RESEARCH REPORT

GLOBALISATION AND FISH UTILISATION AND MARKETING STUDY

OFF-BEACH FISH MARKETING AND LIVELIHOODS IN UGANDA

SOCIO-ECONOMICS SECTION

FISHERIES RESOURCES RESEARCH INSTITUTE

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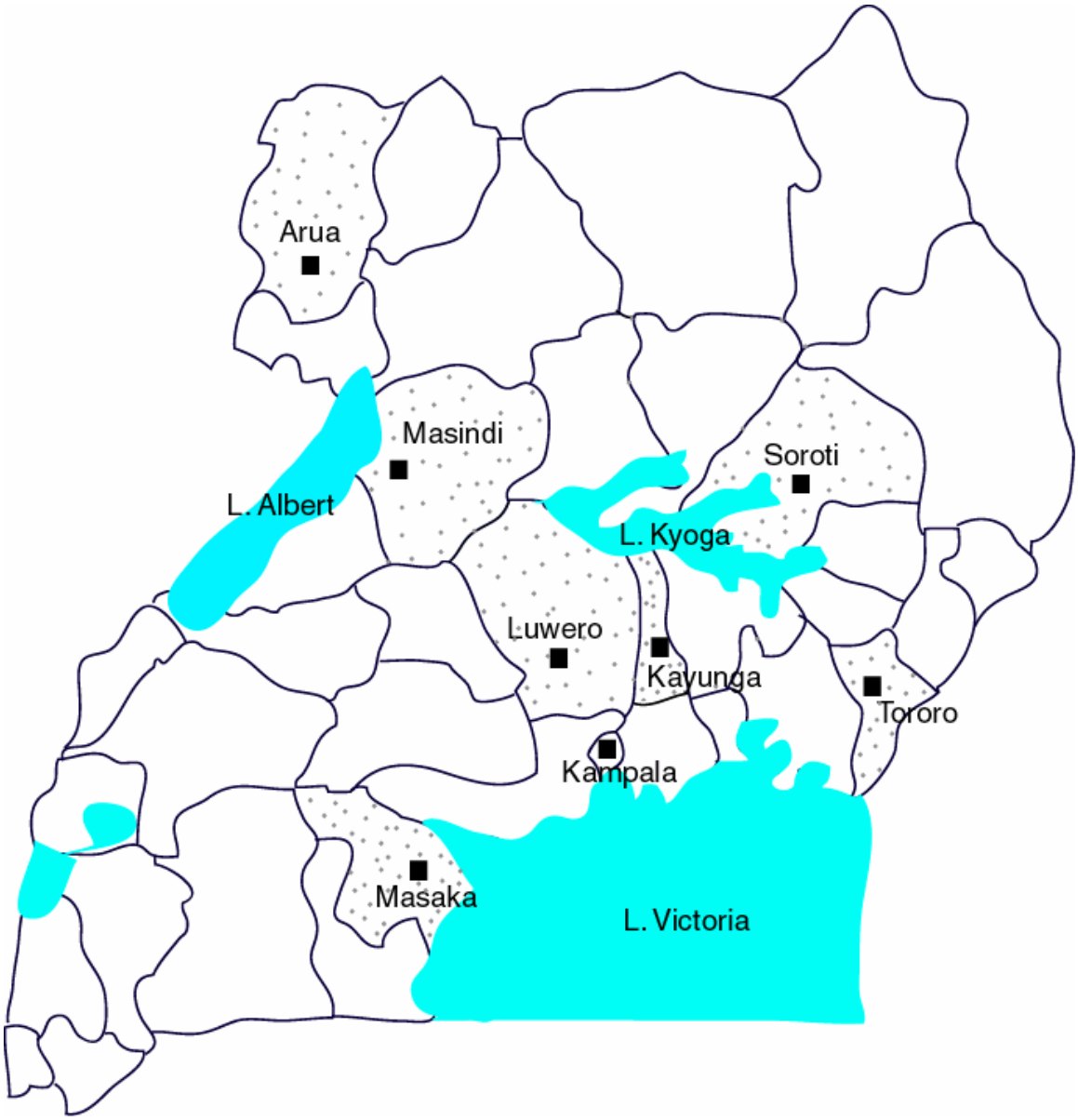
Acronyms

FIRRI	Fisheries Resources Research Institute
DFID	Department for International Development
TDRI	Tropical Development and Research Institute
AFRP	
UFFRO	Uganda Freshwater Fisheries Research Organisation
FAO	Food And Agricultural Organisation
UNDP	United Nations Development Project
FISHIN	Fisheries Statistics and Information Systems
FCSEP.	Fish Commodity Systems Economics Project.
SEDAWOG	Social Economic Data Working Group
SPSS	Statistical Package for Social Scientists
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernisation of Agriculture

DEFINITIONS

Bicycle Hawker-	Fish trader who mostly uses bicycle for transport and procures supplies of fish at the market and sell to households
Market vendor-	Trader who owns or rents a market stall and procures supplies of fish either at the beach or wholesaler at the market
Wholesaler-	Trader who buys fish at the beach and sells to market vendor or fish hawker

Figure 1: MAP SHOWING DISTRICTS FROM WHICH FISH MARKETS WERE SELECTED



Key

■ Selected districts

EXECUTIVE SUMMARY

1. The purpose of the study was to assess the impact of global fish trade on fish marketing chains and consumption patterns away from the beaches.
2. The study was carried out in 8 randomly selected districts that derive their main fish supplies from Lakes Victoria, Kyoga and Albert. A sample of 321 local fish traders and consumers was interviewed using unit questionnaire interviews.
3. The findings show that off-beach fish marketing is primarily a female dominated occupation as indicated by the large proportion (65%) of females in the sample.
4. The investment requirements for the fish marketing operations were generally low ranging between 36,000-88,000 Shs. per unit on the average. The main capital inputs for the local traders were bicycles, wooden racks and fish platforms.
5. The fish marketing operations require modest expenditures on operating inputs as indicated by their reasonably low operating costs, which on a weekly basis varied between 15,000-30,000 Shs/unit. Transport, which accounted for nearly 76% of the total costs, was the most important cost item.
6. Overall, Nile tilapia was the most available species at the fish markets that mainly obtained their supplies from Lakes Victoria and Kyoga. On the other hand, *Brycinus nurse* and *Hydrocynus* were the dominant species at markets that mainly received their supplies from Lake Albert.
7. The average retail price of Nile tilapia was 1,800 Shs/kg slightly higher than for Nile perch, which was 1,700 Shs. However, *Bagrus sp.* fetched the highest retail price (4,500 Shs/kg) while Mukene was priced at 1,100 Shs/ kg.
8. Most of the Nile perch on the off-beach markets was of low quality (juvenile or factory reject) as indicated by the market prices, which were much lower than that offered by the factory agents. Smoking of Nile perch was done to increase the shelf life especially of the rejects by some processors.
9. Each fish retailer on the average supplied nearly 40 consumers on a market day, thus highlighting the importance of local fish marketing in meeting animal protein requirements in the local diets.
10. Investments in local fish marketing were profitable as indicated by the positive net incomes of the traders. Market vendors earned higher net incomes as compared to other traders because they had high turnovers, enjoyed wider price margins and incurred the least operating costs.
11. Fresh Nile tilapia was reported as the most consumed fish product followed by smoked Nile perch and sun-dried Mukene. Most consumers considered high buying prices and fish scarcity as the main constraints limiting the consumption of fish.

12. Beach-level marketing enterprises were more profitable than off-beach due to their higher turnover.
13. It is recommended that fisheries management should address the needs of the domestic market, particularly ensuring species diversity and sustainable supply of the different species serving the domestic market.
14. Fish marketing infrastructures and services should be extended beyond the beaches to inland marketing centres to promote viability in off-beach marketing and consumption.
15. Rural demand for fish should be improved through measures that enhance the earnings of consumers and enable them to better afford fish.
16. In view of the small quantities of Nile perch available in domestic markets, there is need to regulate export volumes by revising and strengthening the existing quota systems to accommodate domestic fish consumption needs

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1. INTRODUCTION

The study of the off-beach fish marketing and livelihoods has been carried under the Globalisation and Fish Utilisation and Marketing Project, a collaboration between the Fisheries Resources Research Institute (FIRRI) and the Mike Dillon Associates Limited, with funding from the Department for International Development (DFID) of the Government of the United Kingdom. The study is designed to examine the impact of the development of the export fishery on the fish producers, processors, traders and consumers in the artisanal fishery in Uganda. Under the Project, FIRRI has been able to collect field data relating to the livelihoods of artisanal fish producers, processors, traders and consumers, in particular data relating to income and revenue flows.

Industrial fish processing has existed in Uganda since 1990, producing mainly fillets for the international market. In the process, the country has been able to realise increased foreign exchange earnings as a result of fish export. Furthermore, the districts involved have benefited from increased revenues attributed to the presence of refrigerated trucks and insulated vessels at the beaches. Sources of such revenues include specific tax charged on trucks and vessels and market fees earned through tendering of the beaches.

Earlier studies within this Project were carried out at the beach-level, examining the impact of industrial fish processing and export on the livelihoods of the artisanal beach operators and consumers. The findings revealed that fish exports have resulted in higher income levels for boat owners and crewmembers targeting Nile perch, attributed to the high prices paid for Nile perch by the industrial processors. However, because of reduced fish supply on the domestic market due to the export of Nile perch, the prices of other species have also increased. Fish exports have resulted in substantially decreased levels of artisanal fish processing, and in some cases virtually eliminating it from the beaches, especially on Lakes Victoria and Kyoga. The levels of beach-level fish marketing activities have significantly declined, with only a small proportion of local traders continuing to deal in Nile perch as they cannot compete with factory trucks in securing raw supplies of the fish. Fish exports have also greatly reduced fish consumption levels even at the beach level, with indications that local population was consuming low quality Nile perch, namely rejects and juveniles.

The off-beach domestic fish-marketing consists of an extensive network of small-scale traders and processors who sell fish in domestic and regional markets. The effect of their activities is a wide and fairly well-functioning distribution system of fish. There are, however, growing concerns that the expanding fish export trade could be posing a serious threat to their operations, in which women play a prominent role. Moreover, weakening domestic fish marketing will in effect compromise food security of the multitude of fish-dependent households. The study on the off-beach fish marketing is part of a wider study to assess the impact of the global fish trade on the artisanal fishery and in this case, the off-beach fish traders and consumers.

1.1. LITERATURE REVIEW

Crutchfield (1958) conducted the pioneer study of Uganda's fish trade during the late 1950s, prior to which there were only pieces of records and information on various aspects of trade on Lake Victoria mainly with the Fisheries Department. Subsequently, other studies and reviews were carried out, notably that by the Tropical Development and Research Institute (TDRI 1984) and a second by a team of experts from the Government of the Republic of China in 1986. Among the recent studies was the survey by AFRP and UFFRO (1990). At about the same time, a regional study on Lake Victoria covering Uganda, Kenya and Tanzania was examining the impact of the proliferation of *L. niloticus* on the fishing industry in the region (Reynolds and Greboval 1988). The information was further up-dated and strengthened under the FAO/UNDP Fisheries Statistics and Information Systems (FISHIN) Project market survey (Kirema-Mukasa and Reynolds 1991). The survey, which covered Lakes Victoria, George and Edward, examined the marketing activities and highlighted the complexity created by the wide assortment of products traded; the large number of traders and processors involved and the combination of the formal and informal supply arrangements in operation. In the mid-1990s, the findings were further updated by FCSEP (1997), which undertook a nation-wide survey covering marketing, together with the other fisheries sector components of production, processing and consumption. The project was aimed at undertaking a diagnostic study of the fisheries sector components with a view to identifying the constraints to sector performance, based on selected criteria. The objectives of the marketing component were:

i) To identify categories within the fish marketing group and areas where they operated;

ii) To assess resources, facilities and technology available to the group;

iii) To study the institutional and organisational set up;

iv) To assess the existing status of the fish marketing component;

v) To study the group’s relations with other groups and its influences on them and,

vi) To investigate the constraints within the marketing component.

Some of the key findings included the highly informal private sector characteristic of fish marketing, with weak organisational and institutional framework. There was lack of prosperity among the marketing operators, attributed to constraints in transportation, taxation, storage, lack of capital and lack of business management skills. The study recommended establishment of a credit scheme to assist traders; training in business management; co-operative group administration and provision of extension services covering proper fish handling during the whole process of fish marketing to reduce post-harvest losses. Concerning transportation, the study recommended improvement in access roads as well as provision of specialised trucks with chill storage for their use. A review of the taxation policy was also suggested, with a view to reducing the

number as well as the rates of taxes paid along the fish distribution chain. Finally, it recommended further studies on fish marketing, particularly to investigate the traders' profit-volume relationships and how they could be improved to make the occupation more viable.

In a later study, SEDAWOG (1999) undertook a regional survey of fish marketing on Lake Victoria, covering Uganda, Kenya and Tanzania. There were four parts to the study, namely the survey of fish consumers, traders and processors, industrial processors and fishers. The survey of fish traders and processors was carried out with the objectives of:

i) Identifying and describing the people involved in the fish trade and processing industry;

ii) Investigating the impact of the export market upon the domestic fish trade;

iii) Examining the participation of women in the fish trade and

iv) Examining the structure and organisation of the fish trade.

The study confirmed that most of the issues that had been raised by earlier studies affecting fish trade were still relevant, namely: supply fluctuations, product spoilage, inadequate business knowledge among traders and lack of financial resources.

Odongkara (2001) examined the nature of poverty in the fisheries, identifying the indicators, analysing the causes and proposing intervention strategies aimed at enhancing the quality of life of Uganda's fishing communities of Lake Victoria. Within fish marketing operators, the study identified the bicycle traders and market stall operators as the most vulnerable with about 90% of them operating below the poverty line. Aspects of marketing that have contributed to the poverty were identified, including physical limitations through inadequate infrastructure, facilities, services and isolation of fish supply sources which affected fish quality and the nature of the competition, which influenced the pricing methods for fish. The report proposed that the physical limitations be addressed through ensuring the successful implementation of the relevant provisions within PEAP and PMA. The competitive nature of the market is expected to improve once the physical obstacles are removed. This calls for strengthening of the necessary links between fisheries and the rest of the economy.

1.2 STUDY OBJECTIVES

Overall Objective

The overall objective of the study is to assess the impact of the global fish trade on the livelihoods of local fish traders and consumers in off-beach fish markets and draw comparisons with beach-based traders and consumers.

Specific Objectives

a) To assess the costs and earnings of fish traders at off beach fish markets.

b) To compare costs and earnings of beach-based and off-beach fish traders.

c) To assess fish consumption levels and patterns of off-beach fish traders and consumers.

2. METHODOLOGY

2.1 STUDY AREA AND SAMPLE DESIGN

The study was carried out in 8 randomly selected districts that derive their main fish supplies from Lakes Victoria, Kyoga and Albert. Kampala, Masaka, Luwero and Tororo were selected as districts that obtained their supplies from Lake Victoria; Masindi and Arua as districts that mainly obtained their supplies from Lake Albert and Kayunga and Soroti districts that mainly derived their fish from Lake Kyoga. A list of (fish) markets in each district and information on market days was obtained from the Fisheries Officers and in every district approximately two markets, both rural and urban, were selected yielding a total of 15 markets.

2.2 DATA COLLECTION

The initial stages of the study constituted a review of literature and reports related to the study. The review was undertaken further to supplement on the information gathered in the field.

Primary data was collected through key informant and unit questionnaire interviews (Appendix 2). Fisheries Officers and heads of fish markets were interviewed to obtain general market information while a total of 321 local fish traders and consumers provided information on the costs and earnings and their fish consumption levels and patterns respectively.

Table 2.1: Distribution of Respondents by District and Market

Water Body	Districts	Markets	No. of Respondents
L. Victoria	Kampala	Kibuye	21
		Kalerwe	18
	Masaka	Masaka Central Market	15
		Nyendo	14
		Kabonera	23
	Luwero	Kasana	15
	Tororo	Tororo Central Market	18

Water Body	Districts	Markets	No. of Respondents
		Tuba	30
L. Kyoga	Kayunga	Kayunga Central market	32
	Soroti	Soroti Central Market	24
		Katine	17
L. Albert	Masindi	Masindi Central Market	8
		Bweyale	19
	Arua	Arua Central Market	29
		Koboko	38
Total			**321**

Source FIRRI survey data, 2003.

2.3 DATA ANALYSIS

Both qualitative and quantitative data was collected. The qualitative data was analyzed using frequencies whereas the quantitative data was transformed to give target variables related to the costs and earnings enterprises and subsequently analyzed. The cost and earnings data was analyzed by type of trader and fish species traded in. The SPSS Version 10.0 program was used in the data analysis. Measures of central tendency were calculated for the quantitative data. With respect to categorical data, the observations were summarised using frequencies, which were generated in percentages or counts. Tables were used in presentation of the summaries.

3. FINDINGS

3.1 Overview

Overall, Nile tilapia was the most available species at the off-beach fish markets that mainly obtained their supplies from Lakes Victoria and Kyoga. On the other hand, *Brycinus nurse* and *Hydrocynus* were the dominant species at markets that mainly derived their supplies from Lake Albert. Nile perch was available in most local markets although in limited quantities while Mukene seems to be gaining prominence. The scarcity of Nile perch in the off-beach markets is mainly attributed to the high overseas export demand. Other species of significance included *Clarias,* Haplochromines and *Protopterus*. The districts that mainly obtained their supplies from Lake Albert enjoy a more diverse fish species assemblage as compared to other districts.

All the markets visited dealt in both processed and fresh forms of fish. Processed forms were mainly sun-dried and smoked and were found in the

markets all the time. However, fresh fish was only brought either in the morning or evening. Although urban markets (Kibuye, Kalerwe, Masaka Municipal, Nyendo, Kasana, Tororo Central, Soroti Central, Arua Central, Masindi Central, Kayunga Central) operated on a daily basis, they had specific market days while rural markets strictly operated on specific market days, for example Kabonera and Bweyale operated on Saturdays, Tuba and Koboko on Thursdays, and Katine on Tuesdays. Market operations were planned in a way that allowed same traders to move from one market to another on specific market days. Consumers from far and nearby villages were able to access fish and other domestic supplies on market days. Table 3.1 shows quantities of the various species dealt in at selected markets.

Table 3.1: Weekly Quantities by species at the Selected Markets

Markets	Weekly Quantities (in tonnes)								
	Nile perch	Tilapia	Mukene	Clarias	Bagrus	Hydrocynus	Protopterus	B. Nurse	Haplos
Kibuye Kampala District	1.4	0.7	2.1	0.5	--	--	--	--	--
Kalerwe Kampala District	3.5	2.0	0.7	--	--	--	--	--	0.7
Masaka Municipal-Masaka District	0.4	2.0	3.0	--	--	--	--	--	2.0
Nyendo Masaka District	1.0	3.0	1.5	0.8	--	--	--	--	--
Kabonera	0.2	1.0	2.0	--	--	--	--	--	0.1
Tororo Central-Tororo District	1.5	4.0	1.6	--	--	--	--	--	--
Tuba Tororo District	0.4	0.8	1.0	--	--	--	--	--	--
Kasana-Luwero District	--	3.0	0.5	--	--	--	--	--	--
Soroti Central-Sororti District	1.0	2.0	--	2.0			1.0		
Katine	1.0	4.0	0.8	--	--	--	0.4	--	--

Sororti District									
Kayunga Central Kayunga District	0.1	5.0	0.4	--	--	--	--	--	--
Arua Central-Arua District	0.8	0.7	1.0				2.4	2.0	
Koboko Arua District	1.0	6.0	0.5	--	4.0	7.0	--	1.0	--
Masindi Central – Masindi District	--	--	--	--	0.2	0.5	--	--	--
Bweyale-Masindi District	0.2	0.5	5.0	1.0	0.5	0.5	0.3	2.0	--

Source: FIRRI Survey data 2003

The main sources of fish for Arua and Masindi markets are Lakes Albert, Victoria and Kyoga and the Albert Nile. Nearly all the fish destined for Arua markets came from Panyimur Market in Nebbi District. Much of the fish that was found in the markets of the two districts was processed (salted, sun dried and smoked). There are seasonal variations in supply of species to some of these markets. The supply is also influenced by tastes and preferences as well as distances involved . Markets from far north prefer salted and sun dried fish that stay much longer than smoked form. There is abundant supply of *Protepturus* and *Clarias* to the markets of Soroti Central, Katine and Bweyale and *Bagrus Spp* for Arua Markets.

Urban markets such as Arua, Masindi, Masaka, Soroti, Kayunga and Kalerwe have fish marketing facilities including permanent stalls while rural markets have temporary structures of reeds and grass.

3.2 Fish Traders Characteristics:

The average age of the off-beach fish traders was 35 years, with about 9 years spent marketing fish. At least 81% of the fish traders had attained primary education while the rest had not gone to school at all. Of these, only 23% had advanced to the secondary school level. Most traders were married (70%) and females dominated the sample (65%). Most traders in the sample were Baganda (37%) followed by Lugbara (14%), Kakwa (13%) and Itesot (12%).

3.3 INPUTS AND COSTS

3.3.1 Capital Costs

The fish traders employed some level of capital depending on the type of trade he is involved in. Generally, fish trading operations require low capital investments mainly consisting of bicycles and market stalls. Most market stalls in urban markets are made from concrete or timber whereas rural market traders use wooden racks. Other capital items of relatively negligible cost include fish baskets, polythene sheets and sacks for carrying fish.

Table 3.2: Capital Costs by Type of Trader (Shs/ unit)

Asset	Type of trader		
	Bicycle trader	Market vendor	Wholesaler
Bicycle	49,100	58,250	88,000
Market stall	45,000	36,510	15,000

Source: FIRRI Survey data, 2003.

Generally, some bicycle traders owned markets stalls for instance those found at Kayunga Central Market who would retail in rural markets where they owned stalls. Some market vendors also owned bicycles as their means of transport to ferry supplies from nearby supply markets, for instance those found in Masaka Municipal Market and had Nyendo Market as their fish supply source. Besides owning or hiring space on pickups, some wholesale traders were using bicycles and had stalls in markets that also served as stores.

3.3.2 Input Costs

The most significant operating cost item for the local fish traders was transport, which accounted for nearly 76% of the total costs for all marketing enterprises. The traders had bicycles but still incurred transport costs implying that they combine transport by bicycle with other means (hire of pick-up or public means) in the process of delivering fish to consumers. Most of the fish marketing enterprises (85%) were owner operated while the remainder relied on either hired (12%) or family labour (2%) sources. Each enterprise employed an average of 2 labourers.

Table 3.3: Total Weekly Costs by Type of Trader (Shs/ unit)

Cost item	Type of trader		
	Bicycle trader	Market vendor	Wholesaler

Depreciation	184	151	102
Hire of stall	1,542	1,335	1,136
Transport	44,000	18,586	29,968
Market dues	2,688	3,767	2,287
Labour	3,467	4,952	4,538

Source: FIRRI Survey data, 2003.

3.4 Outputs and Incomes

3.4.1 Quantities Traded and Fish Prices

As earlier indicated (Table 3.1) Nile tilapia was the most available species at the fish markets that mainly obtained their supplies from Lakes Victoria and Kyoga while *Brycinus nurse* and *Hydrocynus* were the dominant species at markets that mainly derived their supplies from Lake Albert. However, most fish traders interviewed dealt in Nile perch (38%), Nile tilapia (25%), Mukene (13%) and Bagrus (6%). Other species of significance included *A. baremose*, *Alestes nurse* and *Hydrocynus*. Some traders (10%) reported that they traded in more than one species. Most traders (62%) regarded their fish as mature whereas 34% considered their fish to be juveniles and some 4.3% a mixture of juveniles and mature fish. Most traders (64%) waited for fish to be delivered at the markets by wholesale traders while 36% obtained their supplies directly from fishermen at landing sites. Most traders interviewed (81%) were retailers. Most traders (60%) sold smoked fish while the rest sold sun dried (16%), salted/ sun dried (12%) and fresh (11%) fish. Each fish retailer on the average supplied nearly 40 consumers on every market day, thus highlighting the importance of local fish marketing in meeting animal protein requirements in the local diets. The main problems affecting fish marketing operations were high buying prices (41%) and alleged harassment by law enforcement officers (20%).

Table 3.4 presents information on the quantities traded in, buying and selling prices per kg of fish. Overall, *Bagrus* had the highest market price especially in Kampala based markets followed by the Nile tilapia, Nile perch and Mukene. Again, the price margins of *Bagrus* (Shs. 522/ kg) were the highest followed by Nile tilapia (Shs. 404/ kg), Nile perch (Shs. 336/ kg), Mukene (Shs. 235/ kg) and *Alestes nurse* (Shs. 146/ kg).

Table: 3.4. Quantities Traded, Buying and Selling Prices

	Type of trader		
	Bicycle trader	Market vendor	Wholesaler
Nile perch			
Weekly quantities traded	85.00	193.16	96.40
Buying price/ kg	1,250	1,307	1,300
Selling price/ kg	1,725	1,634	1,507
Nile tilapia			
Weekly quantities traded	119.57	227.64	553.00
Buying price/ kg	1,386	1,395	900
Selling price/ kg	1,729	1,905	1,260
Mukene			
Weekly quantities traded	.	144.16	1012.22
Buying price/ kg	.	893	936
Selling price/ kg	.	1,104	1,194
Bagrus sp.			
Weekly quantities traded	.	198.17	390.00
Buying price/ kg	.	3,685	1,363
Selling price/ kg	.	4,465	1,625
Brycinus nurse			
Weekly quantities traded	.	480.00	181.00
Buying price/ kg	.	675	499
Selling price/ kg	.	800	666
Other species*			
Weekly quantities traded	262.50	296.12	212.50
Buying price/ kg	1,350	1,404	1,500
Selling price/ kg	1,750	1,699	1,825

** *Alestes baremose, Hydrocynus* and *Protopterus*

Source: FIRRI Survey data 2003.

3.4.2 Traders Incomes

All types of fish marketing enterprises realized positive net incomes indicating that their operations are profitable (Table 3.5). Market vendors who are largely urban-based earned the highest net incomes due to a combination of relatively low costs, high turnovers and wider price margins. Bicycle traders on the other hand employed low capital hence realising low profit margins.

Table 3.5: Weekly Costs and Revenues by type of Trader (Shs/ unit)

	Type of trader		
	Bicycle trader	**Market vendor**	**Wholesaler**
Gross revenues	234,867	495,903	545,805
Cost of fish	186,400	358,545	446,463
Other input costs	17,211	14,526	30,403
Net revenues	34,789	122,768	68,939

Source: FIRRI Survey data 2003.

3.5 Fish Consumption

The most consumed fish species was Nile tilapia (52%) followed by Nile perch (25%) and Mukene (8%). Other species of significance included *Bagrus spp* and *Alestes barimose*. Most fish was consumed in the smoked (57%) and fresh (24%) forms with a few consuming the deep-fried (10%) and salted (8%) forms. The main substitutes to fish included beans (56%), green vegetables (25%) and ground nuts (13%). Most consumers considered high buying prices (41%) and fish scarcity as the main problems affecting consumption of fish.

Table 3.6: Fish Consumption Levels and Prices

	Fish Traders	**Non-Fish-Trading Consumers**
Monthly Income (Shs)	.	34,375
Household size	7	7
Daily household consumption (kg)	1.1	1.24
Daily per capita consumption (kg)	.4	.37
Frequency of consumption / week	2.5	1.8
Weekly per capita consumption (kg)	.9	.57
Average Fish Price Shs/kg	1,364	1,082

Source FIRRI survey data, 2003

3.6 Comparison of Beach and Off-beach Traders

One of the study's objectives was to draw comparisons in costs and earnings between beach and off beach traders. Table 3.7 below shows comparisons for

Lake Victoria beaches and markets in the districts that were assumed to obtain their supplies from Lake Victoria, namely Kampala, Masaka, Luwero and Tororo.

Table 3.7: Comparison of Beach and Off-beach Traders for Lake Victoria

	Beach traders			**Off-beach traders**		
	Bicycle trader	**Motor cycle trader**	**Pick-up trader**	**Market Vendors**	**Wholesalers**	**Bicycle trader**
Total Inputs	5,799	52,621	91,623	14,526	30,403	17,211
Nile perch						
Buying price/kg. (Ug.Shs.)	1,200	.	500	1,307	1300	1,250
Selling price/kg(Ug.Shs.)	1,600	.	700	1,634	1,507	1,725
Nile Tilapia						
Buying price/kg (Ug.Shs.)	1,033	875	900	1,395	900	1,383
Selling price/kg (Ug.Shs.)	1,358	1,150	1,181	1,905	1,260	1,733
Weekly Net Revenue	71,070	208,379	538,788	122,768	68,939	34,789

Source FIRRI survey data, 2003

Beach traders, who are also non-residents at the beach, incurred higher operating costs relative to off-beach traders due to their higher expenditures on fuel and transport, due to the sometimes-long distances between the beaches and inland markets. On the other hand, most off-beach traders, except for wholesalers, buy their fish supplies at markets of their operation thereby eliminating transport and fuel costs.

Most beach traders interviewed specialized in the trade of fresh Nile tilapia whereas most off-beach traders dealt in smoked Nile perch. However, at beach level, the trade in smoked fish was handled by local processors who mainly sold to wholesalers who in turn supply to market vendors in off-beach market. Most fresh Nile tilapia at the off beach market was supplied by pick-up traders

although bicycle and motorcycle traders to some extent also delivered fish supplies to markets.

The consistency between the buying and selling prices of wholesale traders and market vendors is an indication that the former supply the latter. The beach prices of Nile perch showed wide differences because the prices of Nile perch rejects was largely determined by level of spoilage, which also varied widely. Beach traders generally earned higher net incomes as compared to off-beach traders mainly because they had higher turnovers normally selling their daily stock of fish within a day. On the other hand, market vendors may take several days and sometimes weeks to sell off their fish products and in the long run fetch lower profits.

4. CONCLUSIONS AND RECOMMENDATIONS

Generally, off-beach fish marketing enterprises require low capital investments essentially because most of the capital inputs particularly the market stalls are either hired or of low cost. Hence, entering into the fish marketing business is relatively easy provided reliable and sufficient supplies of fish can be secured. In addition, most owners of fish marketing enterprises spent modest amounts of money on day-to-day expenditures because their fish supplies are delivered at the markets thereby eliminating transport and fuel costs.

Fresh Nile tilapia, smoked Nile perch and sun dried Mukene were the dominant forms of fish on the off-beach markets. Other species of significance included *Bagrus, A. baremose, Brycinus nurse* and *Hydrocynus*. Overall, *Bagrus* had the highest market price especially in the Buganda region markets followed by the Nile tilapia, Nile perch and Mukene. Most of the smoked Nile perch at the markets is juvenile or factory reject as indicated by the prices, which were considerably lower than that paid by factory agents.

The high cost of fish was reported as the single most limiting constraint to the operation of fish marketing enterprises. All types of fish marketing enterprises realized positive net incomes indicating that their operations are profitable. Market vendors who are largely urban-based earned the highest net incomes due to a combination of relatively low costs, high turnovers and wider price margins.

Fresh Nile tilapia, smoked Nile perch and sun-dried Mukene were the most consumed fish products. Beans, plain vegetables and groundnuts were the main substitutes to fish thereby suggesting that in the absence of fish, most households would lack alternative animal protein sources. High buying prices coupled with fish scarcity were reported as the main constraints limiting the consumption of fish.

Based on the findings of the study, the following recommendations are made:

1. Fisheries management should address the needs of the domestic market, particularly ensuring species diversity and sustainable supply of the different species serving the domestic market.

2. Fish marketing infrastructures and services should be extended beyond the beaches to inland marketing centres to promote viability in off-beach marketing.

3. Rural demand for fish should be improved through measures that enhance the earnings of consumers and enable them to better afford fish.

4. In view of the small quantities of Nile perch available in domestic markets, there is need to regulate export volumes by revising and strengthening the existing quota systems to accommodate domestic fish consumption needs.

5. REFERENCE

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APPENDICES

APPENDIX 1 PRINCIPAL PERSONS MET

Mr. Joackin Andiandu	District Fisheries Officer, Arua
Mr. Afeni James	Assistant Fisheries Officer, Arua Central Market
Mr. Amule John	Chairman Fish Traders, Koboko
Ms. Nabirye Florence	Assistant Fisheries Officer, Kayunga Central Market
Mr. Oketta	Dstrict Fisheries Officer, Soroti
Mr. Onyait S.	Assistant Fisheries Officer, Soroti
Mr. Segirinya Emilio	Chairman Fish Traders, Kabonera
Ms. Nakajiko	Head Fish Traders Section, Masaka
Mr. Sengendo	Head Fish Traders Section, Kasana
Mr. Nkwanga Patrick	Dstrict Fisheries Officer, Tororo
Mr. Okoth E.	Chairman Fish Traders, Tororo
Mr. Emojong	Assistant Fisheries Officer, Tororo
Mr. Opal Alfred	Market Tenderer, Bweyale
Mr. Philip Ngongaha	Assistant Fisheries Officer, Masindi
M. Baguma Richard	Dstrict Fisheries Officer, Masindi

APPENDIX 2 **DATA COLLECTION INSTRUMENTS**

Key Informant Interview with market tenderer/master

A. Background information

1) Date _____

2) Name of enumerator _____

3) District_____

4) Name of market _____

5) Title of respondent _____

B. Infrastructure/facilities in support of fish marketing (No. and description)

6)

a) Fish stalls _____

_____

b) Weighing shade _____

c) Raised platform __ _____

_____

Fill in the information below about fish, rank and quantities brought per week

Fish species	**Rank**	**Qty per week**
7) Nile perch		
8) Tilapia		
9) Mukene		
10) Other		
11)		

Fill in the information below about number by category, assets and rank of fish trader

Type of trader	**Rank**	**No**
12) Bicycle trader		
13) Truck trader		
14) Other		
15)		

17) State the problems faced with fish marketing

_____

_____

_____

Unit Questionnaire for Fish Marketing Sub-Sector

Name of enumerator _____

Date _____

1. District _____
2. Market/roadside point _____

A. PERSONAL DATA

3. Name of respondent _____
4. Age _____ years
5. Sex [1] Male [2] Female
6. Tribe [1] Ganda [2] Soga [3] Mugungu [4] Munyoro [5] Teso
   [6] Mukenye [7] Acholi [8] Adhola [9] Alur [10] Other_____
7. Marital Status: [1] Married [2] Single [3] Divorced [4] Separated
   [5] Widowed [6] Other (Specify) _____
8. What is your level of education? [1] No schooling [2] Primary [3] Secondary
   [4] Tertiary [5] University [6] Other_____
9. How long have you traded in by products? _____ Years
10. Household size _____

B. INPUTS/ COSTS

Capital

11. What type of trader are you?
[1] Bicycle trader [2] pick-up trader [3] Factory Wholesale trader
[5] Retailer [6] Other (Specify) _____

12. What fish trading assets do you own?

ASSET	YEAR OF ACQUISITION	COST PRICE	EXPECTED USEFUL LIFE	SALVAGE VALUE
[1] Bicycle				
[2] Basket				
[3] Ice boxes				
[4] Truck				
[7] Stall/slab				
[8]				

13. What other inputs do you use and what are their costs?

INPUT	QTY	UNIT COST
Fuel		
Ice		
Transport		
Others		

14. How many days a week do you operate? _____

Labour

14. What sources of labour do you use?
[1] Self-employment [2] Family labour [3] Hired labour [4] Other _____

15. Provide the information below:

SOURCE OF LABOUR	NUMBER	UNIT COST/ DAY/ WK/MONTH
[1] Self-employment		
[2] Family labour		
[3] Hired labour		
[4] Other		

D. OUTPUT/ INCOME

16. What type(s) of fish do you deal in?
[1] Nile perch [2] Tilapia [3] Mukene [4] Other _____

17. Provide the information below:

TYPE OF FISH	AVERAGE WEEKLY QUANTITY TRADED	BUYING PRICES (KG)	SELLING PRICES (KG)
Nile perch			
Tilapia			
Mukene			
Other			

18. To whom do you sell your products?
[2] Retailer [3] Consumer [4] Other _____

19. If to consumers, approximately how may consumers do you sell to each day you operate? _____

20. In what form do you sell your products?
[1] Fresh [2] Processed-smoked [3] Processed – fried [4] Other _____

21. What problems do you face with marketing of your fishs_____
_____
_____

E. CONSUMPTION

10. What type of fish do you most commonly eat at home?
    [1] Nile perch [2] Tilapia [3] Mukene [4] Others _____

11. What form of fish do you consume?
    [1] Fresh [2] Processed – smoked [3] Processed – fried [4] Other _____

13. How much fish does your family eat each day? _____ Kgs

14. How often does your family eat fish fish per week? _____

15. At what price per kg do you buy fish? Shs. _____

16. Over the past year, has there been change in price at which you buy fish for consumption? [1] Yes
    [2] No

17. If yes, what change? [1] Increased [2] Decreased

18. What is your substitute for fish? [1] Beans [2] Meat [3] Vegetables
    [4] Chicken [5] Other _____

19. State problems associated with consumption of fish? _____
_____

Unit Questionnaire for fish consumers

Name of enumerator _____

Date _____

3. District _____

4. Market/roadside point _____

A. PERSONAL DATA

3. Name of respondent _____

4. Age _____ years

5. Sex [1] Male [2] Female

6. Tribe [1] Ganda [2] Soga [3] Mugungu [4] Munyoro [5] Teso
[6] Mukenye [7] Acholi [8] Adhola [9] Alur [10] Other _____

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

15. What is your level of education?
[1] No schooling [2] Primary [3] Secondary [4] Tertiary [5] University
[6] Other (Specify) _____

16. How long have you consumed fish? _____ Years

10. What is your main source of income?
[1] Farming [2] Trading [3] Salaried employment

k. How much do you earn in a week? _____
l. Household size _____

B. CONSUMPTION PATTERNS

13. What type of fish do you most commonly eat at home?
[1] Nile perch [2] Tilapia [3] Mukene [4] By-products [5] Others _____

14. What form of fish do you consume?
[1] Fresh [2] Processed – smoked [3] Processed – fried [4] Other _____

15. How much fish does your family eat each day? _____ Kgs

16. How often does your family eat fish per week? _____

17. At what price per kg do you buy fish? Shs. _____

18. Over the past year, has there been change in price at which you buy products for consumption?
[1] Yes [2] No

19. If yes, what change? [1] Increased [2] Decreased

20. What is your substitute for fish? [1] Beans [2] Meat [3] Vegetables
[4] Chicken [5] Other _____

21. State problems you are faced with in respect to obtaining fish for consumption? _____