

# Community involvement in fish harvesting around Lake Victoria (Kenya)

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## Abstract

Benefits accruing to fishing communities have not marched increases in fish yields. This has affected the disadvantaged groups especially women who rely on processing and marketing fish for their livelihood. The aim of this study was to assess the extent of community involvement in fish harvesting activities, the benefits accruing, perceptions towards fisheries regulations and their constraints in regard to threats and risks they face in Lake Victoria.

Sampling was conducted on 25 landing beaches between August and November 2000 and a total of 229 fishers interviewed. Data was obtained using a structured survey questionnaire on fish production and personal interviews. Seventy two percent felt that their occupation was not sustainable due to low prices of fish, 70% of fishers joined the fishery for period between 1 to 10 years, 81% operated on full-time basis, while 19% operated on part-time. During the Government of Kenya retrenchment exercise, there was a short-term influx into the fishery. In a good week, a fisher could earn an average of Kshs.7, 750. In a bad week one could earn approximately Kshs.1, 822. Fishers sampled were familiar with fisheries laws and regulations applied in the management of Lake Victoria fisheries 90%.

The results show most fishers have no alternative occupation apart from fishing with men dominating in the harvesting sector while women only owned fishing gears and equipments. Although majority of fishers worked on full-time basis, they have limited or no influence on the levels of benefits they receive from the activity and this can be supported by the unemployment caused by the fish processing factories that fish directly by providing efficient gears and boats to fishermen.

Key words: Fishery, Community, Fishing, threats and risks.

## Introduction

The Lake Victoria fishing community comprises of fishermen, artisanal fish processors; small-scale fish traders and industrial processors. Thus fisheries activities play a vital role in the lives of the communities in terms of employment and nutrition. The fishery has evolved from a traditional and subsistence status to an industrial level characterized by high-level commercialization of production and distribution levels.

Butcher and Coloris (1973) estimated that during the early 1970s some 50,000 fishermen operated from some 12,000 fishing vessels the fishermen had a varying degree of involvement in the fisheries sector, some fished only part-time or seasonal basis, while others were full-time fishermen.

Eighty percent of fishermen derived their primary income from fishing and most of them were also engaged in complementary agricultural activities.

In Kenya the fisheries department estimated that a total of 798,000 people were directly or indirectly supported by the fishing industry as compared to 720,000 in 1995 whereby there were 34,000 fishermen, 238,000 dependants and 526,000 people engaged in the provision of support and ancillary services such as trade in fishing inputs, fish handling, processing and marketing

According to the recent statistics from the fisheries Dept. (2000), there are about 42,000 fishermen in Kenya and approximately 90% of them are in Lake Victoria basin but this number has increased by 28% since 1995.

Although fish has been the cheapest source of high quality animal protein and a major source of income, the native fish stocks have been heavily reduced due to over exploitation and have had socio-economic consequences for the fisher folk, other fish eating communities and the environment.

According to (Reynold *et al.*, 1992) Lake Victoria fisheries produced a total value of US\$ 280 million between 1975 and 1989

Employment increased from 158,000 in fishing and ancillary activities in the entire Lake to 422,000 by 1992 when the Nile-perch fishery was at the pick (Wilson 1993).

The value of fish produced from Lake Victoria has grown since 1980 from kshs 0.2 billion to about 2.2 billion in 1995 (Ikiara, 1999).

Ikiara (1999) also estimated that the average monthly income for boat owners was to be kshs 6,000 while the crewmembers earned between kshs 1,000-2,000 per month in case of fish processing sector the earnings were slightly more than crewmembers.

Gibbon (1997) estimated that in 1996, 50% of all Nile-perch landed in Tanzania went to the filleting factories while in Kenya for the same period (Abila and Jansen, 19997) estimated that about 48% of all the Nile-perch was also taken by the filleting factories.

This study was necessary because opportunities in the harvesting and marketing have changed nutrition and health habits of people. Other social benefits have declined while government policies and

regulations to manage the resource have not changed to match these changes. However community participation in the fishery is one of the concepts used to characterize the involvement of local communities in the management of natural resources (IUCN, 1991)

### Specific objectives of the study

- (1) To examine community involvement in fish harvesting, their benefits and problems.
- (2) Examine the fisher's perception towards the fishery and fisheries regulations.
- (3) Examine the movement of fishers into and out of the fishery

### Methodology

This study was conducted on 25 landing beaches covering eight districts bordering Lake Victoria from August to November 2000. Data was collected using an open-ended survey questionnaire on fish production, Group discussion; personal interviews were also carried out.

A stratified random sampling method was used to select beaches for field survey. The beaches were categorized into small, medium, and large size based on the number of boats registered on that beach.

Small beaches had 1-25 boats; medium beaches 26-50 boats and large beaches had more than 51 boats.

Random sampling method was used to select respondents for the interview.

A total of 229 fishers were successfully interviewed

Data was analyzed using Excel package.

### Results and discussions

#### Characteristics of fishers of Lake Victoria

In Lake Victoria, fish production is dominated by few ethnic groups of fishers of which the Luo people constitute a great majority 64%. The other groups involved in the fish harvesting were the Subas 27%, Luyhas 7% and other tribes (Somalis and Machitas from Tanzania) 2%.

IIRR (1998) defined the fishing community as an association of people living in a given area or sharing some general commonality in addition to geographic proximity.

A survey conducted by (SEDA WOG II, 1999) indicated that fishers were dominantly male and most of them were in the age range of 21-45 years. This study also confirms that out of 229 fishers interviewed, 98% were male and 2% females with an average age of 35 years and modal age of 25 years. The majority 69% was between age brackets 21-40 years, 20% were 41-60 years, and 6% were 61-80 years while those in the 1-20 years bracket formed 5% of the population.

However the females either owned a boat, gear or lamp and other items of wealth but were not involved in off-shore fishing activities except beach seining. Analysis made on the marital status of fishers indicates that majority of them had children ranging between 1-18 years with an average of 4 children per family and dependants ranging between 1-30 people with an average of 7 people per family who were either orphans, widows or single parents. This also confirms the study by (SEDAWOG II, 1999).

On education results show that 52.9% of fishers had attained primary level of education, 42.0% secondary level, 0.8% tertiary and 0.4% university education level. (SEDAWOG II, 1999) indicated two-thirds having at most primary level of education.

Results on marital status involved in fish harvesting activity indicates that 90.3% of fishers were married, 8.3% were single, 1.0% were widowed while 0.4% were divorced.

Although most fishers depended on fish harvesting activities, they were involved in other income-earning activities like farming, retailing and food kiosk industry.

#### Entry of fishing community into the fishery

According to (Abila, 2000) the term fishermen usually refers to all the people involved in any aspect of fish harvesting. Fishermen are usually categorized into distinct groups depending on property ownership or the actual role they play in the fishing activity. The first category is the boat and gear owners who often do not participate in the actual fishing activity but leases out their boat and gears.

The second category is the fishing crew who are the hand man (jotich) in the fishing boat. Within the crew is a boat operator who directs the boat in water and its operations. In the fishing activity, there is also a boat manager who may or may not be part of a fishing operation, but who is always responsible for selling fish and paying crewmembers.

Results from this study show that 70% of fishers had been in the fishery for a period of 1-10 years showing that young entrants have joined the fishery, while older people who have been in the fishery for over 22 years decreased to 11%, 19% have been in fishery for 11-21 years.

The rapid increase in fishermen and equipment in the lake is mainly caused by the rapid growing population with few means of earning income. Many people who are not fishermen by heritage and tradition have turned to fishing as a last resort to earn a living. This is largely due to the recent retrenchment in the government and private sectors in 1999 after which many people had moved into fishery.

The other main reason why the number of fishers is growing from time to time is the easy entry to the fishing occupation. There is always an opportunity or

guarantee to get a job by those desperately in need of money. The high rate of entry into the fishery has also persisted to date largely due to low prospects of employment in other sectors of the economy.

The result indicate that 56% of the fishers were introduced into fishing activities by either their family members or relatives, 18% perceived that most boys living in the lake region, regardless of their social background, have some knowledge about the work on the lake since they come from a fishing community, 18% were also influenced by their age mates, while 8% were introduced through other means e.g. crew in a boat

When asked why they joined fishing activities 93.1% joined fishing because they lacked employment elsewhere, 6.5% joined to look for school fees, while 0.4% joined because fishing was a family occupation.

In joining fishing activity, 59% of the fishers experienced many difficulties due to lack of starting capital to buy expensive gears and equipment for fishing, 25% indicated that the skills required in fishing was not easy to acquire, 8% felt there was insecurity in the lake due to strong currents and changing weather conditions. 5% indicated cultural hindrances restricting women from fishing in the lake, while 2% indicated strict laws and regulations imposed on fishers.

On entering the fishery fishermen had several ways of acquiring starting capital. 26% raised starting capital from their family members or relatives, while 40% acquired capital after working as laborer or crewmember on someone's boat (Figure 1).

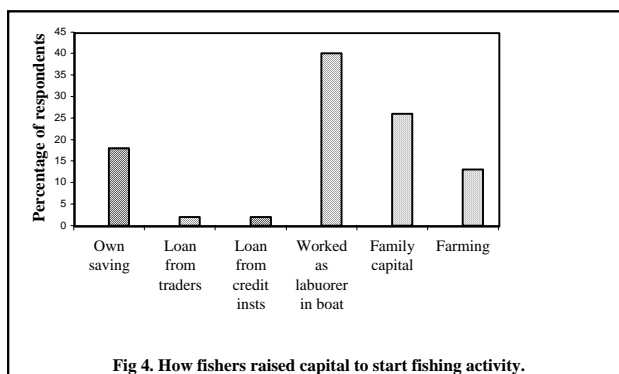


Figure 1: How fishers raised capital to start fishing activity.

### Job satisfaction and fishing operations

81% of fishermen were involved in fishing activities on full-time basis. This group is mostly married with constant demands from their families or dependants and can stay away from their homes for a long time. They usually own boats and gears. Those who work on part-time or on seasonal basis constitute a great portion of them and are only engaged on fishing during certain seasons of the year and are sometimes established agriculturalists working on the lake on a seasonal basis.

The length of time these groups are engaged in fishing activities varies from group to group due to depletion of inshore stocks where fish harvesting has now moved offshore.

Fishermen carry out their activities on different days of the month and for different periods during fishing the majority of them operated or fished for 21-30 days in a month and rested for 4 days in a month to attend church 82%. 16% of fishers operated between 11-20 days, while the minority 2% operated between 1-10 days a month.

These results show that for proper sustainability, fishers have to work for many days in a month while the other scenario indicates that to catch more fish fishers have to spend more time in fishing thus working for many days and spending more hours in fishing. On a fishing trip 55% fishermen took between 9-16 hours, 38% took between 1-8 hours and 7% took 17-24 hours.

According to (SEDAWOG II, 1999) and Wakwabi *et al.*, (2003), fishermen faced a number of critical limitations in their fishing occupation. Among these problems, were irregular and often low incomes from fish, lack of cold storage facilities for their fish and inability to organize themselves and improve their bargaining power, lack of information on saving options, poor business management skills and inadequate saving facilities. 72% of fishers felt they are not able to do their fishing activities effectively. The main reasons were due to decline in fish catches or fish scarcity in the lake 25%, 24% indicated the problem of gear limitations whereby fishers were not able to catch any fish using recommended gears apart from illegal ones (Figure 2).

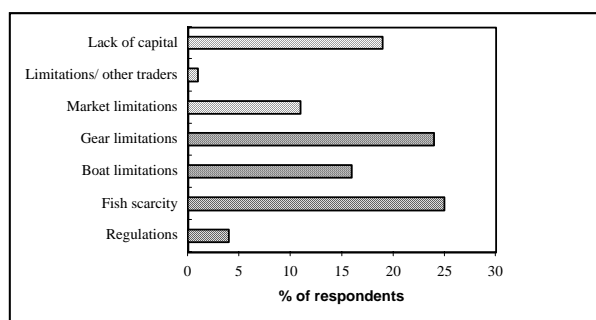


Figure 2: Most limiting factors affecting fishers.

Somehow the processors control prices at the beaches and the islands

### Market of fish and source of credit facilities

Fishers sampled targeted all commercial fish species available in the lake with few indigenous fish species that are cherished by the local communities. Majority of fishers sold their fish to resident landing site traders and processors who sell fresh or process fish and sell to buyers from inland markets 36%, while 17% sold to factory agents with trucks and 18% sold to consumers on the beach.

Marketing channels of commercial fish species have expanded to export market and this has resulted to unemployment for artisanal fishermen now because fish processing factories send their people to go fishing in the Lake or they buy fish directly from the Lake.

The study indicates that over the period 1997-1999, 93% of fishers had not obtained any credit facilities for their fishing activities; remaining 7% got credit facilities from Agricultural finance cooperation (AFC), Merry-go-round commercial banks and relatives. Fishers normally do not qualify for credit facilities due to their migratory tendencies and lack of saving culture.

### **New technology used**

Uses of spears, baited traps, baskets and barrier traps were earlier traditional fishing technologies used (Dobbs, 1927). Other gears in order of use are:

- Flax gillnets were introduced in lake Victoria in 1905 (Dobbs, 1927)
- Nylon gillnets stronger and easier to apply were introduced in mid 1950s (Geheb, 1997).
- Modern fishing hooks started at the end of second world war (Mbuga et al.,; 2000)
- Beach seines came into use in late 1940 (Geheb, 1997)
- Mosquito nets were introduced in the lake in 1950s.
- Attraction lamps were introduced in late 1960 (Okedi, 1981).
- 6,369 crafts still use paddles in Kenyan part of the Lake Victoria (Asila, 2000)
- 3,031 sail-propelled fishing crafts are used in Kenyan part of the Lake (Asila 2001).

However, 86% of the fishermen indicated that over the period 1997-1999, they had not adopted any new methods of harvesting fish and catch preservation. Those who used new methods used paddle propelled and sail propelled crafts with few motorized boats. On methods of improving fish quality and better preserving methods, 49% fishers felt that they needed out board engines to conduct fishing activities effectively in the open lake, 22% needed modern boats and more efficient gears, 21% wanted to use only ice in preserving their catch, 7% preferred to use refrigerated trucks, but 1% would not want to use any new methods that is preferred.

### **Wealth status of fishers of Lake Victoria:**

This survey had also sought to understand what individual fisherman within the fishing communities has owned i.e. assets, other investments and status of their wealth. After money is got from fish sales certain money is provided for replacement of old gears, meeting food expenses, clothes, domestic

expenses, and school fees, much of the remaining money was invested in buying animals.

Among the fishers interviewed, 60% owned about 1-5 boats, while the rest worked as crewmembers or boat managers.

Results indicate that out of 229 fishers sampled 56 fishers were landless, 29 had cattle, while 41 had no goats.

An analysis made on the wealth status of fishermen indicated that fishers around the lake owned several assets and items of wealth. Majority of them owned a house with an average cost of Ksh.15, 889, some owned a piece of land with an average price of Ksh.29, 085 an acre, a few owned a motor vehicle costing about Ksh.673, 000 and bicycles costing Ksh.4, 512 each, some owned cattle costing Ksh.8, 494 each, others owned goats costing Ksh.2, 080 each and radios worth 5,462 each.

From observation made apart from these investments the standard of living for the fisher communities is very low, most houses owned were either grass thatched, or semi-permanent and a significant proportion were landless as only 53 owned land.

### **Earnings from the fishery and remuneration systems**

Earnings's accruing from the fishery differs substantially between beaches, for different fishermen, the number of boats and gears owned, on various days and for different fish species. Thus fishermen incomes may have wide ranges within the year.

Results show that in a good week fishermen earned approximately Ksh. 7,750. In a bad week they earned Ksh. 1,822 a week.

In 1999 (SEDAWOG II, 1999) estimated that the average boat owner earned in the range of US \$ 65-305 per month in Lake Victoria (Kenya sector) with an average annual net income of US \$ 2,240 (Ksh. 168,000).

In the course of carrying out their activities, fishers also employ labourers who earn monthly salaries or wages on daily or weekly basis. Those labourers with no nets earned approximately Kshs. 702 per week, while those who owned fishing nets earned Ksh. 1,740. Family helpers working on the boat earned an average wage of Ksh. 935 per week, while temporary workers who relieve these crewmembers on safari or during holidays earned Ksh. 417 per week.

On remuneration systems around Lake Victoria (Abila, 2002; Odongkara, 2003) indicated boat owners remunerate fishing crew using one of the main methods where the boat owner takes 50% of the income from fish sales, and the crewmember share out the remaining half amongst themselves. But this study also reveals that fishers have several ways of sharing catch or remuneration, which these

methods vary from place to place with the kind of fishery.

The most common form of remuneration system used was percentage share of the proceeds after deducting expenses with 75% fishers using it.

Another method was boat owner to retain all the catch proceeds for six days while the crew took all the proceeds for the seventh day 12%, boat owner pays crews daily, weekly or monthly wage 7%, crew to take a percentage share of daily catch value and also receive a wage at the end of the month 4%, boat owner receives a higher percentage share of catch value on some days and crew take the higher percentage on the remaining days of the week 2%.

### Fisher's perception on the future of fishery

The increased participation in the fishing industry does not necessarily mean that the fishermen are satisfied with the economic returns from their work, the enlarged number of people getting their income from the lake is rather a reflection of the fact that more and more are entering fishery; there are few or no alternative to fishing as a means of making a living. Some of the boat or gear owners can be people who are relatively well off, but the majority are poor. This is because of the remuneration system, which ensures that the crews earn the least from the fishery as compared to the boat owners or renters.

52% of the fishers sampled had a positive perception on the future of their fishing activity, while 42% had a negative perception (Figure 3).

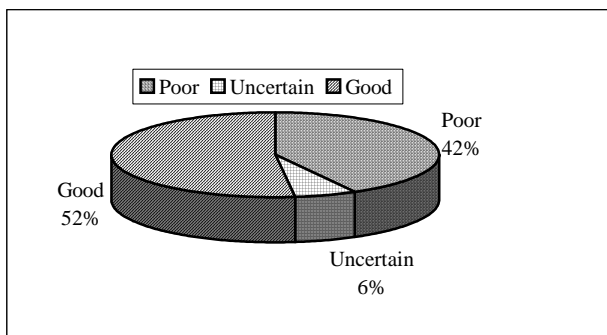


Figure 3: Fisher's perception on the fishery.

Those who indicated a positive perception based their perceptions on factors of receiving more or higher earnings in the future 61%, reliability of fishery 21%, 10% indicated job security in the fishery, 7% gave other factors and felt that there will be proper lake management and increase of fish stock in future while 1% based their perception on dignity whereby fishers will be recognized and respected.

Fishers also had negative attitude towards the future of the fishery. 32% felt that there was no job security in fish harvesting activity, 37% felt that fishing can not be relied on, 8% indicated that due to continuous depletion of fish resource, there will be low earning from the lake, 2% felt that fishing lowers ones

dignity, while 22% felt that the future of fishery will be more corrupt than today.

Those who had uncertain perception of the fishery felt that the future of fishing activities depended on the will of God and seasons and nobody can tell the future.

Majority of fishers could not want to quit their fish activities, 83% found it impossible to quit fishing because they lacked alternative activities to sustain them, 8% mentioned that fishing was a family occupation and their only livelihood so they cant do without it, 8% also indicated that fishing was their only source of income, while 1% felt that their fishing equipment were not easy to dispose off.

### Movement of people out of the fishery

Fishers listed several conditions that can make them quit fishing activity. The common condition that can make a fisher to desert fishing was sickness or death 43%, 27% could quit fishing if all the nets were stolen, 16% indicated that the time when all the fish is finished, while 14% could quit if they get a better job elsewhere.

Fishers also gave several reasons as to why they would want to quit fishing activities. 31% could quit due to fish decline in the lake, 17% cited theft of gears and fishing equipments, 16% cited lack of capital or market for their fish, 11% indicated sickness while 2% cited the problems of trawlers destroying their nets.

Fishermen of Lake Victoria have no retirement age limit but majority of them revealed that they don't have to retire from fishing until one is dead 69%, while 31% indicated that their retirement age was after attaining the age of 60 years.

Figure 3 shows the strategies the fishers would take when the fishery declines. Majority indicated that if the fishery was declining, they could be forced to increase the fishing effort, while others would change to farming activities (Figure 4).

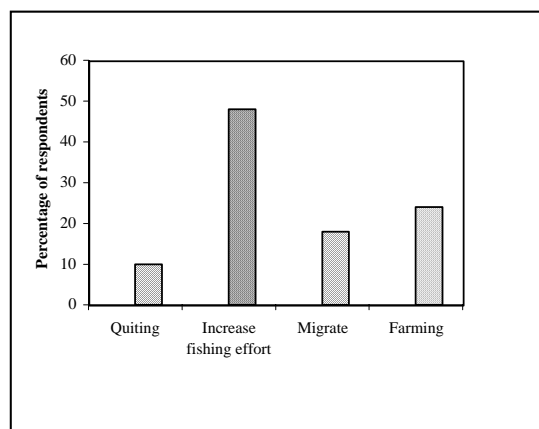


Figure 4: The strategies fishers would take when the fishery declines.

The study further indicates that fishers have no other complementary activities to supplement fishing, but

if they would wish to move, they would most readily move into farming activities or trade in agricultural produce. The high level of dependence of lakeside communities on fishing activities reflects this.

### Fisheries management initiatives (Laws and regulations)

The fish resource in Lake Victoria is declining due to use of illegal gears, retrogressive fishing methods and environmental degradation. For the purpose of co-management, this study was meant to investigate whether fishing communities are aware of fishing laws and regulations and their overall perception of fishery potential in the future.

The Fisheries Departments of the three riparian states collected statistics on the catch and adopted different types of regulations in order to control fishing effort. The government had however, very limited possibilities to enforce these regulations. Although there in principle this has been an open access to the fishery, local fishing communities have all through this century developed rules that regulate the fisheries (Ogutu, 1992, and 1994). These rules stipulate clearly who may fish, in what season, in what area, what type of fishing gear that is acceptable and type or size of fish can be caught.

Institutions had been developed in the local communities to enforce these regulations. The rules and nature of enforcement institutions varied from one area to another and they also changed over time. In some places these rules were detailed, explicitly expressed and well known in the community. In other areas the rules were be vaguer, covered less issues related to the fishing effort and were not generally recognized in the community. This system of local management has been threatened with the introduction of commercial fishing. The operations of the trawlers fishing in the lake had little knowledge of these rules or felt free to disregard them.

Results of this study indicate that 90% of the fishermen sampled had some knowledge of most of the fisheries laws and regulations.

The most common regulation cited by the fishers were restriction on harvesting juvenile fish and fish size restrictions whereby fish less than 1 kg is restricted in case of Nile perch species 26%, gear type and size restrictions e.g. beach seines, gillnets, mosquito seines forming 26%, 24% were aware of fishing methods regulations restricting use of pesticide in catching fish, boat size requirement regulations 12%, 7% mentioned regulation on fishing time/closed seasons where fishing is only in certain months of the year, 13% indicated boat and fisher licensing regulations but other areas mentioned was not fishing on fish breeding grounds at shallow water and river mouths, children are not allowed to fish, drunkenness is prohibited at the beach or the lake.

### Threats and risks associated with fishing activity

In the course of carrying out fish harvesting activities fishers experience a lot of risks, uncertainties and threats. The most common threat was theft of fishing gears and other equipments followed by drowning and attack by wild animals e.g. crocodile's, hippos and snakes (Figure 5).

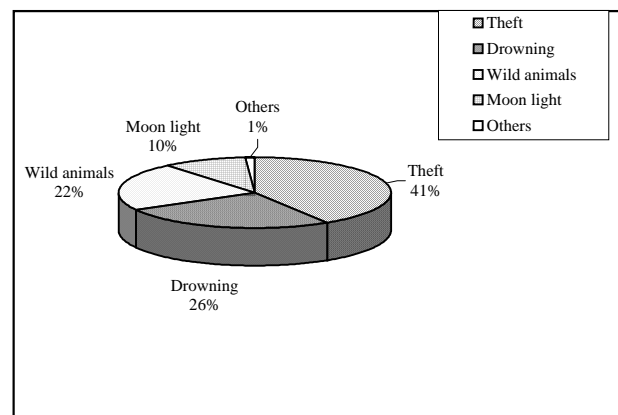


Figure 5: Common threats facing the fishing communities around the lake.

The occurrence of the moonlight lead to the reduction of catches of certain species e.g. Omena, which can be harvested in plenty during dark nights using pressure lamps to attract them. Due to these threats fishers suggested several methods to curb them. The majority suggested their beaches to have a patrol boat to safeguard theft of gears and equipments 46%, 30% indicated the use of life jackets every time they are fishing to prevent them from drowning, 16% suggested other safeguards in case of animals by either chasing animals from the fishing grounds or to confine them to national parks, 5% did not propose any safe guard, but 3% suggested day time fishing only.

Fishers also experience other risks and uncertainties where 35% of them indicated the unpredictable markets for fish, they were not sure who to buy their fish and on what prices, 44% indicated heavy rains during rainy seasons, 12% were stricken by lightening in the lake, 7% experienced a lot of floods and 2% mentioned other risks like strong currents in the lake and frequent raids at the boarder beaches.

To safeguard these risks and uncertainties, 48% suggested the wearing or covering themselves with black polythene paper during heavy rains, 40% suggested the provision of cold storage and transport facilities at the beach, fish prices control at the beaches, wearing of protective rubber shoes, provision of tents on the boats, broadcasting fish prices on the radio, insurance cover for fishermen incase they drown and die in the lake, incase of lightening they should provide a provision of lightening arresters at the landings ,but 12% did not suggest any safeguard.

## Conclusions

Most fishers have no alternative occupation apart from fishing.

Lack of resources, financial and physical remains the main handicap to their fishing activities.

Men dominate the harvesting sector while women either own fishing gears and equipments.

Poverty amongst the fishing community is apparent from the small-scale nature of their fishing activities and trade.

Nile-perch fishery has changed the size of vessel and gear where those targeting the fish cannot afford expensive nets, bigger boats or outboard engine.

Although a number of fishers work on full-time basis, they have limited or no influence on the levels of benefits they receive from their activities.

Educational levels are low indicating high illiteracy and poor standards of living.

If the fishery declined fishers perceived to take other strategies by increasing the fishing efforts or changing to agricultural activities to earn a living.

Fisher folk have some knowledge on fisheries management laws and regulations used to manage the Lake.

Major threats facing fishers were theft of gears, drowning in the lake, attacked by wild animals and lightning

## Recommendations:

- The concerns over the future of the fishery should be captured to make fishers realize the need to conserve the resource.
- Predictions of weather to avoid risky weather.
- Enforce safety of fishing vessels

## Acknowledgements

I wish to acknowledge the World Bank, through LVEMP, who funded the study

My sincere gratitude goes to all communities I visited during the survey whose help and cooperation enabled the collection of data during this study.

I would also like to extend my appreciation to the Deputy Director KMFRI who facilitated data collection. Last but not least I would like to thank KMFRI staff Edward Waiyaki, Martin Araka, Pamela Olela, for assisting with the collection of the data.

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