

ICEIDA Intervention in Quality Assurance of Fish Products in Uganda – Fish Quality Laboratory in Entebbe 2002-2005.

External Evaluation Report



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**Prepared for Icelandic International Development Agency and Department
of Fisheries Resources**

Kampala and Neskaupstaður, November 2005

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List of Acronyms

AIA	Appropriation in AID
DFR	Department of Fisheries Resources
EU	European Union
FQL	Fish Quality Laboratory
GoU	Government of Uganda
ICEIDA	Icelandic International Development Agency
ISO	International Standard Organization
LVEMP	Lake Victoria Environment Management Programme
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MoFPED	Ministry of Finance, Planning and Economic Development
PIP	Project Implementation Plan
PMC	Project Management Committee
PMT	Project Management Team
SANAS	South African National Accreditation System
UNBS	Uganda National Bureau of Standard
UFL	Uganda Fisheries Laboratory

Acknowledgements

The evaluation team would like to thank all the people who participated in the evaluation in one way or another and received us warmly. We would especially want to thank the people who gave freely of their time to participate in interviews and also helping us in one way or another to make this evaluation possible. This includes both ICEIDA and DFR staff, the UFL staff and also people from other laboratories and the fisheries sector in Uganda.

Neskaupstaður and Entebbe. November 2005
Karl Rúnar Róbertsson and Boaz Blackie Keizire

Executive Summary

0.1. Introduction

The project ICEIDA Intervention in Quality Assurance of Fish Products in Uganda, fish quality Laboratory in Entebbe, was a three-year cooperation intervention between Icelandic International Development Agency (ICEIDA) and the Government of Uganda. The project became effective in July 2002 and expected to end in July 2005. The project was extended until December due to delays in evaluation. The objective of the project was to strengthen the quality assurance system for fish and fish products from Uganda to contribute towards a general improvement on the macro economy of the country as a result of assured expansion, retention and stability of the export markets for Ugandan fish products.

The initial outline of the project is laid down in "ICEIDA intervention in Quality Assurance of Fish Products in Uganda, Fish Quality Laboratory in Entebbe" Project Document.

0.2. Key findings

0.2.1 Efficiency

- *Human Resources:* The evaluation notes that organisation of human resources in the project has been efficient. The project implementation team has been setting targets and achieving them.
- *Financial Resources:* It is noted that, in some years, the project expenditures have been exceeding the approved budgets by about US\$5-7,000 in most expenditure categories. This over expenditures could be minimised, although it oscillates between 5-6% acceptable over- and under- expenditure limits.
- *Capacity building:* The project has made a lot of progress on this area of capacity building. The project conducted internal and external training. Internal training consisted of workshops and on-job training for laboratory personnel. External training involved laboratory staff joining training institutions in and outside Uganda to strengthen the capacity of laboratory management and quality assurance. Internal trainings included workshops that were based on ISO 170525 requirements.
- *Infrastructure:* The laboratory building is fit for its purpose and fulfils requirement to such a building. The laboratory sometimes experiences power fluctuations from the main electricity distribution system that cause some breakdowns in some equipment. The laboratory has sufficient equipments for the microbiological analysis and one chemical method and the laboratory has a good functional quality manual.

0.2.2 Effectiveness

- *The potential to achieve the stated objectives:*
 - ✓ *Objective 1: A Fish Quality Laboratory (FQL) operational with the DFR capable of carrying out microbiological, chemical and sensory tests on fish and fish products in compliance with international standards.*

The laboratory is capable of carrying out ten microbiological tests and one chemical test. The main emphasise has been put on microbiological methods because of high demands by the market. The project management still has a plan for development of sensory lab. As regards to chemical tests, little progress has been made and this is attributed to the big investments that

are required to set-up a chemical laboratory.

- ✓ *Objective 2: A streamlined quality control and assurance mechanism in the Uganda Fisheries Sector in accordance with international standards.*

It should be noted that this was an ambitious objective and unclear what exactly could be one to achieve it. It is however noted that there are a number of processes and developments within the fisheries management and quality assurance framework that consists of the anticipated system. UFL has developed its own Quality Manual, which could be considered as a system within the lab itself. The combination of the system developed under the Quality Assurance Rules for Fish Inspection together with the UFL Quality Manual could be interpreted to constitute a quality system envisaged as an objective of this project.

- ✓ *Objective 3: A cost-recovery or self-financing mechanism available for the operation of the Fish Quality Laboratory and thus sustainable and secure sustainable operation environment available for the FQL.*

The process of putting in place a cost-recovery system for UFL has got many stages involved. Some of these processes are within the scope of project management while the others are outside the control of project. ICEIDA supported the project to engage a consultant in developing a Business Plan which was developed and submitted to for action. The lab will not, very likely, get customers once it is not nationally recognised or internationally accredited. This, therefore, means that for a cost recovery to operate, the laboratory will first need to obtain national recognition or international accreditation.

- ✓ *Objective 4: The quality control and assurance mechanism and the Fish Quality Laboratory compliant with international standards (ISO 17025) and accepted as such by the most important markets*

The laboratory has a functional microbiological laboratory and in addition to that the laboratory can analyse for TVB-N, the quality system is operational and complies with international standards. The lab is still working towards operational sensory laboratory. The laboratory has applied for national recognition and international accreditation (which was outside the initial scope of the project). The project has achieved this objective.

0.2.3 Impact

- UFL is important to strengthen the Quality assurance system in Uganda. Therefore the UFL is already having a great impact and will in the future play a vital role in keeping the doors open to export markets.
- The training of the personnel is very important part of this project and a great progress has been made in developing the capacity of professional and technical staff of DFR. Well-trained personnel will strengthen the laboratory and increase its standard and sustainability.

0.2.4 Relevance

- The project is relevant to Government of Uganda objectives of accessing the international markets through improved quality and safety assurance mechanisms. The project is an important part of GoU wider policy to strengthen the quality assurance system for fish products.

0.2.5 Sustainability

- The sustainability of the project depends on the cost recovery system, the independence of the management, the opportunity for the lab to generate funds and spend at source and achieving international accreditation. If these things are in place the evaluation believes the laboratory has got high potential to survive after donor financial and technical support.
- Currently, the cost recovery is yet to be instituted. A Business Plan has been developed and awaits to be approved and the laboratory has applied for international accreditation.

0.3. Lesson learned

Well trained personnel, motivated with guarantee of financial independence is key to sustainability of the project

0.4. Conclusions and Recommendations

0.4.1 Conclusions

- The project suffered for some delay in the beginning because the renovation of the building was not complete when the project started.
- A lot of progress has been made in developing the capacity of professional and technical staff of DFR.
- The laboratory is functional microbiological laboratory and it has operational quality manual and quality system. But the project has not yet established both the sensory and chemical analysis laboratory.
- A business plan for the laboratory remains important and therefore it is still needed to provide a guide on the strength and ability of the lab to generate funds from the services it will provide.
- The laboratory has already applied formally for international accreditation regarding to ISO 17025 as well for national recognition.

0.4.2 Recommendations

- The evaluation observes that the personnel are well trained and it is capable of doing their jobs but will require further training to maintain and match the challenges that may occur in the laboratory services. In particular, there is need for training in quality control at testing laboratories and further training in sensory analysis.
- It is recommended that the sampling program continues until the laboratory starts to receive real samples. It therefore calls for more support by the project.
- It is recommended that the procedure for establishing a sensory analysis lab be emphasised before the project winds up.
- Since DFR is setting up an entire chemical lab under the African Development Bank Funded Fisheries Development project, it is recommended that ICEIDA supported project should cooperate with the ADB project to avoid repetition.
- It is recommended that the Project Management strongly move in to ensure that the Business Plan is finalised and approved by the Project Management Committee for its implementation.
- It is recommended that, through DFR, options be explored to create a position at Principle Level for the Lab Manger and another position at Senior Level for the Quality Manger.

- It is recommended that DFR, with current or other ICEIDA support, think of putting in place a quality system by strengthening quality and safety of fish for the local and regional fish trade to strengthen the export system that is already established
- It is recommended that ICEIDA should not wind-up until both the national recognition and International accreditation are granted.
- It is finally recommended that an extension of at least one year be granted to the project to prepare for a cleaner exit.



UFL personnel working at the microbiological lab

1. Introduction

1.1. Background to the Project

The project ICEIDA Intervention in Quality Assurance of Fish Products in Uganda, fish quality Laboratory in Entebbe, was a three-year cooperation intervention between the governments of the Republic of Iceland, through the Icelandic International Development Agency (ICEIDA) and the Government of Uganda through its Department of Fisheries Resources (DFR) of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). The project became effective in July 2002 and expected to end in December 2005 after a 5 months extension due to delays in evaluation. Initially the planned cost of the project was USD 815,000, of which ICEIDA contribution amount to USD 663,000 (81%) and the GoU contribution was USD 152,000 (19%).

The overall objective of the project was to strengthen the quality assurance system for fish and fish products from Uganda to contribute towards a general improvement on the macro economy of the country as a result of assured expansion, retention and stability of the export markets for Ugandan fish products.

The European Union (EU) market is one of the most important for fish products from Uganda. Export to the EU market has been marred by various problems in the past years and the market has been closed for fish from Uganda in a number of occasions. One of the principal reasons for the closure of the EU market for fish imported from Uganda and from the whole of Lake Victoria was the lack of objective evidence that Uganda was able to show, in order to provide the safety, quality and wholesomeness of fish and its products. To avoid this, GoU is stringent on the quality assurance system for fish products. The quality assurance system in Uganda is fairly well developed but the laws and regulations are not in compliance with the current market requirements. A functional Fish Inspection services has been established for the fish export but not for the local market. An accredited analytical laboratory is, therefore, an important part of quality assurance system. Until now Uganda mainly relies on one privately owned laboratory for issuing of Quality Assurance Certificates on fish exports. It is thought that Competent Authority cannot rely on only one private laboratory for these services and it is felt that the necessary capacity for Quality Control and Quality Assurance Certificates has to exist in the public sector in Uganda, parallel to the services provided in the private sector. Therefore, the DFR in cooperation with ICEIDA decided to support the establishment of a Fish Quality Laboratory at the Department of Fisheries Resources headquarters.

1.2. Project framework

The initial outline of the project is laid down in "ICEIDA intervention in Quality Assurance of Fish Products in Uganda, Fish Quality Laboratory in Entebbe", *Project Document* submitted by ICEIDA and DFR in March 2002. In the first months of the project, the Project Management Team (PMT) prepared a Project Implementation Plan (PIP) to be approved by the Project Management Committee (PMC) annually.

At the inception of the project, an understanding between the DFR and ICEIDA was that DFR would provide basic laboratory equipment including a completed building with support from

the Lake Victoria Environment Management Project (LVEMP). The initial assumption was that ICEIDA project would find a renovated building where laboratory equipment would be installed. The project started in July 2002 and the first activity was complete the renovation of the building that was ongoing under LVEMP. The implementation of the planed activities started in November 2002 rather than the original plan of starting in July 2002. When the ICEIDA/DFR project started, the initial activities were on renovating, building extension, buying the laboratory equipments, training of personnel and working on the quality system. The laboratory was officially opened 4th July 2003. Initially the three years project was supposed to end in July 2005 but some delays in conducting project evaluation necessitated some extension up to December 2005.

1.3. This evaluation

The independent external evaluation was rooted in the Project Document signed between Uganda and ICEIDA in 2002. The purpose of the evaluation was to study the planned activities, the implementation and outputs of the project and the results obtained, as well as to make recommendation to guide the involved parties in their decision-making regarding the future of the ICEIDA support and cooperation with the DFR. Special attention was to be paid to efficiency and effectiveness of the support, and the impact, relevance, and sustainability of the project (See Terms of reference Appendix 1). An international consultant, Mr. Karl Rúnar Róbertsson, and a national counterpart Mr. Boaz Blackie Keizire conducted the external evaluation.

1.4. Methodology

Preparation for the evaluation began in August 2005. Relevant background material was assembled and handed over to the team leader for initial offsite evaluation. The team leader arrived in Entebbe on September 8th. After initial meeting with the national counterpart September 11th where plan for meetings and visits was arranged and started off the fieldwork. Discussions were made with various individuals and institutions were both directly and indirectly involved in the implementation of the project (see Annex 2).

Field work was concluded with presentation of preliminary findings, conclusions and recommendations at the ICEIDA office in Kampala on 22nd September 2005.

2. Key Findings

2.1. Efficiency

The efficiency of the project is evaluated based on the extent to which various inputs were used to achieve the desired outputs. The inputs range from a variety of areas including human resources, financial resources, infrastructure, additional equipment and capital investments.

2.1.1. Human Resources

ICEIDA country office in Uganda on behalf of ICEIDA and DFR on behalf of GoU guide the overall organization of the project. Project Management Committee (PMC), chaired jointly by the Commissioner for Fisheries of the DFR and ICEIDA Country Director in Uganda, administer and monitor the implementation of the project. Additional Committee members are the Fish Quality Advisor and a counterpart senior officer of the DFR. The Fish Quality

advisor and DFR counterpart form a Project Management Team (PMT) responsible for day-to-day management of the project. In the beginning the ICEIDA Fish Quality Advisor and the Laboratory Manager formed the PMT. When the Laboratory Manager went to its M.Sc. studies the quality manager took her place in the PMT.

The organisation of human resources in the project has been efficient and the evaluation team did not notice any inefficiency in human resource in regard to the implementation of the project.

2.1.2. Financial Resources

Assessment of financial management including disbursement of funds at different levels and financial reporting has been done to determine, to the extent possible, the financial performance to efficient achievement of project targets.

The initially estimated project cost was US\$ 815,000. ICEIDA contribution was US\$ 663,000 (81%) and Uganda contribution was US\$ 152,000 (19%). The original breakdowns of the budget were only indicative to guide project spending. ICEIDA approve a budget for every year and it can differ slightly from the original budget.

It should be noted here that during project preparation, budgeting had assumed that a cost recovery system was to be instituted in the last quarter of the second year and in the final year of the project. The budget for the final year was therefore assumed low. The cost recovery has not taken effect and this has budget implications. The project had to make resource reallocations to ensure that project activities continue.

We note that, in some years, the project expenditures have been exceeding the approved budgets by about US\$5-7,000 in most expenditure categories. This over expenditures should not be encouraged, although it oscillates between 5-6% acceptable expenditure limits. In every financial report, it would be more advisable to explain reasons for these variations between budgeted and actual expenditures.

As the project comes to an end, it is possible that the expenditures will exceed the originally agreed budgets. This possibility will be largely as a result of extra expenditures on the building, which was not originally envisaged. On the other hand, the operational expenditures may remain within the agreed limits. As noted earlier again, the original budget had assumed a full cost recovery by closure of the project, which has not been the case. Any extra budget beyond the originally agreed can be understood and appreciated.

One other important issue is that the project originally budgeted for a vehicle, which was to be initially used by the Project Advisor and later be handed to the laboratory management to enhance the operational capacity of the lab. It is noted that the project vehicle was not bought since funds were allocated to non-envisaged activities like the purchase of some lab equipment that was supposed to be bought under LVEMP budget. Nonetheless, the operational capacity of the lab will still be required when the project ends. The project needs to identify some funds to buy this vehicle to enhance the operational capacity of the lab. Furthermore, LVEMP was expected to buy, among other equipment, an Autoclave. This evaluation has been informed that up to now, LVEMP is still in the process of procuring an Autoclave. Since the Lab could not wait for the uncertainties of buying the Autoclave under

LVEMP, the project purchased one. This explains why some of the expenditures were beyond the agreed budgets. The Autoclave being sought under LVEMP is still needed in the lab.

2.1.3. Assessment of staff development and needs for further capacity building

The laboratory has 6 personnel, all working full time. The Laboratory Manager and the Quality Manager both have M.Sc. degree in food science. The two technicians have Diploma and the two attendants with A-level education.

Regarding the capacity, the view of the evaluation is that the laboratory has sufficient personnel to deal with the workload. However, since the laboratory is not getting any real samples yet and it is not known how many samples it will get annually; it is difficult to assess how many personnel will be needed. As soon as the laboratory gets national recognition or international accreditation it will start testing commercially, the clients are expected to be from both the private sector and the government.

Building the capacity of professional and technical personnel of DFR was outlined as an independent output and it should be mentioned that this output is essential for achieving all the objectives of the project. This evaluation notes that a lot of progress has been made in developing the capacity of professional and technical staff of DFR to fulfil the needs and requirements of the Fish Quality Laboratory and also for operation of the Quality Control and Assurance System.

Capacity building for project staff was envisaged at two different levels. The first was to consider internal training covering on-job training of laboratory staff and in-house workshops while the second considered international, national and/or regional technical training courses. The project has a training plan approved by the PMC and all training activities are reflected there.

The project has made a lot of progress on this area of capacity building. The internal training and specifically workshops were based on requirements of ISO 17025 and took the form of lectures, held by the Fish Quality Adviser or an external consultant, covering the following areas; microbiology in general, and in particular; internal control, tractability, control charts, proficiency tests, calibration, control of balances, incubators, media, environment, autoclave, water, washing and personal performance. Participants attended the training workshops from Kenya and Tanzania.

Laboratory personnel have also been undergoing on-job training specifically obtaining hands-on experience including picking samples from the landing sites and fish processing factories for analysis. The informal training in the lab for the managers and technicians has been effective. It is therefore noted that this hands-on training was the most effective in supplementing knowledge obtained from technical courses and workshops. The beneficiaries of this on-job training are all laboratory staff.

Regarding external training, a number of staff benefited from the project. The Laboratory Manager underwent an in-country short course in Project Management at Uganda Management Institute in Kampala. The Lab Manager also had Masters Degree Training in Food Safety and Quality Management. The view of the evaluation is that the M.Sc. training, together with the short courses and in-house training, are excellent contribution by the project to the overall objectives. It is further hoped that this training will be put to maximum use as the laboratory fully established. The project further supported one DFR staff member to

undergo a six months training in Iceland under the United Nations University Training Program. Although the project did not directly meet the costs of this training, it was made on the understanding that the trained officer will enhance his skills in Laboratory Quality Management. However, the staff member, upon return from Iceland, declined to continue working as a Quality Manager. We believe that funds were used to enhance capacity of someone who did not turn out to be useful. This is not a problem of the project to predict that the trained personnel would not put to use the skills obtained. DFR appointed another officer to be the Quality Manager. We recognise the strong morale, enthusiasm and the “willing to work” attitude by the current Quality Manager. This opportunity should be used to strengthen his capacity in laboratory quality management. The Quality manager has got a Masters degree in Food Science from China. We note that there are strong elements of quality management in the course obtained. However, the quality manager would further need some short course training in an internationally accredited laboratory either in form of secondment or a tailored course to suit the needs in quality management.

Related to this issue of capacity building, we note that there are no strong linkages built between the project and Inspection Unit of the Department. There is no relationship built between the staff of the Inspection Unit and the Laboratory. Most staff of inspection unit, for example, claim that they are not aware of what is going on in the project. Project management on the other hand think that activities being carried out by the inspection division are not being shared with the project. This is not a healthy development for sustainability of the project.

2.1.4. Assessment of infrastructure facilities, equipment etc.

The laboratory building is fit for its purpose and fulfils requirement to such a building. The laboratory is close to Lake Victoria and the Wildlife Education Centre (zoo). The project provided money for asphaltting the nearest surroundings of the building in order to prevent dust pollution.

Furthermore, the laboratory sometimes experiences power fluctuations from the main electricity distribution system. Although the laboratory does have a standby generator to provide supplementary power, power instabilities in the electricity supply cause some breakdowns in some equipment. Already two incubators, the autoclave and the water distiller have experienced some breakdown. It is highly recommended that an electricity stabilizer for the laboratory and nearest buildings be bought and installed. Other projects under DFR could contribute with ICEIDA to buy a general stabilisation system for the entire DFR offices.

The laboratory has sufficient equipments for the microbiological analysis and one chemical method, which is TVB-N. All principal equipments have been installed and tested. A plan for maintenance for equipments is in place. The laboratory has a good quality manual that has been updated after a Professor from Iceland performed informal external audit. A minor comment however is that it has been observed that recording the heat of the incubators is not done regularly. For accreditation, it is important to record all aspects in the lab to ensure traceability. It is noted that with more laboratory work and experience, the personnel will gain more confidence in what they are doing and recording, like any other work, will come to be a routine.

Thermometers and scales/weights are calibrated by UNBS. We note that UNBS can only calibrate thermometers up to 60°C so the laboratory has to find another accredited calibration laboratory to calibrate at least for thermometer for autoclave.

The laboratory has identified proficiency testing scheme with organisation called Thistle in South Africa and we note that the first test will be in November 2005. It is also recommended that the UFL participate in the inter-laboratory comparison of test results, being planned under the Germany funded project for East Africa.

2.1.5. Assessment of needs for eventual additional equipment and other capital investment

As stated all necessary instruments are in place. It is not known how many samples the lab will get and therefore it is difficult to assume if it is need to increase the capacity. The quality manager expressed the view that there is still need for another autoclave. As it is recognised furthermore, LVEMP was expected to buy, among other equipment, an Autoclave. This evaluation has been informed that up to now, LVEMP is still in the process of procuring an Autoclave.

2.2. Effectiveness

2.2.1. The potential of the project to achieve the stated objectives

The overall objective of the project was to strengthen the quality assurance system for fish and fish products from Uganda to contribute towards a general improvement on the macro economy of the country as a result of assured expansion, retention and stability of the export markets for Ugandan fish products.

The immediate objectives of the project were 4 as stated in the project document and they are;

- (i). A Fish Quality Laboratory (FQL) operational with the DFR capable of carrying out microbiological, chemical and sensory tests on fish and fish products in compliance with international standards.
- (ii). A streamlined quality control and assurance mechanism in the Uganda Fisheries Sector in accordance with international standards.
- (iii). A cost-recovery or self-financing mechanism available for the operation of the Fish Quality Laboratory and thus sustainable and secure sustainable operation environment available for the FQL.
- (iv). The quality control and assurance mechanism and the Fish Quality Laboratory compliant with international standards (ISO 17025) and accepted as such by the most important markets.

In an attempt to determine the extent to which the project has achieved the objectives, the evaluations gave attention to the key achievements based on the progress so far made on the overall project. The achievement of objectives is analysed below looking at a particular objective.

Objective 1: A Fish Quality Laboratory (FQL) operational with the DFR capable of carrying out microbiological, chemical and sensory tests on fish and fish products in compliance with international standards.

At the inception of the project, an understanding between the DFR and ICEIDA was that DFR would provide basic laboratory equipment including a completed building with support from the Lake Victoria Environment Management Project (LVEMP). The initial assumption was that ICEIDA project would find a renovated building where laboratory equipment would be installed. When the project became effective in July 2002, it started by first renovating the constructed the building under LVEMP funding. The project then started later in November 2002 with the initially planned activities on buying the laboratory equipment, training of personnel and working on a quality system.

In relation to this objective, the laboratory is capable of carrying out ten microbiological tests (See Appendix 5) and one chemical test (TVB-N). The main emphasise has been put on microbiological methods because of high demands by the market compared to chemical and sensory tests. Microbiology tests would therefore bring in financial resources faster than the chemical and sensory tests. The project noted that putting in place the sensory testing methods was more difficult than originally anticipated and therefore project management sought to delay this activity to concentrate on more achievable ones. Project management also thought that it was not likely that customers would demand for sensory tests and a decision was made to defer the activity and concentrate on microbiological tests.

Nonetheless, this evaluation notes that project management still has a plan for development of sensory lab. The plan includes sending one person for external training in sensory analysis and testing. The plan also involves training laboratory staff to participate in sensory analysis panel with other relevant people outside the lab. This proposed training is expected to end by December 2005. However, the proposed training is not within the project budget. The Fish Quality Advisor pointed out that, may be there is no much need for sensory analysis in the region since no one has requested for sensory tests compared to many demands for microbiological analysis.

As regards to chemical tests, little progress has been made and this is attributed to the big investments that are required to set-up a chemical laboratory. The project had not anticipated the huge investments involved (especially for undertaking tests for heavy metals and pesticides) and therefore only TVB-N method has been developed.

DFR with funding from the African Development Bank is implementing a Fisheries Development Project, which is planning to put up a Chemical Laboratory for undertaking chemical tests. To this effect, the lab will require a lot of expertise from the current ICEIDA funded quality system and advisory role for implementation of the chemical lab. It is thought, therefore, that the experience ICEIDA has got in this project regarding quality control and infrastructure at the laboratory will be better used with in the planned chemical laboratory. It is important that the current advice being provided by Fisheries Advisor is carried forward for this purpose.

Objective 2: A streamlined quality control and assurance mechanism in the Uganda Fisheries Sector in accordance with international standards.

It should be noted that this was an ambitious objective and unclear what exactly could be one to achieve it. It is however noted that there are a number of processes and developments within the fisheries management and quality assurance framework that consists of the anticipated system. Firstly, DFR is currently working under the guidance of Fish Quality Assurance Rules of (1998) with regularly updated Standard Operating Procedures (SOPs) for

fish quality assurance and safety. Although this system is silent about the quality requirements for the local fish markets, there are specific and strong measures for guaranteeing the safety and quality of fish for export.

The Uganda Fisheries Laboratory (UFL) has developed its own Quality Manual, which could be considered as a system within the lab itself. The combination of the system developed under the Quality Assurance Rules for Fish Inspection together with the UFL Quality Manual could be interpreted to constitute a quality system envisaged as an objective of this project. Because of the ambiguity surrounding this objective, it can be said that the objective was not fully met by the project. The project only contributed towards this objective. In the Project Implementation Plan (PIP) however, some clarification was made on the scope of this objective and based on this clarity, project management did achieve the clarified objective (See PIP attached).

The Fish Quality Adviser, in his Memorandum to the Project Management Committee (ref. ICE/UG/FIS/01/2002), proposed a number of steps that could be undertaken to ensure full compliance with quality and safety requirements for compliance with national and international standards, rules and regulations. Once the proposals by the Fish Quality Advisor are followed, especially in emphasising a quality assurance system to cover the entire industry rather than fish exports alone, it will be possible to think of a system envisaged by the project. The challenge is for the Advisor and DFR to think on how the proposals could be implemented.

It is therefore concluded that, based on the PIP which narrowed and specified the scope of this objective, the project achieved the intended objective.

Objective 3: A cost-recovery or self-financing mechanism available for the operation of the Fish Quality Laboratory and thus sustainable and secure sustainable operation environment available for the FQL.

The process of putting in place a cost-recovery system for UFL has got many stages involved. Firstly, it is essential that mechanisms are developed to justify that the lab can operate business-like and can recover its entire costs from the services it undertakes. This therefore requires developing a Business Plan. However, even when a justification is made, it would require Government approval for the UFL to charge its clients and spend the funds generated at source. Moreover, UFL would require an administrative set-up that can guarantee to the clientele that the services provided are not compromised by other functions of different sections or departments within the Component Authority where UFL is attached. Some of these processes mentioned are within the scope of project management while the others are outside the control of project.

It is noted that ICEIDA supported the project to engage a consultant in developing a Business Plan. It is noted that the costs of the Business Plan were outside the project and ICEIDA's involvement to pay for the consultant is appreciated and applauded. However there are still some issues regarding the finalisation of the Business Plan. The short-term consultant was expected to undertake the task within 30 days. This evaluation team was informed that the consultant submitted the draft within the stipulated time but DFR delayed in making comments. When the comments were made, the consultant responded in time but DFR again delayed in responding to the consultant's submissions. Later in May 2005, DFR and the consultant reviewed the comments for the consultant to incorporate. This evaluation was

informed that the consultant has finalised the report and submitted to ICEIDA and government for consideration and use in implementation. It is recommended that DFR should make use of the business to plan for a cost recovery system.

This evaluation further notes that the project made attempts to obtain clearance from government to spend at source funds generated from the services provided by the lab. The evaluation team was told and later verified that, in its 2004/05 Budget Frame Work Paper, the Ministry of Agriculture, Animal Industry and Fisheries did submit UFL's requests for approval to the Ministry of Finance, Planning and Economic Development (MoFPED) to charge and spend at source funds generated from the lab services. The evaluation team notes that no responses were made to this effect by MoFPED. Further, the lab will not, very likely, get clients or customers until it has received nationally recognised or internationally accredited. This, therefore, means that for a cost recovery to operate, the laboratory will first need to obtain national recognition or international accreditation.

More still, it is noted that the cost recovery and financial independence of the laboratory will require a well functioning laboratory management structure that is semi-detached from the current Fish Quality Inspection Division. Currently both the laboratory and quality manager are at the level of an officer and report to the head of Fish Quality Inspection Division. This compromises the independence of the lab from the Quality assurance division which it is supported to serve on a commercial basis.

Further, the evaluation team recognises that, already, there are processes of DFR transforming into an Authority are advanced. In the Authority structure, the positions of both the Laboratory Manager and Quality Manager are well and satisfactorily clarified. However, this evaluation notes that even though the DFR is granted an Authority this or next financial year (2005/06 or 2006/07), it would take another 3-4 years to operationalise the Authority. The existing structure would, therefore, in a way continue to weaken the possibility of UFL being independently managed with sufficient powers to make financial and management decisions.

The position of laboratory manager which is at officer level should be upgraded to Principal Officer level and that of Quality Manager to Senior Officer level. This will grant laboratory management the confidence of reporting and management contrary to the current positions. The principle officers will henceforth report directly to the head of the Competent Authority rather than through the Head of the Fish Quality Inspection Division. These cases should be sufficient to grant the lab autonomy and operate on a cost recovery basis. In the short run therefore, DFR should explore ways of creating and fill the said positions.

In conclusion, the evaluation team notes that the cost recovery system is not yet operationalised. There are approvals that are still required to have the system operate. One of the required approvals is a no objection from Ministry of Finance, Planning and Economic Development (MoFPED) to apply Appropriation in AID (AIA), or to spend at source. The other approval is the accordance of National recognition by Uganda National Bureau of Standards and International accreditation by SANAS. This evaluation, however, notes that government has not been inflexible in granting this clearance. Once the necessary requirements have been put in place, UFL could, on a pilot basis, start charging and spending at source under the project. Once these approvals have been obtained, the laboratory will move to operationalise a cost recovery system. It is therefore recommended that DFR, with the support from the project, pushes for AIA from MoFPED and for national recognition and international accreditation.

Objective 4: *The quality control and assurance mechanism and the Fish Quality Laboratory compliant with international standards (ISO 17025) and accepted as such by the most important markets*

Regarding the laboratory this objective has been fully achieved. The laboratory is functional microbiological laboratory and it has operational quality system that complies with international standards. The laboratory has already applied formally for international accreditation regarding to ISO 17025 as well for national recognition. The lab has undergone informal external audit, responded to improvement requests and has finally passed all tests required for accreditation. This means that the lab is ready for national recognition and international accreditation.

2.2.2. Extent of the programme towards producing the anticipated outputs

The project has to a greater extent achieved the outputs. It is important to note that the project outputs were similar and clearly fed into the objectives. The analysis on the achievement of objectives therefore confirms the effect that project outputs were achieved.



Samples prepared for microbiological analyses

2.3. Impact

In evaluating the impact of the project, other effect of the project, technological and socio-cultural factors affecting project implementation have been considered.

What are the positive and negative effects of the project? What are their causes?

2.3.1. Assessment of the impact of the project activities on the fisheries industry, and possibility to export fish

It is clear that a Fish Quality laboratory such as UFL is important to strengthen the Quality assurance system in Uganda. Therefore the UFL is already having a great impact and will in the future if/when it gets international accreditation play a vital role in keeping the doors open to export markets like the on in Europe.

2.3.2. Assessment of the impact of the training of the personnel

Like stated before the training of the personnel is a vary important part of this project and this evolution notes the significant progress that has been made in developing the capacity of professional and technical staff of DFR to fulfil the needs and requirements of the Fish Quality Laboratory and also for operation of the Quality Control and Assurance System. Well-trained personnel will strengthen the laboratory and increase its standard and sustainability.

It is hard to see any negative impact of the project.

2.4. Relevance

The project had high relevance to GoU objectives of establishing mechanisms for improved quality and safety of fish for both domestic and international markets Accreditation of the laboratory will strengthen the fish export possibilities from Uganda to foreign markets.

2.5. Sustainability

It is important to note that the sustainability of the project achievements largely depend on the availability of financial resources to sustain the ongoing activities. While it is recognised that UFL is part of the government structure, its sustainability will depend on its ability to generate its own funds. It is therefore sufficient to say that the sustainability of the project depends on the cost recovery system, the independence of the management, the opportunity for the lab to generate funds and spend at source and achieving international accreditation. If these things are in place, the evaluation believes the laboratory has got high potential to survive after donor financial and technical support.

The evaluation team notes that the cost recovery system is not yet ready. The Business Plan has been developed and finalised. DFR should move to approve the proposed cost recovery system outlined in the Business Plan. It is suggested that the PMT move in to ensure that mechanisms are put in place prepare for operationalising the cost recovery system. Furthermore, the lab will, very likely, not get clients or customers once it is not nationally recognised or internationally accredited. This, therefore, means that for a cost recovery to

operate, the laboratory will first need to obtain national recognition or international accreditation. This, therefore, becomes a priority activity for the project before winding up.

For the lab management to operate independently (independent from the bureaucratic structures of DFR and entire MAAIF) it requires autonomy in decision-making and powers that can avoid the current processes and stages of financial requests. It is possible that this process can compromise the services of lab. The Head of the Competent Authority however assured the team that, although the staff members in the lab were recruited under the DFR structures, they are directly appointed with special assignment to the lab and report directly to the Head of the Competent Authority. This in away reduces the compromises and provides some level of independence from the general government structures and this is seen happening in reality.

What is clear is that the opportunity for the lab to generate funds is enormous. Inspectors from the Inspection Division of DFR have been taking official samples to other private labs for testing and paid for by industry. The Competent Authority can direct or advise that all official samples be analysed by UFL. This, alone, can bring in funds to sustain the operations of the lab. This withstanding, trends in exports (both volumes and values) indicate an increasing trend. It is most likely that this increase will continue and probably stabilise at higher level. It therefore means that demand for testing services will increase considerably.

As mention earlier, the laboratory has already applied formally for international accreditation regarding to ISO 17025 as well for national recognition. Technically the laboratory fulfils the requirements of the standard in all parts. It has well trained personnel. It has a good quality system that is described in its quality manual, which has recently been reversed. All needed equipments are in place, functional and calibrated and all methods are nationally recognised, eight ISO methods and two NMKL methods (see annex 5). The informal external audit performed by Professor from Iceland contributed strongly in building and strengthen the quality system.

3. Lesson learned

There are a number of lessons that have been learnt and which are drawn from the implementation of this project. The good lessons will be built on to strengthen the implementation while actions will be developed to mitigate against the bad lessons.

This evaluation mission observes that the project document contained all sufficient guidance for implementing the project. Three out of four objectives can be considered to be Systematic, Measurable, Achievable, Realistic and Time bound (SMART). Objective number two, as written in the project document was, however, over ambitious and considering the time and financial resources allocated to the project, the objective is not achievable.

It is clear that the project cannot wind up at this stage since most of the activities require further support. The project need some further training of personnel, obtaining national recognition, international accreditation, continuation of sampling program, preparation for supporting the chemistry laboratory planned under a different support, preparing for cost recovery system and developing a quality system that covers all fish production-marketing and processing chains. The project should be extended also because there were some delays in the start of the planned activities since some activities such as renovation of the building was

not an activity of this project. As an exit strategy, the project should be extended for the next 1 year to cover these major important activities.

4. Conclusions and Recommendations

4.1. Conclusions

A number of conclusions are drawn based on the progress made in the implementation of the project. The conclusions drawn are used to generate recommendations.

The project suffered for some delay in the beginning because the renovation of the building was not complete when the project started, as it should. The first months was used to complete the renovation. The project was extended for some months from July to December 2005.

A lot of progress has been made in developing the capacity of professional and technical staff of DFR to fulfil the needs and requirements of the Fish Quality Laboratory. The laboratory has two persons with qualifications in laboratory management and quality assurance of up to Masters Degree. These qualifications have benefited the project but also the project has tested, up to credible standards, the relevancy of these qualifications to the benefit of the laboratory. The staff, therefore, has benefited from the project.

The laboratory is functional microbiological laboratory and it has operational quality manual and quality system. All equipments are in place and are operational and calibrated and chemicals and media for microbiological analysis have been bought. The, project, however, has not yet established the sensory part but has in place the TVB-N method as was planned and approved in the scope for the laboratory. Establishment of both labs was more complicated that was originally envisaged. The sensory and chemical labs, however, remain important for testing emerging demand for chemical and sensory tests on samples of fish exports by some fish processing factories.

A business plan for the laboratory remains important and therefore it is still needed to provide a guide on the strength and ability of the lab generate funds from the services it will provide. The business plan will further guide in projecting costs and returns to guide on its sustainability.

It is clear that the quality assurance mechanism (specifically referred to in objective number two) in place target the safety and quality of fish for export and yet the domestic and regional trade also requires good quality fish. The mechanism is comprised of the standard operating procedures for quality assurance, the Manual for the Laboratory and others seem to be targeting the international markets. All the compliance mechanisms being enforced by the Competent Authority seem to target the international market alone. For example, the fish for domestic and regional markets are not subjected to stringent quality tests as it is done to fish destined for the international markets. As the concept of trace ability becomes more often emphasised at all levels by fish consumers in the foreign market, putting a fish quality and safety system throughout the entire fish production to consumption chain cannot be avoided.

The laboratory has already applied formally for international accreditation regarding to ISO 17025 as well for national recognition although it was not an immediate objective.

4.2. Recommendations

Regarding training, in general the personnel are well trained and it is capable of doing their jobs. It is, however, recommended that Quality Management and calibration will be given further attention. The training can preferably either be conducted as secondments to international laboratories such as Icelandic Fisheries Laboratories and/or SANAS in South Africa or be done in any credible training institutions. If the current project budget cannot accommodate this training, it should be considered in the extension that is being proposed. Further training is also needed in the area of sensory analysis.

It is noted that the sampling program is very important to the continuation of the project and is not likely to be funded once the project is closed. It is noted that this was not an intended outcome of the project but as the project progressed, it was found very important in the achievement of all objectives. It is therefore recommended that the project extension is considered to take care of this sampling program until the cost recovery system is put in place or the laboratory starts to receive real samples. The reason for the sampling plan is the confidence building amongst the personnel.

It is recommended that a sensory analysis section/laboratory be established as was planned before the project winds up. The challenge is that it might take some time to find suitable external training before the completion of the project. The project management should identify some funds from within the project to have this training done and if funds cannot be identified within the current budget, the ICEIDA and DFR should strongly consider extending the project for this purpose, among others.

Since DFR is setting up an entire chemical lab, it is recommended that UFL should not go on with other chemical methods but could concentrate on TVN method. The lab could go ahead to seek for accreditation of TVB-N since there has been substantial progress in this area under the project. Discussions with fish processing industry indicated a potential demand for TVB-N tests.

It is recommended that the Project Management strongly move in to ensure that the Business Plan is finalised and approved by the Project Management Committee for its implementation. The Project Management, together with DFR should put in place necessary financial instruments¹ for operationalising the cost recovery system and generating revenue during and after the lab has obtained national recognition and international accreditation.

Regarding the structure of DFR and the independence of the Lab Management, this evaluation recommends that, through DFR, options be explored to create a position at Principle Level for the Lab Manger and another position at Senior Level for the Quality Manger.

It is recommended that DFR, with current or other ICEIDA support, think of putting in place a quality system by strengthening quality and safety of fish for the local and regional fish trade to strengthen the export system that is already established. The standards, though brought clearly in the Quality Assurance Rules of 1998, seem to emphasise international fish trade and less on domestic and regional trade. Even if it is mentioned, it is not enforced. One step on doing this is to undertake fish quality and safety awareness amongst all stakeholders in the fish production, marketing and export chain.

¹ Such as the receipting system and methods of financial management etc

Although the project document does not mention accreditation as a deliverable objective or output, it is recommended that ICEIDA should not wind-up until both the recognition and accreditation are granted.

The services of the current Fisheries Advisor/Project Manager should be extended to tap the knowledge and already built quality assurance system especially when the chemical laboratory is being set up under a different project.

The project should consider in identifying resources to purchase a vehicle for the laboratory to strengthen the operational capacity during the project extension and when the project winds up.

5. Exit Strategy

As an exit strategy and considering the amount of work remaining to be done by the project, it is recommended that the project be extended for at least 1 more year and during this extension a more comprehensive project be prepared for support. The comprehensive project should consider other complementary activities of having a good quality assurance system throughout the fish production and supply chain. The following should be considered as an exit strategy by DFR in collaboration with ICEIDA (with support of the project).

1. Make formal requests for extension
2. Prepare and cost of activities to be supported in the extension.
3. Identify financial resources available within the project budget and if not sufficient, prepare requests to ICEIDA for support.
4. During the extension period to prepare for bankable proposals for support.
5. During extension, start phasing out some activities directly supported by the project to test the cost recovery system.

ANNEXES

Annex 1: Terms of Reference for the Evaluation

ICEIDA Intervention in Quality Assurance of Fish Products in Uganda - Fish Quality Laboratory in Entebbe

1) Introduction

When ICEIDA initiated its development co-operation with Uganda in 2001, one of the first tasks was to respond to a request from the Ugandan Fisheries Authorities and prepare a Quality Assurance Project in co-operation with the Department of Fisheries Resources (DFR), and a project agreement was signed in March 2002.

The three year project, at the total cost of USD 815.000, “ICEIDA intervention in Quality Assurance of Fish Products in Uganda – Fish Quality Laboratory in Entebbe” formally took off in July 2002.

According to the Project Document, an evaluation of the project shall be carried out during the last 6 months of implementation. The evaluation will consider the level of success for the project and advise on future directions and actions. The evaluation report will be considered and formally accepted by ICEIDA and DFR prior to the closing day of the project. The results and recommendations of the evaluation are to guide the involved parties in their decision-making regarding the future of the ICEIDA support to the project. The evaluation should also provide the personnel of the laboratory and DFR with information that could assist in planning and implementing future activities.

Further information regarding the background, the main components of the project, development objectives, immediate objectives, expected outputs and strategies in place form an integral part of the attached Project Document

2) Scope and Focus.

- a) In general, the evaluation shall;
- b) Consider the goal and purpose of the project, as well as inputs and outputs and financial management;
- c) Consider unintended outcomes of the project;
- d) Provide a description of major constraints and risk factors for project implementation and sustainability;
- e) Assess the degree of project sustainability;
- f) Provide a description of lessons learned in relation to future project implementation;
- g) Give recommendations on future modifications and improvements in light of the above listed objectives.

3) Issues to be Covered

Special attention shall be given to but not necessarily limited to, the following issues:

- a) Efficiency;

- b) Results achieved (inputs -outputs).
- c) Have resources been effectively used in the project?
- d) What problems have arisen?
- e) Could they be avoided in similar projects?
- f) Review of the project organisation on all levels (including management, reporting and monitoring, human resources and technical backup);
- g) Assessment of financial management including disbursement of funds at the different levels and financial reporting;
- h) Assessment of staff development and needs for further capacity building;
- i) Assessment of the infrastructure facilities, equipment etc;
- j) Assessment of needs for eventual additional equipment and other capital investment;

4) Effectiveness

- a) Achievement of objectives.
- b) Has the project achieved its objectives?
- c) What has facilitated or prevented the effectiveness of the project?
- d) The potential of the project to reach the stated objectives;
- e) To which extent the programme is progressing towards producing the anticipated outputs;

5) Impact

Other effects of the project. Technological and socio-cultural factors affecting project implementation shall be considered.

- a) What are the positive and negative effects of the project? What are their causes?
- b) Assessment of the impact of the project activities on the fisheries industry, and possibility to export fish;
- c) Assessment of the impact of the training of the personnel.

6) Relevance

The direction and usefulness of the project.

- a) Are the objectives worthwhile?
- b) Assessment of the degrees and need for collaboration with other players in the sector, including the role of government institutions;
- c) Assessment of project relevance in relation to DFR Policy and strategy;
- d) Assessment of project relevance in relation to other donor agencies activities in this field;

7) Sustainability

Which benefits of the project continue beyond donor involvement?

- a) Assessment of the FQL potential to survive after donor financial and technical support;

- b) Assessment of the need for external technical assistant after end of the end of the project (short term or long term)
- c) Assessment of what kind of follow-up/exit strategy would be needed to secure the sustainability of the project

8) Evaluation Team

The team leader should have relevant experience in operations of laboratories, quality issues and good understanding of training and management issues. The team leader shall also have a University degree in food science. Fluency in the English language is required.

Other team members should have good knowledge of the project in general.

The Principal Team Leader will be recruited from Iceland (outside ICEIDA) and his/her co-team leader should be appointed by DFR

Other resource persons;

- i) ICEIDA staff
- ii) FQL staff;
- iii) DFR staff;

9) The cost of the evaluation will be covered by the project budget.

10) Methodology

- a) The team will have access to relevant background material, including Uganda Fisheries Development plans and other relevant documents from current fisheries projects.
 - i) The evaluation shall be carried out through meetings with Fisheries personnel and FQL staff at all levels including representatives from the fisheries industry through visits to selected companies.
- b) Final discussions shall be held in Uganda with DFR and ICEIDA, where the main preliminary findings and recommendations of the team will be presented.

11) Timetable and reporting (pending availability of consultant)

Preparation for the evaluation will take place during 10 days in March 2005. Fieldwork will be carried out in Uganda on the 9th to 17th of March 2005, during eight days, with a preliminary report being prepared on-site.

The Principal Team Leader shall have the main responsibility for the writing and compilation of the report. A draft report will be submitted to DFR and ICEIDA for comments before the end of March. The final report will be submitted to the DFR and ICEIDA before the middle of April 2005.

It is recommended that the findings and recommendations of the report will be presented to the personnel of the Laboratory and other relevant DFR personnel.

12) List of Documents:

- a) Project Document
- b) Progress and Financial Reports

- c) Minutes from Project Management Committee Meetings
- d) Various material regarding training of staff
- e) Bi-Annual Reports -Uganda
- f) ICEIDA Annual Reports 2001-2003
- g) Other Documents:
 - i) Uganda, booklet published by ICEIDA
 - ii) Travel reports from Uganda 2001-2004, ICEIDA

Annex 2: List of documents

1. ICEIDA Intervention in Quality Assurance of Products in Uganda ICE/U G/FIS/OI2002 Project Document
2. Project Implementation Plan, Gantt Chart
3. Bi-Annual Reports:
 - July to December 2002
 - July to December 2003
 - July to December 2004
 - January to June 2005
4. Project Budget, Final Version 28/02/2002
5. Financial Reports:
 - January to December 2003
 - January to December 2004
 - January to June 2005
6. Progress Reports:
 - January to June 2003
 - January to April 2003
 - July to December 2003
 - January to April 2004
 - July to September 2004
 - January to April 2005
 - January to June 2005
7. Minutes For Project Management Committee Meeting:
 - 1st meeting 25/06/2002
 - 2nd meeting 10/09/2002
 - 3rd meeting 15/01/2003
 - 4th meeting 30/04/2003
 - 5th meeting 01/10/2003
 - 6th meeting 22/01/2004
 - 7th meeting 30/04/2004
 - 8th meeting 17/08/2004
 - 9th meeting 05/10/2004
8. Plan for Internal Training in UFL
9. Plan for External Training in UFL
10. Business Plan, Prepared by Benjamin B. Mutambukah, Draft
11. Memorandum to the PMC of ICE/UG/FIS/01/2002 On fish inspection in Uganda
12. A short-term consultancy work including a training course, auditing and follow up activities on quality assurance in food laboratories by Prof. Hjörleifur Einarsson
13. ICEIDA-Uganda Bi-Annual report July-December 2002

Annex 3: Programme of the Evaluation team

Preparation	30.08.2005	07.09.2005
Flight to Uganda	08.09.2005	
Field Work	12.09.2005	22.09.2005
First Meeting of Evaluators	12.09.2005	
Writing of First draft	19.09.2005	22.09.2005
Presentation of first draft at ICEIDA office	22.09.2005	
Return of Icelandic Evaluator to Iceland	23.09.2005	
Writing of Evaluation Report	26.09.2005	20.10.2005
Final Draft	21.10.2005	
Finalisation of Report	15.10.2005	29.11.2005
Final Version Handed in	29.11.2005	

Annex 6: Evaluation Program

Date	Time	Activity	Persons Responsible	Venue/Place
Monday 12 th Sept 05	3:30-5:00	Draw up Program and Signing of review agreement with national consultant	Mr Kristinn Kristinsson Project Review Team Leader National Consultant	Iceida Office East African Development Bank Building 5 th Floor
Tuesday 13 th Sept 05	9:-9:30	Courtesy call to DFR Staff	Project Review Team	DFR Entebbe
	9:30-12:00	Hold preliminary discussions with Project Advisor/Project Manager	Project Review Team	Uganda Fisheries Laboratories Entebbe
	2:00-5:00	Preliminary Discussions with Commissioner Fisheries	Project Review Team	DFR Entebbe Commissioners Office
Wednesday 14 th Sept 05	9:00-12:30	Discussions with ICEIDA Fisheries Advisor	Project Review Team	UFL Entebbe
	2:00-5:00	Discussions with ICEIDA Fisheries Advisor and Staff of UFL	Fisheries Laboratories Entebbe	Fisheries Laboratories Entebbe
Thursday 15 th Sept 05	9:00-12:30	Visit Green Fields Fish Processing Plant Entebbe	Project Review Team	Entebbe
	2:00-5:00	Office Draft Preliminary Report	Project Review Team	Entebbe
Friday 16 th Sept 05	9:00-12:30	Further Discussions with Project Management Fisheries Advisor and Staff	Project Review Team	UFL Entebbe
	2:00-5:00	Discussions with Principal Fisheries Inspector	Project Review Team	DRF Entebbe
Monday 19 th Sept 05	9:00-12:30	Visit and hold discussions with Uganda National Bureau of Standards	Project Review Team	Kampala
	2:00-5:00	Hold discussions with UFL Lab Manager	Project Review Team	ICEIDA Country Office
Tuesday 20 th Sept 05	9:00-12:30	Visit and hold discussions with management of Water Quality Laboratory	Project Review Team	Water Resources Department Entebbe
	2:00-5:00	Discussions with Fisheries Inspectors at the Department of Fisheries Resources	Project review Team	DFR Entebbe
Wednesday 21 st Sept 05	9:00-12:30	Further Discussions with Commissioner Fisheries	Project review Team	DFR Entebbe
	2:00-5:00	Discussions with ICEIDA Country Director	Project review Team	ICEIDA Country Office Kampala
Thursday 22 nd Sept 05	9:00-12:30	Prepare draft preliminary report	Project Review Team	ICEIDA Offices Kampala
	2:00-5:00	Presentation of Preliminary Report	Project Review Team	ICEIDA Country Office
Friday 23 rd Sept 05	9:00	Head of Review Mission leaves for Iceland		
15 th – 20 th Oct 05	05:00pm	Submit Draft Report	Project review Team	
25 th – 30 th Oct 05		Receive and incorporate Comments		
31 st Oct 05	05:00 pm	Submit Final Report		

Annex 4: List of the people met

Names	Role	Place
Kristinn Þór Kristinsson	ICEIDA Fish Quality Adviser	Entebbe
Ágústa Gísladóttir	ICEIDA Country Director	Kampala
Dr. Dick Nyeko	DFR Commissioner for Fisheries	Entebbe
E. F. Nsimbe Bulega	DFR Principal fisheries Inspector	Entebbe
David Baziwane	UFL Quality Manager	Entebbe
Ruth Mbabazi	UFL Laboratory Manager	Kampala
Annette Nabbengo and Charles Katabi	UFL Laboratory Technician	Entebbe
Akankwasa Alfred (SFI) Sarah Bawaye (SFI) Omanyi B. Paul (SFI) Mulamba James (SFI) Ahimbisibwe John B. (SFI)	DFR, Fisheries Inspectors	Entebbe
Willy Musinguzi David L. Kiragga Abdu Ndifuna David Eboku	UNBS Head, Quality Assurance Head, Testing Division Head Microbiology Standards Officer	Kampala
Phillip Borel – Executive Director and CEO. Quality Manager	Green Fields Fish Processing Plant, Proprietor and Quality Systems Manager	Entebbe
Etim Simon	In Charge of Water Lab Water Quality Division	Entebbe

Annex 5: Microbiological methods used at UFL

1. Sampling, Culture methods

1.1.Sampling, shipment and preparation analysis

1.2.Culture methods for enumeration of microorganisms

1.3.Most Probable number techniques

1.4.Membrane filtration

1.5.Media preparation

1.6.Media and reagents as per methods

2. Total Plate Count (ISO 4833 3rd ed.2003)

3. Coliforms (MPN) (ISO 4831, 2nd ed.1991) / (Colony count) (ISO 4832, 2nd ed.1991)

4. E. Coli (MPN) (ISO 7251, 3rd ed.2005)

5. Staphylococcus Aureus (ISO 6888-1, 1st ed.1999, amd 1, 2003)

6. Salmonella (ISO 6579, 4th ed.2002)

7. Listeria (ISO 11290-1, 1st ed.1996)

8. Sulfite reducing bacteria (ISO 15213, 1st ed.2003)

9. Enterobacteriaceae (Colony count technique) (ISO 7402, 2nd ed.1993)

10. Vibrio cholerae (NMKL no.156, 2nd ed.1997)

11. Molds and yeasts (NMKL no.98, 3rd ed.1995)