Final Report

of the

# BASELINE DATA RECONSTRUCTION FOR THE QUALITY ASSURANCE FOR FISH MARKETING PROJECT

## (QAFMP)



**Submitted to**

**ICELANDIC INTERNATIONAL DEVELOPMENT AGENCY (ICEIDA)**

**And**

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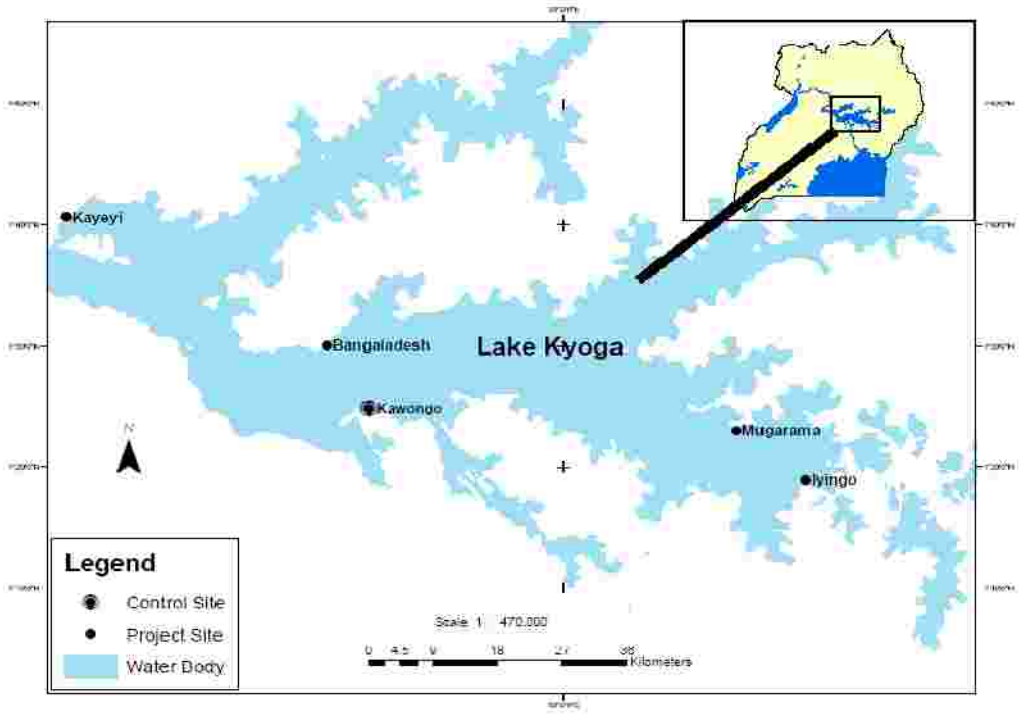



Fig. 1: Showing QAFMP improved and control landing sites on La Kyoga and Kwania.

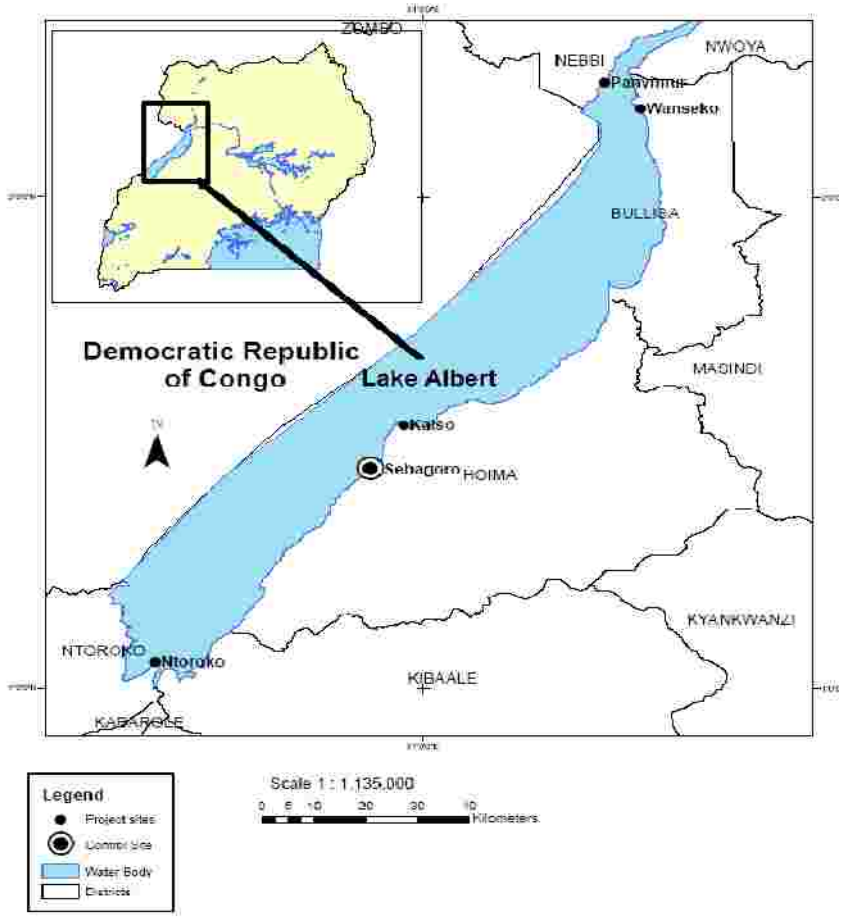



Fig. 2: Showing QAFMP improved and control landing sites on Lake Albert.

**Acronyms**

| | |
|---|---|
| BMU | Beach Management Units |
| CAO | Chief Administrative Officer |
| CAS | Catch Assessment Survey |
| DFO | District Fisheries Officer |
| DFR | Department of Fisheries Resources |
| DRC | Democratic Republic of Congo |
| FO | Fisheries Officer |
| FS | Frame Survey |
| ICEIDA | Icelandic International Development Agency |
| IFMP | Implementation of Fisheries Management Project |
| LEAF | Lake Edward and Albert Fisheries |
| LVFO | Lake Victoria Fisheries Organisation |
| MAAIF | Ministry of Agriculture, Animal Industry and Fisheries |
| NaFIRRI | National Fisheries Resources Research Institute |
| NARO | National Agricultural Research Organisation |
| NUSAF | Northern Uganda Social Action Fund |
| PRDP | Priority Reconstruction and Development Programme |
| QAFMP | Quality Assurance for Fish Marketing Project |
| UBOS | Uganda Bureau of Statistics |

## Executive Summary

### Introduction

The Quality Assurance for Fish Marketing Project (QAFMP), implemented by the Department of fisheries Resources (DFR) with funding support from the Icelandic International Development Agency (ICEIDA), was aimed at reducing poverty and improving the livelihoods of people in fish dependent mmunities on Lakes Kyoga and Albert. The activities included construction of landing sites and offices for District Fisheries Officers (DFOs) and training for Beach Management Units (BMUs), fish inspectors and DFOs, among others.

A baseline survey for the project conducted in 2009 had gaps that could not allow assessment of project performance in the outcome and i pact indicators to be made. This study was to reconstruct the baseline data, aligned to impact and outcome indicators on the project logframe and results framework, against which project achievements could be assessed.

The purpose and scope of the study was to reconstruct baseline data and analysis describing the situation prior to QAFM Project inception, taking 2008 as the baseline year, which was aligned to the project logfra outcome and impact indicators; to collect data on current status to compare project outcome (and where possible impact) in improved fish handling sites in comparison with the baseline and comparable non-improved fish handling sites as control group.

The study was conducted through a secondary data search from sources at NaFIRRI, DFR and ICEIDA. Field data collection covered boat and gear owners, crew members, processors and traders, collected at eig project intervention and two control landing sites, covering 312 respondents through a sample survey. Key Informant Interviews were conducted with DFOs and BMU leaders in the study districts and landing sites respectively.

### Baseline reconstruction

The mean population per landing site at project and control sites were 3,715 and 2,500 respectively. Literacy levels given by respondents able to read vernacular were 12.9% and 25.8% respectively while numeracy levels given by those able to write numbers were 6.5% and 12.9% respectively. Some 36.4% of the respondents had migrated from one landing site to another prior to the project.

With respect to impact indicators, annual household incomes for the main fish species at project and control sites respectively in Shs million were: Nile perch (12.9 and 11.7), Tilapia (16.2 and 16.0), Mukene (8.7 and 6.8) and *B. nurse/ N. bredoi* (14.0 and 12.6).

Livelihood indices, indicated by respondents who had a ss to schools were 67.7% and 54.8%; health centres 61.3% and 74.2% and HIV/AID information services 74.2% and 83.9% respectively.

Disease infection, with respect to cholera at project and control sites was 12.9% and 19.4% respectively and diarrhea/ dysentry was 58.1% and 58.1% respectively.

Adoption of alternative livelihoods were crop farming (51.6% and 35.5%); livestock farming (45.2% and 29.0%) and commodity trade (19.4% and 16.1%) for project and control sites respectively.

Household livelihood diversification, revealed by contributions of fisheries to total household incomes were 72.0% and 80.0% respectively.

With respect to food security, respondents who ate 3 meals a day were 56.2% and 76.9% and the amounts of fish eaten were 2.5 and 2.2 kg per day at project and control sites respectively.

Expenditures on basic needs in Shs were: food items (8,685 and 11,337 per day), health (31,345 and 52,235 per month), education (229,218 and 342,738 per term), clothing (104,067 and 169,884 per year) and saving (162,717 and 306,761).

Values of the main assets owned by respondents in Shs llion were: brick & iron roofed houses (3.27 and 3.81) and land (4.73 and 2.19).

Baseline outcome indicators revealed that post harvest percentage economic losses were Nile perch (-3.8% and -7.4%), Tilapia (-3.2% and -18.0%), Mukene (2.0% and -1.0%) and *B. nurse/ N. bredoi* (2.1% and -22.4%).

Average volumes of fish marketed at project and control sites in tonnes were 1,935 and 1,846 respectively.

Average proportions of catch marketed at project and control sites were 77.0% and 66.8% respectively.

Average values of marketed fish at project and control sites were Shs million 962 and 990 respectively.

Respondents who made use of the improved infrastructure and facilities at project and control sites were 52.4% and 44.6% respectively.

Respondents who had access to the beach market were 64.5% and 70.9% while those with access to fish market information were 41.9% and 45.2% at project and control sites respectively.

**Current status**

Current results with respect to impact indicators, annual household incomes for the main fish species at project and control sites respectively in Shs million were: Nile perch (10.9 and 9.6), Tilapia (13.7 and 12.3), Mukene (24.7 and 21.4) and *B. nurse/ N. bredoi* (23.3 and 18.2).

Livelihood indices, indicated by respondents who had a ss to schools were 80.6% and 61.3%; health centres 74.2% and 83.9% and HIV/AID information services 90.3% and 96.8% respectively.

Disease infection, with respect to cholera at project control sites was 9.7% and 16.1% respectively and with diarrhea/ dysentry was 67.7% and 64.5% respectively.

Adoption of alternative livelihoods were crop farming (54.8% and 45.2%); livestock farming (51.6%and 45.2%); commodity trade (19.4% and 19.4%) for project and control sites respectively.

Household livelihood diversification, revealed by contributions of fisheries to total household incomes were 70.3% and 75.5% respectively.

With respect to food security, respondents who ate three meals a day were 59.5% and 75.0% and the amounts of fish eaten were 2.7 and 2.5 kg per day at project and control sites respectively.

Expenditures on basic needs in Shs were: food items (15,283 and 14,310 per day), health care (61,083 and 76,643 per month), education (381,466 and 499,795 per term), clothing (200,923 and 197,337 half yearly) and Saving (184,518 and 229,766 per month).

Values of the main assets owned by respondents in Shs million were: brick & iron roofed houses (7.17 and 9.34) and land (9.6 and 7.09).

Respondents who perceived improvements in their livelihoods since the project start at project and control sites were 74.2% and 29.0% respectively

Baseline outcome indicators revealed that post harvest percentage economic losses at project and control sites respectively were Nile perch (-1.6% and -6.5%), Tilapia (-3.1% and -18.1%), Mukene (-1.5% and -0.8%) and *B. nurse/ N. bredoi* (-0.9% and -12.4%)

Average volumes of fish marketed at project and control sites in tonnes were 1,975 and 1,874 respectively.

Average proportions of catch marketed at project and control sites were 94.0% and 54.8% respectively.

Average values of marketed fish at project and control sites were Shs million 1,312 and 1,323 respectively.

Respondents who made use of improved infrastructure and facilities at project and control sites were 58.0% and 65.8% respectively.

Respondents who had access to the fish buying trucks were 64.5% and 74.2% while those with access to fish market information were 64.5% and 71.0% at project and control sites respectively.

**Comparative analysis**

At the impact level, between baseline and the current year, net revenues of fishing units declined at project and control landing sites for Nile perch and Tilapia, with lower percentage declines at project (-15.25%) than at control (-18.72%) sites.

Fish prices increased at project and control sites for Nile perch (75.63% and 56.49%), Tilapia (37.93% and 145.85%), Mukene (173.08% and 91.67) and *B. nurse/ N. bredoi* (156.38% and 85.00%).

Livelihood indices at project and control sites, represented by acces to education, increased by 17.26% and 15.15% respectively and for health services increaesed by 17.65% and 15.56% respectively.

The proportions of households that perceived improvements in their livelihoods at project and control sites were 74.19% and 29.03% respectively.

At the outcome level, percentage changes in post harvest lossess at project control sites respectively were as follows: Nile perch (-57.30% and -15.56%), Tilapia (-15.56% and 0.56%), mukene (-25.61% and -20.00%) and *B. nurse/ N. bredoi (-*59.52% and -44.64%).

Percentage changes in volume of fish marketed at project and control sites were 2.05% and 1.54% respectively.

Percentage changes of catch marketed at project and control sites were 18.62%and -8.00% respectively.

Percentage rise in value of fish marketed at project and control sites were 17.06% and 33.69% respectively.

Percentage changes in access to improved and functional infrastructure and facilities at project and control sites were 46.25% and 17.42% respectively.

While beach markets remained the main market outlet for most respondents over the period, access to factory agents and industrial processors declined due declining catches of Nile perch and tilapia

The proportional change in respondents reporting good cess to trucks between baseline and current years at control and project sites were 64.29% and 50.00% respectively

Percentage increase in respondents who rated their market information as being "good" at project and control sites were 47.17% and 57.14% respectively.

**Conclusion**

Reconstruction of baseline has been made possible through the use of reports of previous studies, records of BMUs and DFOs, field sample survey and key informant interviews. However, challenges were identified with the secondary as well as primary data. The lesson for future projects was, therefore, to get the log frame right from the beginning of the project so that the real time baseline study can provide the necessary information on the impact and outcome in ators for subsequent evaluations.

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# *CHAPTER 1:*

# *INTRODUCTION*

The Department of Fisheries Resources (DFR) has been implementing the Quality Assurance for Fish Marketing Project (QAFMP), with support of the Icelandic International Development Agency (ICEIDA). The project, which is scheduled to run between 2009 and 2013, is aimed at reducing poverty and improving the livelihoods of people in fish dependent communities. This is to be achieved through improved quality and safety of fish for the domestic, regional global markets. The immediate objective is to increase volume and value of marketed fish on the domestic and export markets.

The main project activities includes construction of landing sites and offices for District Fisheries Officers (DFOs) and equipping the offices; training for Beach Management Units (BMUs), fish inspectors and DFOs and cing quality assurance manuals for fish inspectors.

In 2009, a baseline survey for the project was conducted, covering 9 Districts on Lakes Kyoga and Albert. It provided general information on the landing sites covering fish production, catch volumes and values, fish species, boats and fishermen. For each of the 9 districts, it identified constraints and gaps to fisheries activities, established training needs of staff and resource users, educational levels within staff and BMU leadership, numbers of fisheries staff and BMU leaders and availability of training facilities for BMUs.

However, the mid-term project review conducted in 2012 revealed that the original baseline results did not provide data aligned to the project indicators, especially at the impact and outcome levels, hence it could not allow evaluation of project performance in the outcome and impact indicators. At b the original baseline results could be used in monitoring the outputs of the project, namely facilities and training provided.

DFR, therefore, requested for this study to reconstruct the baseline data and analysis describing the situation prior to QAFMP implementation in 2008, against which progress could be assessed, in line with the project log frame and results framework. Unlike the original baseline, this study is structured on the impact and outcome indicators as given in Appendix 5. While no direct comparisons may be possible between results of this study and those of the baseline due to differences in focus, this report should be seen to complement the first, building on it and taking it to a higher level that would meet the requirements for impact and outcome assessment of the project achievement

This is the final report on the study, prepared to provide results to DFR and ICEIDA on the baseline reconstruction, current status and comparative s of the impact and outcome indicators.

## 1.1 Objectives

The purpose and scope of the study were as follows:

i) To reconstruct the baseline data and analysis describing the situation prior to QAFM Project inception taking 2008 as the baseline year which s aligned to the project logframe outcome and impact indicators.

ii) To collect data on current status to compare project outcome (and where possible impact) in improved fish handling sites in co ison with the baseline and comparable non-improved fish handling sites as control group.

The specific objectives are as follows:

i) Design a baseline data reconstruction study methodology and data collection tools

ii) Conduct the study to obtain baseline reconstruction data.

iii) Collect current data on the indicators.

iv) Present a report on the results.

## 1.2 Expected outputs

i) Comprehensive baseline reconstruction study design developed.

ii) Comprehensive baseline and current data collected and and results report produced, covering:

- Data collection design, methodology and activities.
- Baseline data reconstruction for the impact and outcome indicators
- Current status of the indicators.
- Comparison of current with baseline reconstructed data.
- Conclusion and recommendations.

iii) Submission of report and the data sets in electronic and hard copies.

## 1.3 Background of the control landing sites

The control landing sites selected were Sebagoro and Kawongo. Sebagoro is close to Kaiso but a little smaller than Kaiso in the same district of Hoima. Kawongo is in Kayunga District and is close to but a little bigger than Bangladesh in Amolatar District. Interventions at the project improved landing sites included a platform with slab and shade, toilet and wash rooms, parking area, waste pit and fencing. Characteristics of the control landing sites compared to the project improved sites are given in Table 1.

## *CHAPTER 2:*

## *METHODOLOGY*

The baseline data reconstruction was conducted using a combination of methodologies, namely secondary data search, recall using a questionnaire sample survey and Key Informant Interviews using a semi-structured instrument. The data collection tools are given in Appendix 4.

The study was planned for 8 Districts, covering 8 project intervention and 2 control landing sites on Lakes Kyoga and Albert. Infrastructure at the project sites of Kaiso and Panyimur were not yet operational at the time of study, hence they were not included for current data in some calculations where they would distort the results. The list of landing sites visited is given in Appendix 1.

### 2.1 The process

The activities carried out were as follows:

Comprehensive baseline data collection/ study design was carried as follows:

i) A technical team meeting of members from NaFIRRI, DFR ICEIDA discussed the baseline data reconstruction design.

ii) Following revision of the project Logframe and Results Framework by ICEIDA, the questionnaire and key informant interview checklis were drafted and circulated to ICEIDA and DFR for comments.

iii) Training was provided to data collectors at station and in the field.

iv) The data collection tools were pre-tested at Bukungu Landing Site for clarity, relevance and appropriateness. This was followed by a l team meeting of NaFIRRI, ICEIDA, DFR and Buyende District Fisheries staff, held in Kamuli to review the comments for improvement of the tools.

### 2.2 Data sources

Secondary data and information for reconstruction of baseline information have been obtained from NaFIRRI, DFR and ICEIDA and reviewed, including:

i) Frame and Catch Assessment Survey (CAS) reports for Lakes Albert and Kyoga for 2007 and 2012. (Taabu-Munyaho *et al* 2012; Mbabazi *et al* 2012)

ii) Socio-economic survey reports of the two lake systems conduc by NaFIRRI. (Odongkara *et al* 2013; Odongkara *et al* 2009; Odongkara *et al* 2007)

iii) QAFM Project baseline survey and the Mid-term review reports were obtained from the project office.

iv) The revised logical framework (LOGFRAME) and project i ementation arrangements for QAFM Project from ICEIDA.

v) Records of fish quantities landed and prices have been assessed at District Fisheries offices and BMUs at landing sites.

vi) Market data from Fish Movement Permits have been asses at 10 Landing Sites.

Comprehensive baseline reconstruction and current data collection, analysis and report were carried out. Field data on primary stakeholders, mely boat and gear

owners, crew members, processors and traders have been collected at eight project intervention and two control landing sites. A total of 312 respondents were covered, with an average of 31 for both control and project landing sites.

## 2.3 Data analysis

Data from secondary and field sources were blended where necessary to compute the required indicators. The different sources were also used for triangulation purposes.

Statistical tests were carried out where appropriate, including the Chi-squared test for frequencies and the Standard Deviation for means. Results which did not meet the tests were not included in the report.

Data on the different indicators were collected and analysed as follows:

### 2.3.1 Household incomes among fish dependent communities indicator

Household incomes were represented by the net revenues from fishing activities of respondents.

The data used to compute the net revenues were production costs, catch data and fish prices, by main species and by landing site.

- Production costs covered costs of boats, oars, labour, gears, floats, sinkers anchors and operational expenses,
- Additional costs for *R. argentea* and *A. nurse/ N. bredoi* included lanterns and paraffin.
- Sources of cost data were the sample survey, key informant interviews with BMU leaders, frame survey reports and records of suppliers of fishing inputs
- Catch data by main species were obtained from sample survey, key nformant interviews and catch assessment survey report.
- As the current year was still running, CAS data for the previous complete year 2012 was used.
- Fish price data were obtained from the sample survey, nformant interviews and catch assessment survey reports.

Net annual revenues were computed as the difference between total annual revenues and total annual costs.

Depreciation on fixed cost items were taken on straight line bias.

The key assumptions used in the calculations were that the ‘parachute” and ‘barque” boat data were the predominant boat types on Lakes Kyoga and Albert respectively.

Only legal gear and fishing methods were considered in the analysis.

The use of outboard was limited on both lakes and generally considered not to be cost-effective for fishing and most of the outboard engines encountered on the lakes were used for transportation of mixed goods and passengers.

### 2.3.2 Livelihood indices of households in fish dependent communities indicator

The livelihood indices considered were access to education and health services; health status; alternative livelihood sources; income diversification; food security; expenditure patterns and asset ownership.

The data was obtained from the sample survey, key informant interviews and published sources (UBOS 2010).

Data summaries in counts, percentages and means were computed.

### 3.2.3 Households that perceived improvements in their livelihoods indicator.

The data used to measure this indicator were the proportions of respondents who considered their livelihoods to have improved since ba line year.

Tha data were obtained from the sample survey.

Data summaries in counts and percentages were computed.

### 2.3.4 Post harvest losses in the project improved landing sites

Post-harvest economic losses were computed for the different landing sites and fish species using data on volumes of fish catch, proportions of catch sold at reduced prices due to spoilage, normal fish prices and the reduced prices at which spoilt fish was sold.

- The average volumes of catch per day by species, from ich annual equivalents were computed, were obtained from sample survey and CAS reports.
- Proportions of catch, by fish species, sold at reduced prices were obtained from the sample survey.
- The average prices of good quality fish were obtained m the sample survey and CAS reports.
- Reduced prices at which the spoiled fish was sold were obtained from the sample survey.

Post-harvest economic losses were computed as a product of the data under the above variables.

### 2.3.5 Volumes of fish marketed from the project improved lan ing sites

Volumes of fish marketed were captured using records of Fish Movement Permits (FMP) and through recall by BMU leaders, based on number of transport trucks and boats leaving the landing sites per week, their species cargo and tonnage.

Weekly estimates were converted to annual estimates by applying a raising factor of 52.

### 2.3.6 Proportions of captured fish marketed from the landing sites

This indicator was measured using catch tonnage and marketed tonnage data.

- Fish catch tonnage, by species and by landing site, wa obtained from CAS results, BMU"s and DFO's records.

- Fish marketed tonnage by species and by landing site u were computed in **Section 2.3.5** above, based on FMPs and transportation records of BMUs.

### 2.3.7 Values of fish marketed from the landing sites

The indicator was measured using tonnage of fish marketed and fish prices.

- Tonnage of fish marketed by fish species and by landing site was obtained from **Section 2.3.5** above.
- Prices of fish marketed by species and by landing site were determined through recalls with BMU leaders, individual respondents and from CAS reports.

### 2.3.8 Fishing population with access to improved and functio al infrastructure and facilities

Data on this indicator was generated through interviews under the sample survey and key informant interviews with BMU leaders.

Frequencies were computed for the baseline reconstruction and current status. Percentages were calculated for the comparison between baseline and current status.

### 2.3.9 Fishing population with access to markets and market information

The indicator was also assessed using frequencies and percentages of respondents derived from the sample surveys, supplemented with key informant interview information.

## 2.4 Reporting

Deliverables submitted to DFR and ICEIDA include the following:

i) Study proposal

ii) Study budget

iii) Data collection tools

iv) Programme of work

v) Interim progress report

vi) First draft report

vii) Final report

## 2.5 Challenges

The challenges encountered during the study were that frame and catch surveys for Lake Kyoga for 2012 were not carried out. Catch data collected by BMUs were incomplete and were not summarised to give monthly or annual estimates. Fish movement permits were issued mostly for mukene, as coverage of other species was hindered by the presence of immature fish in consignments. Also there were no records of permits other than for the current period. Due to low record keeping among fishers, recall of some of the baseline information was a challenge to the respondents.

The indicators likely to be affected by these limitations are the household incomes, post-harvest losses, volumes and values of fish marketed as they involve computations requiring extensive data.

There was some turnover of respondents at the landing site, estimated at 17.7% and 18.5% for project and control sites respectively (Table 2). However, the new respondents were not required to provide data for baseline reconstruction but only for the current status, so the quality for baseline data was not affected.

## *CHAPTER 3:*

## *RECONSTRUCTION OF BASELINE DATA*

The chapter provides highlights of the fishing community characteristics as at baseline for the project and control sites. This is fo wed by results specific to the impact and outcome indicators at baseline. For data types, sources and analysis under each indicator, reference is made to the relevant section in the Methodology chapter, to avoid the report becoming too repetitive. stated earlier, there is little comparison between these results and those of the original baseline report, as the focus was different. The report should supplement the original baseline report by providing results on impact and outcome indicators.

### 3.1 DEMOGRAPHIC CHARACTERISTICS

This section supplements the information on fishing co munities on the original baseline report. It provides information on the landing site populations, literacy and numeracy status, education, migrant statu target species and the role of boat owners and fish traders. The data was obtained from the sample survey and key informant interviews, frame survey reports and previous socio-economic surveys.

The results revealed that baseline mean populations per landing site at project and control sites were 3,715 and 2,500 respectively (Table 3).

Males dominated the activities along the fish value chain (84.9%) but there were also significant numbers of women owning boats and doing fi processing. The average age of the adults was 36 years, ranging from 18 to 74.

Concerning literacy levels, project and control landing sites were at different levels at the beginning of the project. Based on average sample of 31 respondents per landing site, the baseline percentages of respondents able to vernacular were 12.9% and 25.8% at project and control sites respectively (Table 4).

Baseline proportions of respondents able to write numbers were 6.5% and 12.9% for project and control sites respectively (Table 4).

The average numbers of boys of school going age who were actually in school at baseline were 2.1 and 1.8 at project and control sites respectively. For girls, the baseline averages were 2.1 and 1.5 for project and control sites respectively (Table 5).

Some 36.4% of the respondents reported that they had m from one landing site to another prior to 2008. The main reason for these movements was the seasonality in fish catch (56.1%).

At baseline, majority of the respondents on Lake Kyoga targeted Tilapia (68.2%), followed by Nile perch (27.3%) while on Lake Albert, the main fish targeted was *Hydrocynus* and *Alestes baremose* (33.3%), followed by *Bracynus nurse* and *Neobola bredoi* (27.8%).

At baseline, the average number of days the respondents operated in a week were 5.1, which translated to 265 days a year for the large species and 183 days for the small pelagics, namely *R. argentea, B. nurse and N. bredoi*, known locally as mukene, muziri and ragoge respectively. These were fis half of the days of the month due to moon light effect.

Baseline percentage of boat owners and renters was 38.7% at both project and control sites. Baseline proportions of fish traders were 3.2% and 9.7% at project and control sites respectively. The aveaged were disaggregated by gender (Table 6).

## IMPACT INDICATORS

### 3.2 HOUSEHOLD INCOMES AMONG FISH DEPENDENT COMMUNITIES

Percentage increase in household incomes among fishing dependent communities was one of the impact indicators chosen for the project. Income was derived through sale of catch and was determined from total revenues less total costs of the fishing units. Better fish quality through improved handling w attract more buyers to improved landing sites, leading to higher fish prices thus, higher revenues for the fishers. Not withstanding, other factors also had mpact on fish prices, notably decline in fish catch, growing demand and the general lation in the economy. A previous study identified the key drivers of profitability to include effectiveness in management of the fish stocks, demand and stability of the market (Odongkara *et al* 2013).

The data types, sources and analysis as well as the li tions for this indicator are given in ***Section 2.3.1*** and ***Section 2.5*** above. The results revealed that the baseline annual net revenues for the main fish species at proje l sites respectively in Shs million were as follows: Nile perch (12.9 and 11.7), Tilapia (16.2 and 16.0), Mukene (8.7 and 6.8) and *B. nurse/ N. bredoi (*14.0 and 12.6) (Table 7).

#### 3.2.1 Fish prices during high and low catch months of the year

For purposes of computing annual production and catch, distinction was made between the high and low catch months of the year and average prices were computed from sample survey, CAS and previous socio-economic surveys.

Baseline average fish prices at project and control sites respectively in Shs per kg were as follows: Nile perch (2,619 and 2,744), Tilapia (2,254 and 1,796), mukene (6,500 and 6,000 per basin) and *B. nurse/ N. bredoi (*4,813 and 5,500 per basin) (Table 8)

### 3.3 LIVELIHOOD INDICES OF HOUSEHOLDS IN FISH DEPENDENT COMMUNITIES

An impact indicator of the project was the percentage increase in livelihood indices of households in fish dependent communities. Apart from household incomes examined above, other important livelihood indices were quality of life, given by education and health achievements, livelihood diversification, food ity and wealth accumulation. In order to assess improvements in livelihood indices, therefore, the study examined these parameters within the fishers' households.

The data types, sources and analysis were given in ***Section 2.3.2.*** The main limitation was that of limited ability by respondents to recall information four years ago.

#### 3.3.1 Access to education and health services

Primary school facilities were in the proximity of the landing sites at baseline time. Baseline proportions of respondents with access to functional schools at project and control sites were 83.9% and 87.1% respectively (Table 9). Baseline proportions of

respondents who made use of the schools at project and control sites were 67.7% and 54.8% respectively.

Health centers were also in the proximity of both the control and project landing sites. Baseline proportions of respondents with access to fun l health facilities at project and control sites were 64.5% and 80.6% respectively. Baseline proportions of respondents who made use of the health centres at project and control sites were 61.3% and 74.2% respectively.

Similarly, access to HIV/AIDS information was also good for both the control and the project landing sites. Baseline proportions of respondents with access to functional HIV/AIDS information services at project and control s were 77.4% and 83.9% respectively. Baseline proportions of respondents who made use of the HIV/AID information services at project and control sites were 74.2% and 83.9% respectively.

### 3.3.2 Disease prevalence

The common diseases that could be caused by poor sanitation and hygiene were cholera and diarrhea/ dysentery and the prevalence status is provided (Table 10).

Baseline proportions of respondents who reported infection with cholera at project and control sites were 12.9% and 19.4% respectively.

Baseline proportions of respondents reporting infection with diarrhea/ dysentry were 58.1% and 58.1% respectively.

### 3.3.3 Alternative livelihood sources

Livelihood diversification is an essential element of ustainable livelihood. In this respect, the baseline results revealed that the main alternative livelihood fishers engaged in at project and control sites were: crop farming (51.6% and 35.5%); livestock farming (45.2% and 29.0%); commodity trade (19.4% and 16.1%) respectively (Table 11).

### 3.3.4 Contribution of fisheries to total incomes

Baseline contributions of fisheries to total household incomes at project and control sites, as reported by respondents, were 72.0% and 80.0% respectively (Table 12). The high contributions of fisheries to household incomes reflected the heavy dependence on fisheries by households.

### 3.3.5 Food security

Indication of food security among the fishing communit was provided by the number of meals eaten by households in a day and the quantities of fish consumed.

Baseline proportions of respondents who ate 3 meals a ay were 56.2% and 76.9% for project and control sites respectively (Table 13).

The amounts of fish eaten in kg per household per day almost the same for both the control and project sites at the baseline (2.5 and 2.2 respectively) (Table 14).

### 3.3.6 Expenditure patterns of fishers

To provide further insights into the livelihoods of fishers, the study examined the expenditure patterns of fishers. The results showed that baseline expenditures on basic needs at project and controls sites respectively in Shs were: food items (8,685 and 11,337 per day), health (31,345 and 52,235 per month), education (229,218 and

342,738 per term), clothing (104,067 and 169,884 per year) and saving (162,717 and 306,761) (Table 15).

### 3.3.7 Asset ownership

Asset ownership was an important livelihood indicator cause certain assets could be used for production while others provided consumptive satisfaction were indicators of wealth.

Baseline values of the main assets owned by respondent d control sites respectively in Shs million were: brick & iron roofed houses (3.27 and 3.81), land (4.73 and 2.19), mobile phones (0.11 and 0.09), radios (0.09 and 0.51) and bicycles (0.12 and 0.21) (Table 16).

## 3.4 HOUSEHOLDS THAT PERCEIVED IMPROVEMENTS IN THEIR LIVELIHOODS

Percentage increase in households that perceived improvements in their livelihoods was another impact indicator of the project.

No baseline estimates were made as the project was only beginning then but, respondetnss were able to comment on improvements in their livelihood status at current point as the project was operating.

## OUTCOME INDICATORS

## 3.5 POST HARVEST LOSSES IN THE PROJECT IMPROVED LANDING SITES

Percentage reduction of post harvest losses was an out me indicator of the project. Post harvest losses have been computed as percentages total values if loss had not occurred.

The data types, sources and analysis for the indicator are given in ***Section 2.3.4*** and the challenges in ***Section 2.5***. The results revealed that baseline post harvest percentage economic losses by species at project and control sites respectively were as follows: Nile perch (-3.8% and -7.4%), Tilapia (-3.2% and -18.0%), Mukene (2.0% and -1.0%) and *B. nurse/ N. bredoi* (2.1% and -22.4%) (Table 18).

Observations revealed that majority of the respondents had sometimes sold fish at reduced prices due to spoilage (Table 19). However, only a few attributed the spoilage to poor handling of fish and other factors like distance of fishing grounds, high temperatures were also important. Spoilage was ma for light fisheries which did not have proper processing materials at both control and project landing sites.

## 3.6 VOLUMES OF FISH MARKETED FROM THE PROJECT IMPROVED LANDING SITES

Percentage increase in volume (tonnes) of fish marketed was an outcome indicator of the project. It was anticipated that with improved handling resulting from the use of improved infrastructure, the landing sites would attract more fish buyers to take advantage of reduced post harvest losses, leading to increased proportions of catch sold. This would also attract more fishers even from neighbouring landing sites to market their catch through the improved landing sites.

The data types, sources and analysis for the indicator are given in ***Section 2.3.5*** and the challenges in ***Section 2.5***. Baseline average volumes of fish marketed at project and control sites respectively in tonnes were 1,935 and 1,846 tonnes (Table 20).

### 3.6.1 Credit and financing of business

Financing methods for the fishing inputs were examined for their influence on fish marketing. Results using data from the sample survey revealed that own savings were the main source of financing for fishing, with limited proportions of respondents obtaining from fish buyers, SACCOs or financial institutions (Table 21). At baseline, proportions of respondents who used own capital at project and control sites were 35.5% and 32.3% respectively.

### 3.6.2 Booking of fish by traders

Related to funding sources, booking of catch by funders could also affect marketing of the fish. Results based on data from the sample surveys revealed that the proportions of respondents who indicated that their catch were booked at baseline were 1.6% at both project and control sites (Table 22). The low booking could be attributed to limited credit offered by traders to fishers for purchase of gear. High fish prices also meant that fishers were able to generate their own funds and avoid credit and booking.

## 3.7 PROPORTIONS OF CAPTURED FISH MARKETED FROM THE LANDING SITES

Percentage increase in proportion of captured fish marketed was another outcome indicator. Catch data for the study landing sites were obtained from the CAS results of 2007-8 and 2012-13. For Lake Kyoga, where no CAS was done in 2012-13, the gaps were filled with data provided by DFOs and BMUs.

The data types, sources and analysis for the indicator are given in ***Section 2.3.6*** and the challenges in ***Section 2.5***. The results revealed that the baseline mean percentages of catch marketed at project and control s s respectively were 77.0% and 66.8% (Table 23).

## 3.8 VALUES OF FISH MARKETED FROM THE LANDING SITES

Percentage increase in values of fish marketed was another indicator. This was determined by the prices at which the marketed fish was sold.

The methodology used in assessing the indicator is described in ***Section 2.3.7***. The results revealed the baseline mean values of marketed sh at project and control landing sites were Shs million 962 and 990 respectively (Table 24).

## 3.9 FISHING POPULATION WITH ACCESS TO IMPROVED AND FUNCTIONAL INFRASTRUCTURE AND FACILITIES

The outcome indicator measured here was the percent of fishing population in the project focal area with access to improved functional and facilities for quality fish handling and marketing. The facilties con were clean water for fish handling, sanitation facilities, fish handling facilities, fish drying facilities and the BMUs at the landing sites.

The data types, sources and analysis for the indicator are given in ***Section 2.3.7*** and the challenges in ***Section 2.5***. The results revealed that overall, at baseline at control and project sites respectively, 48.7% and 44.6% of respondents viewed the facilities

as being functional (Table 25). However, only 52.4% and 44.6% respectively made use of the facilities.

## 3.10 FISHING POPULATION WITH ACCESS TO MARKETS AND MARKET INFORMATION

Percent of fishing population with access to markets and market information outcome indicator was measured here. The data types, sources and analysis for the indicator are given in ***Section 2.3.8*** and the challenges in ***Section 2.5***.

### 3.10.1 Access to market

Table 26 gives the respondents who sold on the different market types. The results revealed that at both control and project sites, the majority sold at the beach market. The number of respondents who sold to factory agents was limited, due to the reduced Nile perch and tilapia stocks.

At baseline, proportions of respondents at project and control sites respectively who had access to the different markets were as follows: beach market (64.5% and 70.9%), factory agent/ industrial processors (6.4% and 12.8%), Other local markets (29.0% and 19.3%) and regional market (6.4% and 3.2%)

### 3.10.2 Access to fish buying trucks and fish market information

Access to fish trucks, as a measure to improve market access, was assessed. The data used was from the sample survey. The results showed that baseline proportions of respondents with access to fish buying trucks at project and control sites respectively were 38.7% and 48.4% (Table 27).

Fish market information was also considered because of its impact on market access. The results revealed that baseline proportions of respondents with access to fish market information at project and control sites respectively were 41.9% and 45.2%.

## *CHAPTER 4:*

## *CURRENT STATUS*

The chapter provides results on the current status of indicators to enable comparison to be made in the next chapter with the baseline situation to determine the progress of the project in achieving its goals and purpose. The methodologies used are described in the methodology chapter, to which reference will be made.

### 4.1 DEMOGRAPHIC CHARACTERISTICS

Data sources for this information were the sample survey and key informant interviews, frame survey reports and previous socio-economic surveys.

The results revealed that the current mean populations at project and control sites were 4,879 and 3,600 respectively (Table 3).

Literacy levels at project and control sites were 19.4% and 29.0% respectively of respondents able to read in vernacular (Table 4). Similarly, with respect to numeracy, the percentages of respondents able to write numbers at project and control sites were 12.90% and 16.13% respectively.

The current average numbers of boys of school going age actually in school at project and control sites were 2.4 and 2.1 respectively. For girls, the current averages were 2.3 and 1.9 respectively (Table 5).

The average proportions of boat owners at project and sites were 58.06% and 51.61% respectively. The average proportions of respondents in the category of fish traders were 9.68% and 19.35% respectively (Table 6).

### IMPACT INDICATORS

### 4.2 HOUSEHOLD INCOMES AMONG FISH DEPENDENT COMMUNITIES

Percentage increase in household incomes among fishing dependent communities was one of the impact indicators chosen for the project. Income was derived through sale of catch and was determined by revenues and costs of the fishing units. Better fish quality through improved handling would attract more buyers to improved landing sites, leading to higher fish prices and, thus, higher revenues for the fishers. Not withstanding, other factors also had impact on fish prices, notably decline in fish catch, growing demand and the general inflation in the economy.

The data types, sources and analysis as well as the limitations for this indicator are given in ***Section 2.3.1*** and ***Section 2.5*** above. The results revealed that the current net revenues for the main species at project and control sites in Shs million were as follows: Nile perch (10.9 and 9.6), Tilapia (13.7 and 12.3), Mukene (24.7 and 21.4) and *B. nurse/ N. bredoi* (23.3 and 18.2) (Table 7).

#### 4.2.1 Fish prices during high and low catch months of the year

Fish prices were obtained during high and low catch season and averaged, for the purpose of computing annual revenues. CAS reports and socio-economic surveys were other sources of fish price data.

Current average fish prices for project and control sites in Shs per kg were as follows: Nile perch (4,869 and 4,294), Tilapia (3,295 and 4,415), Mukene, (basin) (17,750 and 11,500) and *B. nurse/ N. bredoi* (basin) 11,281 and 10,175) (Table 8).

## 4.3 LIVELIHOOD INDICES OF HOUSEHOLDS IN FISH DEPENDENT COMMUNITIES

Apart from household incomes examined above, other important livelihood indices examined were quality of life, given by education and health achievements, livelihood diversification, food security and wealth accumulation. In order to assess improvements in livelihood indices, therefore, the study monitored the parameters within the fishers' households.

The data types, sources and analysis are given in ***Section 2.3.2.***

### 4.3.1 Access to education and health services

Primary school facilities were in the proximity of the landing sites at current time. Current proportions of respondents with access to functional schools at project and control sites were 100% and 96.8% respectively (Table 9).

Current proportions of respondents who made use of schools at project and control sites were 80.6% and 61.3% respectively.

Health centers were also in the proximity of both the control and project landing sites. Current proportions of respondents with access to functional health facilities at project and control sites were 74.2% and 93.5% respectively.

Current proportions of respondents who made use of the health entres at project and control sites were 74.2% and 83.9% respectively.

Similarly, access to HIV/AIDS information was also good for both the control and the project landing sites in current year. Current proportions of respondents with access to functional HIV/AIDS information services at project and control sites were 83.9% and 93.5% respectively.

Current proportions of respondents who made use of the HIV/AIDS information services at project and control sites were 90.3% and 96.8% respectively.

### 4.3.2 Disease prevalence

The common diseases attributed to poor sanitation and hygiene were cholera and diarrhea/ dysentery (Table 10).

Current proportions of respondents who reported infection with cholera at project and control sites were 9.7% and 16.1% respectivley.

Current proportions of respondents reporting infection with diarrhea/ dysentry were 67.7% and 64.5% respectively.

### 4.3.3 Alternative livelihood sources

Livelihood diversification is an essential element of ustainable livelihood. In this respect, respondents who adopted alternative livelihood activities at proje and control sites were: crop farming (54.8% and 45.2%); livestock farming (51.6%and 45.2%); commodity trade (19.4% and 19.4%) respectively.

### 4.3.4 Contribution of fisheries to total incomes

Current contributions of fisheries to total household ncomes at project and control sites were 70.3% and 75.5% respectively (Table 12).

### 4.3.5 Food security

Indications of food security among the fishing communities and how it had changed over the period was provided by the number of meals eaten by household in a day and the quantities of fish consumed.

Current proportions of respondents who ate three meals a day were 59.5% and 75.0% for project and control sites respectively (Table 13).

### 4.3.6 Amount of fish eaten in a household

At current period, the amounts of fish eaten in kg per household per day was 2.7 and 2.5 for project and control sites respectively (Table 14).

### 4.3.7 Expenditure patterns of fishers

To provide further insights into the livelihoods of fi the study examined the expenditure patterns of fishers.

Current expenditures on basic needs at project and con sites in Shs were as follows: Food items (daily) (15,283 and 14,310), Health care (per month) (61,083 and 76,643), Education (per term) (381,466 and 499,795), Clothing (half yearly) (200,923 and 197,337) and Saving (month) (184,518 and 229,766) (Table 15).

### 4.3.8 Asset ownership

Asset ownership was an important livelihood indicator because certain assets could be used for production while others provide consumptive satisfaction and are indicators of wealth.

Current values of assets owned by respondents at proje and control sites respectively in Shs million were as follows: brick & iron roofed houses (7.17 and 9.34), land (9.6 and 7.09), mobile phones (0.09 and 0.1), radios (0.09 and 0.13) and bicycles (0.14 and 0.14) (Table 16).

## 4.4 HOUSEHOLDS THAT PERCEIVED IMPROVEMENTS IN THEIR LIVELIHOODS

Percentage increase in households that perceived improvements in their livelihoods was another impact indicator of the project, hence there was need to examine the perception of fishers to household livelihood changes ince the establishment of the project in 2008.

The data types, sources and analysis for the indicator are given in ***Section 2.3.3*** and the challenges in ***Section 2.5***. The results showed that the average numbers of respondents who perceived improvements in their livelihoods since the project started at project and control sites were 74.2% and 29.0% respectively (Table 17).

## OUTCOME INDICATORS

### 4.5 POST HARVEST LOSSES IN THE PROJECT IMPROVED LANDING SITES

Percentage reduction of post harvest losses was an out me indicator of the project. Post harvest economic losses have been computed as percentage of total values if loss had not occurred.

The data types, sources and analysis for the indicator are given in ***Section 2.3.4*** and the challenges in ***Section 2.5***. The results for the current year at project and control sites respectively were as follows: Nile perch (-1.6% and -6.5%), Tilapia (-3.1% and -18.1%), Mukene (-1.5% and -0.8%) and *B. nurse/ N. bredoi* (-0.9% and -12.4%) (Table 18):

Further observations revealed that majority of the respondents had sometimes sold fish at reduced prices due to spoilage (Table 19).

Fish spoilage was also attributed to poor sunshine in case of mukene, *B. nurse/ N. bredoi*. Seasonal occurrence of maggots due to flies in the months of May, June and July also contributed to spoilage. Fishers of large-sized species attributed their spoilage to delayed landing of catch, scarcity of ice and sometimes limited buyers.

### 4.6 VOLUMES OF FISH MARKETED FROM THE PROJECT IMPROVED LANDING SITES

Percentage increase in volume (tons) of fish marketed s an outcome indicator of the project. With improved handling resulting from the use of improved infrastructure, the landing sites could attract more fish buyers, leading to increased proportions of catch sold. This would also attract more fishers from ighbouring landing sites to market their catch through the improved landing sites.

The data types, sources and analysis for the indicator are given in ***Section 2.3.5*** and the challenges in ***Section 2.5***. Current average volumes of fish marketed at the landing sites were 1,975 and 1,874 tonnes for project respectively (Table 20)..

#### 4.6.1 Credit and financing of business

Currently proportions of respondents who used own capital for project and control sites respectively were 48.4% and 41.9% respectively (Table 21). Other sources were Credit from SACCO (3.2% and 3.2%), Credit from fish buyers (3.2% and 6.4%) and Credit from financial institutions (3.2% and 0.0%).

The study also revealed that the prices of the few respondents who received credit from fish buyers were not mainly determined by the buyers but by the prevailing market conditions.

#### 4.6.2 Booking of fish by traders

Current proportions of respondents who indicated that catches were booked at project and control sites were 61.3% and 64.5% respectively (Table 22).

### 4.7 PROPORTIONS OF CAPTURED FISH MARKETED FROM THE LANDING SITES

Percentage increase in proportion of captured fish marketed was another outcome indicator.

The data types, sources and analysis for the indicator are given in ***Section 2.3.6*** and the challenges in ***Section 2.5***. The results revealed that the current mean percentages of catch marketed for project and control s were 94.0% and 54.8% respectively (Table 23).

## 4.8 VALUES OF FISH MARKETED FROM THE LANDING SITES

Percentage increase in values of fish marketed was another indicator. This was determined by the prices at which the marketed fish was sold. The methodology used in assessing the indicator was described in ***Section 2.3.7***.

The results revealed the current mean values of marketed fish at project and control landing sites were Shs million 1,312 and 1,323 respectively (Table 24).

## 4.9 FISHING POPULATION WITH ACCESS TO IMPROVED AND FUNCTIONAL INFRASTRUCTURE AND FACILITIES

The outcome indicator measured here was the percent of fishing population in the project focal area with access to improved functional infrastructure and facilities for quality fish handling and marketing. The data types, sources and analysis for the indicator were given in ***Section 2.3.7*** and the challenges in ***Section 2.5***.

The results revealed that currently, 53.9% and 70.5% of respondents at control and project sites respectively considered the facilities functional and 58.0% and 65.8% at control and project sites respectively made use of them (Table 25).

## 4.10 FISHING POPULATION WITH ACCESS TO MARKETS AND MARKET INFORMATION

Percent of fishing population with access to markets and market information outcome indicator was measured here. The data types, sources and analysis for the indicator are given in ***Section 2.3.8*** and the challenges in ***Section 2.5***.

### 4.10.1 Access to fish buying trucks

Access to fish trucks was assessed and results showed that current proportions of respondents with access to fish buying trucks at project and control sites were 64.5% and 74.2% respectively (Table 27).

Current proportions of respondents with access to fish market information at project and control sites were 64.5% and 71.0% respectively.

### 4.10.2 Access to market information

Access to market information was assessed and it was revealed that currently the proportions of respondents who rated their access to market information as “good” at project and control sites were 64.5% and 71.0% respectively.

### 4.10.3 Effects of landing site improvement

The benefits that accrued from the development of the ding sites were identified. The main ones included: improved fish handling (43.2% respondents), increased fish prices (15.5%) and improved community hygiene (7.7%) (Table 28). Other benefits reported were reduction of post-harvest losses due to the use of ice; improved security due to lighting and improved revenues to the BMUs.

### 4.10.4 Expected benefits for those who did not have facilities

Respondents from the control landing sites also indicated that development of their landing sites could result into high benefits the major ones being: improving standard

of living (12.9%), boosting business and development at landing site (11.3%) and improving sanitation (11.3%). Others included improving fish handling and quality and improving fish prices (Table 29).

## *CHAPTER 5:*

## *COMPARATIVE ANALYSIS OF CURRENT STATUS TO BASELINE-*

### 5.1 DEMOGRAPHIC CHANGES

Populations at the project and control sties changed between baseline and current years by 21.51% and 40.95% respectively (Table 3). However, in absolute terms, there were higher mean populations at project than control sites at both baseline and current years.

Concerning literacy, percentage change of respondents le to read in vernacular at project and control sites were 40.63% and 20.00% respectively (Table 4). Concerning numeracy, the proportional changes in respondents able to write numbers were 55.56% and 12.50% respectively.

These results show more improvements in literacy and numeracy among fishers at project landing sites than at control sites, which would enable them to read messages, compute payments and subtract costs in their business transactions. This is partly attributed to the project training which adopted the functional adult learning (FAL) approach.

Concerning school attendance by children, the percentage change in number of boys of school going age who were actually in school at pro and control sites were 16.97% and 13.89% respectively. For girls, the percentage changes were 10.00% and 23.33% respectively. The percentage change for boys was higher at project than control sites. The reverse was true for girls, as their education was affected by other socio-cultural factors.

The respondents in the categories of boat and gear owners increased between baseline and current years at project sites by 44.86% males and 53.33% for females and at control sites by 33.33% for males and 0.00% for females (Table 6). Similarly, fish traders increased at project sites by 157.14% for males and control sites by 120.00% for males with no baseline records for female fish traders. Higher increases of boat owners and fish traders could be attributed to improved business environment provided by the project.

### IMPACT INDICATORS

### 5.2 HOUSEHOLD INCOMES AMONG FISHING DEPENDENT COMMUNITIES

Percentage increase in household incomes among fishing dependent communities was one of the impact indicators chosen for the project.

Between baseline and current years, net revenues of fi enterprises declined at project and control landing sites for Nile perch and Tilapia, with lower percentage declines at project (-15.25%) than at control (-18.72%) sites. Net revenues rose for mukene and *B. nurse/ N. bredoi* with different percentages as shown in Table 7.

#### 5.2.1 Fish prices during high and low catch months of the year

As stated earlier, fish prices were estimated for purposes of computing annual production values.

Overall, fish prices increased by higher percentage at project sites compared to control sites. The species specific price changes at project and control sites respectively in Shs were as follows: Nile perch (75.63% and 56.49%), Tilapia (37.93% and 145.85%), Mukene (173.08% and 91.67) and *B. nurse/ N. bredoi* (156.38% and 85.00%) (Table 8).

## 5.3 LIVELIHOOD INDICES OF HOUSEHOLDS IN FISH DEPENDENT COMMUNITIES

An impact indicator of the project was the percentage increase in livelihood indices of households in fish dependent communities. The relevant parameters have been identified and examined and the changes are presented here.

### 5.3.1 Access to education and health services

Primary school facility functionality was perceived to have increased between baseline and current years at project and control site by 20.00% and 11.11% respectively. Utilization by respondents increased by 17.26% and 15.15% respectively (Table 9).

Health center functionality was reported to have increased at project and control sties by 16.35% and 16.00% respectively. Utilistion increased by 17.65% and 15.56% respectively.

With respect to HIV/AIDS information, functionality of the system improved at project and control sties by 18.13% and 11.54% respectively. Proportions of respondents who made use of the services increased by 21.74% and 13.46% respectively.

Generally, improvements in both functionality and usage of the different services were higher at project than at control sites, attribut to improved welfare at the project compared to control sites.

### 5.3.2 Disease prevalence

The two common diseases caused by poor sanitation and hygiene examined were cholera and diarrhea/ dysentery. Between baseline and period, the cholera infected respondents at project and control sties declined by -18.75% and -18.18% respectively (Table 10).

Diarrhea/ dysentry infected respondents increased by 12.93% and 11.43% at project and control sties respectively.

Project sties performed a little batter than control s attributed mainly to better awareness and facilities at the project sties.

### 5.3.3 Alternative livelihood sources

Livelihood diversification was an essential element of sustainable livelihood. The main alternative livelihood activities fishers engaged in to supplement fishing were crop and livestock farming and commodity trade.

Between baseline and current years, the percentage changes in respondents involved in alternative livelihood activities at proje and control sites respectively were: crop farming (7.94% and 33.33%), livestock farming (13.16% and 50.00%) and commodity trade (4.55% and 33.33%) (Table 11). The proportionate changes were smaller at project than at control sites, implying that fisheries livelihoods ware more stable and gratifying at project than at control sites.

### 5.3.4 Contribution of fisheries to total incomes

The proportions of incomes from fisheries were high but declining for both the control and project landing sites (Table 12). However, between baseline and current years, they declined at a lower rate at project landing sites (-2.50%) than at the control sites (-5.56%). Stabilization of fisheries incomes at project s can be attributed to the interventions.

### 5.3.5 Food security

The number of meals eaten by household in a day and the quantities of fish consumed were chosen as indicators of food security among fisheries households.

Proportion of respondents who had 3 meals a day increased by 3.30% between baseline and current years at project, compared to a decline at control sites where it fell by -1.90% (Table 13). This indication of improvement in livelihood at project sites could be attributed to project interventions.

### 5.3.6 Amount of fish eaten in a household

Although the amounts of fish eaten in kg per household per day were almost the same for both the control and project sites at baselin (2.5 and 2.2 respectively), the rise at project sites was by a less percentage (7.61%) compared to control sites (15.91%) (Table 14). The slowed rise in fish consumption at the project sites was contributed by the higher marketing of catch due to project interventions.

### 5.3.7 Expenditure patterns of fishers

Expenditure patterns of fishers were examined to provide further insights into the livelihoods of fishers. The data reveals that between seline and currently, the percentage increase in expenditures on the items at project and control sties respectively were as follows: **Food items** (75.97% and 26.23%), **Health care** (94.87% and 46.73%), education (66.42% and 45.82%), clothing (93.07% and 16.16%) and saving (13.40% and -25.10%) (Table 15).

The percentage changes were higher at project than at control landing sites. Assuming that inflation rates remained the same at both categories of landing sites, these results show that fishers had more money to spend at project than at control landing sites. Percentage change in savings was also higher at project than at control landing sites.

### 5.3.8 Asset ownership

Asset ownership was also examined as a livelihood indicator, as certain assets could be used for production while others provided consumptive satisfaction and were indicators of wealth.

Proportionate changes in values of assets owned were as follows: Brick & iron roofed houses (119.71% and 145.01%), Land (102.91% and 223.97), Mobile phones (-0.18% and 5.56%), Radios (-0.03% and -0.76%) and Bicycles (15.00% and -33.33%) (Table 16).

The most valuable assets of houses and land increased more at control than project sites, despite higher incomes at project sites and thi uld be explained by utilization of incomes earned by communities at the different sites.

## 5.4 HOUSEHOLDS THAT PERCEIVED IMPROVEMENTS IN THEIR LIVELIHOODS

The study assessed the percentage increase in households that perceived improvements in their livelihoods as an impact indicator of the project. Perceptions of fishers to household livelihood changes between baseline and current years were assessed. The results revealed that the average number of respondents who perceived improvements in their livelihoods at project and control sites were 74.19% and 29.03% respectively (Table 17). Higher proportions of respondents with improved livelihoods at project sites were attributed to the project interventions.

## OUTCOME INDICATORS

## 5.5 POST HARVEST LOSSES IN THE PROJECT IMPROVED LANDING SITES

Percentage reduction of post harvest losses was assessed as an outcome indicator of the project. The results revealed the percentage changes at project and control sites respectively as follows: Nile perch (-57.30% and -15.56%), Tilapia (-15.56% and 0.56%), mukene (-25.61% and -20.00%) and *B. nurse/ N. bredoi (*-59.52% and -44.64%) (Table 18).

These results revealed that the declines in post harvest losses between baseline and current years were greater at project than at control sites and this could be attributed to the project interventions.

The results also showed that the proportions of respondents experiencing different effects of spoilage declined more at project than at control sites, attributed to improved facilities (Table 19).

## 5.6 VOLUMES OF FISH MARKETED FROM THE PROJECT IMPROVED LANDING SITES

Percentage increase in volume (tons) of fish marketed as an outcome indicator of the project was assessed. The results showed that the percentage changes in volume between baseline and current years at project and control sites were 2.05% and 1.54% respectively (Table 20), depicting a higher percentage change in volume of fish marketed at project than control sties, attributed to infrastructure improvements.

### 5.6.1 Credit and financing of business

Results on the percentage change between baseline and current years for project and control sites respectively were as follows: own capital (24.58% and 30.00%), credit from SACCO (100.00% and 0.00%), credit from fish buyers (50.00% and -20.00%) and credit from financial institutions (11.11% and 0.00%) (Table 21).

### 5.6.2 Booking of fish by traders

Proportional changes in respondents who indicated that their catch were booked between baseline and current years at project and control sites were 17.43% and 29.03% respectively (Table 22).

The booking could be attributed to credit offered by traders to fishers for purchase of gear but the higher prices of fish could have been responsible for the reduction in booking patterns at project sites as fishers needed le credit and hence less booking.

## 5.7 PROPORTIONS OF CAPTURED FISH MARKETED FROM THE LANDING SITES

Percentage increase in proportion of captured fish marketed as an outcome indicator was assessed. The results revealed that between the baseline and current years, percentage changes of catch marketed at project and control sites were 18.62%and -8.00% respectively (Table 23). The better performance at project sites was attributed to the project interventions.

## 5.8 VALUES OF FISH MARKETED FROM THE LANDING SITES

Percentage increase in values of fish marketed was assessed as an outcome indicator. The results revealed that although the values of fish marketed were comparable during current year, the percentage rise between baseline and current years at project and control sites were 17.06% and 33.69% respectively (Table 24). The lower project site percentage change was attributed to the decline in Nile perch and tilapia catches for which the infrastructure intervention was intended.

## 5.9 FISHING POPULATION WITH ACCESS TO IMPROVED AND FUNCTIONAL INFRASTRUCTURE AND FACILITIES

The percent of fishing population with access to improved and functional infrastructure and facilities for quality fish handling and marketing was assessed as an outcome indicator.

Between baseline and current years, percentage changes for functionality of facilities at project and control sites were 68.49% and 18.42% respectively. For usage, the percentage changes were 46.25% and 17.42% respectively.

The facilities with highest percentage changes in functionality at project and control sites were clean water for fish handling (112.50% and 8.80%), sanitation and fish handling facilities (82.3% and 5.0%) (Table 25).

Generally, less usage of facilities were reported than functionality because of the technical challenges experienced with some of the facilities.

## 5.10 FISHING POPULATION WITH ACCESS TO MARKETS AND MARKET INFORMATION

Percent of fishing population with access to markets and market information outcome indicator was examined.

### 5.10.1 Access to market outlets

While beach markets remained the main market outlet for most respondents over the period, access to factory agents and industrial proces declined due to declining catches of Nile perch and tilapia while access to regional markets increased as s result of increased catch of *B. nurse/ N. bredoi*

### 5.10.2 Access to fish buying trucks

Access to fish trucks was assessed and results showed at the proportional change in respondents reporting good access to trucks between baseline and current years at control and project sites were 64.29% and 50.00% respectively (Table 27).

### 5.10.3 Access to market information

Access to market information was assessed and it was revealed that the level of access to market information had risen between baseline and current period at

project and control sites. The percentage increase in s who rated their market information as being “good” at project and control sites were 47.17% and 57.14% respectively (Table 27). The project needs to do more facilitate the flow of market information between the project sites and the outside arkets.

### 5.10.4 Effects of landing site improvement

The benefits that accrued from the development of the ding sites were identified. The main ones included: improved fish handling, increased fish prices and improved community hygiene (Table 28). Other benefits reported were reduction of post-harvest losses due to the use of ice; improved security due to lighting and improved revenues to the BMUs.

## *CHAPTER 6:*

## *CONCLUSIONS AND RECOMMENDATIONS*

The study reconstructed the baseline and generated current data on the impact and outcome indicators as provided under the logframe and Its framework of QAFMP. The corresponding current data have also been collected and analysed. Comparative analysis of current and baseline reconstructed results has been carried out.

Reconstructon of baseline has been made possible through the use of available reports of previous studies and records of BMUs and DFOs. Field data conducted through a sample survey and key informant interviews provided invaluable information. However, challenges were identified with secondary as well as primary data, which should be taken into consideration in applying the data generated. A reconstruction study has its limitations it cannot generate same quality data as a real time study and any information which had not been recorded or could be not be recalled would not be available to the project.

The lesson for future projects is, therefore, to get the logframe right from the beginning of the project so that the baseline study can the necessary measurements for the different impact and outcome indicators. Furthermore, data collection mechanisms should be built into the project to ensure that the information necessary evaluations are generated. As this has not been the case, there is need to consider improving fish marketing data through awareness, design of suitable data collection mechanisms and training for DFR, DFOs and BMUs.

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## TABLES

**Table 1: Baseline characteristics of the selected control and project improved landing sites**

| | District | Boats | Gillnets | Fishers | Catch (tonnes) | Value (Shs mill) |
|---|---|---|---|---|---|---|
| **Control sites** | | | | | | |
| Sebagoro | Hoima | 199 | 576 | 367 | 3,975.5 | 1,719.6 |
| Kawongo | Kayunga | 153 | 1,695 | 405 | 700.6 | 778.6 |
| **Mean** | | **176** | 1,136 | **386** | **2,338** | **1,249** |
| **Project sites** | | | | | | |
| Iyingo | Buyende | 117 | 1,654 | 210 | 497.12 | 586.7 |
| Mugarama | Serere | 83 | 1,906 | 175 | 451.02 | 521.6 |
| Bangladesh | Amolatar | 107 | 1,752 | 117 | 423.62 | 443.6 |
| Kayei | Apac | 61 | 636 | 123 | 363.69 | 274 |
| Panyimur | Nebbi | 101 | 1,868 | 257 | 3,041.3 | 696.2 |
| Wanseko | Buliisa | 220 | 688 | 28 | 5,485.5 | 1,378.7 |
| Kaiso | Hoima | 208 | 3,743 | 554 | 2,490.4 | 2,225.3 |
| Ntoroko | Ntoroko | 218 | 4,288 | 361 | 898.7 | 806.4 |
| **Mean** | | **139** | 2,067 | **228** | **1,706** | **867** |

*Sources: Taabu-Munyaho et al 2012; Mbabazi et al 2012*

**Table 2: Change in fishing population between baseline and currently**

| | No. of Respondents at site at baseline | No. of Respondents who came after baseline | Total respondents | Percentage that came after 2008 |
|---|---|---|---|---|
| **Control sites** | | | | |
| Sebagoro | 27 | 5 | 33 | 15.15% |
| Kawongo | 22 | 6 | 28 | 21.43% |
| **Average** | **25** | **6** | **31** | **18.03%** |
| **Project sites** | | | | |
| Iyingo | 21 | 3 | 24 | 12.50% |
| Mugarama | 21 | 12 | 34 | 35.29% |
| Bangladesh | 23 | 11 | 36 | 30.56% |
| Kayei | 30 | 2 | 32 | 6.25% |
| Kaiso | 22 | 4 | 27 | 14.81% |
| Wanseko | 27 | 4 | 34 | 11.76% |
| Panyimur | 26 | 0 | 28 | |
| Ntoroko | 26 | 9 | 36 | 25.00% |
| **Average** | **25** | **6** | **31** | **17.93%** |

*Source: Survey data*

**Table 3: Population of landing sites**

| Control site | Baseline | Current | Percentage change |
|---|---|---|---|
| Sebagoro | 3,500 | 5,200 | 48.57% |
| Kawongo | 1,500 | 2,000 | 33.33% |
| **Average** | **2,500** | **3,600** | **40.95%** |
| **Project sites** | | | |
| Iyingo | 800 | 600 | -25.00% |
| Mugarama | 1,670 | 2,000 | 19.76% |
| Bangladesh | 1,650 | 1,450 | -12.12% |
| Kayei | 3,500 | 2,671 | -23.69% |
| Kaiso | 5,000 | 10,000 | 100.00% |
| Wanseko | 8,400 | 10,000 | 19.05% |
| Panyimur | 2,500 | 4,000 | 60.00% |
| Ntoroko | 6,200 | 8,314 | 34.10% |
| **Average** | **3,715** | **4,879** | **21.51%** |

*Source: Survey data*

**Table 4: Literacy and numeracy levels of respondents by landing site**

| | No. able to read in vernacular | | No. able to write numbers | |
|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | |
| Sebagoro | 10 | 11 | 3 | 4 |
| Kawongo | 5 | 7 | 5 | 5 |
| **Average** | **8** | **9** | **4** | **5** |
| **Project sites** | | | | |
| Iyingo | 2 | 3 | 2 | 3 |
| Mugarama | 3 | 5 | 1 | 1 |
| Bangladesh | 2 | 4 | 1 | 3 |
| Kayei | 3 | 5 | 1 | 2 |
| Kaiso | 2 | 2 | 1 | 2 |
| Wanseko | 6 | 7 | 1 | 3 |
| Panyimur | 8 | 8 | 3 | 3 |
| Ntoroko | 6 | 11 | 8 | 11 |
| **Average** | **4** | **6** | **2** | **4** |
| **Percentage change** | | | | |
| Control sites | | 20.00% | | 12.50% |
| Project sites | | 40.63% | | 55.56% |

*Source: Survey data*

**Table 5: Average number of school going children of 6-18 years in households by landing site**

| | Boys | | Girls | |
|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | |
| Sebagoro | 1.9 | 2.2 | 1.7 | 2.2 |
| Kawongo | 1.7 | 1.9 | 1.3 | 1.5 |
| **Average** | **1.8** | **2.1** | **1.5** | **1.9** |
| **Project sites** | | | | |
| Iyingo | 2.2 | 2.7 | 2.7 | 3.7 |
| Mugarama | 1.9 | 2.0 | 2.4 | 2.7 |
| Bangladesh | 2.0 | 2.7 | 1.9 | 2.0 |
| Kayei | 1.6 | 2.1 | 1.8 | 2.0 |
| Kaiso | 3.3 | 2.9 | 1.9 | 2.0 |
| Wanseko | 1.4 | 1.8 | 2.2 | 2.1 |
| Panyimur | 2.1 | 2.8 | 1.8 | 2.1 |
| Ntoroko | 2.0 | 2.3 | 2.3 | 2.1 |
| **Average** | **2.1** | **2.4** | **2.1** | **2.3** |
| **Percentage change** | | | | |
| Control sites | | 13.89% | | 23.33% |
| Project sites | | 16.97% | | 10.00% |

*Source: Survey data*

**Table6: Numbers of boat owners and traders among fishing communities**

| | Boat owner/ Renter | | | | Fish trader | | | |
|---|---|---|---|---|---|---|---|---|
| | **Baseline** | | **Current** | | **Baseline** | | **Current** | |
| | Males | Females | Males | Females | Males | Females | Males | Females |
| Control sites | | | | | | | | |
| Sebagoro | 14 | 3 | 15 | 3 | 4 | -- | 8 | 0 |
| Kawongo | 7 | 0 | 13 | 0 | 1 | -- | 3 | 1 |
| **Average** | **11** | **2** | **14** | **2** | **3** | | **6** | **1** |
| **Project sites** | | | | | | | | |
| Iyingo | 10 | 1 | 11 | 1 | 0 | -- | 0 | 0 |
| Mugarama | 7 | 2 | 10 | 2 | 1 | -- | 2 | 2 |
| Bangladesh | 13 | 2 | 18 | 3 | 2 | -- | 7 | 0 |
| Kayei | 11 | 1 | 14 | 2 | 0 | -- | 2 | 2 |
| Kaiso | 12 | 3 | 13 | 3 | 0 | -- | 1 | 1 |
| Wanseko | 9 | 2 | 15 | 4 | 1 | -- | 1 | 0 |
| Panyimur | 12 | 4 | 13 | 6 | 0 | -- | 0 | 2 |
| Ntoroko | 10 | 0 | 26 | 2 | 3 | -- | 5 | 0 |
| Average | **11** | **2** | **15** | **3** | **1** | -- | **2** | **1** |
| **Percentage change** | | | | | | | | |
| Control sites | | | 33.33% | 0.00% | | | 120.00% | -- |
| Project sites | | | 42.86% | 53.33% | | | 157.14% | -- |

*Source: Survey data*

**Table 7: Average annual net revenues by main species b ding site** (Shs million)

| | Nile perch | | Tilapia | | Mukene | | *B. nurse/ N. bredoi* | |
|---|---|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | | | | | |
| Sebagoro | 12.2 | 9.2 | 14.9 | 10.8 | | | 12.6 | 18.2 |
| Kawongo | 11.3 | 9.9 | 17.0 | 13.9 | 6.8 | 21.4 | | |
| **Average** | **11.7** | **9.6** | **16.0** | **12.3** | **6.8** | **21.4** | **12.6** | **18.2** |
| **Project sites** | | | | | | | | |
| Iyingo | 15.4 | 11.7 | 23.0 | 19.3 | 4.1 | 16.4 | | |
| Mugarama | 10.0 | 9.7 | 19.6 | 18.1 | 8.5 | 24.6 | | |
| Bangladesh | 14.9 | 10.7 | 14.9 | 12.0 | 12.7 | 31.4 | | |
| Kayei | 11.1 | 9.5 | 9.4 | 7.7 | 9.6 | 26.4 | | |
| Kaiso* | 12.6 | | 15.8 | | | | | |
| Wanseko | 5.5 | 4.4 | 18.3 | 12.5 | | | 12.5 | 20.6 |
| Panyimur* | 11.3 | | 14.3 | | | | | |
| Ntoroko | 22.4 | 19.6 | 14.5 | 12.9 | | | 15.5 | 26.1 |
| **Average** | **12.9** | **10.9** | **16.2** | **13.7** | **8.7** | **24.7** | **14.0** | **23.3** |
| **Percentage change** | | | | | | | | |
| Control sites | | -18.72% | | -22.57% | | 214.71% | | 44.44% |
| Project sites | | -15.25% | | -15.25% | | 183.09% | | 66.79% |

*Source: Survey data; NaFIRRI 2009, Taabu-Munyaho et al 2012, Mbabazi et al 2012*
**Infrastructure at these landing sites not yet functional*
*For years of data, see **Section 2.3.1***

**Table 8: Average selling prices by main species for high and low catch seasons** (Shs/uniit)

| | **Nile perch** (kg) | | **Tilapia** (kg) | | **Mukene**(basin) | | ***B. nurse/ N. bredoi*** (basin) | |
|---|---|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| Control sites | | | | | | | | |
| Sebagoro | 1,200 | 2,400 | 1,000 | 4,125 | | | 5,500 | 10,175 |
| Kawongo | 4,288 | 6,188 | 2,592 | 4,706 | 6,000 | 11,500 | | |
| **Average** | **2,744** | **4,294** | **1,796** | **4,415** | **6,000** | **11,500** | **5,500** | **10,175** |
| **Project sites** | | | | | | | | |
| Iyingo | 2,500 | 4,156 | 1,812 | 2,956 | 3,000 | 15,000 | -- | -- |
| Mugarama | 2,563 | 3,308 | 1,708 | 2,600 | 10,000 | 20,000 | -- | -- |
| Bangladesh | 2,167 | 5,250 | 3,117 | 2,963 | 5,000 | 17,000 | -- | -- |
| Kayei | 2,140 | 3,464 | 3,000 | 3,349 | 8,000 | 19,000 | -- | -- |
| Kaiso* | 3,083 | -- | 2,167 | -- | -- | -- | 5,000 | -- |
| Wanseko | 2,450 | 4,750 | 2,050 | 3,300 | -- | -- | 5,438 | 9,677 |
| Panyimur* | 2,063 | -- | 2,150 | -- | -- | -- | -- | -- |
| Ntoroko | 3,983 | 6,667 | 2,025 | 3,483 | -- | -- | 4,000 | 15,000 |
| **Average** | **2,619** | **4,599** | **2,254** | **3,109** | **6,500** | **17,750** | **4,813** | **12,339** |
| **Percentage change** | | | | | | | | |
| Control sites | | 56.49% | | 145.85% | | 91.67% | | 85.00% |
| Project sites | | 75.63% | | 37.93% | | 173.08% | | 156.38% |

*Source: Survey data, NaFIRRI 2009, Mbabazi et al 2012*

**Infrastructure at these landing sites not yet functiona*

*l*

**Table 9: Average number of respondents with perceptions on social facilities and services**

| | Primary school | | | | Health centre | | | | HIV/AIDS services | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Functionality | | Usage | | Functionality | | Usage | | Functionality | | Usage | |
| | Baseline | Current | Baseline | Current | Baseline | Current | Baseline | Current | Baseline | Current | Baseline | Current |
| **Control sites** | | | | | | | | | | | | |
| Sebagoro | 31 | 32 | 22 | 23 | 29 | 31 | 29 | 29 | 30 | 31 | 29 | 31 |
| Kawongo | 23 | 28 | 11 | 15 | 21 | 27 | 16 | 23 | 22 | 27 | 23 | 28 |
| **Average** | **27** | **30** | **17** | **19** | **25** | **29** | **23** | **26** | **26** | **29** | **26** | **30** |
| **Project sites** | | | | | | | | | | | | |
| Iyingo | 21 | 23 | 19 | 22 | 11 | 12 | 11 | 12 | 17 | 20 | 16 | 19 |
| Mugarama | 20 | 32 | 16 | 24 | 17 | 24 | 16 | 23 | 18 | 26 | 17 | 25 |
| Bangladesh | 26 | 36 | 17 | 19 | 18 | 25 | 18 | 24 | 26 | 34 | 25 | 34 |
| Kayei | 29 | 31 | 22 | 23 | 28 | 29 | 28 | 29 | 29 | 32 | 29 | 32 |
| Kaiso | 23 | 27 | 17 | 22 | 6 | 10 | 6 | 10 | 21 | 26 | 21 | 26 |
| Wanseko | 31 | 34 | 27 | 29 | 23 | 26 | 22 | 24 | 29 | 32 | 25 | 32 |
| Panyimur | 28 | 28 | 25 | 26 | 28 | 28 | 27 | 27 | 26 | 26 | 25 | 24 |
| Ntoroko | 27 | 35 | 25 | 32 | 28 | 31 | 25 | 31 | 27 | 32 | 26 | 32 |
| **Average** | **26** | **31** | **21** | **25** | **20** | **23** | **19** | **23** | **24** | **29** | **23** | **28** |
| **Percentage change** | | | | | | | | | | | | |
| Control sites | | 11.11% | | 15.15% | | 16.00% | | 15.56% | | 11.54% | | 13.46% |
| Project sites | | 20.00% | | 17.26% | | 16.35% | | 17.65% | | 18.13% | | 21.74% |

*Source: Survey data*

**Table 10: Respondents who reported disease infections by landing site**

| | Cholera | | Diarrhea/dysentry | |
|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | |
| Sebagoro | 7 | 7 | 18 | 17 |
| Kawongo | 4 | 2 | 17 | 22 |
| **Average** | **6** | **5** | **18** | **20** |
| **Project sites** | | | | |
| Iyingo | 1 | 1 | 18 | 13 |
| Mugarama | 0 | 0 | 22 | 26 |
| Bangladesh | 4 | 3 | 16 | 21 |
| Kayei | 4 | 3 | 19 | 19 |
| Kaiso | 6 | 4 | 12 | 16 |
| Wanseko | 6 | 5 | 26 | 29 |
| Panyimur | 7 | 6 | 19 | 20 |
| Ntoroko | 4 | 4 | 15 | 22 |
| **Average** | **4** | **3** | **18** | **21** |
| **Percentage change** | | | | |
| Control sites | | -18.18% | | 11.43% |
| Project sites | | -18.75% | | 12.93% |

*Source: Survey data*

**Table 11: Respondents engaged in alternative livelihood activities by landing site**

| | Crop farming | | Livestock farming | | Commodity trade | |
|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | | | |
| Sebagoro | 8 | 11 | 7 | 10 | 3 | 3 |
| Kawongo | 13 | 17 | 11 | 17 | 6 | 9 |
| **Average** | **11** | **14** | **9** | **14** | **5** | **6** |
| **Project sites** | | | | | | |
| Iyingo | 18 | 19 | 16 | 16 | 7 | 7 |
| Mugarama | 24 | 28 | 16 | 23 | 1 | 3 |
| Bangladesh | 15 | 19 | 13 | 17 | 5 | 7 |
| Kayei | 12 | 10 | 13 | 12 | 7 | 4 |
| Kaiso | 8 | 9 | 9 | 11 | 5 | 5 |
| Wanseko | 20 | 24 | 18 | 22 | 7 | 5 |
| Panyimur | 22 | 21 | 19 | 18 | 6 | 7 |
| Ntoroko | 7 | 6 | 10 | 10 | 6 | 8 |
| **Average** | **16** | **17** | **14** | **16** | **6** | **6** |
| **Percentage change** | | | | | | |
| Control sites | | 33.33% | | 50.00% | | 33.33% |
| Project sites | | 7.94% | | 13.16% | | 4.55% |

*Source: Survey data*

**Table 12: Contribution of fisheries to total incomes**

| | Baseline | Current |
|---|---|---|
| **Control sites** | | |
| Sebagoro | 87.9% | 80.2% |
| Kawongo | 72.1% | 70.9% |
| **Average** | **80.0%** | **75.5%** |
| **Project sties** | | |
| Iyingo | 61.4% | 55.8% |
| Mugarama | 66.1% | 59.6% |
| Bangladesh | 78.3% | 77.9% |
| Kayei | 62.0% | 74.2% |
| Kaiso | 79.1% | 78.1% |
| Wanseko | 74.1% | 67.2% |
| Panyimur | 72.7% | 72.1% |
| Ntoroko | 81.9% | 76.9% |
| **Average** | **72.0%** | **70.2%** |
| **Percentage change** | | |
| Control sites | | -5.56% |
| Project sites | | -2.5% |

*Source: Survey data*

*N.B. Values for fisheries incomes are given in Table 7 but for recalls of incomes from other sources were considered too demanding on respondents, so they were only asked for* proportional contributions of the sources to household incomes.

**Table 13: Respondents who have eaten the different number of meals per day**

| | Baseline | | Current | | Percentage change | |
|---|---|---|---|---|---|---|
| **No. of meals** | **Control** | **Project** | **Control** | **Project** | **Control** | **Project** |
| 1 | 0.0% | 1.3% | 0.0% | 2.0% | -- | 0.70% |
| 2 | 23.1% | 38.5% | 25.0% | 35.2% | 1.90% | -3.30% |
| 3 | 76.9% | 56.2% | 75.0% | 59.5% | -1.90% | 3.30% |
| More than 3 | 0.0% | 3.9% | 0.0% | 3.2% | -- | -0.70% |

*Source: Survey data*

**Table 14: Average quantities of fish consumed in household per day (kg)**

| | Baseline | Current |
|---|---|---|
| **Control sites** | | |
| Sebagoro | 2.3 | 3.1 |
| Kawongo | 2.1 | 2.0 |
| **Average** | **2.2** | **2.5** |
| **Project sites** | | |
| Iyingo | 2.2 | 2.0 |
| Mugarama | 1.9 | 2.1 |
| Bangladesh | 2.2 | 2.2 |
| Kayei | 2.1 | 2.7 |
| Kaiso | 2.9 | 3.0 |
| Wanseko | 3.1 | 3.3 |
| Panyimur | 2.8 | 2.8 |
| Ntoroko | 2.5 | 3.1 |
| **Average** | **2.5** | **2.7** |
| **Percentage change** | | |
| Control sites | | 15.91% |
| Project sites | | 7.61% |

*Source: Survey data*

**Table 15: Average expenditures on selected items** ( Shs)

| | **Food items** (daily**)** | | **Health care** (per month) | | **Education** (per term) | | **Clothing** (half yearly) | | **Saving** (month) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | | | | | | | |
| Sebagoro | 10,696 | 15,906 | 55,069 | 97,321 | 258,333 | 463,000 | 115,357 | 197,500 | 386,522 | 290,156 |
| Kawongo | 11,977 | 12,714 | 49,400 | 55,964 | 427,143 | 536,591 | 224,412 | 197,174 | 227,000 | 169,375 |
| **Average** | **11,337** | **14,310** | **52,235** | **76,643** | **342,738** | **499,795** | **169,884** | **197,337** | **306,761** | **229,766** |
| **Project sites** | | | | | | | | | | |
| Iyingo | 5,543 | 9,354 | 27,545 | 53,917 | 172,308 | 276,905 | 90,045 | 177,826 | 107,667 | 146,667 |
| Mugarama | 8,250 | 16,606 | 21,417 | 88,774 | 241,875 | 361,133 | 98,800 | 227,636 | 104,818 | 122,903 |
| Bangladesh | 11,280 | 13,028 | 28,720 | 46,236 | 385,263 | 653,371 | 127,600 | 233,611 | 353,864 | 250,156 |
| Kayei | 5,683 | 11,839 | 31,071 | 40,355 | 284,739 | 589,867 | 88,750 | 166,333 | 150,870 | 191,200 |
| Kaiso | 7,720 | 20,852 | 35,542 | 55,389 | 215,231 | 280,441 | 109,600 | 201,296 | 148,500 | 172,409 |
| Wanseko | 7,448 | 13,303 | 48,231 | 84,818 | 254,400 | 298,182 | 101,250 | 200,758 | 111,533 | 112,000 |
| Panyimur | 8,196 | 12,765 | 20,485 | 41,257 | 108,450 | 189,923 | 126,357 | 207,500 | 124,773 | 223,625 |
| Ntoroko | 15,357 | 24,514 | 37,750 | 77,919 | 171,480 | 401,903 | 90,130 | 192,424 | 199,708 | 257,188 |
| **Average** | **8,685** | **15,283** | **31,345** | **61,083** | **229,218** | **381,466** | **104,067** | **200,923** | **162,717** | **184,518** |
| **Percentage change** | | | | | | | | | | |
| Control sites | | 26.23% | | 46.73% | | 45.82% | | 16.16% | | -25.10% |
| Project sites | | 75.97% | | 94.87% | | 66.42% | | 93.07% | | 13.40% |

*Source: Survey data*

**Table 16: Average value of assets owned by respondents by landing site** (Shs mill.)

| | Brick & iron roofed houses | | Land | | Mobile phones | | Radios | | Bicycles | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | | | | | | | |
| Sebagoro | 3.74 | 4.34 | 1.07 | 8.85 | 0.08 | 0.08 | 0.06 | 0.12 | 0.08 | 0.10 |
| Kawongo | 3.88 | 14.33 | 3.31 | 5.34 | 0.10 | 0.11 | 0.96 | 0.13 | 0.34 | 0.18 |
| **Average** | **3.81** | **9.34** | **2.19** | **7.09** | **0.09** | **0.10** | **0.51** | **0.13** | **0.21** | **0.14** |
| **Project sites** | | | | | | | | | | |
| Iyingo | 3.35 | 7.25 | 5.35 | 6.11 | 0.09 | 0.08 | 0.08 | 0.07 | 0.17 | 0.19 |
| Mugarama | 3.00 | 8.43 | 6.55 | 11.74 | 0.20 | 0.07 | 0.08 | 0.14 | 0.14 | 0.15 |
| Bangladesh | 2.67 | 11.97 | 6.99 | 14.25 | 0.14 | 0.11 | 0.12 | 0.12 | 0.10 | 0.14 |
| Kayei | 0.73 | 2.63 | 0.87 | 2.65 | 0.04 | 0.08 | 0.23 | 0.1 | 0.08 | 0.12 |
| Kaiso | 4.38 | 5.37 | 5.76 | 8.72 | 0.11 | 0.09 | 0.05 | 0.1 | 0.09 | 0.14 |
| Wanseko | 2.00 | 4.56 | 9.34 | 20.20 | 0.10 | 0.10 | 0.04 | 0.04 | 0.12 | 0.15 |
| Panyimur | 0.00 | 11.50 | 2.33 | 5.63 | 0.11 | 0.08 | 0.08 | 0.08 | 0.17 | 0.14 |
| Ntoroko | 10.00 | 5.70 | 0.65 | 7.48 | 0.08 | 0.10 | 0.05 | 0.06 | 0.13 | 0.12 |
| **Average** | **3.27** | **7.17** | **4.73** | **9.60** | **0.11** | **0.09** | **0.09** | **0.09** | **0.12** | **0.14** |
| **Percentage change** | | | | | | | | | | |
| Control sites | | 145.01% | | 223.97% | | 5.56% | | -0.76% | | -33.33% |
| Project sites | | 119.71% | | 102.91% | | -0.18% | | -0.03% | | 15.00% |

*Source: Survey data*

**Table 17: Respondents who perceived that their household livelihoods had improved, 2013**

| **Control sites** | **No.** |
|---|---|
| Sebagoro | 12 |
| Kawongo | 6 |
| **Average** | **9** |
| **Project sites** | |
| Iyingo | 21 |
| Mugarama | 25 |
| Bangladesh | 24 |
| Kayei | 21 |
| Kaiso | 16 |
| Wanseko | 25 |
| Panyimur | 24 |
| Ntoroko | 29 |
| **Average** | **23** |

*Source: Survey data*

**Table 18: Post-harvest losses for the main fish species by landing site**

| | Nile perch | | Tilapia | | Mukene | | *B. nurse/ N. bredoi* | |
|---|---|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | | | | | |
| Sebagoro | | | -8.0% | -3.2% | | | -22.4% | -12.4% |
| Kawongo | -7.4% | -6.5% | -28.0% | -33.0% | -1.0% | -0.8% | | |
| **Average** | **-7.4%** | **-6.5%** | **-18.0%** | **-18.1%** | **-1.0%** | **-0.8%** | **-22.4%** | **-12.4%** |
| **Project sites** | | | | | | | | |
| Iyingo | -1.3% | -0.5% | -3.6% | -1.3% | -5.4% | -3.0% | -- | -- |
| Mugarama | -9.0% | -2.4% | 3.3% | -2.6% | -- | -- | -- | -- |
| Bangladesh | -3.9% | -1.2% | 0.0% | -1.7% | -2.8% | -3.1% | -- | -- |
| Kayei | -1.7% | -0.1% | -7.5% | -2.7% | 0.0% | 0.0% | -- | -- |
| Kaiso* | -4.6% | -- | -9.3% | -- | -- | -- | -0.7% | -0.2% |
| Wanseko | -4.2% | -3.5% | -7.0% | -7.2% | -- | -- | -3.5% | -1.5% |
| Panyimur* | -1.7% | -- | -1.6% | -- | -- | -- | -- | -- |
| Ntoroko | -4.2% | -2.1% | -3.1% | -3.1% | -- | -- | -- | -- |
| **Average** | **-3.83%** | **-1.63%** | **-3.67%** | **-3.10%** | **-2.73%** | **-2.03%** | **-2.10%** | **-0.85%** |
| **Percentage change** | | | | | | | | |
| Control sites | | -12.16% | | 0.56% | | -20.00% | | -44.64% |
| Project sites | | -57.30% | | -15.56% | | -25.61% | | -59.52% |

*Source: Survey data; NaFIRRI 2009, Taabu-Munyaho et al 2012, Mbabazi et al 2012*
**Infrastructure at these landing sites not yet functional*

**Table 19: Respondents' experiences with post harvest losses**

| | Baseline | | Current | | Percentage change | |
|---|---|---|---|---|---|---|
| | **Control** | **Project** | **Control** | **Project** | **Control** | **Project** |
| Respondents who sometimes sold fish at reduced prices | 65.4% | 86.5% | 50.0% | 72.7% | -15.40% | -13.80% |
| Respondents who experienced spoilage in fish | 18.7% | 25.0% | 20.1% | 20.0% | 1.40% | -5.00% |
| Respondents who attributed spoilage to poor handling | 6.3% | 28.1% | 4.5% | 19.8% | -1.80% | -8.30% |
| Respondents who threw away spoiled fish that could not be eaten | 24.1% | 50.0% | 28.3% | 29.4% | 4.20% | -0.60% |

*Source: Survey data*

**Table 20: Volumes of fish marketed from the landing sites** (tonnes)

| | Baseline | | | | | Current | | | | | Percentage change |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Nile perch** | **Tilapia** | **Mukene** | ***B. nurse/ N. bredoi*** | **Total** | **Nile perch** | **Tilapia** | **Mukene** | ***B. nurse/ N. bredoi*** | **Total** | |
| **Control sites** | | | | | | | | | | | |
| Sebagoro | 318 | 477 | -- | 2,385 | 3,180 | 161 | 482 | -- | 2,568 | 3,210 | 0.90% |
| Kawongo | 51 | 77 | 383 | | 511 | 27 | 81 | 430 | | 538 | 5.30% |
| **Average** | **185** | **277** | **383** | **2,385** | **1,846** | **94** | **281** | **430** | **2,568** | **1,874** | **1.54%** |
| **Project sites** | | | | | | | | | | | |
| Iyingo | 39 | 58 | 292 | -- | 389 | 23 | 69 | 366 | -- | 458 | 17.74% |
| Mugarama | 33 | 49 | 245 | -- | 327 | 21 | 63 | 336 | -- | 420 | 28.44% |
| Bangladesh | 31 | 46 | 231 | -- | 308 | 21 | 62 | 330 | -- | 412 | 33.77% |
| Kayei | 28 | 42 | 209 | -- | 278 | 15 | 44 | 234 | -- | 292 | 5.04% |
| Panyimur* | 184 | 276 | -- | 1,379 | 1,839 | -- | -- | -- | -- | -- | -- |
| Wanseko | 497 | 746 | -- | 3,728 | 4,970 | 215 | 646 | -- | 3,446 | 4,307 | -13.34% |
| Kaiso* | 203 | 305 | -- | 1,523 | 2,031 | -- | -- | -- | -- | -- | -- |
| Ntoroko | 534 | 800 | -- | 4,002 | 5,336 | 298 | 894 | -- | 4,766 | 5,958 | 11.66% |
| **Average** | **193** | **290** | **244** | **2,658** | **1,935** | **99** | **296** | **316** | **4,106** | **1,975** | **2.05%** |

*Source: Survey data; NaFIRRI 2009, Mbabazi et al 2012*
**Infrastructure at these landing sites not yet functional*

**Table 21: Main source of capital for financing boats and gears**

| | Own capital | | Credit from SACCO | | Credit from fish buyers | | Credit from financial institutions | |
|---|---|---|---|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | | | | | |
| Sebagoro | 9 | 12 | 1 | 1 | 5 | 4 | 0 | 0 |
| Kawongo | 11 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Average** | **10** | **13** | **1** | **1** | **3** | **2** | **0** | **0** |
| **Project sites** | | | | | | | | |
| Iyingo | 8 | 8 | 0 | 1 | 1 | 1 | 1 | 2 |
| Mugarama | 4 | 12 | 2 | 2 | 0 | 0 | 2 | 2 |
| Bangladesh | 12 | 15 | 0 | 0 | 0 | 0 | 1 | 2 |
| Kayei | 9 | 11 | 0 | 0 | 0 | 0 | 2 | 2 |
| Kaiso | 11 | 14 | 0 | 0 | 1 | 2 | 0 | 0 |
| Wanseko | 11 | 15 | 1 | 2 | 0 | 1 | 2 | 1 |
| Panyimur | 15 | 18 | 0 | 1 | 1 | 0 | 0 | 0 |
| Ntoroko | 19 | 25 | 0 | 0 | 1 | 2 | 1 | 1 |
| **Average** | **11** | **15** | **0** | **1** | **1** | **1** | **1** | **1** |
| **Percentage change** | | | | | | | | |
| Control sites | | 30.00% | | 0.00% | | -20.00% | | -- |
| Project sites | | 24.58% | | 100.00% | | 50.00% | | 11.11% |

*Source: Survey data*

**Table 22: Respondents for whom traders booked fish**

| | Baseline | Current |
|---|---|---|
| **Control sites** | | |
| Sebagoro | 18 | 23 |
| Kawongo | 13 | 17 |
| **Average** | **16** | **20** |
| **Project sites** | | |
| Iyingo | 13 | 15 |
| Mugarama | 17 | 22 |
| Bangladesh | 18 | 25 |
| Kayei | 16 | 17 |
| Kaiso | 16 | 16 |
| Wanseko | 25 | 28 |
| Panyimur | 13 | 14 |
| Ntoroko | 9 | 16 |
| **Average** | **16** | **19** |
| **Percentage change** | | |
| Control sites | | 29.03% |
| Project sites | | 17.43% |

*Source: Survey data*

**Table 23: Proportions of fish catch marketed at the landing sites**

| | Baseline | | | | | | Current | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Control sites** | **Nile perch** | **Tilapia** | **Mukene** | ***B. nurse/ N. bredoi*** | **Total** | **Percent of catch** | **Nile perch** | **Tilapia** | **Mukene** | ***B. nurse/ N. bredoi*** | **Total** | **Percent of catch** | **Change in percent** |
| Sebagoro | 191 | 286 | 0 | 1,431 | **1,908** | 60.80% | 89 | 266 | 0 | 1,418 | **1,772** | 55.20% | -5.60% |
| Kawongo | 31 | 46 | 230 | | **373** | 72.90% | 17 | 50 | 269 | | **336** | 62.50% | -10.40% |
| **Average** | **111** | **166** | **230** | **1,431** | **1,140** | 66.85% | **53** | **158** | **269** | **1,418** | **1,054** | 58.85% | -8.00% |
| **Project sites** | | | | | | | | | | | | | |
| Iyingo | 30 | 46 | 228 | 0 | **305** | 78.30% | 19 | 57 | 302 | 0 | **377** | 82.40% | 4.10% |
| Mugarama | 24 | 36 | 178 | 0 | **237** | 72.50% | 19 | 56 | 296 | 0 | **370** | 88.10% | 15.60% |
| Bangladesh | 22 | 34 | 168 | 0 | **224** | 72.60% | 17 | 50 | 269 | 0 | **337** | 81.70% | 9.10% |
| Kayei | 21 | 32 | 161 | 0 | **214** | 77.00% | 12 | 35 | 187 | 0 | **234** | 80.00% | 3.00% |
| Panyimur* | 145 | 218 | 0 | 1,090 | **1,453** | 79.00% | | | | | | -- | -- |
| Wanseko | 369 | 553 | 0 | 2,766 | **3,688** | 74.20% | 308 | 923 | 0 | 4,920 | **6,150** | 142.80% | 68.60% |
| Kaiso* | 152 | 228 | 0 | 1,142 | **1,523** | 75.00% | | | | | | -- | -- |
| Ntoroko | 465 | 698 | 0 | 3,490 | **4,653** | 87.20% | 265 | 796 | 0 | 4,247 | **5,309** | 89.10% | 1.90% |
| **Average** | **154** | **231** | **184** | **2,122** | **1,537** | **76.98%** | **106** | **319** | **264** | **4,584** | **2,129** | **94.02%** | **17.04%** |

*Source: Survey data; NaFIRRI 2009, Mbabazi et al 2012*

**Infrastructure at these landing sites not yet functional*

*Derived from marketed fish data in Table 20 and Catch Assessment Data. See **Section 2.3.6** for computaion*

**Table 24: Mean values of fish marketed at the landing sites** (Shs million)

| | **Baseline** | | | | | **Current** | | | | | **Percentage change** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Nile perch** | **Tilapia** | **Mukene** | ***B. nurse/ N. bredoi*** | **Total** | **Nile perch** | **Tilapia** | **Mukene** | ***B. nurse/ N. bredoi*** | **Total** | |
| **Control sites** | | | | | | | | | | | |
| Sebagoro | 138 | 207 | -- | 1,033 | **1,377** | 102 | 306 | | 1,634 | **2,042** | 48.29% |
| Kawongo | 60 | 90 | 452 | -- | **603** | 30 | 91 | 484 | | **605** | 0.33% |
| **Average** | **99** | **149** | **452** | **1,033** | **990** | **66** | **199** | **484** | **1,634** | **1,324** | **33.69%** |
| **Project sites** | | | | | | | | | | | |
| Iyingo | 45 | 68 | 338 | -- | **450** | 26 | 79 | 422 | -- | **527** | 17.11% |
| Mugarama | 34 | 51 | 257 | -- | **342** | 23 | 69 | 370 | -- | **462** | 35.09% |
| Bangladesh | 23 | 35 | 174 | -- | **232** | 23 | 68 | 364 | -- | **455** | 96.12% |
| Kayei | 31 | 46 | 232 | -- | **309** | 17 | 50 | 265 | -- | **331** | 7.12% |
| Panyimur* | 114 | 171 | -- | 855 | **1,140** | -- | -- | -- | -- | -- | -- |
| Wanseko | 125 | 187 | -- | 935 | **1,247** | 193 | 578 | -- | 3,084 | **3,855** | 209.14% |
| Kaiso* | 78 | 118 | -- | 588 | **784** | -- | -- | -- | -- | -- | -- |
| Ntoroko | 319 | 479 | -- | 2,393 | **3,191** | 112 | 336 | -- | 1,792 | **2,240** | -64.71% |
| **Average** | **96** | **144** | **250** | **1,193** | **962** | **66** | **197** | **355** | **2,438** | **1,312** | **17.06%** |

*Source: Survey data; NaFIRRI 2009, Mbabazi et al 2012*

**Infrastructure at these landing sites not yet functional*

**Table 25: Respondents' perceptions to functionality and usage of improved facilities**

| | | Baseline | | Current | | Percentage change | |
|---|---|---|---|---|---|---|---|
| | | **Control** | **Project** | **Control** | **Project** | **Control** | **Project** |
| Clean water for fish handling | Functionality | 50.0% | 30.5% | 54.4% | 64.8% | 8.8% | 112.5% |
| | Usage | 57.5% | 34.4% | 60.4% | 62.7% | 5.0% | 82.3% |
| Sanitation facilities | Functionality | 50.0% | 39.4% | 56.1% | 72.7% | 12.2% | 84.5% |
| | Usage | 58.5% | 40.9% | 66.0% | 64.1% | 12.8% | 56.7% |
| Fish handling facilities | Functionality | 38.6% | 41.3% | 44.2% | 78.4% | 14.5% | 89.8% |
| | Usage | 42.1% | 43.9% | 50.0% | 71.2% | 18.8% | 62.2% |
| Fish drying facilities | Functionality | 14.3% | 27.1% | 22.0% | 37.7% | 53.8% | 39.1% |
| | Usage | 13.9% | 29.8% | 20.5% | 33.5% | 47.5% | 12.4% |
| BMUs | Functionality | 90.4% | 84.8% | 92.9% | 98.8% | 2.8% | 16.5% |
| | Usage | 90.2% | 82.2% | 92.9% | 96.7% | 3.0% | 17.6% |
| **Average** | **Functionality** | **48.66%** | **44.62%** | **53.92%** | **70.48%** | **18.42%** | **68.49%** |
| | **Usage** | **52.44%** | **46.24%** | **57.96%** | **65.64%** | **17.42%** | **46.25%** |

*Source: Survey data*

*N.B: These are the percentages of respondents with different responses and no other details apply here.*

**Table 26: Respondents selling on the different markets at baseline**

| | Beach market | Factory agent/ industrial processors | Other local markets | Regional market |
|---|---|---|---|---|
| **Control sites** | | | | |
| Sebagoro | 23 | 4 | 4 | 1 |
| Kawongo | 20 | | 8 | |
| **Average** | **22** | **4** | **6** | **1** |
| **Project sites** | | | | |
| Iyingo | 17 | 1 | 6 | |
| Mugarama | 19 | 2 | 11 | |
| Bangladesh | 21 | 3 | 11 | 1 |
| Kayei | 12 | | 18 | |
| Kaiso | 16 | 2 | 7 | 2 |
| Wanseko | 24 | | 10 | |
| Panyimur | 27 | | 1 | |
| Ntoroko | 26 | | 7 | 2 |
| **Average** | **20** | **2** | **9** | **2** |

*Source: Survey data*

**Table 27: Respondents who rated access to fish trucks market information as "good".**

| | Access to fish buying trucks | | Knowledge of fish market prices | |
|---|---|---|---|---|
| | **Baseline** | **Current** | **Baseline** | **Current** |
| **Control sites** | | | | |
| Sebagoro | 15 | 21 | 16 | 23 |
| Kawongo | 15 | 24 | 12 | 21 |
| **Average** | **15** | **23** | **14** | **22** |
| **Project sites** | | | | |
| Iyingo | 7 | 21 | 8 | 13 |
| Mugarama | 7 | 18 | 14 | 24 |
| Bangladesh | 16 | 29 | 16 | 28 |
| Kayei | 14 | 24 | 16 | 22 |
| Kaiso | 13 | 9 | 18 | 20 |
| Wanseko | 18 | 18 | 20 | 24 |
| Panyimur | 11 | 14 | 9 | 10 |
| Ntoroko | 12 | 28 | 5 | 15 |
| **Average** | **12** | **20** | **13** | **20** |
| **Percentage change** | | | | |
| Control sites | | 50.00% | | 57.14% |
| Project sites | | 64.29% | | 47.17% |

*Source: Survey data*

**Table 28: Respondents at project sites who reported receiving benefits from the infrastructure**

| | Improved fish handling | Increased fish price | Better community hygiene | Attract fish traders | Others | Total |
|---|---|---|---|---|---|---|
| Iyingo | 12.0 | 9.0 | 2.0 | 1.0 | 0.0 | 24.0 |
| Mugarama | 15.0 | 7.0 | 1.0 | 5.0 | 0.0 | 28.0 |
| Bangladesh | 13.0 | 6.0 | 2.0 | 5.0 | 1.0 | 27.0 |
| Kayei | 14.0 | 1.0 | 4.0 | 5.0 | 1.0 | 25.0 |
| Kaiso | 11.0 | 5.0 | 3.0 | 2.0 | 0.0 | 21.0 |
| Wanseko | 19.0 | 0.0 | 2.0 | 3.0 | 0.0 | 24.0 |
| Panyimur | 7.0 | 5.0 | 3.0 | 6.0 | 2.0 | 23.0 |
| Ntoroko | 16.0 | 5.0 | 2.0 | 3.0 | 4.0 | 30.0 |
| **Average** | **13.4** | **4.8** | **2.4** | **3.8** | **1.0** | **25.3** |

*Source: Survey data*

**Table 29: Respondents at control sites who expected benefits from project infrastructure**

| | Boost business and development | Improved sanitation | Improved fish handling and quality | Improved standards of living | Better fish prices | Others | Total |
|---|---|---|---|---|---|---|---|
| Sebagoro | 5.0 | 3.0 | 2.0 | 6.0 | 5.0 | 2.0 | 23.0 |
| Kawongo | 2.0 | 4.0 | 1.0 | 2.0 | 1.0 | 0.0 | 10.0 |
| **Average** | **3.5** | **3.5** | **1.5** | **4.0** | **3.0** | **1.0** | **16.5** |

*Source: Survey data*

## APPENDIX 1: LANDING SITES VISITED

| | Name | District | Category |
|---|---|---|---|
| 1 | Sebagoro | Hoima | Control |
| 2 | Kawongo | Kayunga | Control |
| 3 | Iyingo | Buyende | Project |
| 4 | Mugarama | Serere | Project |
| 5 | Bangladesh | Amolatar | Project |
| 6 | Kayei | Apac | Project |
| 7 | Kaiso | Hoima | Project |
| 8 | Wanseko | Buliisa | Project |
| 9 | Panyimur | Nebbi | Project |
| 10 | Ntoroko | Ntoroko | Project |

## APPENDIX 2: KEY PERSONS MET

| Name | Position | Institution |
|---|---|---|
| Dr. John S. Balirwa | Director | NaFIRRI |
| Jackson Wadanya | Ag. Head | DFR |
| Joyce Ikwaput Nyeko | Principal Fisheries Officer | DFR |
| Ben Twikirize | Senior Project Officer | ICEIDA |
| Maria Nandago | Senior Project Officer | ICEIDA |
| Alfred Akankwasa | Co-ordinator, QAFM Project | DFR |
| Sara Bawaye | Senior Quality Inspector | DFR |
| John Peter Achibu | DFO | Serere District |
| Anthony Otunga | DFO | Amolatar District |
| Medard | DFO | Apac District |
| John Muwadi | DFO | Buyende District |
| James Mwesigwa | DFO | Hoima District |
| Anthony Mzei | LC1 Chairman | Iyingo L.S. |
| Moses Namala | BMU Treasurer/ Fish buyer | Iyingo L.S. |
| SosPeter Kitos | Data collector | Iyingo L.S. |
| Ronald Sande | Data collector | Iyingo L.S. |
| Robert Okiria | BMU Chairman | Mugarama L.S. |
| Michael Olego | Enforcement Officer | Mugarama L.S. |
| Brenda Amilo | BMU Member | Mugarama L.S. |
| Michael Ebyau | BMU Member | Mugarama L.S. |
| Tony Odur | Chairman, Musoma BMU | Bangladesh L.S. |
| Damba Sam | V/Chairman, Manyanga BMU | Bangladesh L.S. |
| Rose Ngobi | Data collector, Manyanga BMU | Bangladesh L.S. |
| James Okello | Sec., Data collector, Musoma BMU | Bangladesh L.S. |
| James Obira | Assistant Fisheries Officer | Akokoro S.C |
| Denis Okello | LC1 Chairman | Kayei L.S. |
| Jane Abaka | BMU V/Chairperson | Kayei L.S. |
| William Igwor | BMU Member | Kayei L.S. |
| Julius Mugisa | BMU Secretary | Kayei L.S. |
| Scovia Okae | BMU Women Rep | Kayei L.S. |

| Name | Position | Institution |
|---|---|---|
| George Ogwal | AFO | Kabwoya S.C |
| Kosia Byarufu | BMU Chairman | Sebagoro L.S. |
| Alfred Ocuki | BMU Mobiliser | Sebagoro L.S. |
| Salim Sali | BMU Mobiliser | Kaiso L.S. |
| Dennis Wandigali | Clerk of Works, ICEIDA Project | Kaiso L.S. |
| Julius Mulindwa | Clerk of Works, ICEIDA Project | Kaiso L.S. |
| Norbert Tumusiime | BMU V/Chairman | Wanseko L.S. |
| William Kwonka | BMU Defense | Wanseko L.S. |
| Charles Tingira | BMU Health | Wanseko L.S. |
| Francis Gahwera | Fisheries Data Collector | Wanseko L.S. |
| Charles Onen | BMU Chairman | Panyimur L.S. |
| Isaac Warom | BMU Secretary | Panyimur L.S. |
| Fred Obedswa | BMU Sec. for Planning | Panyimur L.S. |
| Nabirye florence | AFO | Galiraya SC |
| Patrick Ozombo | District BMU Chairperson | Kayinga District |
| Zephania Kule | AFO | Ntoroko District |
| David Koor | BMU Chairman | Ntoroko L.S. |

## APPENDIX 3: WORK ITINERARY

| Time Frame | Activities |
|---|---|
| March, 2013 | • Held a meeting of the Technical Team from NaFIRRI, DFR and ICEIDA in Kampala to discuss baseline data collection design and tools |
| May, 2013 | • Travelled to relevant institutions in Jinja, Kampala and Entebbe to obtain secondary data for reconstruction of baseline information.<br>• Submitted revised budget and workplan to ICEIDA<br>• Developed data collection tools for field study. |
| June, 2013 | • Travelled to Bukungu Landing Site in Buyende District to train data collectors, pilot and pre-test questionnaire and checklists.<br>• Travel to Lakes Kyoga and Albert to carry out secondary and field data collection in 5 Districts<br>• Submitted interim progress report to ICEIDA and a request for second disbursement of funds. |
| July, 2013 | • Completed field data collection in Kayunga and Ntoroko districts<br>• Carried out data entry and analysis and draft report preparation. |
| August, 2013 | • Submitted draft report to ICEIDA and DFR for comments.<br>• Technical Team meeting for NaFIRRI, DFR and ICEIDA to discuss draft report. |
| September, 2013 | • Submission of final report to ICEIDA and DFR |

## APPENDIX 4: DATA COLLECTION TOOLS

Questionnaire for Boat Owners, Crew, Fish Processors a raders

CURRENT AND RECONSTRUCTED BASELINE SOCIO-ECONOMIC DATA FOR LAKES KYOGA AND ALBERT

1. Date of interview _____
2. Name of Interviewer _____
3. Lake _____ District _____
4. Sub –county _____
5. Landing site _____ GPS _____
6. Name of respondent _____

Demographic characteristics *(All respondents)*

7. Respondent`s sex [1] Male [2] Female
8. Age_____ (Years)
9. Which year did you begin to work at this landing site _____
10. Indicate your highest literacy and numeracy levels (*codes below*)

| | 2013 | 2008 |
|---|---|---|
| Literacy | | |
| Numeracy | | |

| Literacy codes | Numeracy codes |
|---|---|
| [1] Able to read but not write in vernacular | [1] Able to write numbers |
| [2] Able to read and write in vernacular | [2] Able to add and subtract |
| [3] Other levels (specify) _____ | [3] Able to multiply and divide |
| | [4] Higher levels |

11. Provide information on your household

| | 2013 | 2008 |
|---|---|---|
| Marital status [1] Single [2] Married [2] Divorced [5] Widow(er) | | |
| Number of spouse(s) | | |
| Number of children below 18 years - boys | | |
| Number of children below 18 years - girls | | |
| Number of boys of school going ages of 6-18 years in school | | |
| Number of girls of school going ages of 6-18 years in school | | |
| Number of dependants other than spouse(s) | | |

12. What has been your main fishery activity? In 2013 _____ In 2008 _____
[1] Owning/ Renting-in boat(s) [3] Crew member [4] Fish processor
[5] Fish trader [6] Both Fish Trader and Processor [7] Other (specify) _____

13. Have you migrated from one landing site to another?

| | [1] Yes [2] No | If Yes, main reason for migrating (*code*) |
|---|---|---|
| Prior to 2008 | | |
| Between 2008 and 2013 | | |

Codes for reasons for migrating

[1] Seasonality of fish catch [2] Fish market search
[3] Insecurity [4] Disease outbreak
[5] Search for land [6] Others (Specify) _____

14. Average number of days operated in a week: In 2013 _____ In 2008 _____

15. What has been your main fish species targeted? (*code*) In 2013 _____ In 2008 _____

[1] Tilapia [2] Nile Perch [3] Mukene [4] Muziri/ ragoge
[5] *Alestes* (angara)/ *Hydrocynus* (ngasia) [6] *Bagrus. bayad* (lanya)
[7] Others (Specify) _____

Fish production cost data *(Boat owners and renters only)*

16. Do you own or rent a boat?: [1] Own[2] Rent

17. If you rent boat(s), how much do you pay per boat per day? _____ (Shs per boat per day).

18. If you own boat(s), provide information on the main type of boats owned:

| | Year | Number | Unit cost | Repair cost *(Shs/half yearly)* | Life time (years) |
|---|---|---|---|---|---|
| Sesse | 2013 | | | | |
| | 2008 | | | | |
| Parachute | 2013 | | | | |
| | 2008 | | | | |
| Congo barque | 2013 | | | | |
| | 2008 | | | | |
| Other (specify) _____ | 2013 | | | | |
| | 2008 | | | | |

19. Have you used outboard engine(s)? [1] Yes [2] No

20. If Yes, give information on the engine(s) used.

| Engine Horse power | Year | Number | Unit cost | Repair costs *(Sh/week)* | Lifespan *(Years)* |
|---|---|---|---|---|---|
| Less than 10 | 2013 | | | | |
| | 2008 | | | | |
| 10 to20 | 2013 | | | | |
| | 2008 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Above 20 | 2013 | | | | |
| | 2008 | | | | |

21. Give information on fuel used foe outboard engine per fishing day:

| | Year | Quantity *(Litres/ day )* | Unit cost (*Shs/ litre)* |
|---|---|---|---|
| Petrol | 2013 | | |
| | 2008 | | |
| Engine oil | 2013 | | |
| | 2008 | | |

22. Give information on oars owned.

| Oar Size | Year | Number | Unit cost | Repair costs *(Sh/month)* | Lifespan (*months)* |
|---|---|---|---|---|---|
| Small | 2013 | | | | |
| | 2008 | | | | |
| Large | 2013 | | | | |
| | 2008 | | | | |

23. Give information on number of workers deployed and their payments per day:

| | Year | Number | Payment *(Shs/ worker/ day)* |
|---|---|---|---|
| Fishing | 2013 | | |
| | 2008 | | |
| Net preparation | 2013 | | |
| | 2008 | | |
| Splitting fish open | 2013 | | |
| | 2008 | | |
| Other (specify) _____ | 2013 | | |
| | 2008 | | |

24. Provide information on the main type of gear used

| Gear Types | Year | Number | Unit cost *(Shs/unit)* | Repair costs *(Sh/month)* | Life span (*Months*) |
|---|---|---|---|---|---|
| Gillnets - multifilament | 2013 | | | | |
| | 2008 | | | | |
| Gillnets - monofilament | 2013 | | | | |
| | 2008 | | | | |
| Long lines | 2013 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 2008 | | | | |
| Small/ mukene seines | 2013 | | | | |
| | 2008 | | | | |
| Beach/ boat seines | 2013 | | | | |
| | 2008 | | | | |
| Cast nets | 2013 | | | | |
| | 2008 | | | | |
| Others (specify) _____ | 2013 | | | | |
| | 2008 | | | | |

25. How much did you pay for boat license the year before? In 2013 _____ In 2008 _____

26. How much did you pay for boat registration the year before? In 2013 _____ In 2008 ___

27. Give information on the type of floats and sinkers used:

| Floater Type | Year | Number | Unit cost | Lifespan (*Months*) |
|---|---|---|---|---|
| Floats from shops | 2013 | | | |
| | 2008 | | | |
| Plant floats | 2013 | | | |
| | 2008 | | | |
| Plastic materials | 2013 | | | |
| | 2008 | | | |
| Rubber floats | 2013 | | | |
| | 2008 | | | |
| Other floats (specify) _____ | 2013 | | | |
| | 2008 | | | |
| Sinkers (specify) _____ | 2013 | | | |
| | | | | |

28. Give information on the types of anchor used:

| Anchor Type | Year | Number | Unit cost | Lifespan (*Years*) |
|---|---|---|---|---|
| Metal | 2013 | | | |
| | 2008 | | | |
| Stone | 2013 | | | |
| | 2008 | | | |
| Other (specify) _____ | 2013 | | | |
| | 2008 | | | |

29. What other important fishery related expenses have you incurred? (*Shs*)

| Expenses | 2013 | 2008 |
|---|---|---|
| Food (per day) | | |
| Capella/ kavera (per month) | | |
| Charcoal/ firewood (per day) | | |
| Cigarettes (per day) | | |
| Blankets (per month) | | |
| Other (specify) _____ | | |

30. If you are a Mukene/ muziri/ ragoge fisher, give information on the costs incurred as below:

| Item | Years | Number | Unit cost | Repair costs *(Shs per week)* | Life span |
|---|---|---|---|---|---|
| Lanterns | 2013 | | | | |
| | 2008 | | | | |
| Basins | 2013 | | | | |
| | 2008 | | | | |
| Drying nets | 2013 | | | | |
| | 2008 | | | | |
| Drying Racks | 2013 | | | | |
| | 2008 | | | | |
| Candles/ todoma | 2013 | | | | |
| | 2008 | | | | |
| Others (specify) __ | 2013 | | | | |
| | 2008 | | | | |

31. Average quantity of paraffin used per fishing day (*Litres*): In 2013 _____ Iin 2008 _____

32. Average cost of paraffin: (*Shs/litre*): In 2013 _____. In 2008 _____

Fish sales revenue data *(Boat owners and renters only)*

33. Provide information on the main fish species you catch

| | Year | Low catch season | | High catch season | |
|---|---|---|---|---|---|
| | | Average quantities landed *(kg, head, basin/ day)* | Selling price (Shs/ unit) | Average quantities landed *(kg, head, basin/ day)* | Selling price (Shs/ unit) |
| N. perch | 2013 | | | | |
| | 2008 | | | | |
| Tilapia | 2013 | | | | |
| | 2008 | | | | |
| Mukene | 2013 | | | | |
| | 2008 | | | | |
| Muziri/ Ragoge | 2013 | | | | |
| | 2008 | | | | |
| *Alestes* (angara)/ *Hydrocynus* (ngasia) | 2013 | | | | |
| | 2008 | | | | |
| *Bagrus. bayad* (lanya) | 2013 | | | | |
| | 2008 | | | | |
| Other (specify) _____ | 2013 | | | | |
| | 2008 | | | | |

34. How many months are the catch seasons? [1] Low season _____ [2] High season _____

35. What has been the main source of your capital for financing fishing boats and gears? (*codes*)

In 2013 _____ In 2008 _____

[1] Own capital [2] Credit from SACCO [3] Credit from fish buyer(s)

[4] Credit from financial institution [5] Other (specify) _____

36. If credit financed, have your sales been tied to supplier of finance? [1] Yes [2] No

In 2013 _____ In 2008 _____

37. If financed from credit, have your fish prices been fixed by credit supplier? [1] Yes [2] No

In 2013 _____ In 2008 _____

Post harvest losses *(Boat owners/ renters, processors and traders)*

| | Fish species (*code*) _____ | |
|---|---|---|
| | 2013 | 2008 |
| 38. Have you sometimes sold your fish at reduced prices du lage? [1] Yes [2] No | | |
| 39. What has been the average reduced price at which you s es sold your fish? | | |
| 40. If Yes, what has been the main cause for spoilage? (*code*) | | |
| 41. What has been your proportion of fish sold at reduced prices in a day due to spoilage? (*kg, heads, basin)* | | |
| 42. What do you do with fish that cannot be eaten or sold fresh? (*code*) | | |
| 43. How many days a week have you thrown away fish because it could not be eaten or sold? | | |
| 44. What has been your average quantity of fish thrown away in a day? *(kg, heads, basin)* | | |
| 45. What measures have you adopted to minimize fish spoilage? (*code)* | | |

Codes:

Fish species:
[1] Tilapia [2] Nile Perch [3] Mukene [4] Muziri/ ragoge
[5] *Alestes* (angara)/ *Hydrocynus* (ngasia) [6] *Bagrus. bayad* (lanya)
[7] Others (Specify) _____

Causes for spoilage
[1] Poor processing [2] Poor storage [3] Poor handling
[4] Other (specify) _____

Spoilage control measures
[1] Icing [2] Early selling [3] Quick transportation
[4] Salting [4] Salting [5] Deep frying
[6] Other (specify) _____

Fate of fish that cannot be eaten or sold fresh
[1] Thrown away [2] Fed to animals [3] Process [4] Other (specify) _____

Provide information on fish you have been processing, if any

| | Fish species (*code*) _____ | |
|---|---|---|
| | 2013 | 2008 |
| 46. What has been the main reason for processing your fish? (code) | | |
| 47. How many days a week have you processed some or all your catch | | |
| 48. What has been your average quantity of fish processed in a day? | | |
| 49. What has been the average price at which you sold your processed fish? | | |

Codes: Processing methods

[1] Salting/ sun drying
[2] Smoking
[3] Deep-frying
[4] Other (specify) _____

Reasons for processing fish:
[1] To preserve from spoilage
[2] To improve taste
[3] To improve price
[4] Other (specify) _____

Access to improved facilities *(All respondents)*

50. Provide the following information on your access to handling, processing marketing and livelihood facilities

| | Functional through the year [1] Yes [2] No | | Used by respondent [1] Yes [2] No [3] Sometimes | |
|---|---|---|---|---|
| | 2013 | 2008 | 2013 | 2008 |
| | | | | |
| Clean water | | | | |
| Sanitation facilities | | | | |
| Fish handling table/ slabs | | | | |
| Dry fish market facilities | | | | |
| BMU leadership | | | | |

Access to markets and market information *(All respondents)*

51. What are the major markets for your fish?
[1] Beach market [2] Factory agents/Industrial processors [3] Local market not at the beach
[4] Another District [4] Regional market [5] Other [specify] _____

52. Provide the following information on your access to markets and market information

| | 2013 | 2008 |
|---|---|---|
| Access to fish buying trucks | | |
| Knowledge of prevailing fish market prices | | |

*Codes* [1] Poor[2] Fair [3] Good

53. Do you have traders book your catch?

In 2008 [1] Yes [2] No In 2013 [1] Yes [2] No

Access to health and education *(All respondents)*

54. Provide information on the education and health services:

| | Functional through the year [1] Yes [2] No | | Used by your household [1] Yes [2] No [3] Sometimes | |
|---|---|---|---|---|
| | 2013 | 2008 | 2013 | 2008 |
| Primary school | | | | |

| | | | | |
|---|---|---|---|---|
| Health centre | | | | |
| HIV/AIDS information | | | | |

55. Has any member of your household suffered from water borne/ water related disease in the previous year?

| | 2013 | 2008 |
|---|---|---|
| Bilharzia | | |
| Cholera | | |
| Diarrhea/ dysentery | | |
| Malaria | | |

Expenditure patterns *(All respondents)*

56. What percentage has fishery activity contributed to your income?
In 2013: _____ % In 2008: _____ %

57. What alternative activities have you been involved in?

| | [1] Yes [2] N0 | |
|---|---|---|
| | 2013 | 2008 |
| Crop farming | | |
| Livestock keeping | | |
| Commodity trade | | |
| Other (specify) _____ | | |

58. Indicate your average expenditures on the most important items (Shs)

| Expenditure category | 2013 | 2008 |
|---|---|---|
| Food items (per day) | | |
| Health care (per month) | | |
| Education (per term) | | |
| Clothing (per half year) | | |
| Savings (per month) | | |
| Others (specify) _____ | | |

Food security status *(All respondents)*

59. What has been the average number of meals eaten in your household in a day?
In 2008: _____ In 2013: _____

60. What is the average quantity of fish consumed by your household per day (*kg*)?

| | Quantity of fish |
|---|---|
| 2013 | |
| 2008 | |

Asset ownership *(All respondents)*

61. Provide information on other assets owned at the beach

| | 2013 | | 2008 | |
|---|---|---|---|---|
| Assets | Number | Unit cost (Shs) | Number | Unit cost (Shs) |
| Brick house and iron roofed | | | | |
| Vehicle | | | | |
| Motorcycle | | | | |
| Land (acres) | | | | |
| Mobile phone | | | | |
| Radio | | | | |
| Bicycle | | | | |
| Others (specify) | | | | |

For improved landing sites only *(All respondents)*

62. Mention the main benefits from the improved landing site: _____

63. Do you consider your household livelihood to have improved since 2008?

[1] Yes [2] No.

For unimproved landing sites only *(All respondents)*

64. What benefits will an improved landing site bring you benefits? _____

*Thank you for your information*

Key Informant Interview Checklist for BMUs and DFOs

CURRENT AND RECONSTRUCTED BASELINE SOCIO-ECONOMIC DATA FOR LAKES KYOGA AND ALBERT

Date of interview _____

Name of Interviewer _____

Lake _____ District _____

Sub –county_____

Landing site_____ GP _____

Name of respondent _____

Population of landing site: In 2013 _____ In 2008: _____

Volume and prices of fish landed from the landing site

| | Annual quantities of fish species landed at the landing site (Kgs) | | Average prices of fish species at landing site (Shs/kg) | |
|---|---|---|---|---|
| | 2013 | 2008 | 2013 | 2008 |
| N. perch | | | | |
| Tilapia | | | | |
| Mukene | | | | |
| Muziri | | | | |
| Ragoge | | | | |
| *Alestes* (angara) | | | | |
| *Hydrocynus* (ngasia) | | | | |
| *Bagrus bayad* (lanya) | | | | |
| Other (specify) ____ | | | | |

Volume of fish marketed from the landing site

| | Annual quantities of fish species marketed from the landing site (Kg) | | Daily quantity of fish species marketed from the landing site (Kgs) | |
|---|---|---|---|---|
| | 2013 | 2008 | 2013 | 2008 |
| N. perch | | | | |
| Tilapia | | | | |
| Mukene | | | | |
| Muziri | | | | |
| Ragoge | | | | |
| *Alestes* (angara) | | | | |
| *Hydrocynus* (ngasia) | | | | |
| *Bagrus bayad* (lanya) | | | | |
| Other (specify) ____ | | | | |

Availability of improved facilities

| | Available [1] Yes [2] No | | Functional through the year [1] Yes [2] No | |
|---|---|---|---|---|
| | 2013 | 2008 | 2013 | 2008 |
| Clean water | | | | |
| Sanitation facilities | | | | |
| Fish handling table/ slabs | | | | |
| Dry fish market facilities | | | | |
| BMU leadership | | | | |

Availability of markets and market information

| | 2013 [1] Yes [2] No [3] Number | 2008 [1] Yes [2] No [3] Number |
|---|---|---|
| Fish buying trucks | | |
| Display tables | | |
| Storage facilities | | |
| Information of prevailing fish market prices | | |

Availability of health and education facilities and services

| | Available [1] Yes [2] No | | Functional through the year [1] Yes [2] No | |
|---|---|---|---|---|
| | 2013 | 2008 | 2013 | 2008 |
| Primary school *(distance in km)* | | | | |
| Health centre*(distance in km)* | | | | |
| HIV/AIDS information | | | | |

Main water-borne diseases at the landing site

| | 2013 [1] Yes [2] No | 2008 [1] Yes [2] No |
|---|---|---|
| Bilharzia | | |
| Cholera | | |
| Diarrhea/ dysentery | | |
| Malaria | | |

## APPENDIX 5: PROJECT OUTCOMES AND IMPACTS AND THEIR INDICATORS

| | Indicators |
|---|---|
| **Project impact**<br>Improved livelihoods of people in fish dependent communities | 1. % increase in household incomes among fishing dependent communities in the project area from baseline position:.<br>2. % increase in livelihood indices of households in fish dependent communities from baseline:<br>3. % Increase in households who perceive improvements in their livelihoods from baseline situation. |
| **Project outcome**<br>To increase volume of marketed fish both in the domestic and export markets through reduction in post harvest losses | 1. % reduction of post harvest losses in the project improved landing sites (focal areas) from baseline, and in comparison with control group of unimproved landing sites in the same area<br>2. % increase in volume (tons) of fish marketed from the project improved landing sites (focal areas) from baseline, and in comparison with control group of unimproved landing sites in the same area<br>3. % increase in proportion of captured fish marketed from the project improved landing sites (focal areas) from baseline, and in comparison with the control group in unimproved landing sites in the same area.<br>4. % increase in the value (in UGX & US$) of fish marketed from the project improved landing sites (focal areas) from baseline, and in comparison with control group of unimproved landing sites in the same area<br>5. % of fishing population in the project focal area with access to improved functional infrastructure and facilities for quality fish handling and marketing.<br>• % of fishing population with access to markets and market information. |

## APPENDIX 6: TERMS OF REFERENCE (TORS) FOR THE CONSULTANCY SERVICE

### Terms of Reference for a Service Provider to Reconstruct the Project Baseline Data for Quality Assurance for Fish Marketing Project (QAFMP)

January, 2013

### 1. BACKGROUND

ICEIDA has been supporting the implementation of QAFMP under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Department of Fisheries Resources (DFR). The project focuses on reducing poverty and improving the livelihoods of fish dependent communities through improving the quality and safety of fish for domestic, regional and export market. The QAFMP become operational in 2009 and is planned to end in 2013. The project has been operational in 10 districts surrounding Lake Albert (Ntoroko, Hoima, Bulisa and Nebbi) and Lake Kyoga (Nakasongola, Apac, Amolatar, Soroti, Serere and Buyende).

After three years of QAFMP implementation, an external midterm review was commissioned to establish the extent to which the project is likely to meet its objective, determine the challenges could be addressed in the remaining period of the project. The MTR was conducted between March and June 2012 and the final report was produced in November 2012. The MTR found, among others, that the formulation of the project strategy and the monitoring and evaluation framework was not adequate. The main weakness in the formulation of logic was lack of baseline data and performance targets for outcome and mpact indicators against which progress can be assessed.

### 2. PURPOSE AND SPECIFIC OUTCOME OF THE PROJECT

The development objective of the QAFMP is to improve the livelihoods of the fish dependent communities. The purpose of the QAFMP project is to increase the volume of marketed fish both in domestic and export markets through reduction in post harvest losses.

### 3. PURPOSE OF BASELINE

The purpose of the assignment is to reconstruct baseline data and analysis describing the situation prior to QAFMP inspection in 008, against which progress can be assessed. The baseline data and analysis should be aligned to the project logframe and the monitoring and evaluation performance framework.

### 4. THE SCOPE OF WORK

The service provider will design and conduct a baseline data reconstruction exercise using a combination of methods to ensure that the date collected is as accurate and reliable as is practical possible. The methods that could be used include the following.

1. **Secondary Sources**
   - Social economic surveys/Household survy
   - Statistical Abstract by UBOS
   - Catch assessment frame survey report.
   - QAFMP Baseline report of 2008.
   - Needs Assessment reports

- Final MTR report of QAFMP 2012
- QAFMP project document, 2009

2. **Administrative Data**
   - Analysis of data on fish marketed (compiled from fish mits and fish inspectors report
   - DFR/MAAIF reports
   - Sector reports (Education, Health, Water etc)
   - District profiles/reports
   - QAFMP project reports
3. **Primary Data Sources From specific Project Sites using the following methods**
   - Recall techniques
   - Key Informants (Key fish buyers, factories, exporters etc)
   - Group based interviews
     a. Focus group discussion
     b. Participatory assessment techniques

***Objectives***

The service provider should:

- Design a baseline study methodology in collaboration with the project management team
- Conduct the baseline reconstruction study in collaboration with the project management team
- Develop systems and a tool kit for DFR and Districts to collect data on outcome indicators and link it to the existing data collection at DFR/ MAAIF and to the project M&E arrangements.
- Conduct activities to build the capacity of DFR and the District staff in project M&E data collection, analysis and reporting.

5. **EXPECTED OUTPUTS**

- Comprehensive baseline data collection/study design
- Comprehensive baseline data collection and analysis report
  - Data collection plan, methodology during design and execution phase
  - An analysis of collected data in relation to the LFA and M&E arrangements
  - Recommendations
- An accessible (electronic and hard copy data)base with all the data collected during the study
- A capacity building report that provides details on the implementation of the training session for DFR and district staff in M& E project data collection, analysis and reporting
- A tool kit to collect data on outcome indicators linked to existing DFR and the project M & E arrangements.

## 6. REQUIRED EXPERTISE

**General requirements for the team to undertake the assignment**

- Relevant educational qualifications
- Relevant quantitative and qualitative skills
- Professional expertise and experience in M&E and baseline research
- Development expertise and experience
- Knowledge of participatory methodologies
- Gender sensitivity
- Sensitivity to the project principles

**Specific requirements related to the project**

- Adequate knowledge of the Uganda`s lake District Profiles
- Knowledge of the relevant country sector policies
- A history of performing similar evaluations
- Knowledge of Uganda Public Service frameworks
- Knowledge of development and capacity building frameworks
- Knowledge of national quality assurance frameworks and ms

## 7. TIMELINE AND PROGRESS REPORTS

This will be negotiated based on the proposal submitted. Expected to take not more than 30 working days.

## 8. BUDGET

The budget will be negotiated based on the financial proposal submitted by the service provider.

**Appendix 7: RESEARCH TEAM MEMBERS**

| | | |
|---|---|---|
| 1 | Dr. Konstantine Odongkara | NaFIRRI |
| 2 | Sara Bawaye | DFR |
| 2 | Joyce Akumu | NaFIRRI |
| 3 | Bwambale Mbilingi | NaFIRRI |
| 4 | Sam Bassa | NaFIRRI |
| 5 | Mark Olokotum | NaFIRRI |
| 6 | Chrispino Okwong | NaFIRRI |
| 7 | Henry Ochaya | NaFIRRI |
| 8 | Agnes Nasuuna | NaFIRRI |
| 9 | Elizabeth Naula | NaFIRRI |
| 10 | Safina Namatovu | NaFIRRI |
| 11 | Vincent Bagaga | NaFIRRI |
| 12 | Abdalla Hatinda | DFR |