IFMP Socio-economics Series 4

MONITORING OF ADOPTION AND SOCIO-ECONOMIC IMPACTS OF FISHERIES MANAGEMENT MEASURES ON LAKE VICTORIA, UGANDA



Konstantine Odongkara

Implementation of a Fisheries Management Plan

National Fisheries Resources Research Institute

Jinja, Uganda: July, 2006

Acronyms

BMU	Beach Management Unit
CAS	Catch Assessment Survey
CSO	Civil Society Organisation
EC	European Commission
IFMP	Implementation of Fisheries Management Plan
LTTA	Long Term Technical Assistant
LVEMP	Lake Victoria Environmental management Project
LVFO	Lake Victoria Fisheries Organization
LVFRP	Lake Victoria Fisheries Research Project
MCS	Monitoring, Control and Surveillance
NAFIRRI	National Fisheries Resources Research Institute
NARO	National Agricultural Research Organization
NGOs	Non Governmental Organizations
SPSS	Statistical Package for Social Scientist
WG	Working Group

Acknowledgements

The author would like to acknowledge the support provided by the Director and staff of NAFIRRI during the implementation of the survey.

Special thanks go to the IFMP LTTA Dr. Fiona Nunan and LVFO Senior Economist Mrs Caroline Kirema-Mukasa, to the Socio-economic Research and Monitoring Regional Working Group members, namely Mr. Paul Onyango and Dr. Richard Abila for their contributions in formulating the study.

Appreciation goes to the following persons who made various contributions in data collection, processing and report drafting, namely: Agnes Nasuuna, Michael Kaidhiwa, Edward Balaba, James Ogwal, Christopher Wanobere, Sylvia Ocida, Abubaker Ntambi, Bwambale Mbilingi and Godwin Khisa.

Thanks also go to Steven Mukasa and Charles Mbago, who were the drivers during field data collection.

Special thanks go to the DFR staff, District and Sub-county Fisheries Officers, Assistant Fisheries Officers, BMU Executives and all other fisheries stakeholders for supporting the survey by providing information.

Executive Summary

Purpose

1 The overall objective of the study was to develop a better understanding of how people perceived and responded to the fisheries management measures on Lake Victoria and were affected by them.

Fishers' characteristics

2 The demographic characteristics of the respondents revealed that they were mostly adult males, with mean age of 31.4 years, the majority being of the Baganda Tribe, followed by Samia and Basoga and were married. Most had attained incomplete Primary education levels and were engaged in fisheries as crew members.

Fish production activities

3 On average, the respondents had been involved in fishery activities for 8.63 years. The most common fish species targeted were Nile Perch (*Lates niloticus*) (42.1%), followed by Tilapia (*Oreochromis niloticus*) and mukene (*Rastrineobola argentea*).

4 The most commonly used gear types were gillnets (71.8%), followed by hooks. The gillnet sizes most commonly used were of 5 inch, followed by other sizes less than 5 inch"

5 Among those who used hooks, the majority (30.4%) used hook size 9, followed by size 12. Haplochromis (nkejje) was the most commonly used bait (63.4%), followed by *Xenoclarias* (nsonzi).

6 Most respondents were satisfied with the required minimum mesh-size of 5 inch (127 mm) for nets on Lake Victoria because in their view, it caught mostly mature fish. Others, however, said 5 inch mesh was too large to catch the fish now available in the lake.

7 The view of most respondents (82.2%) about the Nile perch catch trends over the past 5 years was that it was declining. Most (62.9%) attributed this to fishing regulations not being obeyed followed by too many fishers, boats and nets on the lake. Similarly, tilapia catch trend was viewed as declining (80.4%), attributed to fishing regulations not being obeyed (63.4%).

Level of awareness of management measures

8 The majority of the respondents were generally aware of the different fisheries management measures in place on Lake Victoria. They had received the information from

fisheries staff and local beach leaders. The management measures selected were the following:

9 Catching Nile perch of less than 50cm is prohibited	10 Use of beach seines is prohibited
11 Catching tilapia less than 25cm is prohibited	12 Using cast netting is prohibited (tupa tupa)
13 Using gillnets of less than 5" is prohibited	14 Beating water (tycooning) is prohibited
15 Using fish poison is prohibited	16 Basket trapping is prohibited
17 Using unlicensed boat is prohibited	18 Using monofilament nets is prohibited
19 Fishing without license is prohibited	20

21 An inter-agency approach had been deployed in the implementation of the measures, involving BMUs, Fisheries Officers, the Police and sometimes the UPDF. However, respondents regarded BMUs as the most effective of the organs in enforcing the regulations.

22 Majority of the respondents reported that they complied with the different measures/regulations. However, some did not, reportedly because they could not afford the required gears, and the low catches associated with complying with the regulations.

23 The major bottlenecks regarding the implementation of fisheries management measures were lack of resources to adjust to the regulations and lack of knowledge of some of them.

Effects of management measures on aspects of activities

24 The survey revealed that the different management measures affected different aspects of the fishers' activities. Notably, the prohibition of catching Nile perch of less than 50 cm was reported to have resulted in increased fish catches, higher fish prices as well as sales but also led to increased investment and operational costs required.

The effect of management measures on processing and trading activities

25 The effects of the different management measures on the activities of artisanal fish processors and traders were examined. It was reported that prohibition of

trading/processing Nile perch of less than 50cm resulted in increased fish prices, higher investment and operational costs to the operators and decreased fish sales.

26 Prohibition of processing/trading without a license was, however, considered to have no effects on fish prices, investment and operating costs and fish sales.

Enforcement of management measures

27 BMUs, fisheries staff and the Police have been actively involved in the enforcement of the fisheries management measures. Assessments of these enforcement agents were made. Fisheries Officers were considered to have high knowledge of the fisheries field (92.0%) followed by BMUs (82.1%), with the UPDF considered to have little knowledge of fisheries.

28 With respect to capacity to enforce the regulations, however, fisheries staff and the UPDF were the most equipped agents.

Hindrances to implementation of the fisheries management measures

29 The success of the fisheries management measures would depend on the co-operation and support of the different groups of people concerned. The survey sought to establish if any categories of people were in any way hindering the success of the measures.

30 Most respondents ranked the gear dealers (55.6%), fish processing factories (50.8%), fish traders (44.5%) and crew members (34.8%) among the high hinderers of fisheries management measures

How operators responded to and coped with management measures

31 In response to the management measures, many fishers have had to buy the approved fishing gears, particularly gillnets of 5" and above, but some were unable to do so due to the high costs involved. Fish processors and traders also had to switch to processing and trading recommended sizes of fish.

Effect of management measures on the stakeholder groups

32 As a result of the fisheries management measures, many fishers lost boats and gears that did not meet the requirements of the regulations while processors and traders suffered loss of capital as their fish was confiscated and destroyed.

33 Some fishers reported that the use of the recommended gears had reduced their catches greatly, which affected their incomes and food security. Traders reported fall in the

quantities of fish handled, thus decline in incomes earned. Furthermore, increases in investment and operational costs were reported by fishers, processors and traders.

Functioning of BMUs

34 Among the activities performed continuously by BMUs were resolving disputes (45.3%), receiving visitors at the beach (43.3%) and collecting revenues (41.9%). Patrolling fishing ground was a weekly activity (23.2%) while conducting meetings was a monthly activity. Prosecuting offenders was considered by the majority as not being done by the BMUs.

35 The BMU activities rated as being highly performance were resolving conflicts (41.7%) and formulating by-laws. Patrolling fishing grounds (39.0%) and confiscating bad gears (33.0%) were activities rated low.

36 In order to ensure adoption of the fisheries management measures, fishers recommended effective lake wide enforcement of measures (27.3%) and effective sensitization of fishers (25.4%). Other suggestions like changing regulations, controlling production and/or importation of illegal gears or effective prosecution of offenders received little support from the stakeholders.

Statements from the Management FGDs

37 Some of the actions taken by Government that were visible to the groups included: instituting management measure alongside the co-management approach to help govern the fisheries resources; sensitization of the fisheries stakeholders about management measure, the fisheries and its importance; Monitoring Control and Surveillance (MCS); establishment of fish markets and provision of sanitation and physical infrastructure.

38 Actions by Government which were considered not right included: deployment of Maritime Police who were not knowledgeable about the fisheries regulations and were not familiar with the fisher men; duplication of duties amongst the different enforcement bodies within the co-management approach which has led to corruption tendencies, discrimination when it comes to arresting and prosecuting offenders.

39 The groups believed that management measures increased awareness of fisheries related issues, boosted adoption of recommended gears and dealing in recommended size of fish.

40 Destruction of illegal gears was reported to be costly, working hours have been reduced and consequently low catches. They have enabled corruption tendencies, sparked of conflicts between the fishers and law enforcers and also forced people out of the fisheries business.

41 When illegal gears are confiscated, fishers resorted to buying recommended gears and boats, trading in recommended fish sizes. Others offered bribes in return for their gears whereas others gave up fishing activities after being prosecuted. Those who could not adopt legal methods left for other landing sites where there were limited management procedures.

42 Concerning what the roles of communities should be in enforcement, groups reported that they should support and provide ideas and information for improved fisheries management at landing sites and sensitize fellow stakeholders on the benefits of protecting water resources.

43 As to why people caught and sold undersized fish, groups reported that it was because of poverty in the fisheries, coupled with lack of alternative job opportunities among fishers.

Recommendations:

44 Implementation of fisheries management measures should involve greater sensitization of fishers, processors and traders on the different measures.

45 Enforcement of management measures should be extended to other points outside the landing sites like processing factories and markets where fish is sold.

46 Effective harmonization of lake-wide implementation of management measures should be strengthened, through holistic and integrated management strategies.

47 The capacity of BMUs should be strengthened to ensure that they effectively contribute towards the implementation of management measures.

48 Government should ensure that the Monitoring, Control and Surveillance (MCS) teams are made up of officers who have a background in fisheries and these should be appointed on a regional basis. The regional MCS teams would then link up to effectively manage the whole fisheries.

49 Strategies should be put in place to mitigate the negative impacts of fisheries management measures on the fishers, processors, traders and consumers.

Table of Contents

	Page
Executive Summary	iii
1. OVERVIEW OF RESEARCH	1
1.1.Introduction/Background:	1
1.2.Objectives of the study:	1
1.3.Justification:	1
1.4.Expected outputs:	2
1.5.Methodology:	2
1.6.Data analysis:	3
2. RESULTS AND DISCUSSIONS:	4
2.1.Fishers' characteristics:	4
2.2.Fish production:	6
2.3.Level of awareness:	10
2.4.Effects of management measures on aspects of activities	13
2.5. Effects of management measures on processing and trading activities	16
2.6. Enforcement of management measures	17
2.7.Hindrances to implementation of the fisheries management measures	19
2.8.How people responded to and coped with the measures:	19
2.9.Effect of management measures on the stakeholder groups:	20
2.10. Functions of BMUs	20
3. Results and Discussion synthesis of Focus Group Discussions	23
4.CONCLUSIONS AND RECOMMENDATIONS	41
4.1.Conclusion:	41
4.2.Recommendations:	43
5.References	44
Appendix 1: Fishers' Questionnaire	45
Appendix 2: Processors/Traders Questionnaire	51
Appendix 3. Topic Guide for the Focus Group Discussions	55

List of Tables

	Page
Table 1: Sample size by landing site and District	2
Table 2: Age of respondents	4
Table 3: Sex of respondents	4
Table 4: Tribes of the respondents	4
Table 5: : Marital status of respondents	5
Table 6: Respondents' levels of education	5
Table 7: Categories of respondents	5
Table 8: Respondents' years in fish production	6
Table 9: Species respondents fished	6
Table 10: Types of fishing gear respondents used	6
Table 11: Mesh sizes of nets respondents used	7
Table 12: Sizes of hooks respondents used	7
Table 13: Type of bait respondents used most	8
Table 14: Respondents satisfied with the minimum net mesh size of 5 inch	8
Table 15: : Reason for accepting the minimum mesh size	8
Table 16: Reason for not accepting the recommended minimum mesh-size	8
Table 17: Respondents' views on the Nile Perch catch trends over the past 5 years	9
Table 18: Reasons for the decline in Nile Perch catches	9
Table 19: Respondents' views on the Tilapia catch trends	9
Table 20: Reasons for the decline in tilapia catch	9
Table 21: Respondents who were aware of the regulations	10
Table 22: From whom the respondents knew the regulations	10
Table 23: Who the respondents thought enforced the regulations	11
Table 24: Whether respondents complied with the regulations	12
Table 25: Why others did not comply with regulations	12
Table 26: Major bottlenecks in implementation of the fisheries management measures	13
Table 27: effect of prohibition of catching Nile Perch of less than 50cm	13
Table 28: effect of prohibition of catching tilapia of less than 25cm	14
Table 29: Effect of prohibition of using gillnets of less than 5"	14
Table 30: Effect of prohibition of using poison for fishing	14
Table 31 Effects of instituting licenses on boats	14
Table 32: Effect of prohibition of fishing without a license	15
Table 33:. Effect of prohibition of use of beach seines.	15

Table 34: Effect of prohibition of use of cast netting 15
Table 35: Effect of prohibition of "tycooning 15
Table 36: Effect of prohibition of basket trapping 16
Table 37: Effect of prohibition of use of monofilament 16
Table 38: Effect of prohibition of processing/ trading Nile perch of less than 50cm 16
Table 39: Effect of prohibition of processing/ trading Tilapia of less than 25cm 17
Table 40: ffect of prohibition of processing/ trading poisoned fish: 17
Table 41: Effect of prohibition of processing/ trading without a license 17
Table 42: Assessment of enforcing agents with respect to knowledge of field 18
Table 43: Assessment of enforcing agents with respect to capacity 18
Table 44: Assessment of enforcing agents with respect to transparency 18
Table 45: Assessment of enforcing agents with respect to co-operation with fishers 19
Table 46: Ranking of groups according to level of hindering implementation of fisheries management measures 19
Table 47: Frequency of functions by BMUs 20
Table 48: Performance rating of BMUs 21
Table 49: Measures to ensure adoption of management measures 22
Table 50: Why fisheries of Lake Victoria need to be managed 24
Table 51: Actions taken by the Government 25
Table 52: Government actions that are right 26
Table 53: Government actions that are not right 28
Table 54: How the measures have affected fishers 29
Table 55: What fishers have done in response to the measures 30
Table 56:What happens when a patrol boat comes to the landing site 32
Table 57: How the Fisheries and Police officers behave during patrols 33
Table 58: Whether some of the people around had their gears confiscated 34
Table 59: What fishers did after their gears had been confiscated 35
Table 60: What the role of communities should be in enforcement 36
Table 61: What can be done to encourage people to use legal gears and methods 37
Table 62: Why people catch and sell undersized fish 39
Table 63: What fishers think is wrong with catching undersized fish 40

1. OVERVIEW OF RESEARCH

1.1 Introduction/Background:

The Lake Victoria fishery, on which riparian communities depend, has come under immense pressure over the past decade threatening its sustainability. It is apparent that stocks of important commercial fish species are declining due to increased market demand. Uncontrolled access and the ever-increasing fisher community populations are exerting tremendous pressure on the resource in the absence of effective government oversight.

Fisheries management has been characterized by inefficiencies and inadequacies, which has greatly slowed implementation of the measures aimed at ensuring sustainability of the lake resource.

Consequently, fisheries resources and the many livelihoods they support are threatened by the increasing use of illegal fishing gears and methods, especially when used on fish breeding grounds.

In the absence of effective integrated management measures and technologies, too promote, guide and ensure sustainability, the fishery of lake Victoria is threatened to collapse.

1.2 Objectives of the study:

The overall objective of the study was to develop a better understanding of how people are affected by and respond to fisheries management measures.

The specific objectives of the study were:

1. To assess the level of awareness of and attitudes of people to selected fisheries management measures.
2. To identify how people respond to and cope with the measures.
3. To assess how the different stakeholder groups are affected by the different management measures and the MCS operations.

1.3 Justification:

Implementation of fisheries management measures are geared towards achieving overall goals relating to the impacts on the livelihoods of people who utilize the resources These impacts are intended to be positive but often may also be negative, as spill over effects.

The main benefits of undertaking monitoring studies of adoption and the impacts of management measures are as follows:

i) Adoption studies can help fisheries managers to refocus their management implementation efforts by providing feedback based on fishers' assessments of the measures

ii) Impact studies can be used to assess the usefulness of the measures in achieving the goals for which they are instituted.

iii) Lessons learned from adoption and impact assessments can be used to improve future management strategies and plans.

The study was held to provide information on adoption and the impact of selected management measures on the livelihoods of fishers upon which appropriate management strategies and policy recommendations could be generated.

1.4 Expected outputs:

Information and data from the study is expected to show:

i) Levels of awareness of and attitudes of people to selected fisheries management measures.

ii) Information on how people respond to and cope with the measures.

iii) Assessment of how the different stakeholder groups are affected by the different management measures and the MCS operations.

1.5 Methodology:

The study covered a total of ten (10) districts namely: Busia, Bugiri, Mayuge, Mukono, Kampala, Wakiso, Mpigi, Masaka, Rakai, and Kalagala Districts.

A total of 520 unit questionnaire interviews were held with fishers, fish traders and processors. Twenty two landing sites were visited namely: Majanji/Maduwa, Nalyoba, Busiro, Wakawaka, Lwanika, Bugoto, Nakalanga, Nkombwe, Kamwanyi, Kiziru, Gaba, Mulungo, Bugiri-Kibulwe, Nakabugo, Golo, Katebo-lwazi, Namirembe, Kaziru, Kasensero,, Kyabasimba, Nakatiba and Butambala. The number of respondents at each landing site is given in Table 1.

During the interviews, regulations wee not read out to respondents but they were asked to mention those they were aware of the interviewers ticked against the list of regulations.

Table 1: Sample size by landing site and District

District	Landing site	No. of Respondents
	Mutambala	28
	Ggaba	17
	Mulungo	15
	Busiro	26
	Nkombwe	21
	Kiziru	19

	Lwanika	30
	Nakalanga	33
	Nakabogo	20
	Majanji/Madhwa	20
	Nakatiba	30
	Nalyoba	17
	Kamwanyi	25
	Bugoto	29
	Wakawaka	27
	Kaziru	29
	Namirembe	21
	Kasensero	24
	Kyabasimba	22
	Golo	22
	Katebolwazi	22
	Bugiri-Kasenyi	23
	Total	520

1.6 Data analysis:

The data was entered, processed and analyzed using the statistical software package (SPSS version 11) and the spreadsheet MS Excel. The data processing involved production of summaries, presented as frequencies, percentages and charts. For the numerical data, means, minimums and maximums were computed.

2. RESULTS AND DISCUSSIONS: SAMPLE SURVEYS

This section presents the data and findings mainly from the sample survey undertaken on the study, supplemented with field observations by the research team members and a some Focus Group Discussions notes.

2.1 Fishers' characteristics

The survey examined the characteristics of the respondents interviewed at the landing sites sampled. Majority of the respondents within the various fishery activities were adults, with mean age of 31.4 years (Table 2).

Table 2: Age of respondents

N	Minimum	Maximum	Mean	Std. Deviation
520	16	65	31.41	8.450

Most of the respondents were males (93.5%), as shown by Table 3. The low proportion of females reflects the limited participation of women in fisheries activities.

Table 3: Sex of respondents

	Frequency	Percent
Male	486	93.5
Female	34	6.5
Total	520	100.0

The respondents were mostly of the Baganda Tribe, followed by Samia and Basoga (Table 4). The prevalence of many tribes at most of the landing sites sampled could be attributed to the migratory nature of fishers.

Table 4: Tribes of the respondents

Tribe	Frequency	Percent
Baganda	259	49.8
Basoga	54	10.4
Samia	76	14.6
Japadhola	16	3.1
Bakenye	5	1.0
Nyarwanda	24	4.6
Bagwere	10	1.9
Itesot	17	3.3
Others	59	11.3
Total	520	100.0

Considering the marital status of the respondents, most of them were married (80.2%) (Table 5). Married people are often considered more stable, thus better able to respond to fisheries management regulations.

Table 5: Marital status of respondents

	Frequency	Percent
Married	417	80.2%
Single	94	18.1%
Divorced	1	0.2%
Widowed	3	0.6%
Separated	5	1.0%
Total	520	100.0%

The educational levels of respondents were examined. The data indicated that the majority had incomplete Primary education (Table 6). This could be attributed to the poor educational facilities at the landing sites, long distances to schools, low incomes for some fisheries stakeholders and the low demand for education among other fishers, who preferred fishing to going to schools. Such low levels of education could limit the ability of respondents to appreciate some of the intricacies within the fisheries management strategies and regulations.

Table 6: Respondents' levels of education

	Frequency	Percent
No schooling	49	9.4
Incomplete Primary	231	44.4
Complete Primary	101	19.4
Incomplete secondary	115	22.1
Complete Secondary	18	3.5
Tertiary	6	1.2
Total	520	100.0

The respondents interviewed fell in different categories of fisheries primary stakeholders, the majority being crew members (51.7%), followed by boat owners and fish traders (Table 7).

Table 7: Categories of respondents

	Frequency	Percent
Fishing Unit owner	149	28.7
Fishing unit renter	31	6.0
Crew	269	51.7
Fish Trader	65	12.5

Fish Processor	3	.6
Both Trader and Processor	1	.2
Other	2	.4
Total	520	100.0

2.2 Fish production activities

The period that the respondents concerned had been in fishing activities was examined. On average, they had been involved for 8.63 years (Table 8). However, there was a wide range, with some having been involved for as short a period as one year while others for as long as 52 years. Generally, therefore, the respondents had long experience with the fisheries.

Table 8: Respondents' years in fish production

N	Minimum	Maximum	Mean	Std. Deviation
451	1	52	8.63	6.881

The most common fish species targeted by the respondents involved in fishing were Nile Perch (*Lates niloticus*) (42.1%), followed by Tilapia (*Oreochromis niloticus*) and mukene (*Rastrineobola argentea*) (Table 9). Regulations governing exploitation of Nile perch was, therefore, relevant to the majority of the fishers.

Table 9: Species respondents fished

	Frequency	Percent
Nile Perch	190	42.1
Tilapia	174	38.6
Both Nile Perch and Tilapia	70	15.5
Mukene	13	2.9
Other	4	.9
Total	451	100.0

The most commonly used gear types were gillnets (71.8%), followed by hooks (Table 10). Other types of nets used were the monofilaments.

Table 10: Types of fishing gear respondents used

	Frequency	Percent
Gillnets	324	71.8
Cast Nets	13	2.9
Beach seines	1	.2
Hooks	93	20.6

Mosquito Nets	13	2.9
Other	7	1.6
Total	451	100.0

The gillnet sizes most commonly used were of 5 inch only (31.5%), followed by "Less than 5 inch" (Table 11). This indicated a positive response as far as adoption of management measures by fishers was concerned.

Table 11: Mesh sizes of nets respondents used

	Frequency	Percent
Less than 5	64	18.5
5" Only	109	31.5
6" Only	46	13.3
7" Only	11	3.2
5"-7"	86	24.9
Greater 7	30	8.7
Total	346	100.0

Among the respondents who used hooks, the majority (30.4%) used hook size 9, followed by size 12 (Table 12).

Table 12: Sizes of hooks respondents used

Hook Size	Frequency	Percent
4	1	1.1
5	4	4.3
6	3	3.3
7	10	10.9
8	9	9.8
9	28	30.4
10	15	16.3
11	3	3.3
12	19	20.7
Total	92	100.0

The type of bait most used by the respondents was Haplochromis (nkejje) (63.4%), followed by *Xenoclarias* (nsonzi) (Table 13).

Table 13: Type of bait respondents used most

	Frequency	Percent
Happlocromis	27	64.3
Mumyrus	2	4.8
Xenoclarias (Nsonzi)	13	31.0
Total	42	100.0

Respondents were asked if they were satisfied with the required minimum mesh-size of 5 inch (127 mm) for nets on Lake Victoria. The majority reported that they were (84.3%) (Table 14).

Table 14: Respondents satisfied with the minimum net mesh size of 5 inch

	Frequency	Percent
Satisfied	370	84.3
Not satisfied	69	15.7
Total	439	100.0

The reason most frequently given for accepting the minimum mesh-size was that it caught mostly mature fish (81.3%) (Table 15).

Table 15: Reason for accepting the minimum mesh size

	Frequency	Percent
They catch enough fish	35	9.5
Catch fish preferred by factories	23	6.2
They catch mature fish	300	81.3
Other	11	3.0
Total	369	100.0

Respondents who were not satisfied with it said the mesh size was too large to catch the fish now available in Lake Victoria (45.7%) (Table 16).

Table 16: Reason for not accepting the recommended minimum mesh-size

	Frequency	Percent
They catch Immature fish	16	22.9
They are too big to catch the fish available	32	45.7
They are too expensive	11	15.7
Not available on the market	1	1.4
They are frequently stolen	7	10.0
Other	3	4.3
Total	70	100.0

The views of respondents about Nile perch catch trends over the past 5 years were sought. Overwhelmingly, the respondents considered the catch to be declining (82.2%) (Table 17).

Table 17: Respondents' views on the Nile Perch catch trends over the past 5 years

	Frequency	Percent
Catch is declining	278	82.2
Catch is increasing	38	11.2
No change	15	4.4
Not sure	7	2.1
Total	338	100.0

The reason given by most of the respondents for the decline in catch was that fishing regulations were not being obeyed (62.9%), followed by too many fishers, boats and nets on the lake (Table 18).

Table 18: Reasons for the decline in Nile Perch catches

	Frequency	Percent
Too many fishers, boats and nets	60	21.6
Fishing regulations are not obeyed	175	62.9
Environmental change	34	12.2
Other	9	3.2
Total	278	100.0

Views were also sought on the tilapia catch trends. Again, the respondents were of the opinion that the catch was declining (80.4%) (Table 19).

Table 19: Respondents' views on the Tilapia catch trends

	Frequency	Percent
Catch is declining	288	80.4
Catch is increasing	47	13.1
No change	13	3.6
Not sure	10	2.8
Total	358	100.0

The majority (63.4%) considered that the decline in tilapia was attributed to fishing regulations not being obeyed (Table 20).

Table 20: Reasons for the decline in tilapia catch

	Frequency	Percent
Too many fishers, boats	49	17.3

and nets		
Fishing regulations are not obeyed	180	63.4
Environmental change	45	15.8
Other	10	3.5
Total	284	100.0

2.3 Level of awareness of management measures

The survey sought to establish whether the fishers were aware of the key management measures for Lake Victoria. The data revealed that the majority of the respondents were aware of the different fisheries management measures in place (Table 21).

Table 21: Respondents who were aware of the regulations

Regulations	N	Yes	No	Total
Catching Nile perch of less than 50cm is prohibited	410	95.6%	4.4%	100%
Catching tilapia less than 25cm is prohibited	418	94.7%	5.3%	100%
Using gillnets of less than 5" is prohibited	437	98.2%	1.8%	100%
Using fish poison is prohibited	416	100.0%	--	100%
Using unlicensed boat is prohibited	417	98.1%	1.9%	100%
Fishing without license is prohibited	426	93.9%	6.1%	100%
Use of beach seines is prohibited	429	97.4%	2.6%	100%
Using cast netting is prohibited (tupa tupa)	401	96.6%	3.4%	100%
Beating water (tycooning) is prohibited	441	98.2%	1.8%	100%
Basket trapping is prohibited	413	97.1%	2.9%	100%
Use of monofilaments is prohibited	422	97.6%	2.4%	100%

Most of the respondents had received information about the management measures from fisheries staff, followed by local beach leaders (Table 22).

Table 22: From whom the respondents knew the regulations

Regulations	N	Fisheries staff	Beach leaders	Factory agents	Media	Others	Total
Catching Nile perch of less than 50cm is prohibited	391	57.3%	35.8%	1.5%	2.3%	3%	100%
Catching tilapia less than 25cm is prohibited	398	57.0%	37.4%	.8%	2.0%	2.8%	100%
Using gillnets of less than 5" is prohibited	430	58.6%	37.0%	--	1.6%	2.8%	100%

Using fish poison is prohibited	415	56.7%	37.3%	.2%	3.1%	2.6%	100%
Using unlicensed boat is prohibited	409	59.4%	35.0%	.2%	2.9%	2.4%	100%
Fishing without license is prohibited	400	62.3%	32.8%	--	2.5%	2.5%	100%
Use of beach seines is prohibited		59.8%	34.7%	--	3.1%	2.4%	100%
Using cast netting is prohibited (tupa tupa)	418	60.7%	34.3%	--	3.0%	2.0%	100%
Beating water (tycooning) is prohibited	394	60.5%	34.6%	--	1.8%	3.0%	100%
Basket trapping is prohibited	433	59.6%	35.4%	--	2.2%	2.7%	100%
Using monofilament nets is prohibited	401	58.1%	37.1%	--	1.9%	2.9%	100%

An inter-agency approach had been deployed in the implementation of the measures, involving BMUs, Fisheries Officers and Police, among others. However, BMUs were regarded by the respondents as the effective organs in enforcing the regulations (Table 23).

Table 23: Who the respondents thought enforced the regulations

Regulations		BMU only	Fisheries Officer only	Police only	BMU, Fisheries Officer, Police	Other	Total
Catching Nile perch of less than 50cm is prohibited	389	53.0%	13.6%	.3%	32.1%	1.0%	100%
Catching tilapia less than 25cm is prohibited	397	55.4%	12.6%		31.2%	.8%	100%
Using gillnets of less than 5" is prohibited	429	55.0%	12.8%	.2%	30.8%	1.2%	100%
Using fish poison is prohibited	416	52.4%	12.3%	.2%	34.4%	.7%	100%
Using unlicensed boat is prohibited	409	50.6%	14.7%		33.5%	1.2%	100%
Fishing without license is prohibited	400	52.0%	14.5%	.3%	32.5%	.8%	100%
Use of beach seines is prohibited	418	51.7%	12.2%	.2%	34.9%	1.0%	100%
Using cast netting is prohibited (tupa tupa)	394	53.0%	10.9%	.3%	35.0%	.8%	100%
Beating water (tycooning) is prohibited	433	55.4%	10.6%	.5%	32.3%	1.2%	100%
Basket trapping is prohibited	401	58.1%	10.0%	.5%	30.2%	1.2%	100%
Use of monofilaments is prohibited	412	55.3%	11.7%	.5%	31.8%	.7%	100%

Majority of the respondents reported that they complied with the different measures/regulations while only some did not (Table 24).

Table 24: Whether respondents complied with the regulations

Regulations	N	Yes	No	Total
Catching Nile perch of less than 50cm is prohibited	385	91.2%	8.8%	100%
Catching tilapia less than 25cm is prohibited	393	91.9%	8.1%	100%
Using gillnets of less than 5" is prohibited	423	91.5%	8.5%	100%
Using fish poison is prohibited	416	100%	--	100%
Using unlicensed boat is prohibited	409	97.1%	2.9%	100%
Fishing without license is prohibited	400	95.3%	4.7%	100%
Use of beach seines is prohibited	418	97.1%	2.9%	100%
Using cast netting is prohibited (tupa tupa)	393	97.5%	2.5%	100%
Beating water (tycooning) is prohibited	433	97.7%	2.3%	100%
Basket trapping is prohibited	401	97.3%	2.7%	100%
Use of monofilaments prohibited	412	95.6%	4.4%	100%

Those who did not comply with the regulations mostly reported that they could not afford the required gears, followed by the low catches associated with compliance with the regulations (Table 25).

Table 25: Why others did not comply with regulations

Regulations	N	Unable to afford	Theft of gear	Low catches	Readily available	Others	Total
Catching Nile perch of less than 50cm is prohibited	34	23.5%	17.6%	32.4%	--	26.5%	100%
Catching tilapia less than 25cm is prohibited	33	18.2%	24.2%	27.3%	3.0%	27.3%	100%
Using gillnets of less than 5" is prohibited	36	25.0%	16.7%	19.4%	2.8%	36.1%	100%
Using fish poison is prohibited	0	--	--	--	--		--
Using unlicensed boat is prohibited	12	33.3%	--	16.7%	--	50.0%	100%
Fishing without license is prohibited	19	47.4%	--	10.5%	--	42.1%	100%
Use of beach seines is prohibited	12	8.3%	--	16.7%	--	75.0%	100%
Using cast netting is prohibited (tupa tupa)	10	40.0%	10.0%	--	--	50.0%	100%
Beating water (tycooning) is	9	11.1%	--	--	--	88.9%	100%

prohibited							
Basket trapping is prohibited	10	30.0%	30.0%	10.0%	--	30.0%	100%
Use of monofilaments is prohibited	15	40.0%	20.0%	13.3%	--	26.7%	100%

The respondents had varying views about the major problems/bottlenecks regarding the implementation of fisheries management measures. Among them were lack of resources to adjust and lack of knowledge of the regulations (Table 26).

Table 26: Major bottlenecks in implementation of the fisheries management measures

	Frequency	Percent
Lack of Resources to adjust	155	32.4%
Lack of Knowledge of regulations	84	17.5%
Weak enforcement	123	25.7%
Lack of suitable fishing gears	36	7.5%
Corruption	63	13.2%
Others	18	3.8%
Total	479	100.0%

2.4 Effects of management measures on aspects of activities

The survey examined how the different management measures had affected aspects of the fishers' activities. The majority of the respondents reported that prohibition of catching Nile perch of less than 50 cm had resulted in increased fish catches and higher fish prices but also led to increased investment and operational costs required while fish sales also increased (Table 27).

Table 27: effect of prohibition of catching Nile Perch of less than 50cm

	N	Increased	Decreased	No effect	Total
Fish catches	337	35.9%	32.6%	31.5%	100%
Fish Prices	335	63.9%	14.3%	21.8%	100%
Investment costs	325	68.0%	4.9%	27.1%	100%
Operational costs	331	70.1%	6.6%	23.3%	100%
Fish sales	337	41.8%	32.0%	26.1%	100%

The effect of prohibition of catching tilapia of less than 25cm on fish catches was not distinct but it reportedly led to higher fish prices, increased investment and operating costs and marginally higher fish sales (Table 28).

Table 28: effect of prohibition of catching tilapia of less than 25cm

	N	Increased	Decreased	No effect	Total
Fish catches	343	34.7%	35.9%	29.4%	100%
Fish Prices	339	63.1%	14.8%	22.1%	100%
Investment costs	337	64.7%	7.1%	28.2%	100%
Operational costs	337	66.2%	8.9%	24.9%	100%
Fish sales	337	39.2%	34.7%	26.1%	100%

Effect of prohibition of using gillnets of less than less than 5" was reported to lead to lower fish catches but higher fish prices, investment and operating costs and fish sales (Table 29).

Table 29: Effect of prohibition of using gillnets of less than 5"

	N	Increased	Decreased	No effect	Total
Fish catches	379	33.2%	38.0%	28.8%	100%
Fish Prices	375	64.0%	14.0%	22%	100%
Investment costs	367	66.8%	6.0%	27.2%	100%
Operational costs	372	68.3%	7.5%	24.2%	100%
Fish sales	365	43.3%	30.1%	26.6%	100%

Prohibition of using poison for fishing was considered by the majority of respondents to have no effect on the various aspects of the fishers' activities (Table 30).

Table 30: Effect of prohibition of using poison for fishing

	N	Increased	Decreased	No effect	Total
Fish catches	244	22.5%	29.1%	48.4%	100%
Fish Prices	238	41.2%	10.5%	48.3%	100%
Investment costs	232	41.4%	5.6%	53.0%	100%
Operational costs	235	46.8%	4.7%	48.5%	100%
Fish sales	123	31.3%	21.0%	47.6%	100%

Similarly, the majority of respondents did not consider the imposition of license fees on boats to have significant effects on their activities (Table 31).

Table 31 Effects of instituting licenses on boats

	N	Increased	Decreased	No effect	Total
Fish catches	295	20.7%	23.7%	55.6%	100%
Fish Prices	291	40.5%	8.9%	50.5%	100%
Investment costs	284	40.5%	4.9%	54.6%	100%
Operational costs	288	45.5%	4.5%	50.0%	100%
Fish sales	288	26.0%	19.0%	55.0%	100%

Prohibition of fishing without a license was also considered to have to effect on the activities of the fishers (Table 32).

Table 32: Effect of prohibition of fishing without a license

	N	Increased	Decreased	No effect	Total
Fish catches	318	20.1%	26.1%	53.8%	100%
Fish Prices	310	41.6%	10.0%	48.4%	100%
Investment costs	306	43.1%	5.6%	51.3%	100%
Operational costs	306	48.4%	4.6%	47.1%	100%
Fish sales	306	29.7%	19.0%	51.3%	100%

Prohibition of use of beach seines was perceived by the majority to have no effect on fish catches, increase fish prices, increased or no effect on investment costs, increase operating costs and to have no effect on fish sales (Table 33).

Table 33: Effect of prohibition of use of beach seines.

	N	Increased	Decreased	No effect	Total
Fish catches	290	24.5%	32.4%	43.1%	100%
Fish Prices	288	47.9%	16.0%	36.1%	100%
Investment costs	284	45.4%	8.8%	45.8%	100%
Operational costs	283	50.2%	9.2%	40.6%	100%
Fish sales	285	34.4%	24.6%	41.0%	100%

Prohibition of use of cast netting was considered by the majority of respondents to have no effect on fish catches and fish sales but to increase fish prices, investment and operating costs (Table 34).

Table 34: Effect of prohibition of use of cast netting

	N	Increased	Decreased	No effect	Total
Fish catches	267	21.7%	27.0%	51.3%	100%
Fish Prices	266	45.5%	10.5%	44.0%	100%
Investment costs	262	45.0%	3.0%	52.0%	100%
Operational costs	262	48.9%	2.7%	48.5%	100%
Fish sales	265	30.2%	21.5%	48.3%	100%

Prohibition of "tycooning" was regarded by most respondents to have no effect on fish catches, increase fish prices, no effect on investment and operating costs (Table 35)

Table 35: Effect of prohibition of "tycooning"

	N	Increased	Decreased	No effect	Total
Fish catches	285	22.1%	31.9%	46.0%	100%

Fish Prices	282	49.6%	11.7%	38.7%	100%
Investment costs	275	46.2%	6.9%	46.9%	100%
Operational costs	278	49.3%	7.6%	43.2%	100%
Fish sales	279	35.5%	22.2%	42.3%	100%

Prohibition of the basket trapping fishing method was regarded as having no effect on fish catches and fish sales but to increase the prices of fish, investment and operational costs (Table 36).

Table 36: Effect of prohibition of basket trapping

	N	Increased	Decreased	No effect	Total
Fish catches	248	20.6%	28.6%	50.8%	100%
Fish Prices	246	49.2%	10.6%	40.2%	100%
Investment costs	243	49.0%	3.7%	47.3%	100%
Operational costs	242	54.1%	3.7%	42.1%	100%
Fish sales	241	33.6%	20.3%	46.1%	100%

Prohibition of the use of monofilament nets was reported by the majority of respondents to have no effect on fish catches, increase the prices of fish, to increase investment costs but to have no effect on operational costs and fish sales (Table 37).

Table 37: Effect of prohibition of use of monofilament

	N	Increased	Decreased	No effect	Total
Fish catches	263	22.8%	31.6%	45.6%	100%
Fish Prices	261	51.3%	10.7%	38.0%	100%
Investment costs	253	48.2%	4.3%	47.4%	100%
Operational costs	256	35.7%	19.4%	45.0%	100%
Fish sales	258	35.7%	19.4%	45.0%	100%

2.5 The effect of management measures on processing and trading activities

The survey also examined the effects of the different management measures on the activities of artisanal fish processors and traders. The majority of the artisanal fish processor/trader respondents reported that prohibition of trading/processing Nile perch of less than 50cm could result in increased fish prices, higher investment and operational costs to the operators and decreased fish sales (Table 38).

Table 38: Effect of prohibition of processing/trading Nile perch of less than 50cm

	N	Increased	Decreased	No effect	Total
Fish Prices	56	56.9%	17.9%	23.2%	100%
Investment costs	54	53.7%	14.8%	31.5%	100%

Operational costs	55	61.8%	14.5%	23.6%	100%
Fish sales	54	37.0%	38.9%	24.1%	100%

Prohibition of trading/processing tilapia of less than 25cm was considered by the majority to lead to increased fish prices, higher investment and operating costs and greater fish sales (Table 39).

Table 39: Effect of prohibition of processing/trading Tilapia of less than 25cm

	N	Increased	Decreased	No effect	Total
Fish Prices	51	62.7%	7.8%	29.4%	100%
Investment costs	47	53.2%	8.5%	38.3%	100%
Operational costs	48	58.3%	10.4%	31.3%	100%
Fish sales	45	37.8%	33.3%	28.9%	100%

Prohibition of processing/trading in poisoned fish was regarded by the majority of the respondents to have no effects on fish prices, investment and operational costs and fish sales (Table 40).

Table 40: Effect of prohibition of processing/trading poisoned fish

	N	Increased	Decreased	No effect	Total
Fish Prices	36	38.9%	5.6%	55.6%	100%
Investment costs	36	22.6%	5.6%	72.2%	100%
Operational costs	36	25.0%	8.3%	66.6%	100%
Fish sales	38	28.9%	18.4%	52.6%	100%

Prohibition of processing/trading without a license was also considered to have no effects on fish prices, investment and operating costs and fish sales (Table 41).

Table 41: Effect of prohibition of processing/trading without a license

	N	Increased	Decreased	No effect	Total
Fish Prices	41	36.6%	7.3%	56.1%	100%
Investment costs	41	43.9%	4.9%	51.2%	100%
Operational costs	41	41.5%	12.2%	46.3%	100%
Fish sales	39	35.9%	15.4%	48.7%	100%

2.6 Enforcement of management measures

BMUs, fisheries staff and police have been actively involved in the enforcement of the fisheries management measures. The survey sought the respondents' assessments of these enforcement agents operating on the lake.

Most of the respondents considered the fisheries officers to have high knowledge of the fisheries field (92.0%) followed by BMUs (82.1%) (Table 42). The lowest proportion (17.8%) believed that UPDF had high knowledge of the field.

Table 42: Assessment of enforcing agents with respect to knowledge of field

	N	High	Moderate	Low	None	Total
BMUs	513	82.1	13.1	4.1	0.8	100%
Fisheries staff	488	92.0	5.7	1.8	0.4	100%
Police	405	27.7	20.7	29.6	22.0	100%
UPDF	264	17.8	15.9	25.4	40.9	100%
Others	7	0.0	28.6	28.6	42.9	100%

The majority of the respondents (62.6%) believed that the fisheries staff and the UPDF were the agents with high capacity to enforce fisheries regulations, with the BMUs considered by the least (41.8%) to have high enforcement capacity (Table 43).

Table 43: Assessment of enforcing agents with respect to capacity

	N	High	Moderate	Low	None	Total
BMUs	514	41.8%	27.4	23.5%	7.2%	100%
Fisheries staff	487	62.6%	24.0	12.5%	0.8%	100%
Police	406	53.0%	20.0	20.4%	6.7%	100%
UPDF	265	62.6%	11.3	9.1%	17.0%	100%
Others	4	25.0%	50.0%	25.0%	0.0%	100%

With respect to high transparency, the majority (58.2%) considered the BMUs to come first, followed by fisheries staff (53.6%). Transparency among the UPDF was considered to be lacking (Table 44)

Table 44: Assessment of enforcing agents with respect to transparency

	N	High	Moderate	Low	None	Total
BMUs	512	58.2%	24.6%	14.1%	3.1%	100%
Fisheries staff	485	53.6%	29.7%	13.0%	3.7%	100%
Police	404	25.0%	16.8%	33.7%	24.5%	100%
UPDF	263	20.5%	15.6%	22.1%	41.8%	100%
Others	3	0.0%	33.3%	33.3%	33.3%	100%

High co-operation with fishers on issues of enforcement of regulations was reported mostly to be exhibited by BMUs (82.0%), followed by fisheries staff (72.3%). UPDF and Police ranked low on this quality (Table 45).

Table 45: Assessment of enforcing agents with respect to co-operation with fishers

	N	High	Moderate	Low	None	Total
BMUs	511	82.0%	11.9%	4.5%	1.6%	100%
Fisheries staff	484	72.3%	17.1%	8.1%	2.5%	100%
Police	403	28.3%	18.6%	29.3%	23.8%	100%
UPDF	263	19.0%	13.3%	20.9%	46.8%	100%
Others	4	25.0%	50.0%	25.0%	0.0%	100%

2.7 Hindrances to implementation of the fisheries management measures

The success of the fisheries management measures in place would depend on the co-operation and support of the different groups of people concerned. The survey sought to establish if any categories of people were in any way hindering the success of the measures.

Most respondents ranked the gear dealers (55.6%), fish processing factories (50.8%), fish traders (44.5%) and crew members (34.8%) among the high hinderers of fisheries management measures (Table 46).

Table 46: Ranking of groups according to level of hindering implementation of fisheries management measures

	N	High	Medium	Low	None	Total
Crew	451	34.8%	31.3%	30.2%	3.8%	100%
Fishers unit owner/renter	415	26.5%	28.4%	41.0%	4.1%	100%
Fish processing factories	415	50.8%	22.2%	24.3%	2.7%	100%
BMU committee	437	15.8%	20.8%	58.8%	4.6%	100%
Police	395	23.8%	26.3%	45.8%	4.1%	100%
Fish traders	425	44.5%	24.2%	27.1%	4.2%	100%
Security operatives	390	28.2%	22.6%	44.9%	4.4%	100%
Gear dealers	417	55.6%	18.5%	23.7%	2.2%	100%
Fisheries staff	415	21.0%	23.6%	52.5%	2.9%	100%
Politicians	406	19.7%	19.0%	56.2%	5.2%	100%
Others	38	34.2%	15.8%	34.2%	15.8%	100%

2.8 How operators responded to and coped with management measures

Recently, enforcement of fisheries management measures has been stepped up under the MCS Working Group of LVFO. Qualitative information was collected, using FGDs, to establish how the fisheries operators responded to these measures and are summarized as follows:

i) Many fishers have had to buy the approved fishing gears, particularly gillnets of 5" and above, but some were unable to do so due to the high costs involved.

ii) Fish traders and processors also had to switch to processing and trading recommended sizes of fish.

2.9 Effect of management measures on the stakeholder groups

The effects of fisheries management measures were reported as follows:

i) Fishers lost boats and gears that did not meet the requirements of the regulations while processors and traders suffered loss of capital as their fish was confiscated and destroyed.

ii) Some fishers reported that the use of the recommended gears had reduced their catches greatly, which affected their incomes and food security.

iii) Traders reported fall in the quantities of fish handled, thus decline in incomes earned.

iv) Increases in investment and operational costs were reported, due to the implementation of the fisheries management measures.

2.10 Functioning of BMUs

The survey sought to assess the perceptions of the respondents on the frequency with which they thought the BMUs carried out the various functions and how well they performed them.

Among the activities considered to be continuous among most respondents were resolving disputes (45.3%), receiving visitors at the beach (43.3%) and collecting revenues (41.9%). Weekly activity was patrolling fishing ground (23.2%) while monthly activity was conducting meetings. Prosecuting offenders was considered by the majority as not being done by the BMUs (Table 47).

Table 47: Frequency of functions by BMUs

	N	Continuously	Weekly	Monthly	After months	None	Total
Formulating by-laws	431	28.5%	16.7%	24.8%	25.3%	4.6%	100%
Patrolling fishing ground	436	23.9%	23.2%	26.1%	17.7%	9.2%	100%
Confiscating bad gears	451	22.8%	19.3%	25.1%	21.1%	11.8%	100%
Prosecuting offenders	397	22.4%	13.4%	15.6%	12.3%	36.3%	100%
Arresting offenders	405	26.2%	13.3%	19.5%	12.8%	28.1%	100%

Resolving disputes/ conflicts	446	45.3%	19.3%	17.7%	12.6%	5.2%	100%
Collecting revenue	375	41.9%	18.7%	11.5%	12.0%	16.0%	100%
Receiving visitors on the beach	441	43.3%	23.6%	15.6%	14.1	3.4	100%
Conducting meetings	442	11.1%	18.8%	48.2%	17.4	4.5	100%
Data collection	354	24.0%	15.5%	32.5%	10.5	17.5	100%
Keeping inventories	329	23.7%	10.9%	22.8%	19.5	23.1	100%

The BMU activities rated by the respondents as being of high performance were resolving conflicts (41.7%) and formulating by-laws. The activities rated low by majority of respondents were patrolling fishing grounds (39.0%) and confiscating bad gears (33.0%) (Table 48).

Table 48: Performance rating of BMUs

	N	High	Medium	Low	None	Total
Formulating by-laws	433	40.4%	31.9%	23.3%	4.4%	100%
Patrolling fishing ground	436	25.0%	27.3%	39.0%	8.7%	100%
Confiscating bad gears	451	29.9%	27.1%	33.0%	10.0%	100%
Prosecuting offenders	395	24.1%	22.5%	23.5%	29.9%	100%
Arresting offenders	407	26.3%	23.3%	23.6%	26.8%	100%
Resolving disputes/ conflicts	441	41.7%	35.8%	16.8%	5.7%	100%
Collecting revenue	375	34.4%	33.3%	16.3%	16.0%	100%
Receiving visitors on the beach	436	32.6%	43.8%	20.0%	3.7%	100%
Conducting meetings	435	35.6%	37.5%	21.8%	5.1%	100%
Data collection	345	27.8%	39.1%	15.9%	17.1%	100%
Keeping inventories	318	27.4%	28.0%	22.3%	22.3%	100%

The survey examined what respondents thought the fisheries managers could do to ensure adoption of the fisheries management measures on Lake Victoria. Steps to ensure effective lake wide enforcement of measures (27.3%) and effective sensitization of fishers (25.4%) were the main measures recommended (Table 49). Other suggestions like changing regulations, controlling production and/or importation of illegal gears or effective prosecution of offenders received little support.

Table 49: Measures to ensure adoption of management measures

	Frequency	Percent
Sensitization of fishers	124	25.4%
Effective lakewide enforcement of measures	133	27.3%
Use of BMUs to enforce measures	98	20.1%
Control production/importation of illegal gears	13	2.7%
Avail appropriate gears at lower prices	76	15.6%
Effective prosecution of offenders	18	3.7%
Change regulations	6	1.2%
Others	20	4.1%
Total	488	100%

3. RESULTS AND DISCUSSIONS: SYNTHESIS OF FOCUS GROUP DISCUSSIONS

These are the findings from the Focus Group Discussions held with the main occupational groups, namely boat owners, boat crew, fish mongers/processors and mixed groups. The Purpose of the FGDs was to generate information on what people know, and think, about management measures; how people are affected by management measures; how they respond to management measures and what ideas people have for improving the management of the lake fisheries. A total of 20 FGDs were held at 5 Landing sites including: Maruba, Ntinkalu, Buwagajjo, Nikiga and Nakatiba, using a Topic Guide (Annex 2)

Table 50: Why fisheries of Lake Victoria need to be managed

Boat owners	Crews	Processors/traders	Mixed groups
• To ensure sustainability and diversity of the fisheries resources, which is a source of livelihood to many people. • Curb theft and other criminal acts that target the fishers. • Curb illegal fishing gears and methods. • Control involvement of children in fishing activities.	• To ensure sustainability of the fisheries resources. • Because it is a source of livelihood to many people. • Because it is a Government property under a Ministry which is mandated to manage it. • Curb theft and other criminal acts that target the fishers.	• To ensure continued sustainability of fisheries resources. • It is Government's mandate to manage the lake fisheries since it is a major revenue base. • To enable people earn high incomes from big-sized fish	• To stop illegal fishing on the lake which reduces fish stocks • To ensure the harvesting of big-sized fish in the long run • To ensure continued sustainability of fisheries in the lake. • To enable people earn better incomes from mature fish. • It is by law that Government has to take care of all natural resources, of which the lake is part

Table 51: Actions taken by the Government

Boat owners	Crews	Processors/traders	Mixed groups
• Instituting management measures to govern the fisheries resources. • Putting BMUs and fisheries officers in place for co-management. • Putting Marine Police to support Government roles in fisheries management. • Sensitization workshops for fishers. • Searching for markets of fish and fish products. • Aiding the construction of fish factories and sanitation facilities at beaches. • Resettling people away from the shoreline.	• Instituting management measures to govern the fisheries resources. • Putting BMUs and Fisheries Offices in place for co-management. • Putting Marine Police to support Government roles in fisheries management. • Sensitization workshops for fishers. • Searching for markets of fish and fish products, for higher prices. • Aiding the construction of fish factories and sanitation facilities at beaches.	• Establishment of BMUs and Fisheries Officers to manage the fisheries. • Continued Monitoring, Control and Surveillance (MCS) of the fisheries and research. • Continued sensitization of fishers about the relevance of the fishery.	• Establishment of BMUs and recruiting Fisheries Officers to manage the lake fisheries. • Building capacity of staff and BMUs to manage the fisheries resources through training, seminars and workshops. • Enactment of fisheries regulations, laws and policies to guide all aspects of fisheries. • Increased stakeholder involvement in co-management of the lake fisheries.

Table 52: Government actions that are right

Boat owners	Crews	Processors/traders	Mixed groups
• BMUs and Maritime Police have helped to reduce theft of boats and nets on the lake through their patrols. • The BMUs, put in plce by Government, have the knowledge of the people at the different landings and, therefore, are in a better position to get hold of the law breakers. • Government actions lead to resources sustainability. • Government actions lead to better accessibility to markets. • Fisheries staff are qualified and can guide the fishers on their activities. • Sensitization enlightens the fishers	• BMU and Maritime Police patrols have helped to reduce theft of boats and nets. • BMUs have better information on the law breakers. • Government actions lead to resources sustainability. • Actions lead to better access to markets and incomes. • Sensitization by the fisheries staff enlightens the stakeholders on the right actions to follow. • Arrests and prosecution deter the offenders from	• Illegal fishing methods are being curbed.. • Continued MCS activities are also providing necessary information for fisheries management, trade and marketing among other issues. •	• Illegal fishing methods are being curbed. • Continued MCS activities are also providing necessary information for fisheries management. • Government actions have solved some of the major conflicts on the lake both nationally and regionally.

on the right actions to improve their incomes. • Provision of sanitary facilities has led to improved hygiene at landing sites. • Promotion of factories has come with other advantages like urbanization.	getting involved in illegal activities again. • BMUs have helped to improve sanitation and fight corruption • Increased security has led to more traders coming to landing sites. • Factories have come with other advantages like urbanization.		

Table 53: Government actions that are not right

Boat owners	Crews	Processors/traders	Mixed groups
• BMUs and Marine Police are not effective because they are familiar to the local fishermen and, therefore, may not easily punish them for illegal activities. • Marine Police and BMUs are corrupt. • Marine Police do not know the regulations and are not knowledgeable enough about fisheries, seizing anything they come across. •	• There is a lot of discrimination in arresting the offenders. • Fishers would first be given legal gears free of charge because they are too poor to afford legal gears. • Marine Police do not know the fisheries regulations and end up seizing anything they come across.	• Fisheries Officers and other stakeholders involved in management have instead become corrupt and hence ineffective. • There is also an overlap of roles and duties for the various authorities and institutions charged with fisheries management hence intrigue.	• Fisheries Officers and other stakeholders involved in management have instead become corrupt and hence ineffective. • There is also an overlap of roles and duties for the various authorities and institutions charged with fisheries management hence intrigue.

Table 54: How the measures have affected fishers

Boat owners	Crews	Processors/traders	Mixed groups
• They have enhanced corruption due to their improper implementation. • Have led to destruction and thus loss of our fishing equipments like gears. • They have led to reduced theft. • Have led to conflicts between the fishers and the law enforcers. • Have led to reduced hours of fishing, which has led to low catches. (from 24 to 12 hours) • Have led to reduced catches and incomes which has exacerbated school drop outs and made people to divert to cultivation	• Have led to destruction and thus loss of fishing equipments like gears. • They have led to reduced theft. • Have led to reduced hours of fishing, which has led to low catches.	• Some traders and processors had abandoned dealing in juvenile fish and are now buying recommended sizes of fish for trade. • Many traders/processors are now members of beach Management Units (BMUs). • There is now increased awareness of issues related to fishing and fish business. • Management measures have increased threats and jealousness around fishing communities.	• Some of fishers have left business because of no capital to buy recommended gears. • Some traders and fishers have lost a lot of money in bribery (i.e. business costs are so high) • Bought recommended gears and boats (the fact that they are sometimes involved in fishing).

Table 55: What fishers have done in response to the measures

Boat owners	Crews	Processors/traders	Mixed groups
• Have locally mobilized funds, opened accounts and then bought recommended fishing equipments for group members. • Some fishers have changed occupation from fishing to cultivation. • Some people have shifted to other landing sites where use of illegal fishing equipments is condoned. • Some have continued to replace as they are taken • Nothing has been done due to the high prevailing poverty within them.	• Have locally mobilized funds, opened accounts and then bought recommended fishing equipments for group members. • Some fishers have changed occupation from fishing to agriculture (crops growing)	• Majority of the traders and processors have been law abiding, though some traders still engage in illegal fish trading • Some traders have acquired business loans and increased capital for investment • Some of the traders/processors have moved out of business due to stringent measures on them. • Few have migrated to other landing sites due to strict measures • Majority of the processors and traders now deal in big sized fish	• Illegal fishers have always been arrested and handed over to relevant authorities. • Many fishers have bought legal fishing equipment as illegal gears have often been burnt. • In case of BMU meetings, all fishers, traders and processors have attended and contributed ideas towards fisheries management. • All boats have been painted and are of the recommended sizes. • Most of the people have been law abiding while a few are still reluctant to change. • Other traders still sell small-

		•	sized fish due to poverty. • Illegal gears have often been burnt/destroyed. • Traders now try to buy big sized fish for their trade. • Bought recommended gears and boats.

Table 56: What happens when a patrol boat comes to the landing site

Boat owners	Crews	Processors/traders	Mixed groups
• The patrol team asks for the Chairman BMU and police and meets them. They sometimes mobilize contributions for them. • At such a moment, people with illegal gears are in a state of fear and, therefore, can not go fishing. • Fishers become suspicious that they are going to be arrested. • When they land, they do inspection of the fishing boats and nets. • Other patrol teams do not speak to anybody.	• The crew members become suspicious that their fishing gears are going to be confiscated and that they are going to be beaten. • The patrol team asks for the Chairman BMU and meets him. • They do inspection of the fishing boats and nets and take appropriate actions. • Some times they ask for fuel which the boat/gear owners collect and give them in form of money. • We just watch as the boat owners discuss with them.	• Some run away from the landing site and others continue looking on. • Patrol team keeps on asking every one regarding culprits. • Some people say that even if they have big sized fish they are threatened by patrols •	• Patrol teams capture any gears (whether recommended or not) during their movements. • People run away with their gears when they see the patrol teams. • Every one at the landing seriously abides by the regulations. • MCS teams normally cane fishers and break their boats.

Table 57: How the Fisheries and Police officers behave during patrols

Boat owners	Crews	Processors/traders	Mixed groups
• If they find you doing the right thing using the legal fishing equipments, they do not have any problem with you. • They threaten people and some people have drowned due to their threats.	• If they find you using the legal fishing equipments, they do not have any problem with you.. • They take bribes • They normally do not carry out patrols as they don't have their own boats ○	• Such officers used to confiscate undersized fish, arrest wrong doers but now it rarely occurs. • Some times they hold crisis meetings to seek for views on what to do for culprits. • Fisheries staff come later when patrols have been done. • Sometimes they simply look on since the culprits are their relatives. • Some times they talk to the BMU chairman and the beach owner.	• They used to confiscate undersized fish and sometimes arrest and beat wrong doers and confiscate illegal fishing equipments. • Since corruption is the order of the day officers normally come around to get some money from culprits. • Some times they talk to the BMU chairman and the beach owner.

Table 58: Whether some of the people around had their gears confiscated

Boat owners	Crews	Processors/traders	Mixed groups
• None of the members present had ever lost anything but their colleagues who were not around had lost boats and gears. • None of the members present had ever lost anything. • All the members had had their gears and fish confiscated and boats broken. • Only one person lost fish to the patrol team. • One person lost his boat and was taken to court.	• All the respondents' gears and catch had been confiscated • All had been beaten • None at this landing at Nakatiba • One member was beaten by the patrol team at Buwagajjo.	• No trader or processors had had his/her fish confiscated. • Most traders buy fish from fishers so they do not own boats, engines. • Some traders reported having lost their fish to law enforcers during transit to markets. • Most traders now deal in big sized fish.	• Some traders loose their fish to revenue agents and law enforcers. •

Table 59: What fishers did after their gears had been confiscated

Boat owners	Crews	Processors/traders	Mixed groups
• Others paid bribes to have their gears back. • Nothing. • Made other boats or bought other gears. • Bought legal fishing equipments particularly gears. • One was taken to court and charged 200,000=.	• Some of them bought legal gears. • Confiscated gears were taken to police and the crew reported to their bosses, who bribed to recover their nets. • The gears and catch were taken away and have never been heard of again.	• Not applicable since no fish was confiscated from any one. • Most of them are now law abiding given the strong and committed BMU leadership. • Most traders and processors have continued to demand for meetings to be enlightened about the measures. • Traders now sell recommended size fish.	• Those whose fish was confiscated just kept quiet because they knew they were in the wrong. • Fishers who cannot adopt the measures have left for other landing sites. • All fishers are registered by the BMU and everyone is a law enforcer of the others, which has effected the management measures. • Most of them are now law abiding given the strong and committed BMU leadership.

Table 60: What the role of communities should be in enforcement

Boat owners	Crews	Processors/traders	Mixed groups
• Support the local authorities by showing them where bad gears are kept and the owners. • Empowering the younger generation to protect the resource. • Sensitization of fishers and the young generation and mobilizing funds to help fishers buy legal fishing equipments. • Ensuring strict follow-up of cases that have been raised by the communities. •	• Support the local authorities by showing them where bad gears are kept and the owners. • Attend sensitization workshops. • Abiding by the fisheries regulations. •	• Provide ideas in meetings on how best to streamline fisheries management at the landing. • Adopt the measures and laws for fisheries management. • Participate in enforcement of measures by reporting illegal fishers. • Attend meetings to contribute to the BMU planning process. • Form a trader/ processor association that will spot issues and see how to go about fisheries management.	• Suggest ideas on how to effectively implement measures for a sustainable fishery. • Reporting illegal fishers. • Arrest or report a law breaker to the relevant authority. • Adopt the measures and laws for fisheries management. • Participate in BMU meetings so as to generate ideas on how to effectively implement the measures and manage the lake fisheries •

Table 61: What can be done to encourage people to use legal gears and methods

Boat owners	Crews	Processors/traders	Mixed groups
• Provision of loans and grants to enable fishers to buy legal fishing equipments. • Fishers should form groups/associations where they can help one another to raise money for buying legal fishing gears and boats. • Sensitization of fishers and traders to ensure adherence to the management measures. • Government should boost security at the lake and landing sites such that people's property may be stolen. • Strengthening confiscation of illegal fishing equipments.	• Provision of loans and grants to enable fishers to buy legal fishing equipments. • Sensitization of fishers. o	• Lake-wide enforcement of measures should be emphasized. • Effectively obey the BMU guidelines. • Government should do something on restocking the lake because big-sized fish are limited in the lake. • Government should support establishing loan schemes for fishes to access funds to buy recommended gears. • There should be increased sensitization of fishers on the need for BMUs and stakeholder roles in co-management.	• Lake-wide enforcement of measures should be emphasized. • Improvement of landing sites and facilities should be emphasized as this would boost fisheries management in the long run • The poverty eradication programs and work plans of Government should extent to the lower fishing communities to help them acquire recommended fishing equipment. • Government should draw up plans for improving and increasing market opportunities for fishers.

		• Government should streamline and set out clearly the specific roles of enforcers because traders are often caught and harassed while transporting their fish after clearance from Fisheries Officers • Government should try to harmonize the measures across all landing sites because some landings abide by the laws while others do not. • Government should draw up plans for improving market opportunities for fishers.	• Government should try to harmonize the measures across all landing sites. • Increased and continued sensitization of fishers about their roles in co-management and about the management measures in place should be done. •

Table 62: Why people catch and sell undersized fish?

Boat owners	Crews	Processors/traders	Mixed groups
• Inability to buy the legal gears to catch mature fish. • Lack of alternative job opportunities. • Can't fish in deeper waters to catch big fish because of lack of the required big boats and nets. • Undersized fish has ready market due to preference by certain groups of people.	• The gears available at the beach catch small fish which has market locally. • Lack of alternative job opportunities other than fishing. • Financial inability to buy the recommended gears. • Weaknesses of the law enforcers ○	• Many traders just buy any sizes of fish available. • Less capital to deal in big sized fish. • High demand for juvenile fish. • The continued supply of illegal fishing equipment necessitates juvenile fishing. • Poverty among traders so they cannot adjust.	• Sometimes recommended gears catch juvenile fish in the process so fishers cannot throw away such fish instead they market everything. • Less capital to deal in big sized fish. • High demand for juvenile fish. • The continued supply of illegal fishing equipments on the market. • Poverty among the fishing communities.

Table 63: What fishers think is wrong with catching undersized fish

Boat owners	Crews	Processors/traders	Mixed groups
• Does not ensure sustainability of the fisheries resources. • It will make Government to lose a source of revenue in the future. • Leads to low incomes as the immature fish attract low prices. • It is against the research findings.	• It will make Government to loose a source of revenue in the future. • Leads to low incomes as the immature fish attract low prices. • Does not ensure sustainability of the fisheries resources. • .	• It does not ensure sustainability of the lake resources • It leads to increased use of illegal gears.	• It does not ensure sustainability of the lake resources. • It leads to increased use of illegal gears.

4. CONCLUSIONS AND RECOMMENDATIONS

The understanding of awareness and attitudes of fishers towards fisheries management measures on Lake Victoria has important implications for national efforts seeking to promote fisheries management, development and improvement of the socio-economic wellbeing of fishers in Uganda. From the findings of the study, conclusions and recommendations have been formulated as below::

4.1 Conclusions:

Majority of the fishers were aware of and increasingly complied with the fisheries management measures in place. Most of them had received information about the management measures from fisheries staff and BMU executives. The use of poison for catching fish had largely been abandoned by the fishers.

Fishers were also increasingly adopting the use of the recommended gears and mesh sizes mainly because the recommended gears ensured catching of mature fish which fetched higher incomes. This was manifested by the increased rate at which recommended gears were bought as reported by fishers among others.

However, many of fishers also did not comply with fisheries regulations mainly due to the inability to afford the recommended gears and increased theft of gears on the lake. This had significantly slowed the rate of adoption of the management measures by other fishers on the lake.

Adoption of fisheries management measures was, however, being hampered by declining stocks of fish in the lake especially the major commercial species namely Nile Perch, tilapia and mukene. This had significantly affected fishers' attitudes towards adoption of the recommended management measures on Lake Victoria.

The major effects of the management measures included; increased fish incomes resulting from sale of mature fish; increased use of recommended gears; loss of fishing gears and equipment especially the illegal gears; increased poverty among some poor fishers who couldn't afford the recommended gears; increased fish prices accrued by fish traders and increased business costs among others.

The success of fisheries management measures in place depends on the co-operation and support of all stakeholder groups involved. Effective implementation and adoption of the fisheries management measures would be achieved when all the stakeholders play their respective roles and responsibilities.

Views from the FGDs

A number of points arose from the Focus Group Discussions held with Boat owners, Crew, Processors/Traders and the mixed groups, the main ones being as follows:

The groups believe that Lake Victoria fisheries need to be managed to ensure sustainability and the diversity of aquatic resources which are a source of livelihood to many people. By curbing illegal fishing gears and methods, recommended size of fish that fetch good prices would be harvested. This as also part of Government's mandate to manage Natural resources.

Some of the actions taken by Government that were visible to the groups included: instituting management measure alongside the co-management approach to help govern the fisheries resources; sensitization of the fisheries stakeholders about management measure, the fisheries and its importance; Monitoring Control and Surveillance (MCS); establishment of fish markets and provision of sanitation and physical infrastructure.

Of these, some were regarded as the right actions by Government, including: sensitization of fisher by fisheries staff, MCS by BMU and maritime police to curb illegal fishing; establishing fish markets to improve people's incomes and provision of sanitary facilities for improved hygiene.

Those actions by Government which were considered not right included: deployment of Maritime Police who were not knowledgeable about the fisheries regulations and were not familiar with the fisher men; duplication of duties amongst the different enforcement bodies within the co-management approach which has led to corruption tendencies, discrimination when it comes to arresting and prosecuting offenders.

On how the measures have affected fishers, the groups believe they increased awareness of fisheries related issues, boosted adoption of recommended gears and dealing in recommended size of fish. However, the destruction of illegal gears has also been costly, working hours have been reduced and consequently low catches. They have enabled corruption tendencies, sparked of conflicts between the fishers and law enforcers and also forced people out of the fisheries business.

In response to the measures by Government, most of the fisheries stakeholders have destroyed illegal gears, purchased recommended fishing gears and/or are trading in the recommended size of fish.

On arrival of the patrol boat at the landing site, fishers are said to become suspicious or filled with fear while some resorted to running away with their gears. As for the patrol team, it normally asked for the BMU chairman, then it went ahead and inspected fishing gears and at times they started off confiscating fishing gears and asking for money for boat fuel.

If you are found using the right gear, they will be no interference unlike if you were found using illegal gears, the gear will be confiscated, the offender will be arrested, beaten while others are asked to offer some money to bribe their way out. In some cases, talks were held with the BMU chairman and the beach owner in a meeting to seek for views on what to do to the culprits.

From the groups that were interviewed, a few people whose gears and fish were confiscated were present but the majority of the people present reported that they had never had their gears confiscated.

After confiscating their illegal gears, fishers have resorted to buying recommended gears and boats, trading in recommended fish sizes. Others offered bribes in return for their gears whereas others gave up fishing activities after being prosecuted. Those who could not adopt legal methods left for other landing sites where there were limited management procedures.

Concerning what the roles of communities should be in enforcement, they should support and provide ideas and information for improved fisheries management at landing sites and sensitize fellow stakeholders on the benefits of protecting water resources.

With respect to what can be done to encourage people to use legal gears and methods, the groups recommended provision credit facilities that can enable them afford these equipments.

Their explanation to why people caught and sold undersized fish was in the poverty in the fisheries, coupled with lack of alternative job opportunities among fishers.

What fishers think is wrong with catching of undersized fish is that it causes the fish stocks in the lake, as well as the sizes of fish, to dwindle.

4.2 Recommendations:

In view of the findings from the study, the following recommendations were proposed:

There is need for increased and improved sensitization and awareness of fisheries stakeholders, particularly the fishers about management measures. Demand-driven and stakeholder specific awareness and training would go along way in changing the attitudes of fishers and other stakeholders positively towards management measures on Lake Victoria and hence improved fisheries management.

The Government should devise mechanisms and strategies for minimizing the costs of fishing gears and equipment in order to increase adoption rates of the management measures by fishers. This would help many poor fishers access the recommended gears as well as other fishing input requirements. Among the strategies would include; reduction of taxes on fishing inputs, creation of

credit incentives for fishers and provision of the necessary infrastructure for fishing input trade at beach level.

The need to continuously monitor changes in critical parameters in the fisheries would provide the necessary information for management decisions about management measures in the sector. It is, therefore, recommended that Government and other stakeholders including the donor partners continue supporting and funding fisheries research.

As a means of reducing pressure on the lake and so the use of illegal gears and methods, Government together with other development stakeholders should increase efforts towards finding alternative solutions and livelihoods for fishing communities. It is hoped that diversification of livelihood opportunities would move other fishers in to other alternative activities besides fishing which would significantly reduce pressure on the lake as well as improve fishers livelihoods.

5. References

FIRRI – 2004. Challenges for Management of the Fisheries Resources, Biodiversity and Environment of Lake Victoria. Technical Document No.2. 319p.

GoU (Government of Uganda) The Fish Act, 1967.

GoU (Government of Uganda) The Fish and Crocodiles Act, 1964. Chap. 228 Laws of Uganda, Revised Edition, 1964. p.3149 – 3163.

MAAIF – 2003. Guidelines for Beach Management Units in Uganda.

Orach-Meza, F.L., 1991. The Basis for Fisheries Legislation and Regulations Relevant to Uganda. A paper prepared for COFE, MAIF. 23p.

Appendix 1: Fishers' Questionnaire

IMPLEMENTATION OF THE FISHERIES MANAGEMENT PLAN

Assessment of the Impact of Fisheries Management Measures on Lake Victoria

Fishers' Questionnaire

Name of Interviewer _____
Date _____
Landing Beach _____
District _____

I. Personal Data

1. Name of respondent: _____
2. Age : _____Years
3. Sex: [1] Male [2] Female
4. Tribe: _____
   [1] Baganda [2] Basoga [3] Samia [4] Japadhola [5] Bakenye [6] Nyarwanda
   [7] Bagwere [8] Itesot [9] Others (specify) _____

5. Marital Status:
   [1] Married [2] Single [3] Divorced [4] Widowed [5] Separated
   [6] Other (specify) _____

6. Level of Education:
   [1] No schooling [2] Incomplete primary [3] completed Primary
   [4] Incomplete secondary [5] complete Secondary [6] Tertiary [7] University
   [8] Other (Specify) _____

7. What category of fisher are you?
   [1] Fishing unit owner [2] Fishing unit renter [3] Crew [4] Other (Specify) _____

II Fish Production

8. For how long have you fished? _____ years

9. What species of fish do you target?
   [1] Nile perch [2] Tilapia [3] Both Nile perch and Tilapia
   [4]Mukene/ Dagaa [5] Other (Specify) _____

10. What types of fishing gear do you use?
    [1] Gillnets [2] Cast net [3] Beach seine [4] Hooks [5] Mosquito net
    [6] Other (specify)_____

11. If nets, what mesh size do you use?
    [1] Less than 5" [2] 5" only [3] 6" only [4] 7"only [5] 5" - 7" [6]. Greater 7"

12. If hooks, what hook sizes do you use? (specify) _____

13. If hooks, which type of bait do you use most?
    [1] Fish (specify species) _____ [2] Worm (specify Name) _____

[3] Other _____

14. Do you agree with the required minimum net mesh size of 5" (127 mm) for Lake Victoria?
[1]. Yes [2]. No

15. If **Yes,** Why?
[1] They catch enough fish [2] Catch fish preferred by factories
[3] They catch mature fish [4] Other (specify) _____

16. If **No,** Why not?
[1] They catch immature fish [2] They are too big to catch the fish available now
[3] They are very expensive [4] Not available on the market
[5] They are frequently stolen [6] Other (specify) _____

17. What is your view about **Nile perch** catch trends over the past 5 years?
[1] Catch is declining [2] Catch is increasing
[3]No change [3] Not sure

18. (***If the answer above is declining***), what are the reasons for the decline in **Nile perch** catches
[1] Too many fishers, boats/nets [2] Fishing regulations are not obeyed
[3] Environmental change [4] Other(specify) _____

19. What are your views about **Tilapia** catch trends
[1] Catch is declining [2] Catch is increasing [3] No change
[3] Not sure

20. (***If the answer above is declining***) What are the reasons for the decline in tilapia catches
[1] Too many fishers boats/nets [2] Fishing regulations are not obeyed
[3] Environmental change [4] Other (specify) _____

III Knowledge of the fisheries management measures

21. Are you aware of the following fisheries management measures for Lake Victoria and do you obey them? (*use codes*)

	Are you aware of this regulation? [1] Yes [2] No	From whom did you know this regulation	Who enforces this regulation	Do you comply with this regulation [1] Yes [2] No	If No, why don't you comply?
Catching Nile perch of less than 50cm is prohibited					
Catching Nile perch of greater than 85cm is prohibited					
Catching tilapia less than 25cm is prohibited					
Using gillnets of less than 5" is prohibited					
Fishing in breeding areas is prohibited					
Fishing in inshore waters is prohibited					
Using fish poison is prohibited					
Using unlicensed boat is prohibited					
Fishing without license is prohibited					
Use of beach seines is prohibited					
Using cast netting is prohibited (tupa tupa)					
Beating water (tycooning) is prohibited					
Basket trapping is prohibited					
Using drift nets (tembea) is prohibited					
Using mosquito seines of less than 10mm is prohibited					
It is prohibited to land fish in a non-gazetted landing					
Fishing omena from April 1st to August 31st is prohibited					
Use of monofilaments is prohibited					

Codes:
From whom did you know regulation: [1] Fisheries staff [2] Local Beach leaders [3] Factory agents [4] Media (Radio, TV & newspapers) [5] Others (specify)
Why not able to obey regulation: [1] unable to afford [2] theft of gear [3] low catches [4] readily available
[5] others (specify)

Who enforces regulation: [1] BMU only [2] Fisheries Officer only [3] Police only [4] BMU/Fisheries Officer/Police [5] Other

22. What do you see as the major bottlenecks/problems regarding implementation of the fisheries management measures?

[1] Lack of resources to adjust [2] Lack of Knowledge of regulations [3] Weak enforcement [4] Lack of suitable fishing gears [5] Corruption [6] others (specify)----------

23. How have the management measures affected aspects of your activities? (*use codes below*)

	Fish catches	Fish prices	Investment costs	Operational costs	Fish sales
Catching Nile perch of less than 50cm is prohibited					
Catching Nile perch of greater than 85cm is prohibited					
Catching tilapia less than 25cm is prohibited					
Using gillnets of less than 5" is prohibited					
Fishing in breeding areas is prohibited					
Fishing in inshore waters is prohibited					
Using fish poison is prohibited					
Using unlicensed boat is prohibited					
Fishing without license is prohibited					
Use of beach seines is prohibited					
Using cast netting is prohibited (tupa tupa)					
Beating water (tycooning) is is prohibited					
Basket trapping is prohibited					
Using drift nets (tembea) is prohibited					
Using mosquito seines of less than 10mm is prohibited					
It is prohibited to land fish in a non-gazetted landing					
Fishing omena from April 1st to August 31st is prohibited					
Use of monofilaments is prohibited					

Codes: [1] Increased [2] Decreased [3] No Effect

24. How do you assess the enforcement agents operating on the lake?

	Knowledge of field	Capacity	Transparency	Co-operation with fishers
BMUs				
Fisheries staff				
Police				
UPDF				
Others (Specify)				

Codes: [1] High [2] Moderate [3] Low [4] None

25. Rank the following groups according to level of hindering the implementation of the fisheries management measures?

	Level of hinderance [1] High [2] Medium [3] Low
[1] Crew	
[2]Fishers unit owner/renter	
[3]Fish processing factories	
[4] BMU committee	
[5] Police	
[6] Fish traders	
[7] Security operatives	
[8 Gear dealers	
[9] Fisheries staff	
[10] Politicians	
[11] Other (Specify): _____	

Codes: Frequency of function [1] Daily [2] Weekly [3] Monthly [4] After months
[5] None.

Codes: Performance rating [1] High [2] Medium [3] Low [4] None

26. How do you rate the performance of your BMU in doing the following functions?

Function		Frequency of function	Performance rating
	Formulating by laws		
	Patrolling fishing ground		
	Confiscating bad gears		
	Prosecuting offenders		
	Arresting offenders		
	Resolving disputes/ conflicts		
	Collecting revenue		
	Receiving visitors on the beach		
	Conducting meetings		
	Data collection		
	Keeping inventories		

27. What should fisheries managers do to ensure adoption of the fisheries management measures on Lake Victoria?

[1] Sensitization of fishers
[2] Effective lakewide enforcement of measures
[3] Use of BMUs to enforce measures
[4] Control production/importation of gears not recommended
[5] Avail appropriate gears at lower prices
[6] Effective prosecution of offenders
[7] Change regulations
[8] Others (specify) ----------

Thank you

Appendix 2: Processors/Traders Questionnaire

IMPLEMENTATION OF THE FISHERIES MANAGEMENT PLAN

Assessment of the Impact of Fisheries Management Measures on Lake Victoria

TRADING / PROCESSING QUESTIONNAIRE

Fishers' Questionnaire

Name of Interviewer _____

Date _____

Landing Beach _____

District _____

I. Personal Data

5. Name of respondent: _____

6. Age : _____Years

7. Sex: [1] Male [2] Female

8. Tribe: _____
[i] Baganda [ii] Basoga [iii] Samia [iv] Japadhola [v] Bakenye [vi] Nyarwanda [vii] Bagwere [viii] Itesot [ix] others (specify)----------

10. Marital Status:
[1] Married [2] Single [3] Divorced [4] Widowed [5] Separated
[6] Other (specify) _____

11. Level of Education:
[1] No schooling [2] Incomplete primary [3] completed Primary [4] Incomplete secondary [5] complete Secondary [6] Tertiary [7] University
[8] Other (Specify) _____

12. What category of fisher are you?
[1] Fish Trader [2] Fish Processor [3] Both Trader and Processor

II Knowledge of the fisheries management measures

13. Are you aware of the following fisheries management measures for Lake Victoria and do you obey them? (*use codes*)

	Are you aware of this regulation? [1] Yes [2] No	From whom did you know this regulation	Who enforces this regulation	Do you comply with this regulation [1] Yes [2] No	If No, why don't you comply?
Trading/Processing Nile perch of less than 50cm is prohibited					
Trading/Processing tilapia less than 25cm is prohibited					
Trading/Processing poisoned fish is prohibited					
Trading/Processing without license is prohibited					

Codes:
From whom did you know regulation: [1] Fisheries staff [2] Local Beach leaders [3] Factory agents [4] Media (Radio, TV & newspapers) [5] Others (specify)
Why not able to obey regulation: [1] unable to afford [2] theft of gear [3] low catches [4] readily available
[5] others (specify)
Who enforces regulation: [1] BMU only [2] Fisheries Officer only [3] Police only [4] BMU/Fisheries Officer/Police [5] Other

14. What do you see as the major bottlenecks/problems regarding implementation of the fisheries management measures?

[1] Lack of resources to adjust [2] Lack of Knowledge of regulations [3] Weak enforcement [4] Lack of suitable fishing gears [5] Corruption [6] others (specify)----------

15. How have the management measures affected aspects of your activities? (*use codes below*)

	Are you aware of this regulation? [1] Yes [2] No	From whom did you know this regulation	Who enforces this regulation	Do you comply with this regulation [1] Yes [2] No	If No, why don't you comply?
Trading/Processing Nile perch of less than 50cm is prohibited					
Trading/Processing tilapia less than 25cm is prohibited					
Trading/Processing poisoned fish is prohibited					
Trading/Processing without license is prohibited					

Codes: [1] Increased [2] Decreased [3] No Effect

16. How do you assess the enforcement agents operating on the lake?

	Knowledge of field	Capacity	Transparency	Co-operation with fishers
BMUs				
Fisheries staff				
Police				
UPDF				
Others (Specify)				

Codes: [1] High [2] Moderate [3] Low [4] None

17. Rank the following groups according to level of hindering the implementation of the fisheries management measures?

	Level of hinderance
[1] Fish traders	
[2]Fishers unit owner/renter	
[3]Fish processing factories	
[4] BMU committee	
[5] Police	
[6] Fisheries staff	
[7] Security operatives	
[8 Gear dealers	
[9] Crew	
[10] Politicians	
[11] Other (Specify): _____	

Codes: Level of hindrance [1] High [2] Medium [3] Low [4] None

13. How do you rate the performance of your BMU in doing the following functions?

Function		Frequency of function	Performance rating
	Formulating by laws		
	Patrolling fishing ground		
	Confiscating bad gears		
	Prosecuting offenders		
	Arresting offenders		
	Resolving disputes/ conflicts		
	Collecting revenue		
	Receiving visitors on the beach		

	Conducting meetings		
	Data collection		
	Keeping inventories		

Codes: frequency of function [1] Daily [2] Weekly [3] Monthly [4] After months
[5] None.

Codes: Performance rating [1] High [2] Medium [3] Low [4] None

14. What should fisheries managers do to ensure adoption of the fisheries management measures on Lake Victoria?

[1] Sensitization of fishers
[2] Effective lake wide enforcement of measures
[3] Use of BMUs to enforce measures
[4] Control production/importation of gears not recommended
[5] Avail appropriate gears at lower prices
[6] Effective prosecution of offenders
[7] Change regulations
[8] Others (specify) ----------

Thank you

Appendix 3 Topic Guide for the Focus Group Discussions

Monitoring of the adoption and socio-economic impact of fisheries management measures

Topic guide for focus group discussions

How many focus groups? Who should be in focus groups? – suggest occupational groups – boat owners, boat crew, fish mongers/processors

Are any guidance notes needed on facilitating focus groups and reporting on discussions (detailed, comprehensive notes)?

Must emphasise that all the discussion is totally confidential. Although we shall make detailed notes, we will not record names (only numbers of stakeholders) and when we report, we shall not say what came from which landing site.

Participants are STRONGLY advised to be open and honest during the discussion so that policy-makers and managers hear what they have to say about management measures.

Purpose of focus group discussion

To generate information on

- What people know, and think, about management measures.
- How people are affected by management measures.
- How they respond to management measures.
- What ideas people have for improving the management of the lake fisheries.

1. Why do the fisheries of Lake Victoria need to be managed?

2. What kind of action has the government taken to manage the fisheries?

3. Do you think these are the right actions/measures?

4. How have these measures affected you?

5. What have you done in response to these measures? (e.g. bought legal gear, moved to smaller landing site, stopped buying small fish)

6. What happens when a patrol boat comes to the landing site?

7. How do the fisheries officers and police behave during patrols? Why do you think this is?

8. Have any of the people present had their gears, catch, boats or engines confiscated?

9. What did they do after that? Were they taken to court? Have they changed their behaviour?

10. What should the role of communities be enforcement, if any?

11. What would encourage people to use legal nets?

12. Why do people catch and sell undersize fish? What is wrong with catching undersized fish?