Natural processes are patently uncertain and often highly variable and irregular or stochastic." Fisher's ecological knowledge has often been given little attention when passing management decision.

Scott 1998 argues that scientists are often skeptical of the value of IK unless it has been recast in scientific terms, and may lump IK with superstition, irrationalism, and tribalism. Scott builds on development theory and imperialistic state planning that ignores the values and desires of its subjects. He identifies three elements that characterize the evil nature of state development. The first is "the aspiration to the administrative ordering of nature and society." Secondly, "the unrestrained use of power of the modern state and its instrument for achieving these designs" and the third is "a weakened or prostrate civil society that

lacks the capacity to resist these plans" (Scott 1998:87-90). It is these grand high modern schemes coupled the other three issues above that have disrupted and killed many local cultures and technologies. "Ideals of high modernism have been articulated in many modernizing states and have sometimes been authoritatively implemented by totalitarian states, often with dire environmental consequences" (Knudsen 2009:8).

High modernism can be visualized in almost every part of Africa and nowhere has it succeeded. Scott uses the example of Nyerere's Ujama villagization. He says that;

…like Soviet collectives, ujama villages were economic and ecological failures. For ideological reasons, the designers of the new society had paid virtually no attention to the local knowledge and practices of cultivators and pastoralists (Scott 223-225). Rural Tanzanians were understandably reluctant to move into new communities planned by the state. Their past experience whether before independence or after warranted their skepticism. As cultivators and pastoralists, they had developed patterns of settlement and in many cases patterns of periodic movements that were finely tuned adaptations to an often stingy environment which they knew exceptionally well. The state-mandated movement threatened to destroy the logic of this adaptation. Administrative convenience, not ecological considerations, governed the selection of sites… (Scott 235-236).

In the same vein, Hviding 2003 in his studies among the Marovo of the Pacific, reports that: "The seasonal capture of nesting marine turtles is based on a complex body of knowledge about life cycles, nesting habits, and hatching periods of two species of marine turtles. History shows us many interesting examples of connections between knowledges, sometimes occurring unexpectedly" (p.58).

Some forms of knowledge have been rendered as false knowledge or superstitious etc as they are not 'observable', 'empirical' or cannot be measured in order to find 'evidence'. This has been a matter of continuous debate in the field of epistemology. The battle therefore has been between 'evidence based scientific knowledge' and other forms of knowledges. Local fishers' ecological knowledge has been grouped under the latter strengthening the argument that local fishers do not care about their environment and therefore somebody with the 'right knowledge' should determine their destiny. However, instead of struggling to find a universally accepted definition of true knowledge we should learn something from the argument that*:* "…there is no absolute difference between science and other knowledges – it is rather a question of degrees of difference" (Knudsen 2009:7-10).

We need to reconsider all forms of knowledge in our respective studies. As already explained earlier; as important fisheries diminished, attention was shifted "to environmental issues and the role of fishers' ecological knowledge" (Knudsen 2009:5). This is because "natural resources and knowledge are usually perceived to be closely connected to lifestyle and identity – typically of culturally distinct groups of marginal and peripheral people such as native populations. It is common to essentialize such knowledge and either implicitly or explicitly contrast it with science" (Knudsen 2009:5).

Acheson cites a case in the recent events in the Maine Lobster Fishery which contradicts the idea that fishermen do not care about the conservation of the resources on which their livelihood is based. He argues that: "in the mid 1980s, many fishermen favored more conservation regulations than did federal and state biologists" (1988:150). The reports on depletion of fisheries stocks appeared when conservation rules and regulations had been broken due to the modernization process. (Johannes 1978). "With the collapse in important fisheries…, there is need to understand …environmental issues and the role of fisher's ecological knowledge" (Knudsen 2009:5).

I get a lot of inspiration through the above analyses. For instance, Hviding (2003) stresses that knowledges at times occur spontaneously through lived experience with species. And that there is actually very close relation between science and other forms of knowledges (Knudsen 2009). The majority of traditional communities especially in Africa do not have a written source; so much knowledge is 'written' in peoples' cultures particularly in traditional beliefs and practices. The stingy environment makes people to manipulate ways and means of survival – a dimension I bring out in Chapters four and five.

Customary Beliefs

Colding and Folke (2001) see social taboos as being significant to resource conservation and management. They emphasize that though the original function of taboo was not for the purpose of preserving the environment, taboos do protect the eco-system by forbidding the killing of animals and destruction of plants. Some species have socio-cultural significance in peoples' customs and traditions and such species enjoy the full protection against their prey (Colding and Folke 1997). Also in most communities, elders play a

significant role in enforcing taboos that govern resource use. Often, some form of punishment or levy is imposed on the offender. In many African communities a beast or a fowl can be levied on the convict. This is important for protecting resources[7].

"Certain customs, religious practices, superstition, or taboos can also be considered a sort of passive means of restraint" (McGoodwin 1990: 118). He cites cases in Europe where fishers restraint from fishing during religious holidays like Sabbath and also in North Africa where any type of fish without scales is a taboo among the Hamito-Semitic people. It is against this background that he argues that taboos offer protection to marine life and in a way some species are preserved. Such species can act as food store which is only put to use doing dire situations (McGoodwin 1990).

In his study in the Bismarck Mountains of New Guinea among the Tsembaga and other Maring peoples, Rappaport looks at ritual as a regulatory force that can preserve an ecological unit. In this community, stability was ensured through the effective utilization of the ecological niche – in this case the pig was utilized equitably by the group through a ritual process that helped preserve the environment (1968:224).

According to Rappaport, it is the pressure on the environment that makes humans to act. The carrying capacity has to be maintained and this forces humans to come together. However, in fisheries, the need for rituals may be not just to regulate the fishing effort but the need to organize society. For instance, when we look at Mary Douglas – she shows how people strive to make order. To make this order, people need actions. Rituals have a lot to do with other things like morals and not only the environment (1966; 1970). Moran (2000:26-28), holds that every society has philosophical or mythological explanation about the natural world and human beings' place in it. It is through such explanations that members of a society articulate both their behavior as individuals and the requirements of survival as a population. Such explanations also provide societies with a means of achieving a measure of well-being.

[7] See Jentoft 2004.

All in all, we need to recognize the social in order to understand the behavioral patterns of people. An ethnographic analysis of rituals and taboos in relation to the eco-system could be relevant to resource conservation and management.

MPAs as a New Management Tool Based on Biological Science?

MPAs include parks, sanctuaries, sheltered areas, reserves etc (Pomeroy 2004; Jentoft etal 2007). The main aim of MPA is for protection and conservation of marine resources. "They are for preserving endangered species, bio-diversity and habitats" Jentoft *et al* 2007:611). Drawing from a governance model, Jentoft *et al* argue that coastal marine governance has two systems – "a governing system" and "a system to be governed" and therefore the success of MPAs will depend on the relationship between these two systems. "In improving the effectiveness of MPAs, solutions are likely to be found in both systems and in the way that MPAs interact with their ecological and social environment. Still, we must assume that there are limits as to how governable they are. They may not always lend themselves to full control" (Jentoft *et al* 2007: 611-612).

Closely related to the above, Pomeroy et al hold that "the development, management and performance of MPAs are shaped by a convergence of institutional interests between resource users, resource stakeholders, community, local government, national governments and international agencies"(2007:149). They view MPAs as "the product of social institutions" created with the intentions of controlling the way individuals utilize fisheries resources. For the successful implementation of MPAs, it is crucial to understand the behavioral patterns of different marine populations.

Much as there are some universal aspects, most of the marine populations are heterogeneous. Attention should especially be given to the socio-ecological set up of a people (Pomeroy et al 2007; Jentoft *et al* 2007). The bond individuals have to the ancestry should not be ignored when designing MPAs. Some areas may have social or cultural significance to a group. For instance, holy sites, burial grounds etc. (Charles A. and L. Wilson 2009). MPAs as a management tool should therefore not be solely based on biological science. Acheson contends that when regulations framed by biologists are made into law,

they can have unintended consequences that result in poor fisheries management. (1984:325).

Chapter Three

The State, Regional and External Agents in Lake Victoria Waters

Introduction

In this chapter, I attempt to assess the role of the Ugandan state, regional bodies together with external organizations such as the World Bank and the EU in shaping the current economy of Lake Victoria fisheries. It is important to note that these external powers work with these regional fisheries bodies through the state. Part and parcel of these organizations is the discourse of modernity and development. This has always not gone well with the local community. For instance, the state involvement in the activities of Beach Management Units (BMUs), the introduction of Marine Protected Areas (MPAs) in lake, management and control of fish landing sites etc, has caused antagonism between the representatives of the state/development and the resource users.

Role of the State

Fisheries in Uganda had for long been managed along traditional lines under a head fisher[8]; fishers to be were enculturated where they learned different fishing techniques and water management. However, from 2009, all fishers are required to register with state imposed fisheries department; must possess a letter of introduction from the local authorities (LCs); declare the fishing gears which must be in conformity with the government regulations, all fishing boats must be 28 feet which requires an outboard engine; fishing nets must be 5 inches upwards for Ngege or tilapia (*nilotica)* and 6 inches above for Mputa *or* Nile perch (*Lates Niloticus)* in case of a hook it must be 9 and below; fishers are also required to pay tax. Only after all these have been met that a fishing boat is licensed. Only after all these procedures and standards have been met, a fishing boat is licensed. This is a measure to

[8] See Chapter four for how fisheries in Uganda and Lake Victoria in particular were managed.

reduce the number of local fishers because it is assumed that, a high number of fishers will exhaust the lake's resources.

The Fish Act

This is the principle document that has rules and guidelines regarding control of fishing, conservation of fish, the purchase, and sale, marketing and processing of fish. This act has caused mixed reactions among fishers. The fishers I talked to, complained of state interference in the activities of the BMUs. BMUs are obliged to follow technical advice from the government which is in most cases stringent to fishers. For instance the Ugandan state has reviewed the 1967 Fish Act to include BMUs into her legal structure. This is already under implementation by the DFR. The 1967 Act was considered 'not comprehensive enough' to meet the current standards for proper management and conservation of fisheries. The 2003 edition gives the minister in charge powers not only to regulate but even to suspend fishing activities. Among others, the revised edition empowers the minister to;

Article 8. Power to control particular methods of fishing

"In any case where it appears to the minister that an otherwise lawful method of fisheries is likely to prove unduly destructive, he or she may by statutory order, which order may be made to apply to the whole or to any part or parts of Uganda-

(a) Prohibit the use of the method; or

(b) Subject the use of the method to such conditions as he or she may think fit…"

Article 9. Closed season

(1) *"The minister may by statutory order, which order may be made to apply to the whole or to any part or parts of Uganda, declare that during such period as may be specified in the order it shall be an offence to fish for any fish of any species specified in the order…"*

This is the power of the modern state which takes matters into its hands. I will later show that this is already damaging the local people especially with the introduction of MPAs. As seen in article 8, the minister has power to stop a fishing method that he/she considers unfit. So far, in the Uganda part of Lake Victoria, fishing boats must now meet the standards that have been set. i.e. All boats must be containerized and at least 28ft long. Findings show that very few local fishers can afford this.

When you look at (*Article 9)*, again fisher's ecological knowledge is not accommodated in the act. It is a pity that the minister can close traditional fishing grounds more without providing an alternative to its dwellers. Not even considering the fact that these people have for generations toiling a living there. It is against this background that the Uganda government through the department of fisheries is instituting MPAs as discussed below.

Uganda's National Fisheries Policy

The Fisheries Department estimates that 60% out of the total fish landed is marketed fresh, while the rest is processed using traditional methods such as smoking, salting, frying and sun drying. Fish is still the cheapest source of animal protein and provides over 50% of animal protein consumption.

In Uganda, the government believes the low literacy rate (national average of 54%) is one of the major setbacks to community participation in fisheries. The national policy therefore is geared towards industrialization and modernization of the fisheries sector to replace family fishing enterprises by large commercial operators. The demand for high quality fish especially by the foreign markets are on the increase.

The Ugandan state has pointed out 'key' issues in the fisheries sector which needs to be addressed. Some of these issues include; resource depletion through over fishing aggravated by use of destructive fishing methods and gears, eutrophication of water bodies and other forms of pollution, infestation and rapid spread of the water hyacinth and the environmental impacts of the different control options, inadequate information on the fisheries resources, inadequate funding for the fisheries activities.

The government believes the underlying causes of the above issues are due to reliance on open-access to fishing for most water bodies, inadequate monitoring, extension and enforcement mechanisms, inadequate research work which critically hinder capture fisheries and aquaculture development, inadequate fisheries infrastructure. Currently, fisheries research is undertaken by National Agricultural research Organization (NARO) through its affiliate Fisheries Research Institute (FIRRI) and Makerere University. However, it is important to note that LEK has hardly been given any consideration. Fishers, the majority of whom have lived experience in these water bodies, are not always consulted, and even when consultations are made, it is just for a couple of hours or a few days of answering questionnaires. This is why I try to understand LEK basing on the lived experience.

Existing national policies that have got a strong bearing on the fisheries policy include;

The National Constitution (1995). Paragraph (xiii) of the National Objectives and Directive Principles of the State places an obligation on the state to protect important natural resources including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda.

NEAP (1994) is aimed at facilitating a comprehensive and coordinated approach to solving environmental problems in Uganda. The policy emphasizes the need to conserve the biological resources including fisheries.

Wild Life Policy (WLP) (1995): fisheries have been grouped under wild life species living in the waters. The objective as set out the Wildlife Policy is the ensure perpetuity, for Ugandans and the international community. The policy builds into the fisheries policy in terms of creating strong links that are associated with exportation of wild fish species.

The National Wetlands Policy (NWP), this policy was adopted in 1995 and complements the goals and objectives of the National Environmental Management Policy. The aim of this policy among others is to "maintain an optimum diversity of uses and users and consideration for other stakeholders when using the wetland". (See Ramsar Convention at *http://www.ramsar.org/pdf/lib/lib_handbooks2006_e02.pdf*)

Plan for Modernization of Agriculture (PMA). One of the main aims of this plan is to transform the rural household farmer including fisher folk to a better standard of living. The plan identifies and prioritizes a number of key areas for government intervention in the medium term where the development of fish landing sites feature as an immediate government priority for investment.

The State and MPAs

It was sun set and we were in the middle of the water with Ojara's canoe. A few meters ahead of us were floaters fastened with strings and were dangling in the water like balloons filled with air. As we were approaching, my friend made a sharp curve and changed the direction. So I requested him to let me go and see what was hanging up in the water ahead of us. He quickly answered, "No no no!, we can't proceed in that direction, don't you see the marked areas? Fishers are not allowed to reach there. Those are breeding areas that is protected by the Fisheries Department." He explains. "It is guarded by *askaris* and one can get arrested if he is found there so we have to keep off." He stresses.

MPAs are areas in and around the lake where fishing and any other human activity is prohibited. These areas are supervised and guarded by the DFR with the help of the police and local area authorities. The Ugandan state in collaboration with other stakeholders is creating MPAs in Lake Victoria. However, during my field work, I observed that local fishers are not participation in the creation and implementation of MPAs. They seem to have realized that local fishers should play a decisive role when it comes to establishing MPAs because they spend so much time at the lake. Fishermen know more about the lake than most of us. They have an enormous amount of knowledge especially about the natural world. For instance important habitats, species behaviors, life cycle of various species.

Fish Breeding Areas FBAs

These are areas in and around the lake shores where fishing activities is prohibited. These areas are supervised by the fisheries department with assistance from the BMUs and Local Councils (LCs). Regular lake patrols are done to prevent fishing activities from FBAs. The fisheries department told me that they have to control fishing activities from FBAs to

enable fish reproduction, growth without any disturbance, egg laying and nest building. This is because the assumption that 'fishers do not care about conservation.'

Cage Fisheries

This is a fish rearing system which involves putting fish in a cage within the lake. It is a project under the National Agricultural Advisory Services (NAADS) programme of the Ugandan state with the aim of improving agriculture, including fisheries in order to alleviate poverty. NAADS gets funding from international aid organizations such as DFID, EU, and DANIDA etc. Cages are erected within the FBAs for easy monitoring and management. It is owned and operated by the DFR.

Figure 4 cages that have been erected within the FBA. (Source: Naffirri, Jinja)

Lake Victoria Fisheries Organization (LVFO)

LVFO was formed in 1994 by the three east African countries that share Lake Victoria waters to manage fisheries resources. It is responsible for coordinating development and management of fisheries resources of Lake Victoria. LVFO works through institutions such as council of Ministers, policy steering committee, fisheries management committee, scientific committee, working groups and an executive committee. There is also a secretariat to coordinate LVFO activities.

The mandate of the LVFO to coordinate fisheries activities in Lake Victoria is embedded in Article 9 of the EAC treaty and Article 8 of the Protocol for Sustainable Development of Lake Victoria Basin Signed on 29th November 2003. For instance, article 8 talks about "sustainable development and management of fisheries resources" where "the partner states shall manage develop and utilize fishery resources of the basin in accordance with the convention establishing the Lake Victoria fisheries organization." The LVFO core objective is "to harmonize, develop and adopt conservation and management measures for the sustainable utilization of living resources of Lake Victoria to optimize socio-economic benefits from the basin for the three Partner States."

As a specialized and autonomous institution of the EAC, the programs and activities of the LVFO are in line with the Vision and Strategy Framework for the Management of the Lake Victoria Basin developed by the EAC in 2003, and The Protocol for Sustainable Development of Lake Victoria. The operations of the LVFO are also guided by the Administrative Principles embedded in the EAC Treaty especially Article 7 which spells out the principle of subsidiarity whereby decisions are proposed at national level, harmonized and agreed upon at regional level and implemented at national level; the principle of Variable Geometry where the partner states may move at different rates; and the principle of Asymmetry whereby the Partner states aim at achieving the same levels of development. (see LVFO)

LVFO claims it is implementing fisheries co-management on Lake Victoria, "by legally empowering fisheries communities to become equal and active partners with Government in fisheries management and development." I would like to argue that this has remained on paper. The fishers I talked said they do not participate in management of the lake's resources. For instance, they are not permitted into the FBAs and CFs. Denying fishers the right to participate in the activities of FBAs and CFs shows no commitment on the government to accept fishers as equal partners who even know the environment of the lake more than many.

Much as progress seems to have been made as far as the enforcement of the legislations is concerned, "…these regulations are more so often violated by the resource users" as

acknowledges the District Fisheries Officer (DFO) for Jinja. Initially, management decisions for Lake Victoria fisheries were directly imposed from above using state organs. This always led to conflicting interests between the government organs and the resource users. The lack of cooperation on the side of the resource users led to the initiative to promote management based on resource user groups that are now known as BMUs.

Beach Management Units (BMUs)

Following the agreement between the three riparian states that share Lake Victoria, BMU was formed under the LVFO as the common foundation for a co-management approach. BMU is a committee elected by the fishing community to oversee issues related to fisheries. The main objective of the BMU is to protect fisheries resources e.g. to make sure that the lake is not exhausted and the law regarding fisheries is followed. Other activities of the BMU according to the department of fisheries is to prevent deforestation of the lake shores and its islands, to stop construction near the lake shores, they also control waste disposal and conduct operations to impound illegal fishing gear.

BMUs are comprised of boat owners, crew members, artisanal fish mongers and boat builders/repairers and other fisheries related institutions operating in a particular beach. BMU with assistance from the Fisheries Department try to enforce the law and sensitize the fishers on management and conservation of the lake's resources. Fishers who break rules are arrested e.g. when one is caught with immature fish, he charged and his catch is either destroyed or given to the community members for free.

However, fishers cited elements of corruption in the lake especially from Marine policemen. They said Marine police arrest them for unjustifiable reasons and if one fails to offer *'kitu kidogo'*[9] his catch is then impounded and the nets confiscated. It is against this background that fishers do not buy the idea of government intervention into the affairs of BMUs. The more the government has control over BMUs, the more misery on behalf of the

[9] This is a Swahili word literally meaning 'something small.' This is a language that has its origin from the armed forces which was a way of asking for bribe from the public. The local area authorities also use the same phrase to ask for bribes from unsuspecting fishers. In Uganda, '*kitu kidogo*' or '*something small*' is synonymous with corruption.

fishers as that means more marine police men. The police is one of the poorly paid institutions in the country which many believe is the reason for their being corrupt. With a large majority of them lacking the basics in life such as housing. They live in makeshift huts, with a few 'lucky' ones living in a dilapidated colonial buildings moreover under squalid conditions with women and children. According to a 2006 report by The Commonwealth Human Rights Initiative (CHRI)[10], "Uganda does not have a democratic, accountable police service. Instead, it has a heavily militarized, colonial-style regime police force that is firmly under the control of the ruling government. The interests of the Government are placed far ahead of the protection of Uganda's people. The police are responsible for widespread human rights violations, and they have not been held to account." Even a 2008 Inspectorate of Government National Integrity Survey report which investigated prevalence and incidences of corruption and administrative injustice in public service in Uganda, put Uganda police as the most corrupt institution in the country.

State involvement in the activities of BMUs.

Fish Landing Sites *(Mwaalo).*

These are areas around the lake shores where fish is landed and sold to members of the community and other fish traders from both near and distant places. Because of the fishing activities, these sites have also turned out as centers of transacting other businesses. Initially, though these areas did not have any formal control; they were traditionally managed by a head fisher known as Gubunga. Every fishing village had its own landing site or sites.

However, now the landing sites are controlled by the DFR through members of the BMU and the local police. The government policy is now geared towards modernization of fish

[10] The (CHRI) is an independent, non-partisan, international non-governmental organization, mandated to ensure "the practical realization of human rights in the countries of the Commonwealth. In 1987, several Commonwealth professional associations founded CHRI. They believed that while the Commonwealth provided member countries a shared set of values and legal principles from which to work and provided a forum within which to promote human rights, there was little focus on the issues of human rights within the Commonwealth."

landing sites. This will involve, new infrastructure in terms of better housing facilities, electricity and fish storage facilities. As seen earlier in this chapter, fishing boats will also be required to meet certain acceptable standards.

The DFR is taking over activities of the BMUs. For instance, by suspending the BMU Statute, fishers are not allowed to elect a leader of their choice. Currently every one working at a beach must belong to a Beach Management Unit (BMU). However, BMUs are an entry point for government and other development partners. This means more control and restrictions by the state on fishing activities. All plans for running the fisheries have been set in the new Fish Act (the revised 1967 edition) which is a principle document with rules and regulations for managing fisheries resources.

External Agents

The World Bank and Dam Construction.

The Owen falls dam which was constructed in 1954 by the colonial government has been extended. Then extension of this dam now called Kiira dam has caused a lot of questions and mixed reactions. The new dam was extended horizontally and that implies that more water now leaves the source of the Nile in Lake Victoria. Lake Victoria's natural control at Ripon Falls was removed for construction of the first dam in the 1950s.

The second dam was built with World Bank funding in the 1990s. A report by scientists in the region concludes that the dams are greatly impacting the lake by releasing more water than is allowed by a legal agreement between Uganda and Egypt. This 'Agreed Curve' is intended to ensure that the releases through the dams correspond to the natural flow of the river before damming (Pottinger 2006). Hilary Onek, a Ugandan member of parliament for Lamwo County Kitigum district and hydrologist, raised the issue of the dams releasing more water than the lake can sustain. In a March 2005 opinion piece in the Ugandan newspaper New Vision, he stated: "[Dam operator] UEGCL is currently releasing above 1400m3/sec to generate 220 MW of energy … Thus they are releasing more water than is physically sustainable." However, Onek and his followers were referred to as a lot that were against development. But this did not last. With the completion of the new dam, the

power situation did not improve. Ugandans were still facing power rationing moreover now with complains that the new dam had not only affected the performance of the old one but also has serious environmental consequences for Lake Victoria.

With the construction of Owen Falls Dam (Nalubaale) in 1954, Ripon Falls which naturally regulated the outflows from Lake Victoria was submerged. A mathematical equation called the "Agreed Curve" was developed basing on agreements in 1949, 1953 between Egypt and the British Colonial Government on behalf of Uganda, and again in 1991 between Uganda and Kenya. The Agreed Curve policy was intended to ensure that water releases by the Nalubaale dam correspond to the natural flow of the river Nile before damming. (See Pottinger 2006)

At the early stages of receding lake levels in 2002, the World Bank's Investigation Panel concluded that: "the Owen Falls complex (Nalubaale and Kiira extension) is over-designed and incapable of full capacity" (World Bank, 2002). This resulted to over release of water, a situation Daniel Kull (2006) links to 55% contribution to the low water levels of the lake.

The World Bank provided funding for the second dam and repair of the original dam. The project did not undergo an environmental impact assessment; indeed, the World Bank's 1991 appraisal report for the project stated: "Extension of the existing plant at Owen Falls will have minimal environmental impact because the project will not affect downstream hydrology or fisheries" (Pottinger 2006; Kull 2006). "It is clear that the Bank and Acres of Canada were excessively optimistic in their appraisal and design of this project, and that its risks were greatly underestimated. The Appraisal Report stated that: In the period 1961–62 extra heavy rain, which persisted across much of Central Africa, raised the lake level by more than a meter (increasing usable storage by 100,000 million cubic meters). This high lake level has more or less prevailed since that time..." (Pottinger 2006).

Figure 5 satellite image of the Nalubaale Power Station

Source:NASA

Implications for Lake Victoria Fisheries

While the government of Uganda blames the drought as the principle cause of the problem, studies by independent experts and Civil Society Organizations both in Uganda and the other two countries sharing the lake hold dam operations in Uganda to be the major cause of the problem (Onek 2005; Kull 2006; Pottinger 2006). A 2006 study by the *International Rivers Network* estimated that only part of Lake Victoria's decline between 2004 and 2005 was caused by drought and higher temperatures. They say as much as 55% of the lake's dramatic shrinkage can be attributed to recent regional hydroelectric dam projects. (Stuteville 2008). The construction of the new dam Owen falls dam 2 or Kiira dam in Jinja. The original dam has 6 terminals; the new dam has 12 terminals that means the flow of water has almost tripled.

On reaching the island, what one first notices are the muddy and dry banks, protruding buttress, bare rocks – all showing where the water level once reached. I asked Manisulu a resident of Kisima II fishing village how the fishing business is fairing. He started by complaining about the decreasing water levels as he pointed to a tree about 50 meters

inland from the shore, shouting, "This is where the water ended 10 years ago when I came to this island". Manisulu attributes this to be resulting from less rain. Fishers are aware of the decreasing water level in Lake Victoria. They say there has been a reduction in rainfall, but when the second dam was constructed at the Nile River, water levels started reducing unusually from Lake Victoria. According to fishers, fish laying grounds – the shorelines are drying up. This has also had a negative impact especially on the Lung fish which lives in the swampy areas.

Lake Victoria Environmental Management Project (LVEMP)

This project is funded by the Global Environmental Facility (GEF) through the World Bank. LVEMP's main aim is the conservation of the lake and its basin in collaboration with the three partner countries sharing Victoria waters; Uganda, Kenya and Tanzania. The project is currently focused on the status of land-use practices, wetlands, waste management, fishing factors, satellite lakes, water quality and quantity, sedimentation, limnology and hydraulic conditions. GIS or Geographic Information System is the main tool used to monitor changes in the wetland habitats around the lake. Satellite imaging is used to assess, identify and quantify threats, propose solutions and formulate management responses.

It is a pity that those have accumulated knowledge resulting from their lived experiences in the lake and nature generally are not consulted. Perhaps if all local fishers and all those who experience the changes in the lake first hand where involved in several studies, such mishaps like the Uganda's dam saga would be avoided.

The European Union (EU) in Lake Victoria

The European Union (EU) has financed the fisheries sector of Lake Victoria since1988 through funding of regional fisheries research and management efforts. The agreement was first reached in 1988 through the signing of Financing Agreement for the first phase of the Lake Victoria Fisheries Research Project (LVRP). This was followed by the Lake Victoria Fisheries Research Project (LVRP phase II) signed in 1995. Then in March 2003, the LVFO received a grant of about € 30 million Euros from the European Development Fund for the implementation of a regional Fisheries Management Plan (FMP). According to the EU, these

measures will reduce poverty and stimulate economic growth in each of the riparian states that share Victoria waters.

Uganda is also a signatory to a couple of international conventions, treaties, protocols and obligations. These international agreements equally form the bulk of the law and quasi legal arrangements which provides the legal framework within which the Ugandan fisheries sector will now on operate. These include;

The Convention on Biological Diversity (CBD) which Uganda signed in June 1992, among others, identifies the ways and means of conserving biological diversity. For instance, article 6 part one (a) calls for each contracting party in accordance with particular conditions and capabilities to "develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity…" *(See cbd at http://www.cbd.int/)* As a contracting party, Uganda is obliged to adhere to all the principles guiding the implementation of CBD.

The Ramsar Convention which is a convention on wetlands was signed in Ramsar, Iran in 1971. This convention calls for "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world". *(See Ramsar at http://www.ramsar.org/pdf/lib/lib_handbooks2006_e02.pdf)*. As a signatory, the Ramsar convention requires Uganda to choose, appropriate policies, legislation and management actions to promote conservation and sustainable use of wetlands and their resources. (Wetlands as per the Ramsar Agreement, includes also lakes and rivers).

Convention for the Establishment of Lake Victoria Fisheries Organization 1994. This convention which was adopted by Kenya, Uganda and Tanzania is the brain-child behind LVFO, the body that harmonizes national measures, conservation, management and sustainable utilization of living resources of Lake Victoria.

Among other issues, this convention acknowledges "the continuing need to increase scientific understanding of Lake Victoria, its living resources, its ecosystem, and the impact on those resources of climate, human populations and settlement, non-indigenous wildlife

and industrialization" (LVFO *November* 2001). No wonder, the fields that dominate the research committee of the organization are fisheries biology, limnology, hydrology, botany, statistics, human and veterinary medicine, water pollution, toxicology etc. Again LEK is hardly given any attention.

Other agreements that equally have profound impacts on the local fishers include The Permanent Tripartite Commission that brings the three countries of East Africa together. As far as Lake Victoria is concerned, the countries envisage cooperation on issues like regulation of fishing vessels, fisheries management and conservation of the environment,

The Convention on the International Trade on Endangered Species (CITES), Technical Cooperation for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE) 1992, Agreement for the Preparation of a Tripartite Environmental Programme For Lake Victoria (1994), FAO Code of Conduct for Responsible Fisheries.

The DFR as the government agency responsible for fisheries must ensure safety, quality and wholesomeness of fish and fishery products, before placement in both domestic and foreign markets. The fish industry has to comply with foreign consumer expectations, particularly on the quality of the products destined for export. The blame has often been placed on inadequate infrastructure and technical expertise, poor fish handling and unhygienic conditions. The government has set up policy strategies such as adoption of appropriate technologies, improving and maintaining implant quality control and hygienic conditions, adaptation of quality assurance systems based on Hazard Analysis of Critical Control Points (HACCP) and Total Quality Management (TQM), proper fish handling, transportation, distribution and marketing systems in the country, developing fisheries infrastructure with emphasis on fish landing sites, suitable designs of fishing boats and transportation of fish with emphasis on hygiene and use of ice on board.

Chapter Four

Economy, Adaptation and Diversification of the Fisheries

Income diversification

The landing site is full of other activities and not just fishing and fish trade. It is Friday morinng and *boda bodas*[11] are Brrrr brrrr brrrrrrr… everywhere. Each bike is having a heap of merchandise wrapped in *kaveera*[12] bags and tied at the back. Some of the bikes are carrying up to four people with merchandise on their thighs or heads, the stalls are full of goods ranging from fabrics, vegetables, cereals, and several other imported items. Women in their primes are selling Mukene[13] and a variety of items; some of the women are carrying babies tied to their backs under the scotching tropical sun, young men are advertizing the weekend's English Premier League, which is shown in their shanty cinema halls. Everybody is engaged in some kind of business. The boats are lined at the shores as if they were getting ready for a racing competition. It is a typical market day in Masese and people have come from all walks of life not only to buy and sell fish but also to do different business and for others it is a place for relaxing and having fun.

As one enters into the islands of Masese, it is quiet observable that apart from fishing, there are a lot of other economic activities going on. At first, I thought the village was divided into two – as farmers and fishers. But after a couple of weeks, I realized that this was not the case. It is common for one to be a fisher and also at the same time a farmer or a boat transporter or craftsman or local beer brewer/distiller.

Other activities noted includes vending different commodities, ranging from food stuffs like cassava and vegetables to fuel, clothes, soap, salt etc. Still others are engaged in petty

[11] Small motor bikes used as a means of transport in most parts of Uganda

[12] Local name for polythene bags

[13] See list of species in this Chapter

businesses such as providing meals in makeshift houses, showing movies and sports in shanty cinema halls and even bicycle and motor cycle transport locally known as boda boda. Some people even participate in three or more roles. In fact I came across a man in Kisima I village who was a primary school teacher, a fisher and a farmer involved in both poultry and crop husbandry. James has been able to diversify his income and according to him, "life is normal". He has been able to construct a semi permanent house[14] using *matafali*[15]. This according to the villagers is a sign of an achievement in life. Otherwise, the majorities of the villagers live in grass thatched houses[16], and in makeshift houses constructed using tins and paper boxes.

We can envisage off seasons as a stimulus to adopting an alternative economy. Alternating the economy can be seen as a response to fluctuating/unstable environment which the people have learnt to cope with. According to fishers, boat transport has become so lucrative that some fishers no longer directly go fishing. They instead employ the services of some youth who fish for them in return for payment. All if not most of the economic activities fishers engage in is largely determined by season.

Landing sites are no longer just places for fishermen and fish trade. It has become a center of communication and trade in all sorts of items[17]. However, it is important to note that these landing sites started with petty fish trade where locals came to buy fish. Initially before the introduction of any form of currency, locals bartered their goods in these sites. It was mainly exchange of food items with fish taking place. The sites also acted as meeting

[14] A simple house made of local clay bricks, wood and iron sheets. In raising the wall, cow dung is mixed with lake sand which is used for joining bricks. Cement is quiet expensive for them, it is only the "rich", by this village standards, people like James who can afford cement.

[15] Local bricks for constructing houses. The bricks are burnt using local kilns. Each kiln has about ten thousand bricks which are pilled to about 12 to 15 feet, leaving two or three hole under where dry wood is place and set on fire. The sides are mudded all over to the top with clay soil. Grass is then placed on top, which if it gets burnt, it shows that the bricks are ready for use.

[16] In constructing this type of house, the walls are raised using mud which is stuffed on poles firmly dug into the ground. In the roof, grass is placed on reeds which are tied on poles. This is the cheapest housing unit since the materials are available locally and in most cases it can be got free of charge.

[17] See section on economy in this very Chapter.

points where village assembly was held. Anybody who wished to trade or buy some item simply went to the site. With the introduction of the monetary economy, there have been a lot of transformations. Both fish and other traders from within Uganda and even neighboring countries have flocked the site and islands.

Seasonal Variation

There are mainly two seasons which can be described as rainy season and dry season. The rains normally start towards mid March through April, May and starts diminishing towards June. July, August, September, October are generally dry months with a few scattered showers. By November, there is a dry spell which escalates through December and January. Therefore, most of the economic activities follow this weather pattern. Farmers prepare gardens in January to wait for the coming rain. Fishing seasons is equally determined by this very weather pattern. Fishing is supplemented by other economic activities like small scale subsistence farming, animal husbandry and some small retail businesses.

When things are not going their way, fishers resort to other means of survival. Sometimes the weather becomes stringent and difficult to predict, sometimes fish migrates to distant areas, there is also forceful eviction by the state, new developments such as the introduction of MPAs and all the tough laws surrounding it, competition from big time private investors who have concession from government etc. Faced with this kind of situation, fishers engage in other activities as a survival mechanism.

“Sometimes during the year, there is migration of fish to other areas, during fish migration, we resort to other activities; we do crop husbandry, animal husbandry and some crafts”, says Madi. Madi is a fisherman and a local photographer. He charges one thousand Ugandan shillings per photograph (approximately 0.5 US dollar). This money Madi says is for helping his family especially during seasons of low catch. Madi said he borrowed the idea when he saw fishers frequent the urban centers to take photographs for identity cards and other purposes. So he decided to bring services nearer to the people. He used the

'money of fish'[18] to buy a cheap camera. So now Madi has the 'money of fish' and the 'money of camera.'

Other fishers, especially women and those who do not directly go fishing in the lake, participate in small retail trade. They sell a variety of goods and commodities such as cloths both new and used, food stuffs, alcohol, crafts etc. this income is then used to supplement earnings from fishing. In Kisima some women make crafts such as mats, bags, baskets using local materials like papyrus, banana stems and leaves, sisal etc. The capital to start these small businesses is mainly from 'the money of fish'.

As already seen, fishers also engage in other activities and according to them, this is largely determined by seasons. Jul-Larsen *et al* (2003:3-4) argues that: "Empirical evidence,… shows that poor people in variable and fragile environments tend to diversify their sources of income and that fisheries is only one of the several income generating activities, or a temporary option." Therefore, the question of alternative economy as part of the survival strategies employed by poor people comes in. I argue here that it is because of the accumulated experience that fishers were able to improvise and devise other means to supplement their income. For instance, following earlier experiences with seasonality led to trail of alternatives. "During 'off seasons'[19], fishers engage in farming tomatoes, beans, maize and distilling local brew" says JB *(see figure 6 below).* As fishers engage in other activities, it allows for fish reproduction.

The people have adapted to their own life style exploiting the available ecological niche. Local fishers refer to the lake as their 'World Bank'. According to them, God has already saved for them and therefore there is no need of putting money in the bank. 'We get what we need at any time we want, you see, says Musa[20]. 'I just go to our 'World Bank here' he points at the lake 'and I get what I want, you see'. However, this is not to say that fishers

[18] Adapted from Sharon Hutchinson's phrase "money of cattle" in *Nuer Dilemmas: Coping with Money War and the State.* An ethnography of nuer peoples of southern Sudan.

[19] This implies dry season with little rain fall when the catch rate is low.

[20] One of the respondents, a fisherman in Masese fish landing site.

have no saving culture. In fact fishers have organized themselves into rotational credit groups in which members are given not only cash but also other items ranging from fabric, food items to furniture and different sorts of household goods. And it is also true that the financial institutions have neglected the fisher community

The islands lack necessary public services like hospitals, running water, electricity, roads, schools, banks and credit facilities. In fact, in all the three islands I visited, (Kisima I, Kisima II and Rwabitooke), there is only one primary school. The majority of the boys drop out of school to become fishermen while the girls also join other businesses related to fishing, such as fish vending, small retail trading and those who save some capital start up small restaurants that provides food for fishers and generally people at the landing site. Lucy, a wife to a fisher and a small restaurant owner at Masese fish landing site was able to save some money from the sale of fish that her husband brings from the lake. 'I then started a small 'hotel[21]' she says.

[21] Any place at the landing site where food is cooked for sale, including all the shacks and sheds. Even if someone uses part of his hut for this purpose, that hut automatically qualifies to become a hotel according to local standards. However, the government also recognizes these 'eating houses' because taxes are levied on them

Figure 6 above; from top left clock wise: women selling vegetables in Masese landing site; boat transport across the islands and the mainland; Fishers' maize garden in Kisima I Island, Masese, and fishers livestock in Masese landing site.

Figure 7 above from left to right: a young man waiting customers at the entrance of his shanty cinema hall and a Market day in Masese fish landing site.

The Role of women in Fisheries

Women's interests and ideas are often over looked when governments are designing management policies for fisheries. The marginalization of women in fisheries is basically because of social reason and the lack of proper communication with fisheries departments. The female gender is not represented fairly in management decisions which imply that a lot of information regarding women is left undelivered to fisheries managers. Despite of all these pitfalls, women are crucial in fisheries management (Jentoft 2001).

When I saw women in their make shift stores selling Mukene and other retail goods, it gave me a good start. After a few months of interactions with them, I was able to realize a couple of things. A number of women who engage in the retail businesses are also fishers. Some of them are wives to fishermen and they managed to start small businesses after selling fish that their husbands routinely bring from the lake. Then there is another category of women married or otherwise. These groups are boat owners. These groups after continuous saving from various sources have been able to buy personal boats. Since many cultures in this

region does not allow women to row the boat and go fishing, they hire the men to go fishing for them. When the men come with the fish, they are obliged to sell to the respective boat owners first at a relatively cheaper rate. These women then retail the catch to another group who are called wholesalers. Wholesalers are groups of persons who are able to buy the catch from retailers in large quantity. The wholesalers then sell to different consumers.

Meanwhile the women boat owners then divert the funds to other small retail businesses. For instance, some of the small motorbikes used for transport as described above are owned by these women. The women again employ the men as riders. Because of this, women fishers are able to progress far better than men. Since much of the men's business is basically in the lake, they do not have that much time to give to another business. Important to note is that this is where the role of women becomes so significant. The men look for fish but it is the women who have the time to retail and also to diversify part of the 'money of fish' into other small retail businesses.

Male fishers have developed their own time for work, leisure and sleep. Day time is for resting and having fun while night time is for work. Most of the fishing is done at night and at dawn. They say it is at this time that fish comes out. As mid-night approaches, you start to see lights gleaming in certain parts of the lake; Kerosene lamps and torches flashing as the men are up on duty, the women and children remain at home. This is the time for catching Mukene, as it is locally known. In the early morning hours, women queue up along the shorelines waiting to "download the days catch"[22]. Most of the local fishers prefer Ngege and Mukene to Mputa. The main reasons were attributed to taste and size. Local fishers said one needs a much stronger fishing gear in order to catch Nile perch. Perch is a giant fish that needs one to have a strong fish net. Local fishers said it is those fishers who fish for the factories that look for Nile perch because they have larger boats and much stronger nets. And also due to marketability of perch. Local fishers cannot meet the EU standards of hygiene.

[22] Fisher' s jargon meaning off-loading fish from the boats

Ethnicity

Lake Victoria is located in south western part of Uganda, and is now home to various ethnic groups**.** There have been several migrations into the lake areas. A new kind of economy is coming up as a result of these mass exoduses of people into the fish landing sites and Islands. The Basoga, Baganda and Basamia traditionally inhabited the lake shores; however, this was not the case when I reached the field. Other groups from the Lou language families and Sudanic speaking peoples were even more dominant.

Figure 8 shows ethno-linguistic map of Uganda. (Source: *Demographics of Uganda, the free encyclopedia****)***

Ethnicity therefore became an issue for me; this did not only change my initial aim but I needed to find out why other groups seemed to override the Bantu groups who are at least known to be the original inhabitants of Lake Victoria. Migrations into the lake areas could in the long run have an impact on the environmental state of the lake. As observed in the field, the shorelines and wetlands is being encroached by settlers as they try to get some fishing space.

Fishers from other groups claim that the Basoga do not like fish and fishing and that is why they came to Busoga. For the case of the Baganda, fishers who are non Baganda allege that the Baganda look at fishing as an opportunity of a lower status. They supported this allegation using the staple food of the Basoga which is sweet potatoes and ground nuts while that of the Baganda is Matooke and groundnuts. It is only Basamia whose staple food is millet and fish. The Basamia are relatively a small group compared to the Baganda and Basoga. According to the Uganda Bureau of statistics, the population of Baganda is about six million people while that of Basoga is about three million people. The Basamia are just a few hundreds. However, there are other ethnic groups whom fish is also not part of their staple food but have embraced fishing.

Some fishers also agreed that they came to Masese to take refugee from insecurity that has hit most parts of the country. This was realized among fishers from especially northern Uganda and parts of western Uganda. The rebellion in northern Uganda has lasted for over two decades. The majority of Lou fishers from northern Uganda said they came to Masese in the 1980s running away from the war ravaged areas.

Uganda does not have a national language but two official languages – English and Kiswahili. The government has for long tried to impose Luganda and Kiswahili but other groups intensely resisted. Because of the ethnic disparity, the Ugandan constitution asserts that English and Kiswahili languages are to be used in schools, parliament and public offices and also for purposes of trade. In Masese, fishers prefer Lusoga, which is the area language to the two official languages. When I asked them why they prefer Lusoga, they said it is the language that is spoken in the area. This implies that Lusoga evolved peacefully. Lusoga is the language of communication and trade within Masese landing site.

Almost all the fishers irrespective of their ethnic background speak Lusoga. Nobody imposed Lusoga on them. Lusoga language was adopted by fishers perhaps because it had already gained stability due to trade.

In all fishers of Masese seem not to be affected by the ethnic disparity around them. In fact the majority of fishers I talked to confessed that their problem is not ethnicity but industrial fisheries. They believe fillet factories have put a lot of pressure on the lake and not them as local fishers.

Some of the Major Species of Lake Victoria

The main species now in Lake Victoria are tilapia, Nile perch and silver fish. Tilapia is the most preferred in the Ugandan market. Nile perch though also sold in the domestic market is largely for export. Silver fish is also very common and is used for various purposes including making animal feeds. There were a number of other native fish species such as (*Oreochromis esculentus* and *O. variabilis*) and the riverine *Labeo victorianus* (Ningu) which were originally important and highly cherished food fishes but have either disappeared completely or their populations have greatly reduced[23].

[23] See Nekemia's story on pages 73-74.

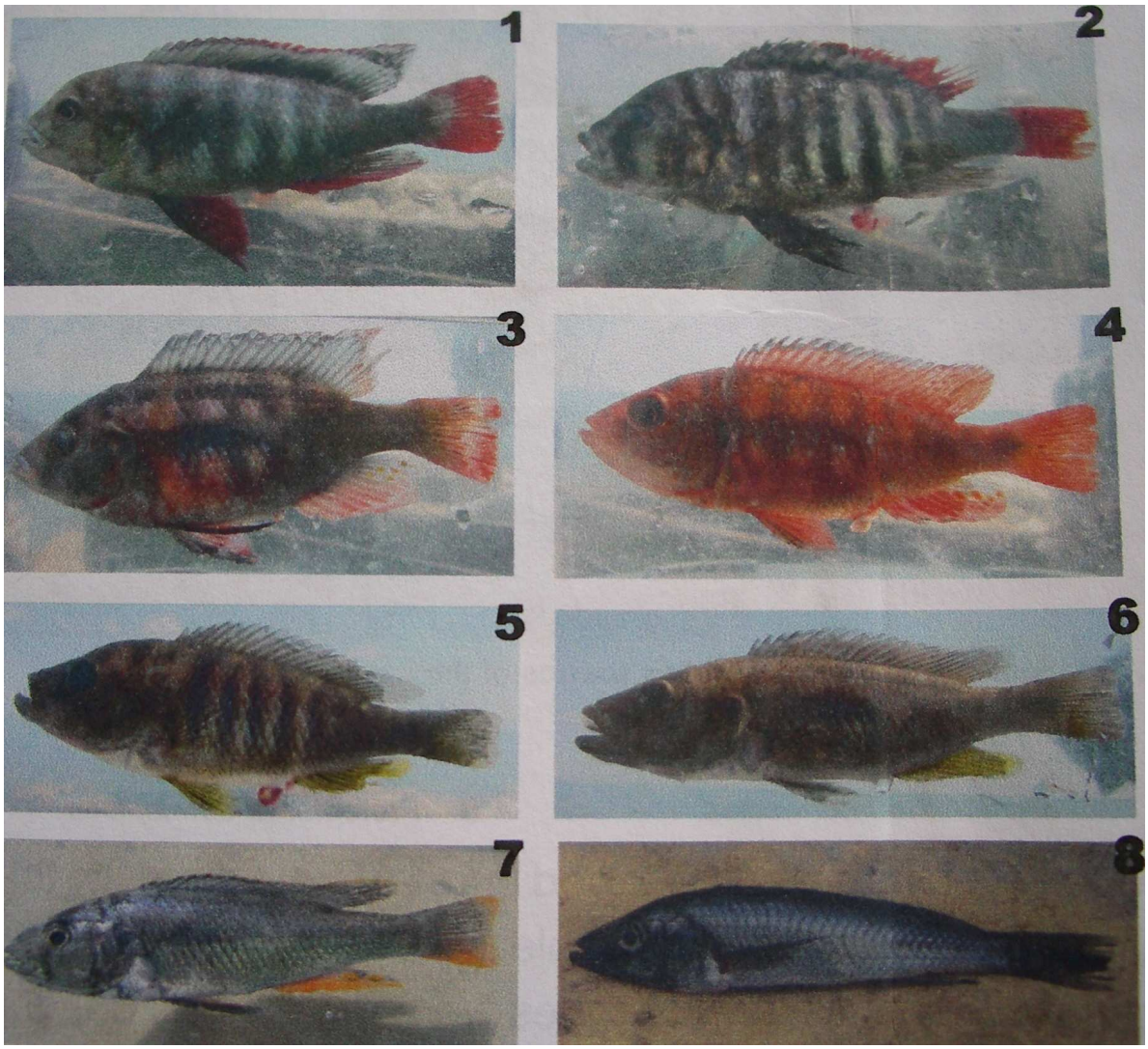
Source: Naffirri

Figure 9 from top to bottom: synodontis victoriae (Kalongo), labeo victorianus, Schilbe intermedius

Source: Naffirri

Figure 10 from top to bottom: Mamba (Lung fish or protopterus), Semutundu (Bagrus) and Male (clarias)

Figure 11 some of the endangered haplochromines species[24]



Source: Naffirri

1. *Noechromis omnicaeruleus 2. Pundamilia pundamilia 3. Paralabidochromis rockkribensis 4. Pundamilia 'bright red' 5. Lipochromisnelanopterus 6. Harpagochromis serranus 7. Yssichromis sp 8. Ysschromis fusiformis*

[24] Source: Nafiiri Uganda.

Types of Fish species in Lake Victoria, Fishing Methods, Marketing and Preservation Process			
Type	**Local name**	**Fishing method**	**Marketing/Consumption and Preservation method**
Tilapia (*nilotica)*	Locally called Ngege	Fishers use gill net during day and cast net at night. Cast net is made in a circular form. It contains sinkers which enables the net to sink to the bottom of the lake. It is cast in the water to surround the fish and technically pulled to reduce the size such that fish does not escape.	This type of fish is mainly for domestic consumption. It is sold in bundles, per head and sometimes by auction or mutual agreement.
Nile perch (*lates niloticus)*	Mputa, Sangara, Sabulenya.	Caught using hooks during day and cast net at night. Also some fishers have been accused of using other species like silver fish and Tilapia as bates to trap Nile perch.	From the boats, perch is weighed and placed into container trucks, iced and directly transported to fillet factories for processing. Perch fillets are then exported mainly to the EU and other foreign markets. At the time of the field work, a kilogram was about 1 US dollars.
Bagrus docmarc	Semutundu	Gill net	Bundles, kilograms
Mud fish (clarius species)	Male		Bundles, kilograms
Lung fish (protopterus aethiopicus)	Known as Mamba, Kamongo or Ebileng, Endu depending on the different ethnicities.	Mainly Basket	Bundles, kilograms This type is a taboo among the Mamba several ethnic groups. E.g. the Baganda and Basoga. It is also a taboo among women from other groups such as the Lou.
Silver/moon fish (rastriniobola argentia)	Called Mukene or Omena by the locals.	Light fishing	auctioning, haggling, bundles, bags and tins, or kilograms Contains a lot of proteins and it is not just a delicacy but also medicinal. It is used for treating measles and several other skin diseases. Mukene according to fishers had been the main fish in Lake Victoria for generations. When thoroughly dried in the sun, it can be stored for several weeks.
Alestes spp	Angara/Nsoga	Basket, hook	Salting, sun drying, smoking
Mormirus parpo	Kasurubana	Basket, hook	Salting, sun drying, smoking
Synodontis spp	Nkolongo/Kalongo	Basket, hook	Salting, sun drying , smoking
Barbus spp	Kisinja	Basket, hook	Salting, sun drying, smoking
Others			

Gears Commonly used by Fishers

1. Gill nets are locally of made with floaters and sinkers set in water to catch fish. Water is hit by use of a material called typoon to drive the fish where the net is.
2. There is also the use of a long line which involves use of a long rope with a series of hooks having baits.
3. Use of baskets which is common mainly in swampy areas during rainy season. It looks like a large bowl with meshes that fishers used in the early days (according to
4. my elderly key informants, it started to disappear in the 19th century). It was one of the most common fishing methods.
5. Light fishing which involves use of light providers like steamer lamps which attracts food for fish. The net is set around the lamps to trap the fish. This is used mainly for catching silver fish
6. Cast net – it is circular and is thrown in the water to cover the fish.
7. There is also hooking which involves use of a stick, a rope and a hook containing bait. This according to the fishers is cost effective. Fishers can easily afford it.

   Most of the materials for making fishing gears are locally available. Some fishers make and mend their own gears.

Marketing procedures involves auctioning, haggling, bundles, bags and tins, and kilograms while Preservation methods includes; sun drying which is considered the cheapest, icing, deep freezing, salting, deep frying and smoking which is the commonest method of preserving. Local fishers prefer sun drying and smoking methods of preservation. When I inquired; all the responses were pointing to cost effective nature of these two methods. Maintaining ice under hot tropical sun is quiet cumbersome and expensive. “We only catch what is ‘enough’ for the day, what remains is either sun dried or smoked. The women sometimes deep fry it especially for tilapia,” explains Musa.


Figure 12 from left to right: a woman boat owner distributing the just landed catch as the men look on and right: a woman fish vendor retailing Mukene in Masese fish landing site.

Local Fishers; Nile Perch Fishers and the EU Market

Local fishers

Own small boats, have meager capital, cannot afford refrigeration facilities, are seasonal in fishing business and their catch is largely for local/subsistence consumption with a little for retailing, his daily catch is low. Ayakito, a fisher in Masese fish landing site, narrates how his average catch per day is 4 (four) fish. But he says that on a good day he can walk away with 10 (ten) fish and that has been his best ever. This group of fishers actually depends on the local market which is relatively small compared to the foreign demand. These are groups that have for generations lived through participation in fisheries related activities. A majority of them are fishers because their ancestors were fishers and were able to acquire fishing knowledge and equipment along those lines.

Fishers live in slums and in squalid conditions characterized by poor housing facilities, poor drainage which has left many diseased. This was observed especially in Masese II which is the main residential place for fishers. The standard of living of local fishers is low; there are increased rate of school drop outs among children and drug abuse especially by the youth. Majority of fishers I talked to blame this to the increased competition for fish by Nile perch fishers and the lack of support on the side of the government. 'The government only minds about the supply of the factories, now they have introduced tough laws for us

making the situation even harder. When I was a young boy it was not like this.' Laments the rather nostalgic Nekemia as he narrates for me how fisheries used to be back in time:

Long long ago my father used to catch Alile, Ebileng, Kalongo, Angara, Kasurubana…etc.[25] using Bemo[26]; sometimes using a spear. I used to accompany my father to Ariwa[27]. Carrying the Bemo, while my father had his spear across his shoulders, we set off for ariwa. We always left our mother pounding Chwaada[28]. Chwaada could not be mingled until we came back. This was everybody's favorite meal. Chwaada was reserved for Angara[29] – we used to

Figure 13 fishers residents

[25] See list of fish species in this chapter

[26] See fishers knowledge of gears in this chapter

[27] Swampy area sometimes with a stream

[28] Cassava flour, one of the staple foods among the Sudanic speakers, Luo groups and Basamia

[29] See list of species in this Chapter

call it *Lo'go* which means washing hands. We coined the term Logo because each time we were having Chwaada and Angara, children rushed to wash their hands. Some people prefer to have it with Kwon or Kaalo[30]. One basket was just enough for several weeks. We could sometime sundry our catch or smoke it. Excess was always later exchanged for salt in Akison. Akison was an open market where people from different places came to barter their goods. You did not need cash; a basket of fish could give you a tin of salt or anything you wanted. The Banyoro[31] would bring for us salt. They were known for that in the whole country. We used not to spend so long fishing like it is now. We had plenty before fish suppliers came.

These days we no longer see Kasurubana, no Angara, no Kalongo, no Alile. It's only Sangara[32] that is common. My father told me that, it was the white man who brought Sangara. The basket cannot catch Sangara. They say Sangara ate Kalongo, Sangara ate Ebileng. Sangara ate Angara. Sangara eats anything. My father told me that one day they found a watch in its stomach. Many people stopped eating it. Women in my village do not eat Sangara, it smells in their armpits. A girl who eats Sangara will not get a husband. She will have an awful smell[33].

[30] Millet bread, staple food of the Luo and some Bantu groups

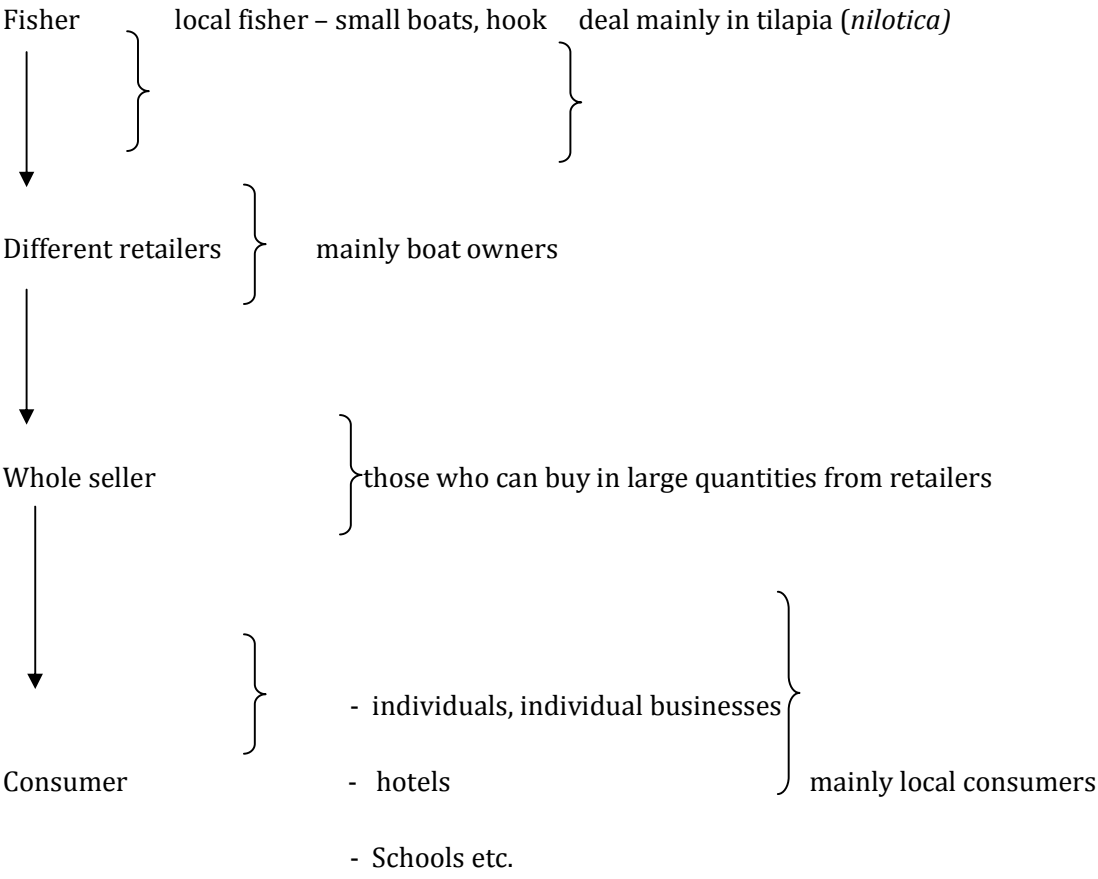
[31] One of the Bantu groups in South Western Uganda

[32] See list of fish species in this Chapter

[33] When Nile perch was introduced, local consumers complained that it has a disgusting odor, and that is the main reason why most women don't eat. Fishers use the leaves of *Kapanga (lantana camara)* to remove its smell.

Comparing the Structure of Local and Industrial Fisheries

Figure 14 shows the organization of local fishers



As portrayed in the *(figure 14 above),* when fishers come out with their catch from the lake, they are obliged to serve the interests of different retailers first. These are mainly boat owners, who then sell to the whole sellers. Whole sellers are able to buy in large quantity from different retailers/boat owners and then sell to the different vendors, restaurants and to the domestic consumer.

Nile Perch Fishers

As the morning breaks, the marabou stork elongates its neck; its head turning like a pendulum as it responds to the sound of roaring lorries. The lorries are on their usual routine to collect the days catch. At the dock, young muscular men in blue and pink gowns with tags at the back are already loading the already weighed Nile Perch into the stationed

lorries. These are the fish suppliers, the ones licensed to fish for the factories. On another side of the site flies murmur at mongers as they rush to buy the just landed catch from local fishers. The young marabous are crowded around the garbage bin as if they were having an assembly.

Nile perch fishers or Fish suppliers as they are locally known, come with big tonnage of fish – mainly Nile perch (*Lates niloticus).* They got the name 'fish suppliers' because they have been mandated by the DFR to fish for the factories. They are therefore in a position to construct big fishing boats and have the ability to maintain business especially in terms of fish supply; they are able to go deep into the lake as opposed the local fishers who stop at the shallow waters. It is the fish suppliers who have been mandated to supply the EU market because they can meet EU 'standards'. EU inspects fish plants and the site for fish export must be isolated from the local people. It's assumed that local fishers do not care about the environment, hygiene and quality. EU considers quality in terms of hygiene and environment *(see Chapter three).*

Figure 15 a fisher tries to lift a giant Nile perch. *(Source: Naffirri)*

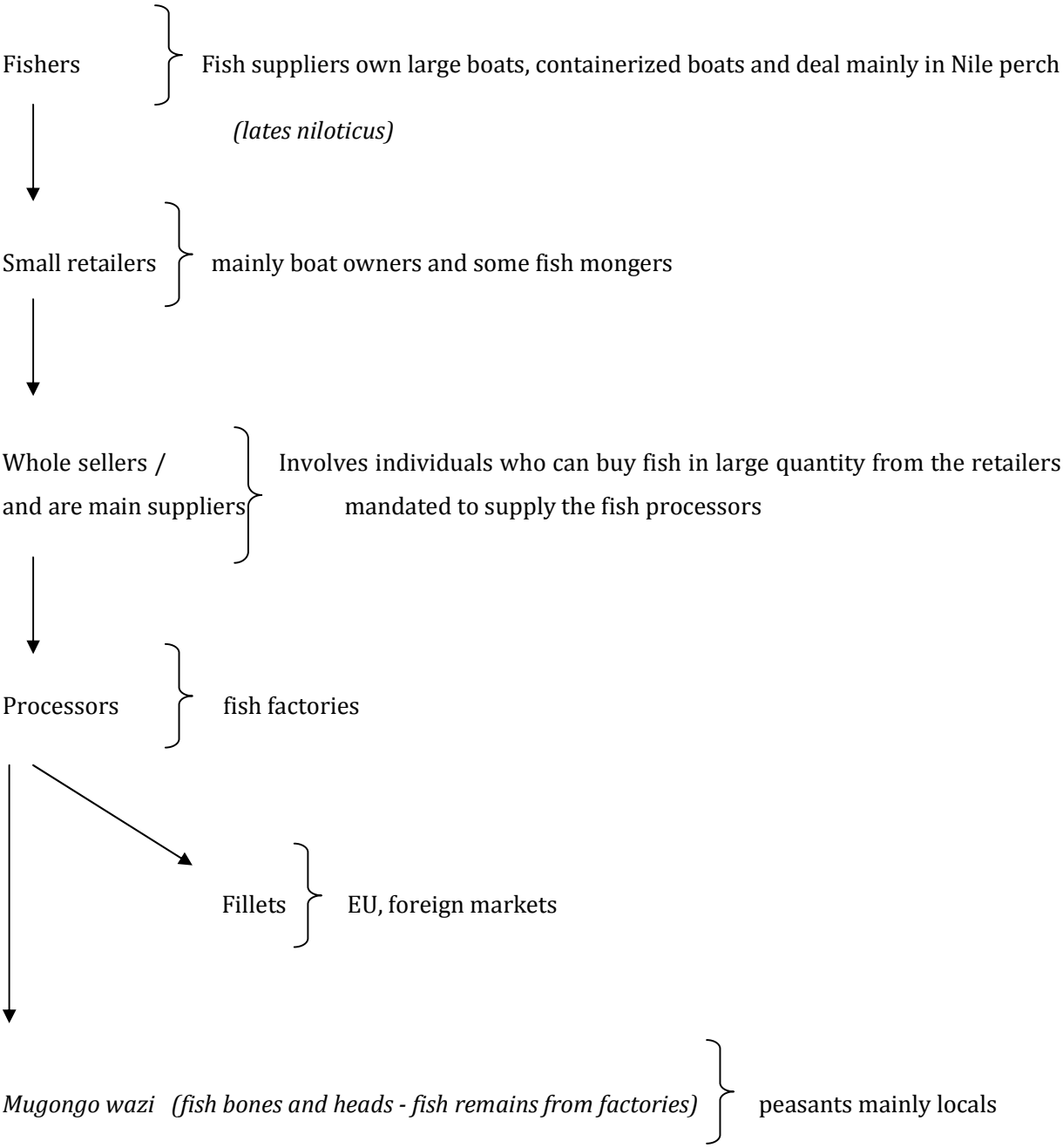
Figure 16 above trucks being loaded with Nile perch destined for fillet factories

Figure 17 below fillet factory workers preparing fillets for export

Source: DFR

Figure 18 a containerized boat under construction. As a rule, the Ugandan state is setting this as the standard requirement for every fisher. Local fishers can hardly afford this kind of boat.

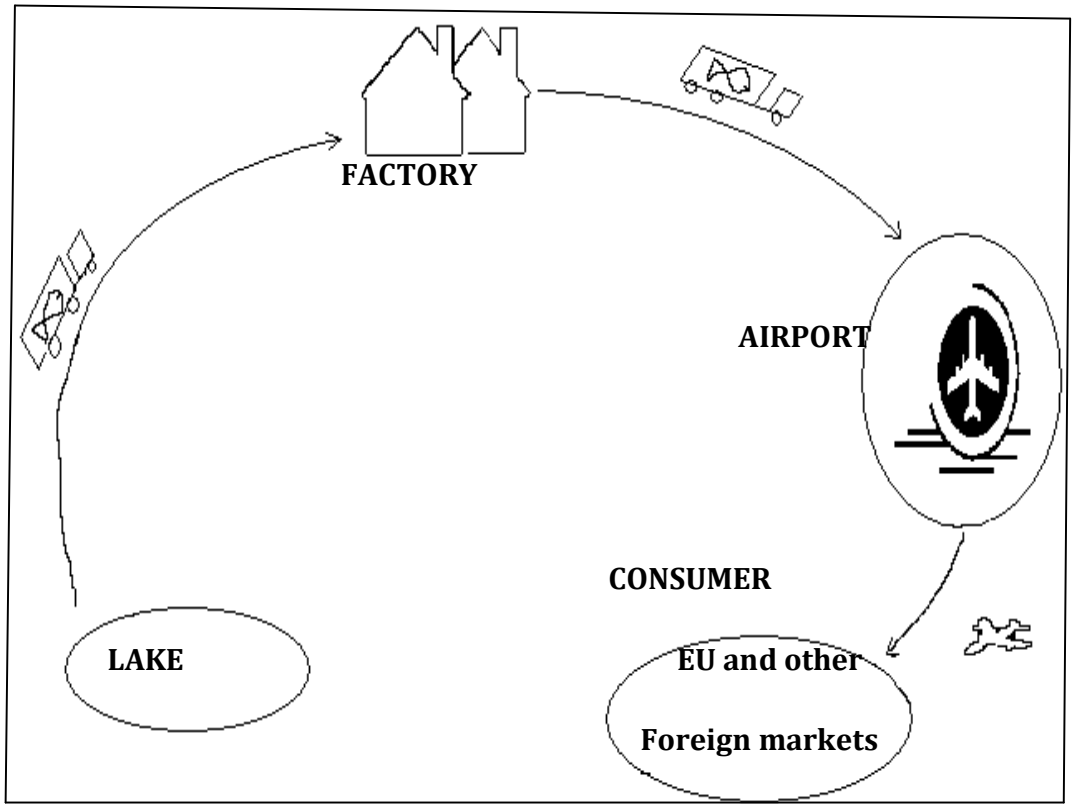
Figure 19 below shows the organization of Nile perch fishers



Nile perch fishers supply mainly the foreign market. They deal primarily in Nile perch which they sell to the factories where fish is then filleted. Some fish processors also buy tilapia. Some factories own boats where they employ some fishers. So one can graduate

from a local fisher to a Nile perch fisher and vice versa. The major importer of the filets is the EU.

Figure 20 represents the movement/distribution of fish



More markets, more factories, more exploitation, more government intervention. The perch 'gold rush' means more misery for the local man. Private investors are continuously winning fishing rights and concessions from the government to the plight of the local fisher. Through Ojubi the truck driver, I got to know a number of factory workers. Erina is one of the fillet factory workers. She lives in Kinawataka – a slum area in a Kampala suburb. Their house is having only one room which plays a double role of bed room and living room. On one side is a small weather beaten wooden bed while another side is having worn out furniture. On the verandah were three cooking stones and a small charcoal stove with

smoke stained sauce pans. Erina is a single mother with two school going children. She had declined to talk to us but finally she accepted when I guaranteed her anonymity. She said, if we published her stories in the news papers, then her boss would definitely fire her. She did not want to lose her job.

At the factory, Erina earns two thousand Uganda shillings (approximately 1 USD) per day, after working for over 8 hours. Most of the women work in the production unit where the filleting and packing takes place while most men mainly load and offload fish into trucks. Every evening, there are many trucks queuing for fillets to take to the airport. When I asked her which countries the fillets are taken she said *Bugenreza,* implying Europe. Erina says like many of her colleagues, she has to work because she does not have any other option.

Table 3 below shows some of the established Fish Processing Plants in the Ugandan side of Lake Victoria.

Fillet plants in Jinja

Name of Fish Processing Plant	Location by district
Masese Fish Parkers	Jinja
Marine and Agro Processing	Jinja
Gomba Fishing Industries	Jinja
Unifoods Ltd	Jinja

Fillet plants outside Jinja

Name of Fish Processing Plant	Location by district
Uganda Marine Products Ltd.	Kampala
Uganda Fish Packers	Kampala
Tropical Fish Industries	Kampala
Nge-ge Limited	Kampala
HwanSung Limited	Kampala
Tampa Fisheries Ltd	Entebbe
Pearl Fish Processors (U) Ltd	Entebbe
Greenfields (U) Limited	Entebbe
Fish Ways	Entebbe
Oakwood Investments Ltd.	Rakai
Byansi Fisheries Co. Ltd	Rakai
Fresh Water Fish Exporters Ltd	Masaka
Igloo Food Industries Ltd	Busia

What is important to note is that all these fish factories target foreign markets especially the EU for their exports. This according to fishers is the reason for over exploitation of the fisheries resources. They argue that the need to satisfy foreign demand is a challenge to

sustainability of fisheries resources and also the main cause of misery for fishers. All the fishers I talked to now feel alienated from what used to be the traditional fishing grounds. Because of the stiff competition resulting from the coming in of the private fisheries investment.

If fisheries resources were meant to serve only the local population with only surplus left for export then perhaps fisher's livelihood would improve. In a discussion with local fishers at Masese fish landing site, they narrated how there was a time when some factories were closed due to managerial problems and this led to an upsurge in the catch rate. "Fish was too much, we could not sell it all so we started giving the locals for free" laments Nsimbi a BMU member for Masese. When fishers reminisce these good old days, they become disillusioned.

Many fishers showed signs of frustration. "You take anything you can catch because fish suppliers take everything and leave us like that with empty hands" complains, Basoga, a local fisher. Basoga has no boat of his own. So he works as a crew member within Masese while his wife sells vegetables and deep fried tilapia at Masese fish landing site. This, according to Basoga, is how they have managed to look after their family of five children. "When the catch is good, you can at least afford food, send your children to school but now with all the restrictions and all these people with big boats, I cannot even afford kerosene[34]" he tells with his folded face.

Most of the fishers we talked to, blamed the government for ignoring them. In fact, when I arrived at the site, I realized that there was tension building among the fish folks. A few weeks later, the Ugandan minister in charge of fisheries and natural resources came to look into the grievances of the fishers. From his speech, the minister seemed no novice in the affairs of the lake. After greeting a large crowd of fishers whom had been summoned at Masese fish landing site, the minister started his speech like; "You see we have been having problems in our lake. How can we overcome the problems? Fishermen were not realizing

[34] Fisher use kerosene lamps to light up their houses and also at night in the lake while catching silver fish. Sometimes kerosene becomes expensive for them due to fluctuating oil prices at the world market, which further worsens the already dire situation.

these problems. Overfishing, facilities are not enough; we need to protect our water, we need a modern landing site…., the visitors you see here with me can actually deliver us from or troubles…" The minister was accompanied by two White people whom he later introduced as Israel investors who had come to 'help them' solve the problems of Lake Victoria.

The government has come up with deliberate policies to attract direct foreign investment, promotion of scientific investigation of issues pertinent to fisheries and adoption of modern technology. The government's argument is that the private sector has the capacity to hire the required services. Much as the government is talking about co-management in which the local resource users will also have an 'equal' participation in the management and utilization of the lake, this only ends in conference table and policy documents. Practically, this is a myth. Some form of co-management was instituted by the LVFO under the current BMU strategy after an understanding among the three partner states in the late 1990s. However, as seen in the discussion in Chapter three and Chapter five, local fishers are excluded from many management arrangements.

In addition, the government privileges Nile perch fishers by offering them concessions. They enjoy these special considerations especially in form of tax holidays, leasing parts of the shore-lines to industrial fish processors and allowance to fish in protected areas, credit facilities, support from the fillet factories especially in form of larger boats as opposed to local fishers' canoes. The trajectory of industrial fish processing is that employment to some fraction of fishers is created but at the same time others get un-employed. It is true that fishers get employment through different chains of distribution to the fillet factories. However, note should be taken that to be able to supply the factories, one must meet EU standards of hygiene[35] and DFR laws and regulations[36]. As seen in Chapter three, very few local fishers are in position to meet these standards.

[35] See section on Nile perch fishers in this Chapter.

[36] See Chapter three for DFR laws and regulations

Conclusively, fishers are aware of the fluctuating fisheries economy that largely depends on weather predictions. They therefore try to devise ways to deal with this unstable environment through adoption of alternative means of survival. Women are crucial in the diversification of the fisheries economy. This is because the men find it hard to balance the fishing job and diversifying the income that they earn through fishing. Since women do not go to the lake to fish, they can dedicate much of their time to other small scale businesses.

The fishery of Lake Victoria has also attracted a large number of different ethnicities into the areas around the lake. The majority of these people participate in the different chains of fisheries trade. Coupled with the demand by industrial fisheries, it is no doubt that the lake may be over stressed. Nile perch fisheries enjoy special privileges from the government at the expense of local fishers. Much as the booming Nile perch trade has created employment for some fishers and foreign exchange for the government, this lucrative fish trade is putting a lot of pressure on the lake as Nile perch fishers try to satisfy the needs of the mushrooming fillet factories.

Chapter Five

Local Ecological Knowledge in Lake Victoria Fisheries

Introduction

In this chapter, I try to show and discuss the presence of LEK among local fishers of Lake Victoria. I examine the place of LEK today, the conservation methods that fishers apply and how they cope with environmental change. I also look at among others; the different customs, beliefs and traditions in relation to the local fishers' environment. "Anthropologists… have contributed to appreciation of the ways that local communities and traditional societies conceptualize, allocate, regulate, and defend rights to marine resources. Distinctive and elaborate systems of property rights exist, contrary to the perceived wisdom that people who fish treat the sea as an open-access frontier… colonial and 'modernizing' experiences often impose the 'freedom of the seas' institution on non-Western people" (McCay2001:258).

Do Fishers Conserve the Environment?

During my field work, I visited (FIRRI) in Jinja Uganda. I also had a chance to use their library. FIRRI is the national research institution mandated to undertake fisheries research in the country. At FIRRI, I found out that some regional EAC[37] fisheries researchers have also been taken up the global discourse on environment and climatic change. For instance, under the FMP[38] they have identified a number of factors that according to them puts the Lake's bio-diversity and the sustainability of the fishery at risk (Bwathondi, Ogutu-Ohwayo,and Ogari; 2001). They attribute these threats to the intensification of fishing

[37] East African Community, the organization that aims to integrate all the countries of East Africa socially, economically and politically.

[38] FMP is a Project financed with support from the European Union, through the LVFO. Its main objective is to promote sustainable management and development of the fisheries resources of Lake Victoria. It also finances fisheries research in the region. (see LVFO, Bwathondi, Ogutu-Ohwayo, and Ogari; 2001)

capacity, limited community participation, destructive land use practices and demographic growth. They assume that the improvement of current (MCS)[39] strategies will solve the problems associated with the fisheries. According to the researchers these include: "Unrestricted access; Illegal mesh sizes, gear use and fishing techniques; Landings below permitted sizes; Non-compliance with closed breeding areas, Illegal trans-border trade; Lack of knowledge and awareness on environmental and conservation management; Unlicensed fishers" (Bwathondi *et al* 2001).

I would like to disagree with them on some points, especially on the issues of unrestricted access, no-compliance with closed breeding areas and last but most interesting to me; "lack of knowledge and awareness on environment and conservation management." My findings among fishers of Lake Victoria, Ugandan side show that fishers not only have control but also have a lot of knowledge on the environment in which they live. Many regional researchers either ignore or have just not realized this. Artisanal fishers have knowledge which would be beneficial not only to fisheries but to other respective studies as well. Much of this knowledge comes from the lived experience. In this chapter, I try to explore these knowledges and the control mechanisms used by fishers of Lake Victoria.

Territoriality; an Informal Regulation?

It was August 14; I was by now almost two months old in the field. Fishers from Kisima I had the previous night had a row with some groups of fishers who were later identified as Wanyange fishers. Wanyange is a neighboring village just about five kilometers from Masese landing site. According to the marine police, Kisima I fishers had apparently made the intruding 'colleagues' to swim ashore as a punishment for crossing boundaries. Corporal Peter, who were among the marine officers on lake patrol that night said they

[39] (MCS) is an extensive fisheries patrol programme which is being implemented involving patrols mainly on water but also on land and closely involve the newly established BMUs as active participants in the programme. (see LVFO)

managed to intervene in time to the rescue of Wanyange fishers. Kisima I fishers had managed to confiscate the fishing equipment of the intruding fishers.

In one of the discussions with fishers of Kisima I and Kisima II, they all agreed that initially, before the introduction of the marine police, they would settle all conflicts by themselves. Under the directive of the head fisher referred to as Gabunga, youthful energetic fishers would practically patrol their boundaries and also offer spy network as a community obligation. Every Mwaalo (landing site) and ekizinga (Island) is under the authority of a Gabunga. According to Kisima I Gabunga, fines ranging from a fowl or a beast to few baskets of food stuffs or cash were often imposed on the offenders.

However, now the Department of Fisheries with the help of the local area police always intervenes in situations of conflicts. And also there are now formal laws put in place for fishers to adhere to. 'The Department of fisheries does not allow us to settle all the cases by ourselves. Now the police patrol everywhere and they require us to report to them in case of any problem. They are demarcating the water without considering that we also use it. Moreover, they found us here…' says the Kisima I Gabunga. Implying that what has been their traditional fishing ground is now being encroached on.

It is important to note that having punished Wanyange fishers, no Kisima fisher can go fishing in Wanyange area for fear of revenge. If an individual fisher for some reasons wants to change residence, he has to first make consultations with the Gabunga responsible for that area. It is only after an agreement has been reached, that he is allowed to join the new place. Meanwhile, his boat is considered 'new' and must go through the same rituals[40] that all new boats go through before being allowed to the lake. For the case of women, since they largely participate in fish vending, they are free to move from one Mwaalo/ekizinga to another. They normally follow the market days. Every Mwaalo/ekizinga operates a weekly market day where people come from different areas to buy and sell their goods. A number of men are also mongers only. Women are also free to change residence through such things as marriage. Since the society is largely patriarchal, women who get married across

[40] See boat rituals in this very chapter.

Mwaalo/ ekizinga act as a uniting factor between the two places. In figure 1 below, I try to show how the concept of territory is understood in the language of a Masese fisher.

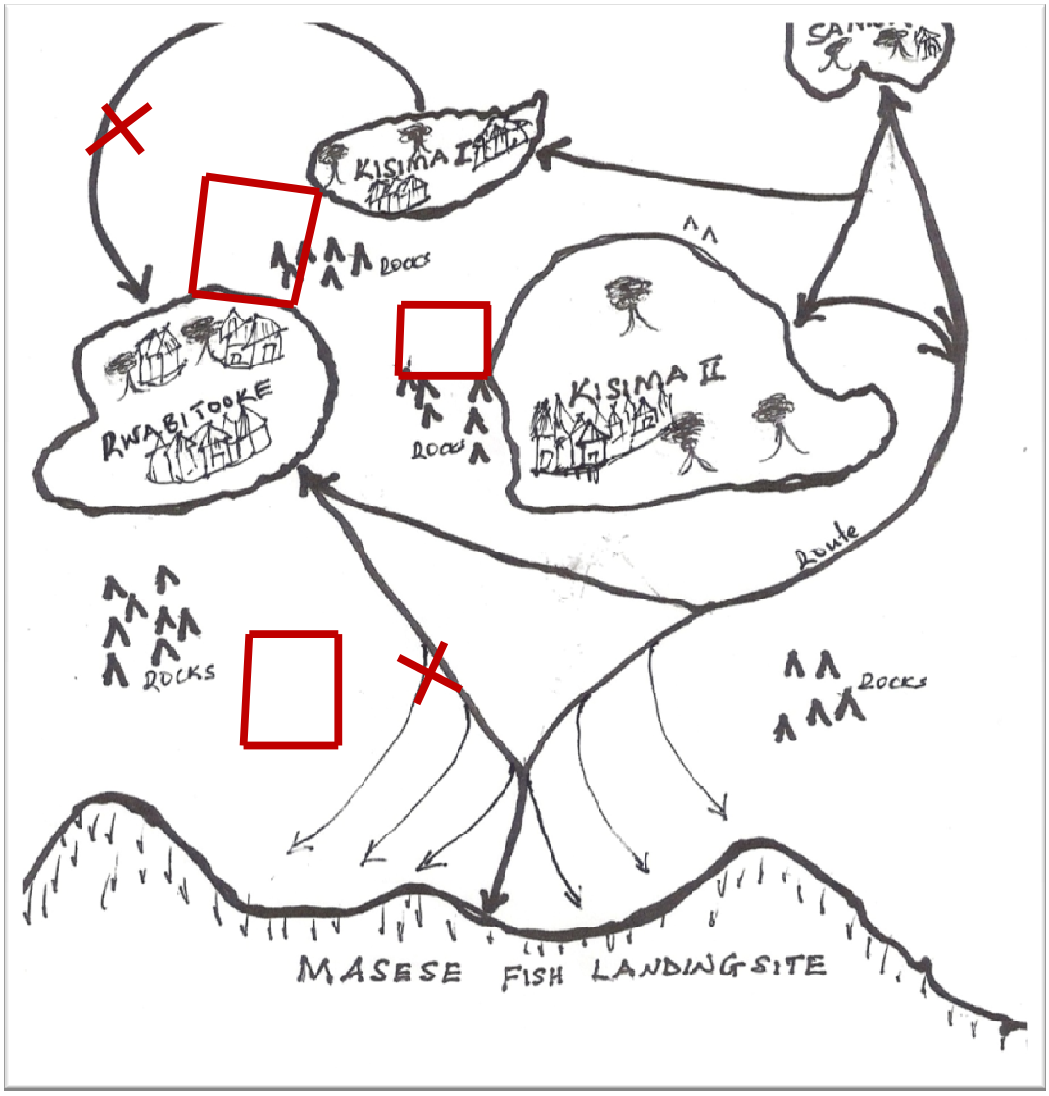


Figure 21: Fishers' movements, FBAs and networks within the lake.

Key

Fishers' routes

Fishers' former routes that are now blocked by the DOF

FBAs

In the course of my field work, I realized that fishers of Masese identify themselves with the island or area where one resides. Your area of residence determines your fishing rights to that particular place. As portrayed in figure 1 above, within Masese fishing village, we have fishers from; Kisima I, KisimaII, Rwabitooke and Samuka. For instance, fishers from Kisima I have the authority of not only the shores lines, but also control a few kilometers further way from the island. And the same applies to all other three neighbors. They have their own 'borders' that only they can explain. A collective action is taken against any foreigner who dares to fish in the 'marked' areas. However, there is always some mutual agreement for neighboring groups. For example, a fisher belonging Kisima I territory will probably be allowed to go fishing in the territory that belongs to Kisima II and vice versa. But there must be some consensus among the members on all sides. Fishers have mapped up these territories using the islands. They are able to identify foreign fishers from distant islands/places.

Some kind of informal registration is often put in place. For one to join a particular island, he must be accepted by members of a community. First, fishers are bound by social relations and net works. The family for instance is central in determining your sense of belonging. It is through the family that one inherits property such as land. Secondly, owning land in a Mwaalo or ekizinga also guarantees you acceptance. You can show that you are a bona fide citizen by pointing to the graves of your ancestors. Graveyards are land titles in many African communities. These are also used as exhibits in courts of law to justify ones lineage. Land can also be acquired through willing buyer willing seller principle. This can also be a precondition for being allowed into a Mwaalo/Ekizinga. However, after buying land, you still have to go through boat ritual done by the elders.

Therefore, new members in a Mwaalo/ekizinga will easily be identified. Being allowed to purchase land is one of the ways through which these traditional communities 'register' members of their society. When a member is selling his land then he must invite the neighbors to come and 'plant the boundaries.' There are particular types of shrubs that are resistant to all weather that is used for demarcation. These shrubs must not be cut by anybody or else it would lead to conflict. Fish suppliers or Nile perch fishers do not

recognize these territories. They have the power of the state behind them and they are obliged to supply the fillet factories.

From the study, one realizes that different groups of fishers have formed territories within the lake. Each group controls a certain portion of the lake's waters. Every island has got its own Gabunga elected by the islanders themselves. In fact the BMU leadership is talking advantage of these local leaders who are recruited as representatives of BMU for the respective islands. However, the Gabungas are in dilemma. It is not easy to satisfy the interests of the community and that of the government at the same time. Moreover, the government demands that, every Mwaalo/Ekizinga must have a BMU representative. If the *Gabunga* decides not to participate in BMU elections, another person is elected. This brings two conflicting offices. The DFR prohibits fishers from indulging in any activity near the MPAs. If the Gabunga chooses to support this, he is not elected in the next election and his respect on behalf of the community is greatly reduced. As a member of a BMU, a Gabunga is obliged to participate in government administrative activities such as tax collection, boat and gear registration etc. These measures[41] make one unpopular among fishers.

The way these areas are mapped, depends on a couple of factors such as knowledge of the catchment area, topography i.e. rocky areas may hamper boat movement. Masese fishers have developed their own lake traffic basing on their lived experience in the lake. They have 'marked' routes that they follow avoiding such things as sharp rocks that may destroy their boats, crocodile areas etc. Before territories are formed, all these are put into consideration. This explains why fishers are in conflict with the government department of fisheries. FBAs are set in their traditional fishing grounds moreover; fishers are not allowed to participate in the construction of FBAs. "Clearly, fishers themselves emphasize that their knowledge is based on being at sea, and this is certainly the primary experiential field with regard to fishers' knowledge" (Knudsen 2009:79-80). According to Acheson: "Lobster fishermen know a tremendous amount about the lobster and the factors affecting the

[41] See Chapter three for new government policy on fisheries.

catches. While that information was not gained through any scientific process, it agrees largely with that of lobster biologists" (1988:150-151). In Lake Victoria among other things, I found out that fishers have mastered the seasonal variation and the life cycle of different fish species**.** For instance, ability to identify catchment areas, fishers also follow the weather pattern. The basket trap is used during rainy season. According to fishers, during rainy season, fish goes into the swampy areas. For this reason, they invented the basket trap[42].

Fishers are not happy about the DFR's attempts to erect cages in their fishing grounds. This hinders fishing activities in terms of easy movement. There also intimidation from the police for any one closer to the protected areas. Fishers are being forced to adjust to new routes and new fishing grounds. And this has caused a lot of frustrations. 'Cages are constructed in our fishing grounds; they block for us our passage routes so it becomes difficult to move.' Complains Olinga, a local fisher from Kisima II. The cages are protected by the askaris. The fact that fishers map up the lake waters is due to the lived experience. The connection between local ecological knowledge and these areas is because of the accumulated experience in these areas which is why fishers know that these areas are important to their lives. The mapping of territory can also be seen as a control mechanism. Therefore, prohibiting fishers into the FBAs implies that a lot of knowledge that would actually be relevant for the construction of FBAs is left out. Only fishers would know where good fishing spots are but they are not consulted. They would give special advice on such cases as extinct species, life history of species and behavior.

Resistance and "Illegal" Fishing

Resistance and illegal fishing are directly linked to the state inability to peacefully integrate local fishers into the management and conservation processes. Fishers are resisting the government measures of discriminating them from participating in MPAs. As the security tightens, they also continuously devise different ways to challenge any attempt to obstruct them from their traditional fishing grounds. In the course of my field work, it was clear that fishers are taking advantage of a weak and poorly managed police force *(see chapter three)*

[42] See Chapter four

that can easily succumb to pay-offs. They are able to bribe the marine police in order to access their traditional fishing grounds, most of which are now MPAs. In some cases they lure marine officers into consuming highly intoxicated liqueur locally known as *Kasese.* This is done mainly by the women. It is the women who deal mainly in local beer trade. The women coax the officers and get them stupidly drunk. As the officers become helpless, the men then bravely go fishing in the protected areas.

Further still, they have had demonstrations and even direct confrontations with government authorities. For instance, Bujaali one of the renowned mediums who lives at the river Nile (in fact Bujaali falls in Jinja Uganda, is named after him), was involved in a controversy when he led a group of Basoga tribesmen against the government of Uganda's proposal to construct a new dam at Bujaali falls. Bujagali falls is home to many cultural traditions and customs of the Basoga people. The construction of the new dam (which at the time of field work was already in process), will destroy these customs and traditions. According to *International Rivers*, this will not only harm the fisheries but also "the dam will submerge a place with great cultural and spiritual importance for the Busoga people[43]." Most of the fishers I talked to including those who are non Basoga opposed the construction of another dam especially after their earlier experiences with Nalubaale and Kiira power plants.[44] Bujagali is located about eight kilometers north of the existing dams in Jinja. Even before the completion of the dam, close to five villages have been resettled; let alone the total disappearance of the falls. [45]

The Catchment Areas

The catchment area can be referred to as the fishing areas. In other words, these are particular areas within the water that has more fish or is home to particular species. Fishers are able to identify these areas. Catchment areas can be grouped into four

[43] See more about Bujagali falls at http://www.internationalrivers.org/en/africa/bujagali-dam-uganda

[44] For the impact of dam construction on Lake Victoria, see Chapter three.

[45] See New Vision online at http://www.newvision.co.ug/D/8/12/712732

categories; rocky, swampy and muddy. According to fishers, fishes have different characteristics and behavior. Different species like different environments. They identified the places as follows; rocky places as home to tilapia, muddy for mud fish and lung fish, swampy for lung fish, sandy for Nile perch and silver fish. In fact, some of these areas were traditional fishing grounds and territories of fishers that have now been turned into MPAs. Something that several fishers complained about, since they are no longer allowed into these areas.

Fishers also complained about construction of the catchment area. The catchment area especially around the shore lines has been turned into farms, construction of factories, residential houses, and recreation centers i.e. modern beaches, and hotels. It is important to note that fishers are aware that the shore lines are the breeding grounds for several species. For instance, they complained that the construction covers fish egg laying sites.

Figure 23 a guest house at the shores of Lake Victoria

Figure 22 A tourist resort in Samuka Island, Lake Victoria, Jinja


Figure 24 from left to right: a resort near source of the Nile and right: the concentration of industries at the shores of Lake Victoria. *(Source: figures 22, 23 and 24 left see Travel Uganda at http://www.hotelsinuganda.com/jinja.html)*

The government has leased most of the shore lines to private investors. Most of the shore lines are swamps that have been reclaimed. Fishers are bitter about the reclamation of swamps. It is in the swamps where they get their baits, where they resort to fish from during rainy season; where most of the breeding takes place. It is because of decades of experience with water life that fishers have this knowledge. This explains why they have improvised ways to deal with severe changes in the environment that affects their livelihood. Alternative economy as discussed below can be seen as a response to severe changes and unstable environment in the lake. Knudsen affirms that small scale fishers acquire an enormous knowledge through lived experience with such things as "the bottom topography, the fish the net, the boat and the engine, the sea currents, navigation, the weather, even other fishers' activities…" (2009:86-88) and that "much knowledge is clearly embodied, lived, local and embedded in biophysical and social contexts" (2009:88-90).

When I reached the field, an investor had a few months back just purchased nearly three quarters of Samuka Island to set up a tourist resort. Fishers who were originally living there were forcefully compensated and made to seek residence elsewhere. These recreational centers target mainly foreign tourist who come to see the source of the Nile and many other sites.

When one looses a right to an island or landing site that could also imply loosing ones' fishing rights. So in the long run we find more and more nomadic fishers. As seen earlier in this Chapter and Chapter three, there is registration process one has to go through whether formally or informally. It is easier for one to get registered when he/she is a resident of a Mwaalo or Ekizinga. As they wander, fishers not attached to any site will always be in conflict with members of the settled groups.

Survival Strategy Adopted by Fishers

Poverty Alleviation Programmes

In Kisima I village, I found community based self help programmes. The community has formed different groups each participating in a programme for poverty alleviation. There is the Fish Mongers Association, an association of mainly fishermen, fish vendors and farmers; KYSOMU and OGOPA farmers groups, the members are engaged in fishing, fish vending, poultry farming, piggery and bee keeping.

With assistance from NAADS or National Agricultural Advisory Services, fishers have identified Cage Farming in Fish Breeding Areas (FBAs). However, fishers complained that they don't only allow them to go into the breeding areas but are denied participation in the construction of FBAs. Fishers therefore feel alienated from this programme. Talking to the residents of Masese II village who requested for anonymity said people no longer trust the government. "NGOs work better than the government; support[46] should come directly to the people and not through the government." Shouted one of the residents. The majority of fishers I interacted with said that NAADS only approached them initially seeking for some information about the lake. After that, local fishers were left out of any activity concerning Cages and FBAs. This is why they are resisting the construction of FBAs.

[46] Since I was in the community trying to find out people's problems, very soon I was associated with some kind of NGO work. NGOs are not new to the area and the people seemed to have weighed the services offered by both government and NGOs. Apparently the people seem to prefer working with NGOs hence the response 'NGOs work well more than the government.'

Fishers and seasonality

It was sun set, and we were getting prepared for our usual fishing spree. But this time my friend Gilbert from Kisima I wanted us to start quiet early. I asked him why we were starting early, Gilbert replied, you mean you don't know that the good season is coming to an end? Which season? I inquired. Gilbert started to explain, "you know fish also has season, some seasons are good others are bad. During rainy season, there is a lot of fish. In fact our fore-fathers were always prepared for all seasons. Fish was always smoked or sun dried and kept for periods of scarcity. You know fish also migrates to other places to look for food and to reproduce. But as you know, we have to survive. So when we don't have enough fish, we resort to other activities like farming, we keep animals; our women do some crafts and generally grow crops to keep us going." He continues.

To Kaganda, another local fisher from Kisima I, the scarcity of fish is not a problem. "Some seasons like the rainy season, the fish population goes up and during dry season we catch less. The fish population in the lake goes up and down depending on season." he laughs. We were now starting early because it was coming towards the end of the year which is normally dry. To get some daily catch, you have got to go early before the water gets so 'disturbed' by the big boats. When many boats especially with outboard engines come, they scare away the fish. "Fish suppliers have bigger boats and they can go far into the deep waters; they pass here and scare away the fish." Complains Gilbert.

Figure 25 a local fisher and a crew member on a fishing spree.

Local fishers prefer a calm environment as depicted in the photo above.

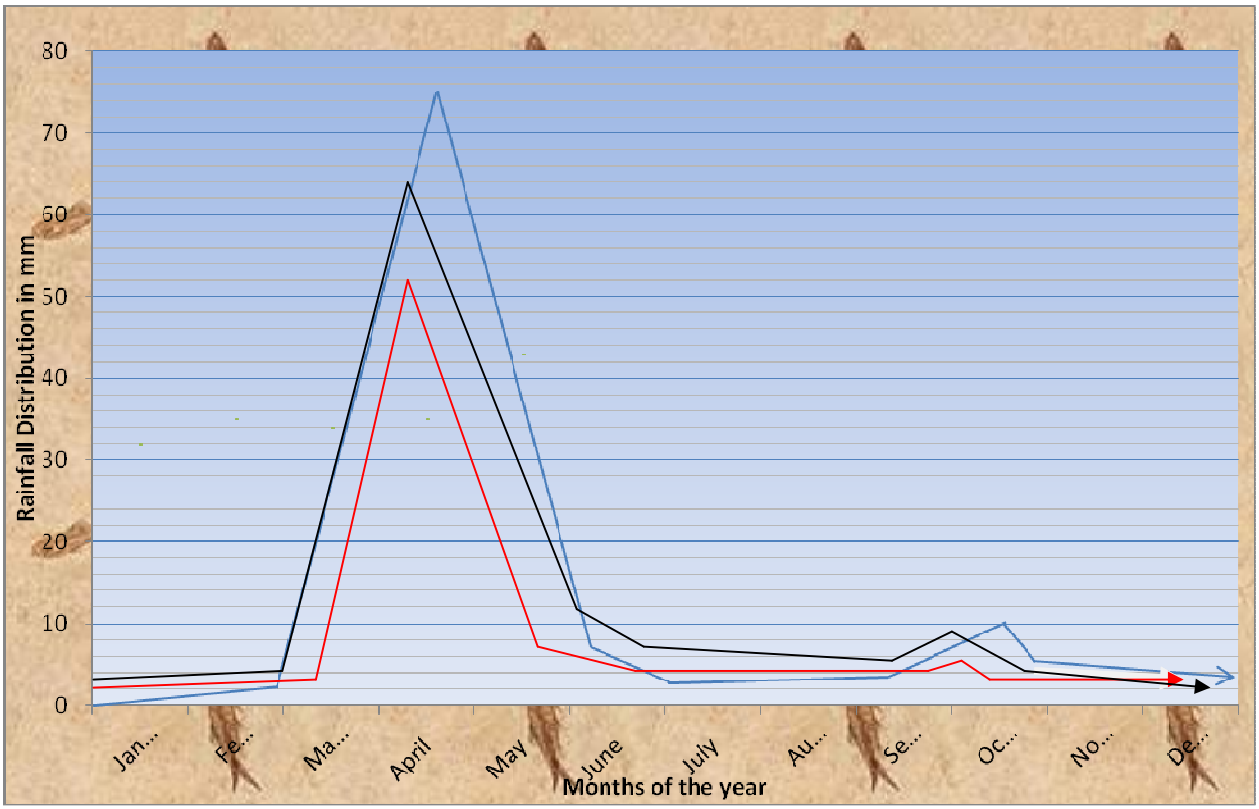


Figure 26 shows rainfall distribution in Lake Victoria, Uganda

Key

Rainfall distribution

As portrayed in (figure 26) above, fishers largely follow this weather pattern. From January to February, fishers prepare the gardens and plant especially millet and Maize and some vegetables. Since these are generally dry months, there are minimal fishing activities taking place. From March to June, there are intense fishing activities taking place. During these months (March to June), women spend more time in the gardens weeding the crops. However, they join the men later during the day as much of the weeding is done in the early hours of the morning. I actually arrived in the field during the last round of weeding maize. Maize is weeded twice or thrice depending on the type of weeds while millet is normally weeded once. July to October is harvesting period and also the beginning of feasting season

especially of new harvests[47]. In November, when most of the harvests are done, fishers again start to prepare their gardens as they prepare for Christmas which is the height of the festive season. During December and early January there is least fishing activities taking place. By this time, many fishers have gone or are going for holiday. It is around December that 'foreign' fishers go back to their ancestral homes for the Christmas holiday and to visit their families. And even those who remain hardly participate in fishing activities as by this time, the fish stocks are down, there are fewer people in every Mwaalo to enable business.

In South Pacific for instance, 'Ceremonial gardening done by Melanesian people who live on the Trobriand Islands of Papua New Guinea illustrates the expressive function of lived time. Ceremonial gardening creates a lived time whose cyclic rhythm of two seasons brings meaning to all aspects of life.'[48] In the same manner, the fishers of Lake Victoria organize their economy basing on the long time experience they have acquired through interactions with the environment. For instance, fishers are aware of which species are numerous during a particular season. Fishers use the 'moons'[49] to determine not only the economic activity to engage in but also to determine and predict species life cycle and behavior.

Fishers believe that during rainy season, a lot of fish comes to the water. It is during this season that they will 'overfish', the catch is sundried or smoked and then stored in preparation for the periods of scarcity.

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[47] New harvests especially millet is not to be eaten unless rituals are performed. And whoever has not celebrated new harvest is not allowed to eat or consume in whatever form the new harvest from relatives, neighbor and even the whole community. Rituals involving the slaughtering of fowls or beasts are done and all the members of the family are treated to a feast including the dead ones. During the feast even the dead are 'served.' It is believed that the dead have power over the environment and therefore can influence the outcome of yields. So if they are ignored, then the next harvest would be a failure.

[48] See Expressive Traditions of Oceania, America and Africa at http://www.jbeonlinebooks.org/eBooks/worldReligions/documents/introducingWorldReligions_chap_2.pdf

[49] Months of the year are referred to as moons in the local dialects. I.e. moon of rain, moon of sunshine, moon of Mukene etc.

Fish Migration

Fishers believe the reasons for fish migration includes; need to spawn, looking for food, running away from dirty waters and also too much noise can also drive way fish. So they follow the weather pattern and the general state of the water to find out the causes of different migrations. "When fish migrate to go and reproduce, this is actually during the dry season, we engage in preparing our gardens, as you know gardens are prepared during dry season as we wait for rain" Narrates Zubairi. These are the 'off seasons' when fish migrates and only come back during rainy season when there is an increase in the level of water. Zubairi and his colleagues said that they are aware that fish migrations can be long term or short term depending on the cause. Sometimes fish migrates very far and it becomes difficult to follow especially if they wander to distant territories. Those who try to follow, conflict with owners of other Mwaalos/Ekizingas. Moreover, you must have a strong boat to be able to pursue the fish. "You need a stronger boat with at least an out-board engine" says Zubairi. Moreover bigger boats with out-board engines are not only expensive but also fishers don't like them because of the noise that they make.

During 'fish migrations', fishers engage in other economic activities as a survival strategy. I see these periods as 'closed season' which can actually be perceived as a period that allows fish to repopulate. *(See figure 20* for seasonal variations in Lake Victoria fisheries). Therefore, we need to understand people and the way they interact with their environment according to their different cultural, economic and historical settings.

Ability to predict weather

Fishers are able to predict weather; they have names for different winds. They can guess which wind will turn into waves. The winds are named after great legends and places depending on the direction from which particular wind comes from. Masaba, one of the winds, comes from the name of an ethnic group the Bamasaba of eastern Uganda who live around Mt. Elgon at the Kenya- Uganda border. Masaba is a legendary hero who is believed to have been the first Lumasaba to arrive in Mt. Elgon, the present day Mbale district in Uganda. Nkoma is a place in eastern Uganda inhabited by the Iteso, this name was given by

fishers from Teso. Muyanja is also a type of wind which according to the fishers, comes directly from the lake, Kirinya another type of wind is a place in Busoga, Kakira also is a type of wind and this name was derived from a place in Busoga. The naming shows how diverse the island is. Names are used as markers of ethnic identity. Names not only show your ethnicity but in most cases even your clan. *(See section on taboos and totems in this chapter)* All names are accepted by different groups which also show how these fishers are able to live together in diversity.

"We know every wind, the direction where it is coming from tells us" cries Musa. "If we are in the middle of the lake, we take cover; I go near an island until it stops," he continues. If going further away from the islands, fishers move with some rocks and ropes as anchor. They told me that, this is used especially against Masaba. Masaba is considered by fishers to be the most dangerous wave. If the weather is cloudy towards the eastern side especially around Mt. Elgon, then that is a sign of Masaba. This always is followed by light winds blowing from the same direction. When Masaba comes and fishers cannot take cover in the nearest island, they anchor the boat, the pointed part facing the eastern direction (the direction of Masaba). The rocks tied to ropes are then sunk to the bottom of the lake. Musa says, they only run to the islands if they are ill-prepared.

According to fishers, the technology for building boats has been influenced by their experience with lake currents. In Lake Victoria, there are mainly three types of boats used by local fishers and these are;

Paracute is mainly used in the shallow waters. This type of boat has a flat bottom and three pieces of timber joined together on both sides. According to fishers, paracute does poorly against waves but is good for shallow areas. The second type is the Sesse pointed at both ends. This is good but costly in terms of timber. The third type which is the most preferred boat by fishers is the Sesse pointed at one end. According to fishers, this type is more stable in water and performs better against waves.

Figure 27 shows fishing boats in Masese landing site; left: mostly the Sesse type and right: paracute, the flat bottomed small craft. *(Source: figure 27 right; Naffirri)*

Rituals

Are there rituals related to fishing?

It was 1100hrs August, Musa tells me to wait as he moves towards a tree at the rear of his house. I suspect he is going to answer to nature's call. I ask him, "going out[50]?" "Not really, just wait for me there" he murmurs as he moves further away. But this time I am pretty much inquisitive since I had observed him behave like this each time we went out to the lake to fish. I try to make myself busy by cleaning my camera lenses but my intention is to observe Musa's movement. I don't want him to realize that I am watching him since he looked rather uneasy. In a side look I try to observe what my friend is doing. No sooner had he reached the tree, than he humbled himself, his posture picturesquely a Christian in a praying mood, his mouth moving up and down in a whisper. But I cannot hear what he is saying because he is relatively a few meters away from me to be able to hear his rather low voice. I call him, "Musa! Are you Okay?" But there was no answer. Shortly he sprung out and said "let's go!" I quietly follow him. Noticing from his behavior, he did not want me to know what he had been doing. After several encounters like this, it was no doubt that my friend was engaged in something highly secretive.

[50] Among the fishers like many African cultures, it is considered uncouth for one to say that am going to the toilet. Phrases such as 'going out', 'going to the bush' etc are acceptable and considered as a form of polite and civilized behavior.

Musa could also perform other acts that I had kind of ignored for some time. But when his friends also did the same, I decided to make a follow up. For instance, after setting the net, when pulling it into the boat, the first catch is hit on the sides of the boat and then thrown inside of the boat. I had on many occasions witnessed this being done on every fishing expedition that we had but I had never asked. But this time I asked Musa, "why do you always hit the first catch on the sides of the boat?" He laughs, then answers; "it is to bring good luck. The first one is supposed to call for more." This experience made me more inquisitive.

But Musa and his colleagues were so secretive in their deeds and I did not want to confront them, so I turned to my elderly informants. One of them was Mzee Wamala, a retired fisher from Masese fish landing site. Other fishers call him "consultant" because he is considered as the one who is more knowledgeable especially when it comes to the history of the lake. I had on many occasions interacted with Mzee Wamala and he even introduced me to his three sons (all fishers). According to him I would be more comfortable with my age mates. So when I went back to Mzee Wamala, I explained to him my experience with what Musa and the other fishers do during fishing. When I narrated to him what Musa does before fishing, Mzee Wamala started like this;

"My grandson, let me explain to you, this massive water you see here is not out of nothing, you understand?" Mzee Wamala started to recount how fishers relate with the lake. He told me how there are so many rituals that are supposed to be performed depending on the occurrence; it could be because of a misfortune. For instance, if a boat capsized then the gods of the lake are angry. In that case rituals have to be performed. Before a ritual is performed, normally, a medium is consulted. This is done in order to unearth the cause the misfortune. If a boat is new, it is not supposed to be taken into the lake – until a fowl or beast is slaughtered and members of Ekinzinga or Mwaalo are treated to a feast. Also the first catch from a new boat is not supposed to be sold. It must be taken home and eaten.

When the color of the water turns red, it is a sign of Mubiru[51]. The lake is supposed to be avoided until ritual sacrifices are performed. Signs of Mubiru starts with gradual disappearance of winds. And during this period, the catch becomes very low as fish goes deep into the bottom of the lake. Those that come to the surface die. Fishers believe that whoever goes into the lake during this period will drown and die. In fact he will have offered himself to the gods of the lake.

Fishers believe the lake is controlled by supernatural forces. These forces can appear in various forms i.e. through waves and many other types of winds. Some of these forces have particular places in the water where they stay. These places are revered by the members of the community. Sometimes there could be a spontaneous change in the natural environment. Wamala said that when the color of the water turns red, that is the color of blood, it means *Lubaale* is hungry. His father used to go and consult *Kiyiira* or *Bujagaali*[52] because they are the only ones with the power to consult the gods of the lake. In fact, the river Nile is named after Kiyiira - *'Omugga Kiyiira'* is the local name for river Nile.

According to Vokes in his studies among the communities of western Uganda, he says that "…in local cosmologies Nyabingi[53] was also inextricably linked with the 'high god' Kazooba. Indeed, they may accurately be termed two aspects of the same whole. The name Kazooba derives from the word for the sun (eizooba), and for all the Bakiga, the sun is the provider of all the agricultural riches" (2009:49). He further argues that in case of difficulty, people turned to Nyabingi as a spirit of fertility and this was always followed by sacrificial offers.

It was interesting to know rituals take many forms. Some rituals are performed before fishing in order to bring good luck. And also that no new boat is taken into the lake without

[51] Many Baganda and Basoga are named Mubiru. It is one of the gods of the lake.

[52] One of the renowned mediums who lives at the river Nile. In fact Bujaali falls in Jinja Uganda, is named after him. He was involved in a controversy when he led a group of Basoga tribesmen who were against the government of Uganda's proposal to construct a new dam at Bujaali falls. Bujagali falls is home to many cultural traditions and customs of the Basoga people. The construction of the new dam will destroy these customs and traditions.

[53]Fertility goddess common among the communities of south western Uganda. (see Vokes 2009: 13-24;35-50)

the blessing of Gabunga or some elder in Ekizinga or Mwaalo. This can be looked at as a kind of an informal registration. One needs the blessings of Gabunga and other members of Ekizinga or Mwaalo in order to be a 'successful' fisher. To get this, he has to go through a ritual process. This is in contradiction with the Hardin thesis and the government's belief that the lake is without any limitation and therefore, anyone can move in and out at will. Nile perch fishers get formal license from the DFR while local fishers get an informal license from a Gabunga/elders. However, this has been altered by the government new demands that everybody should go through formal registration to be able to access the lake.

As the lake is demanding for sacrifice, fishers would shy away from the lake until the sacrifice has been made. We all know that the color of the water could have changed because of natural occurrences such as photosynthetic processes, decomposing algae in the water etc. However, what is worth recognizing is the fact that during this period, there is species reproduction and rejuvenation. Therefore even if the main intention/purpose of this particular ritual is not intended towards conserving nature, it is true that it provides some protection to the habitat.

I soon realized that some of them had of recent 'got saved.' This implies accepting Jesus Christ as your savoir and denouncing all the beliefs, customs and all ritual practices that one has previously been engaging in. This started with the inception of Christianity but rapidly increased with the advent of Pentecostalism that is now spreading across the entire continent. Because of the influence of foreign religions, especially Christianity which refers to ritual practices as satanic and against the teachings of the bible, many fishers who got saved find it difficult to bridge the gap between the two beliefs. However, after my several encounters with Musa and other fishers and later on one of my elderly informants I was able to come to a conclusion that ritual practices among fishers of Lake Victoria is highly secretive. And also that much as some fishers got saved, they still practice their traditional religions of which rituals are a part. I can say that Musa like many of the other fishers practice a syncretic kind of faith. An infusion of African Traditional Religion (ATR) with especially Christianity or Islam.

Taboos and Totems as a resource shield

To many people especially at the DFR, taboos and rituals are out-dated, superstitious beliefs of long ago that is no longer followed in this era of 'modernity'. Some people, including some fishers, do not accept that they perform any kind of ritual sacrifice or have any taboo. But I would like to argue that this is not true. From my findings and also in comparison with other ethnographies in the region, I realized a couple of things. 1.) That rituals are highly secretive, in most cases it is normally done in the late hours of the night so that nobody else notices apart from the participants. 2.) Some of the practices of ATR have been replaced by Christian teachings. Because of the influence of colonialism, especially Christianity, some people are scared of performing certain sacrifices. They could for instance be branded as 'witch doctors'. This explains the secretive nature of sacrifices and several rituals. And also the adoption and incorporation of new forms of art and artifacts. According to the Comaroffs, there is an increase in witchcraft and occult activity which is widely being experienced throughout the world. This is escalating at an amazing rate. The Comaroffs try to situate the current upsurge of witchcraft within global capitalism and modernity (1999:279-282). With regards to ritual sacrifices among fishers of Lake Victoria, new things are now being accepted and incorporated. For instance, the acceptance of western/foreign beverages during the performance of rituals. For instance, western beer may be used in place of a local one.

In Lake Victoria, there are taboos related to species and fisheries management in general. Some fish species are totems that are markers of ethnic identity**.** This depends on the ethnic group or clan to which one is attached. I.e. much as the Mamba species is forbidden among the Mamba clan of Buganda. (Mamba cannot marry Mamba, Mamba cannot eat Mamba)[54]. The Endu clan of Busoga do not catch, kill or eat Endu. A refusal to abide by this

[54] Marriage to someone with whom you share with the same totem would be considered an incestuous relationship. This would call for cleansing the couple in a ritual performed by clan elders. The couple are literally left nude and locked in a makeshift hut that has no door. The hut is then set ablaze as other members of the community watch. The couple must then find their own way out for safety, each dashing to a different direction as members of the community shout several insults at them. This is done in the hope that they will never meet again. If the incestuous couple refuses to participate in this ritual, the punishment would be total banishment from the clan.

clan custom would call for a severe punishment on the part of the offender by the clan elders. The offender could for instance be excommunicated from the clan. Taboos form the basis for environmental management in many traditional communities. In Lake Victoria, It is still socially unacceptable able for a woman to go fishing. She can own a boat, but still needs the services of a man to fish for her. But this does not reduce the role of women in fisheries. Women still play a significant role in fisheries (*see Chapter four*).

Totems are treated as if they were human and with godly qualities. Totems are referred to using the verb (She) or (He) and not (it). Eating your totem would be interpreted as if one has eaten his/her own father, mother or the 'spirit of the ancestors'. The repercussions could be general suffering, e.g. famine, illness or even death. This is the same way Mamba/Endu is treated among the Baganda and the Basoga respectively. Social taboos at least form the foundation for environmental protection in traditional communities.

The Mambas do not eat Mamba. It is also a taboo among women not from other groups such as the Lou. They believe eating Mamba has an effect on their menstrual flow and you also lose breast milk to feed your baby. The majority of women we talked to, still hold this belief.

As seen above, it is important to consider the social dimension. Working in collaboration with people who have for ages lived and experienced the changes in the lake would not only make a more comprehensive study but also help generate knowledge for conservation. For instance, fishers are aware of the species that have gone extinct.[55] If it is true that these species went extinct early in time, then the view that too many fishers have been chasing too few fishes doesn't hold weight. Following the demographic trend of fishers at that time, with low number of fishers, also at a time when there were no fillet factories then what actually led to the extinction of some species? Many researchers generally attribute the extinction of several species of Lake Victoria to the introduction of Nile perch in the early 1950s. This is where the knowledge of the fishermen becomes very vital.

[55] See Chapter four.

Also noted was the construction of the catchment area, poor management of both municipal and industrial. For instance, most of the factories are constructed along the shores; they suck water directly from the lake and dump their waste into the lake. The fishers complained that BIDCO factory empty their industrial waste in the lake and this has according to the fishers killed a lot of fish and has also led to migration of fish to other areas. Garbage management is worse in urban centers than at the countryside. Ironically, it is in towns where all elite, environmentalists and all sorts of the 'informed people' you may think of reside.

Chapter six

Conclusion

All in all, the main goal of this study was to understand local ecological knowledge and its relevance to the management of natural resources in the Great Lakes of Africa with a special focus on Lake Victoria. The study also looked at how LEK is being ignored in the context of development and modernity. The study further explored the narrative that local fishers are the resource destroyers and how biological science has been given first priority in resource management procedures. I also showed that the state has not only favored biological science but in many cases it has failed to offer protection to local resource users.

It is important to note that many national and regional organizations do not take the knowledge of the local people seriously. Apart from just in some cases having it in their proposals, findings show that people are made to follow already designed policies that they have no knowledge of how it was formulated.

The State Involvement in Fisheries

Local fishers are showing anger and frustrations from the laws that have been set by the Ugandan state. They see the laws as a road block to their livelihood. Moreover, local fishers feel the playing field is not leveled; whereas fish suppliers are given concessions and are continuously supplying the fillet factories, no such a thing is done to the local fishers. This is worsened by the fact that what used to be traditional fishing grounds are now MPAs which is a no go area to local fishers. The activities of the BMUs per se would have been useful to the local fishers if they were not used as a plat-form for promoting state policies. If BMUs were instituted with critical regard to local setting, then they would be assets for resource management.

The MPAs and Cage fisheries in Lake Victoria could be a failure if it is not carefully initiated. The DFR has given little attention to LEK during the construction of cages and other protected areas. The state policies are passed with little or no consultation at all on behalf

of the local fishers. This was witnessed with the National Fisheries Policy and the 2003 amended version of the Fish Act. As already seen with the ujama type of development in Chapter two, "if people find the new arrangement, however efficient in principle, to be hostile to their dignity, their plans and their tastes, they can make it an inefficient arrangement" (Scott 1998: 225). It is not surprising that fishers are already resisting government endeavors that are not in conformity with their ways of life.

BMUs, 'Old Wines in New Bottles'?

Actually what I found out in Lake Victoria fisheries as regards the formation of BMUs through community leadership and participation, is a reproduction of what had existed for centuries. For instance, the BMUs of Jinja district are organized along territories i.e.; Wairaka, Kisima I, Kisima II, Rwabitooke, Bugembe, Walukuba etc. These territories had existed before and it is the basis on which local fishers controlled their areas and fishing grounds. As already seen, initially every Gabunga controlled all the affairs of their respective ekizinga or Mwaalo. We saw how a member from another group cannot be allowed to fish in another area unless some form of mutual agreement has been reached.

However, under the current BMU arrangement, every ekizinga/Mwaalo elects its leaders who help in administering their respective territories. These elects are answerable to the DFR' office instead of Gabunga's office. The new arrangement has come with restrictions and regulations which local fishers see as a barrier to their livelihoods.

Uganda has incorporated BMUs into her legal structure which makes fishers to look at BMU as another government instrument of suppression. This is already being shown in the way local fishers resist the marine police. A co-management approach through the BMU leadership would be important for resource management. If the views of the local fishers could be incorporated into the management interventions, government programmes such as FBAs and Cage fisheries would be more acceptable. Fishers would willingly abide by the laws and regulations and this would reduce conflicts, resistance, piracy and illegal fishing.

External Actors

Because of the drive to meet the high demand for fillets in the EU markets, it is a problem that resources are over exploited and fishers are thus becoming poorer. Fishing would have been a strategy to avoid poverty among low income communities; however, this has been curtailed by the push for profit maximization. As noted earlier in Chapter four, it is true that Nile perch fisheries provide jobs and income to many people. However, the EU high demand creates poverty through creating pressure on the environment which has caused local fishers' catch to shrink, leaving poorer local fishers.

Activities of the external actors, the WB, the EU etc have been central in influencing policies in Lake Victoria fisheries. A lot of these policies have been detrimental to local fishers. The WB's funded dam construction in Jinja has left a lot of questions begging. The activities of the EU and its creation of 'the race for Nile perch' through foreign lucrative markets especially in EU countries have left local fishers souring. Unless propagators of development take time to try to understand why people act the way they do, for instance, people's intentions and interpretations of the local environment, there will always be 'friction'. Friction will always come as the forces such as globalization, environment and the politics of indigenous peoples, NGOs and development and the sociology of expert versus indigenous knowledge interact (see Tsing 2005).

"Dependency theorists once usefully distinguished between a state of being undeveloped (an original condition) and a state of being underdeveloped (the historical result of an active process of underdevelopment). In a parallel fashion, we might usefully distinguish between being unconnected (an original condition) and being disconnected (the historical result of an active process of underdevelopment)" (Ferguson 1990: 238). I argue that the modernization of the fisheries has 'disconnected' many traditional fishers. The Ugandan state with many other interventionists in Lake Victoria, have largely ignored how fishers understand and deal with ecological complexity and dynamics in the lake. The study showed that fishers' economy is shaped by their understanding of uncertainty and variability. An examination of subsistence activities of the people is crucial before thinking of planting development.

Lake Victoria: Looming Calamity?

The winds are blowing the narrative of destruction everywhere. Apparently local fishers are the resource destroyers. However, if one may ask, how many fillet factories are operating around Lake Victoria? Who are the owners? Where are their markets? How much do these factories remit back for lake conservation? If the fisheries resources were to serve the local needs first, with only the surplus left for export; would the environmental situation be any better? And would there be poverty? The whole story of the Nile perch fisheries in Lake Victoria needs further scrutiny. It is important to note that power has been concentrated in the hands of the state and some large fishing companies.

The study also showed that LEK is very much present among local fishers but this knowledge is at stake. Traditional ways to management is being replaced by new laws, regulations and policing by the state. It is these laws and regulations that fishers see as disconnecting them from their ways of livelihood. Territoriality which used to form the basis of management is not recognized by the state. The fish suppliers who are backed by the state to meet the demands of the fillet factories are in no way sympathetic to the plight of local fishers. The construction of the catchment areas poses a threat to lake bio-diversity.

The discussion showed that fishermen identify rich fishing sites based on their knowledge of the physical nature of fishing sites, observing fish movements and behavior. Fishermen have a clear understanding of fish habitats and their different fish varieties. They express this knowledge in various ways. For instance, fishermen identify fish varieties by associating their nesting, breeding and nurturing practices to different habitat conditions. LEK has been ignored in all spheres of decision-making for management and sustainability of fisheries in Uganda. LEK guides fishers in the way they associated and interacted with the natural environment around them. Rituals, religious practices, social taboos and totems guide the peoples on how and when to utilize the available natural resources.

The study showed that rituals are one of the informal ways through which individuals get 'registered' into the fisheries. Rituals, religious practices, social taboos and totems guide fishers on how and when to utilize the available natural resources. Something that the

government and many other stake holders have ignored. Fishers indentify with these practices and could be integrated into current management policies.

The study also showed that in the advent of modern scientific knowledge, the African traditional knowledge is quickly fading away and is generally seen as irrelevant by the different state interventionists. If scientists can interact with local fishers, then more knowledge can be gathered and the barriers of mistrust dismantled. Actually from my own findings and other empirical cases, fishers can not only be the best stewards of the environment but are also crucial in finding solutions to lake conservation and management. A co-management approach is necessary in which the resource users and all the stakeholders involved can freely participate in decision making regarding resource utilization and management.

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