

Programme for the implementation of a Regional Fisheries Strategy for the Eastern and Southern Africa and Indian Ocean Region

Programme pour la mise en oeuvre d'une stratégie de pêche pour la région Afrique orientale-australe et Océan Indien



TRAINING FOR FISH QUALITY IMPROVEMENT: TRAINING NEEDS ANALYSIS

October 2011

Implementation of a Regional Fisheries Strategy For
The Eastern-Southern Africa
And Indian Ocean Region

10th European Development Fund
Agreement No: RSO/FED/2009/021-330



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Implementation of a Regional Fisheries Strategy
For The Eastern-Southern Africa and India Ocean Region

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region Afrique orientale-australe et Océan indien

Training for Fish Quality Improvement: Training Needs Analysis

SF/2011/10
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This report has been prepared with the technical assistance of
Le présent rapport a été réalisé par l'assistance technique de



October 2011



Funded by
*European
Union*



PREFACE: Eco-certification for the Indian Ocean Tuna Industry

This report has been prepared under the SmartFish programme (Implementation of a Regional Fisheries Strategy for ESA-IO). Result 4 of the programme deals with the development of regional fish trade with regionally integrated approaches forming the basis for implementation.

A key trade requisite for fish, as well as potential barrier to trade is the requirement for suitable fish quality and hygiene standards. This report has been prepared as a step towards SmartFish defining specific training activities towards the objective of harmonizing regional fish quality standards. Variation in quality expectations between neighbouring countries prevents products from entering intended regional markets and as a result reduces the potential for trade in the region. In addition, there is clearly a requirement to improve standards for basic health reasons for consumers, with the wider socio-economic implications that that would have.

Critical to the SmartFish approach is to ensure that a full understanding of existing and past initiatives is instilled in the planning for the Programme's implementation phases. There have been, and are, a number of initiatives in the region that provide training in fish handling, fisheries quality and hygiene requirements. This report provides significant background to these initiatives, as well as reviews past training experiences and performance. Using lessons learned recommendations are then made for the SmartFish programme implementation and builds on these past activities. Critical review of past failures and success point to a well thought out recommendation for training ideas and approaches.

Visits to six countries were included in the mission that produced this report in a region of Africa that generates significant trade from the fish resources of Lake Victoria, Lake Malawi and Lake Kariba. This report also includes the results of a workshop that took place in Mwanza with regards to the East African Community (EAC) harmonized SPS Guidelines for Fish and Fishery Products and defines how these guidelines can be involved in a wider implementation of training and capacity building in the region. The author attended and assisted with the workshop in Mwanza as part of this TNA exercise.

This assessment was prepared by Mr. Ansen Ward, Fish Quality and Hygiene Training Specialist with extensive experience in the region and globally performing training needs assessments, designing and using training materials and implementing training programmes, directly to fishers, or using the technique of training of trainers to reach a wider audience.

The results of this report will directly feed into the design of training programmes, training materials and methods and their implementation over the coming months of the SmartFish work.

ACKNOWLEDGEMENTS

The consultant would like to thank Mr Chris Short, the IOC SmartFish Business and Trade Development Specialist for his support throughout the assignment and to the SmartFish focal points and their colleagues for facilitating the country visits: Mr.BothwellMakodza and Mr. M Ngoshi of Livestock Production and Development Department, Zimbabwe; Mr. Orton Kachinika and Mrs.ChikondiPasani of the Department of Fisheries, Malawi; and Mr MainzaKalonga and Robert Lubilo of the Department of Fisheries, Zambia.

Thanks also to Ms.Joyce Lugonzo and Mr. Maurice Otieno from Department of Fisheries, Kenya; Mr. Stephen Lukanga, Fisheries Inspector and Mr Charles Swai and Mr TharcisseHigiroof Nyegezi College of Fisheries from Tanzania; and Mr Robin Ibale from Department of Fisheries Resources, Uganda who helped organise the trainers review meetings, and to all the BMU trainers who participated in those meetings.

ABBREVIATIONS

ACP	African, Caribbean and Pacific States
ADB	African Development Bank
AU	African Union
BMU	Beach Management Unit
BTDS	Business and Trade Development Specialist
BVC	Beach Village Committee
CA	Competent Authority
CIDA	Canadian International Development Agency
CODEX	CODEX Alimentarius
COMESA	Common Market for Eastern and Southern Africa
DFR	Department of Fisheries Resources
DFO	District/Divisional Fisheries Officer
DoF	Department of Fisheries
DRC	Democratic Republic of Congo
EAC	East African Community
EDF	European Development Fund
EU	European Union
FAO	Food and Agriculture Organization
FIQA	Fish Inspection and Quality Assurance
GHP	Good Hygienic Practice
Govt.	Government
HACCP	Hazard Analysis Critical Control Point
ICEIDA	Icelandic International Development Agency
IFMP	Implementation of Fisheries Management Plan
IGAD	Intergovernmental Authority for Development
INFOSA	Marketing Information for Fisheries in Southern Africa
IO	Indian Ocean
IOC	Indian Ocean Commission
IRFS	Implementation of Regional Fisheries Strategy
IUCN	International Union for the Conservation of Nature
IUU	Illegal, unregulated and unreported fishing
KMFRI	Kenya Marine Fisheries Research Institute
LVEMP	Lake Victoria Environmental Management Programme
LVFO	Lake Victoria Fisheries Organization
MBS	Malawi Bureau of Standards
MCF	Malawi College of Fisheries
MCS	Monitoring Control and Surveillance
MFDC	Mbegani Fisheries Development Centre
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NTB	Non-Tariff Barriers to trade
PHO	Post-Harvest Overview
QA	Quality Assurance
QC	Quality Control
RIPH	Royal Institute of Public Hygiene
SADC	Southern African Development Community
SFP	Strengthening Fishery Products ACP/EU Programme
SPS	Sanitary and Phytosanitary Measures
TNA	Training Needs Assessment

ToR

Terms of Reference

ToT

Training of trainers

VDC

Village Development Committee

EXECUTIVE SUMMARY

This report refers to work carried out between late July and early October 2011 focussed on reducing non-tariff barriers to trade and supporting the implementation of regional standards for fish quality. It refers specifically to a training needs assessment activity to assist the identification of capacity building activities and subsequent design and implementation of a first phase of regional training initiatives related to hygiene and sanitation standards and improved fish quality.

Working closely with the Business and Trade Development Specialist (BTDS) of the SmartFish Program and focal points in selected countries, the consultant undertook a Training Needs Assessment (TNA) through site visits and secondary data review and reviewed recent related capacity building activities. As part of the process the consultant helped facilitate an EAC standards workshop which also informed the capacity building activities proposed.

Missions undertaken to 6 prioritised countries: Kenya, Tanzania, Uganda, Malawi, Zambia and Zimbabwe. A further 3 countries are also planned to benefit from capacity building: Burundi, DRC and Rwanda.

The EAC are in the process of finalising Harmonised Sanitary and Phytosanitary Guidelines for Fish and Fishery Products. These are designed to promote regional trade activities and will provide an important entry point for the SmartFish programme. COMESA countries are working towards CODEX standards, which have also been used to develop the EAC standards. Key short to medium term objectives for COMESA countries include:

- increased value addition;
- public and private sector investment in aquaculture developed;
- value chain approach to sector development document;
- postharvest losses reduced;
- trade and market conditions improved;
- information and knowledge content and exchange improved.

Training implemented and lessons learnt

Kenya, Tanzania and Uganda have benefited from capacity building support from the EU and other donors over the past two decades; primarily to develop the Nile perch export sector. Malawi, Zambia and Zimbabwe (and it is assumed Burundi, DRC and Rwanda also) have not received such a level of support. Previous capacity building has produced a range of training materials and a number of lessons have been learned. The latter, which were reviewed by EAC stakeholders during a workshop in Mwanza, have been compiled in this report as a set of guiding principles to inform the planning, delivery and follow-on activities of future training initiatives.

A recent ACPFish II training of trainer's initiative developed the capacity of community trainers to deliver fish quality, handling and hygiene training to small-scale fishermen, processors and traders. Discussions with the trainers involved indicates that this has led to some positive changes in terms of better practices and greater awareness of handling and hygiene at landing sites, however, sustainability of the approach has been hampered by a lack of resources for local level training activities and recognition of the trainers amongst peers and by government.

Primary data collection was undertaken in 6 countries to understand priorities and capacity building opportunities. Despite the fact that capacity building has taken place, the majority of stakeholders appear not to have benefitted and still lack an understanding of key technical issues such as:

- understanding the causes of fish spoilage;
- being able to assess fish quality;
- being able to maintain fish quality;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site
- use of crates/boxes of fish handling;
- use of ice;
- personal hygiene;
- proper waste disposal;
- use of potable water.

As well as technical knowledge and skills, many small-scale fishermen, processors and traders lack access to infrastructure (landing sites and markets), services (electricity, roads, water, ice) and equipment (insulated boxes, packaging) to be able to apply better practices. Fishery operators also generally lack access to credit or funding to help them invest in new ideas/better practices and business development. A lack of food safety legislation and bylaws at all levels, or awareness of these if they exist, is also hampering the introduction of better practices.

An understanding of the current situation regarding the fisheries sector is lacking, particularly in Zimbabwe and Zambia. Public sector capacity is weak in many countries with less than optimum numbers of staff and weak or poorly resourced extension services with no regular capacity building activities for the small-scale sector. Few examples of effective fisheries management were noted, with the norm being overexploited natural resources and IUU fishing. More and more attention is being given to aquaculture and its development / expansion as a means to increase fish production.

Opportunities for capacity building

A number of capacity building activities have been identified that would contribute to SmartFish objectives related to:

- regionalization of EAC/COMESA standards;
- reducing non-tariff barriers to trade related to quality, handling and hygiene;
- reduced post-harvest fish losses;
- improved food security;
- improved marketing opportunities;
- capacity building.

The activities would also contribute to various national development priorities identified during the mission. The ToT trainers approach promoted here is something which the ACP Fish II programme has supported and has also been identified by EAC stakeholders as an appropriate model during the recent SmartFish workshop in Mwanza, Sept 2011.

For **Kenya, Tanzania** and **Uganda** it is proposed that capacity building initiatives would focus on:

- A mechanism developed/fostered to introduce sustained support for existing community trainers supported by the ACP Fish II. The mechanisms include mainstreaming support into government policy and plans and the LVEMP trust fund as well as through better provision for training through BMU organization and by-laws;
- Support to ACP Fish II trainers in selected communities to help uptake and demonstration of better practices and improvements made so far and linked into implementation of EAC/CODEX standards;
- Further training of trainers capacity building for fisheries other than Lake Victoria and the aquaculture sector;
- Provision of pictorial materials such as manuals and posters to complement further training by trainers.

For **Kenya, Tanzania** and **Uganda** it is suggested that capacity building opportunities centre on:

- ToT support to develop a model value-chain, building on the recent CIDA initiative and in close collaboration with the imminent Commonwealth Secretariat project with Malawi College of Fisheries (MCF). This would build on the ACP Fish II ToT work on Lake Victoria and involve the community outreach centre of MCF;
- Development of an improved handling for aquaculture pictorial community trainers manual and associated materials which would also be applicable for other countries;
- Value-added smallpelagics support focussed on improved quality, packaging and labelling;
- Site visits to regional countries and markets to improve understanding of value-addition and requirements for access to regional / international markets.

For **Zambia** it is suggested that capacity building opportunities centre on:

- ToT to develop national trainers for different fisheries and organizations including designated landing sites earmarked for development, key markets, private sector, and aquaculture. Again the approach would build on the ACP Fish II approach piloted on Lake Victoria. It would also include support for post-training uptake of improved practices in key locations;

- Understanding the sustainability of the Lake Kariba crayfish fishery and regional marketing potential with pilot scale support to demonstrate improved access to new markets, depending on sustainable harvest potential;

For **Zimbabwe** it is suggested that there is:

- ToT to develop national trainers for Lake Kariba and aquaculture sectors. Again the approach would build on the ACP Fish II approach piloted on Lake Victoria. It would also include support for post-training uptake of improved practices in key locations;
- Due to the lack of understanding of the current situation in the fisheries sector it is recommended that a post-harvest overview (PHO) is undertaken to better inform decision and policy making for the future development of the sector.

The ACP Fish II pictorial trainer manual has been well received and field tested by 24 community trainers in Kenya, Tanzania and Uganda. It is **recommended** that the manual be adapted to support the interpretation of EAC and COMESA/CODEX standards and then used as a standard training resource for SmartFish activities. A key adaptation will be to standardise the images and solicit the involvement of an artist from the region to refine and produce new images to depict key messages better and in a consistent style. Additional text on some images is also required to enable the images to be stand alone. The manual once finalised, ideally involving a pilot testing step, would be used to develop posters for use by trainers and for general dissemination purposes. The manual and posters would be translated into French and used to run ToT workshops in Burundi, DRC and Rwanda. Publication of the manual and posters will be an important contribution of the SmartFish Programme to improving fish quality, handling and hygiene in the target countries. The idea of developing a separate trainers manual for aquaculture stakeholders should also be explored during the next steps of the programme.

RÉSUMÉ EXÉCUTIF

Ce rapport rend compte de des activités conduites entre fin juillet et début octobre 2011 axées sur la réduction des barrières non tarifaires au commerce et sur le soutien à la mise en œuvre de normes régionales pour la qualité du poisson. Ils s'agit particulièrement d'activités d'évaluation des besoins en matière de formation, aider à l'identification d'activités de renforcement des capacités et mettre en œuvre une première phase d'initiatives régionales de formation aux normes d'hygiène, d'assainissement et d'amélioration de la qualité du poisson. Travaillant en étroite collaboration avec le spécialiste du développement du commerce et de l'entreprise (BTDS) du Programme SmartFish et les points focaux dans les pays sélectionnés, le consultant a entrepris une évaluation des besoins de formation (TNA) à travers des visites de sites, l'examen de données secondaires et des dernières activités connexes de renforcement des capacités. Conformément au processus établi le consultant a contribué à faciliter un atelier sur les normes EAC qui a servi de base d'informations sur les activités proposées pour le renforcement des capacités.

Des missions ont été entreprises pour 6 pays prioritaires: Kenya, Tanzanie, Ouganda, Malawi, Zambie et Zimbabwe. Trois pays supplémentaires seront également bénéficiaires du renforcement de capacités: le Burundi, la RDC et le Rwanda.

La EAC finalise les directives sanitaires et phytosanitaires pour le poisson et les produits halieutiques. Elles visent à promouvoir les activités commerciales régionales et fournira un point d'entrée important pour le programme SmartFish. Les pays de la COMESA travaillent sur les normes de CODEX, qui ont également été utilisés pour élaborer les normes de la EAC. Les objectifs à court et moyen termes pour les pays de la COMESA sont:

- l'augmentation de la valeur ajoutée
- les investissements du secteur public et privé dans l'aquaculture développée;
- l'approche chaîne de valeur sur le document du développement du secteur;
- la réduction des prises indésirables et rejet de pêche;
- L'amélioration des conditions du commerce et marchés.
- contenu de l'information et des connaissances et l'échange amélioré.

INTRODUCTION

Fisheries are one of the most significant renewable resources that Eastern and Southern Africa (ESA) and Indian Ocean (IO) countries have for food security, livelihoods and economic growth. Efforts, however, need to be made to ensure that as the population in these countries grows, and demand for food and employment likewise grows, the benefits that fishery resources provide are protected through sustainable management and value-addition.

The IOC-led Programme for the Implementation of a Regional Fisheries Strategy for the ESA-IO region (IRFS) [SMARTFISH] was launched in February 2011 with the aim of contributing to an increased level of social, economic and environmental development and regional integration in the ESA-IO region through the sustainable exploitation of fisheries resources. Underpinning the Programme is the harmonization of the region's strategies and the strengthening of regional integration especially in partnership with COMESA, EAC and IGAD. The Programme (Euro 21 million) is financed by the European Union (EU) under the 10th European Development Fund (EDF). The ultimate beneficiaries are fishermen, coastal communities and wider populations in Burundi, Comoros, Djibouti, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

The expected outcomes of the programme relate to five aspects of development: fisheries governance; fisheries management; monitoring, control and surveillance; regional fish trade and food security.

In terms of trade, the traditional focus on large international trading blocks and fostering trade from Africa to these blocks, has meant less attention has been paid to developing regional trade, which is thought to have great potential and is to be a key focus of the programme. Some of the most pressing issues facing regional fisheries trade relate to trade barriers in both regional and domestic markets. Average import tariffs for example between countries in the region are generally much higher than in developed countries and are thought to have limited intra-regional trade significantly. Non-tariff barriers include challenges with export licensing, logistics and poor infrastructure throughout the value-chain, all of which reduce competitiveness through increased costs to exporters. Improving quality and sanitation issues is critical to improving marketing opportunities regionally as quality standards are becoming an important requirement for trading fish across international borders. Regionally harmonized quality standards should increase competitive access for traders and help to ensure improved quality of fish for consumers. Key activities within the trade component are to include:

- development of a regional trade strategy
- preparation of national marketing strategies
- developing a comprehensive understanding of existing and potential trade, especially intra-regional
- reducing non-tariff barriers to trade particularly in relation to quality and sanitation
- supporting the implementation of regional standards and fish quality
- support for sustainable trade through eco-labelling/certification

Cross-cutting the Programme is the provision of training, especially in light of the low levels of capacity in several of the countries. Hence, training activities will be a fundamental and important component of the Programme.

This report refers to work carried out between late July and early October 2011 focussed on reducing non-tariff barriers (NTB) to trade and supporting the implementation of regional standards for fish quality. It refers specifically to a training needs analysis activity to assist the identification of capacity building activities and subsequent design and implementation of a first phase of regional training initiatives related to hygiene and sanitation standards and improved fish quality. Working closely with the Business and Trade Development Specialist (BTDS) of the Program and focal points in selected countries, the consultant undertook a TNA through site visits and secondary data review and reviewed recent related capacity building activities. As part of the process the consultant helped facilitate an EAC standards regional workshop in Mwanza, Tanzania, which helped understand capacity building issues in more detail. The outcome has been the identification of a series of country specific capacity building activities for the SmartFish Programme to support during the November to June 2012 period. The full terms of reference for work, including the next stage of activities, are provided as Annex 1.

With the agreement of the Programme, the assignment covered by this report was implemented via three missions. The consultant was contracted by AgrotecSpA, Italy. A detailed itinerary for the missions, including the people met, is presented in Annex 2. The main text of the report presents the methodology used, a description of the activities carried out and conclusions and recommendations.

METHODOLOGY

It was decided with the BTDS in August 2011 to select an initial group of countries, from the overall 19 covered by the Programme. These countries would be the focus of the TNA and hence first phase of the hygiene and sanitation capacity building activities.

Criteria that were used to select an initial 9 countries included:

- Principle initial focus of the Programme
- Results of initial interactions between the BTDS and the country stakeholders/focal points
- Participation / interest in regional trade
- Importance of small-scale fisheries
- Importance of fish to livelihoods and food security
- Level of previous training/support
- Existence of regional standards
- Political stability or accessibility
- Other Programme activities taking place and complementing these

As a consequence of discussions 6 countries were chosen for the focus of an initial TNA and subsequent training activities (Phase 1). These are: Kenya, Malawi, Tanzania, Uganda, Zambia and Zimbabwe. A further 3 countries were identified to benefit from training during this first phase: Burundi, DRC and Rwanda. All countries will be considered in the proposed follow-on work plan. Table 1 summarises the reasons for the country selection. Based on the results and progress from Phase 1, it is predicted that similar training will be rolled out to other countries in Phase 2.

Table 1 Target countries - Phase 1

Country	Selection issues
Kenya	Inland small-scale fisheries providing important food security and livelihoods benefits. Covered by EAC SPS Guidelines. Stable and accessible. Lessons can be learned from previous training initiatives e.g. by ACP Fish II. Involved in regional trade. Markets links to Tanzania Dagaa producer/consumer and value-chain study being conducted by project.
Malawi	Inland small-scale fisheries providing important food security and livelihoods benefits. Stable and accessible. Lessons can be learned from previous training. Involved in regional trade. Interest in benefiting from training.
Tanzania	Inland small-scale fisheries providing important food security and livelihoods benefits. Covered by EAC SPS standards. Dagaa producer/consumer and value-chain study being conducted by project. Stable and accessible. Lessons can be learned from previous training initiatives e.g. by ACP Fish II. Involved in regional trade.
Uganda	Inland small-scale fisheries providing important food security and livelihoods benefits. Covered by EAC SPS standards. Stable and accessible. Lessons can be learned from previous training initiatives e.g. by ACP Fish II. Involved in regional trade. Markets links to Tanzania Dagaa producer/consumer and value-chain study being conducted by project
Zambia	Inland small-scale fisheries providing important food security and livelihoods benefits. Small pelagics producer/consumer and value-chain study being conducted by project which could have relevance to similar fish, Kapenta. Stable and accessible. Involved in regional trade. Interest in benefiting from training and standards work. Markets links to Tanzania Dagaa producer/consumer and value-chain study being conducted by project

Zimbabwe	Inland small-scale fisheries providing important food security and livelihoods benefits. Small pelagics producer/consumer and value-chain study being conducted by project which could have relevance to similar fish, Kapenta. Stable and accessible. Involved in regional trade. Interest in benefiting from training and standards work. Markets links to Tanzania Dagaa producer/consumer and value-chain study being conducted by project
Burundi	Inland small-scale fisheries providing important food security and livelihoods benefits. Covered by EAC SPS standards. Stable and accessible. Involved in regional trade.
DRC	Inland small-scale fisheries providing important food security and livelihoods benefits. Markets links to Tanzania Dagaa producer/consumer and value-chain study. Stable and accessible. Involved in regional trade.
Rwanda	Inland small-scale fisheries providing important food security and livelihoods benefits. Covered by EAC SPS standards. Markets links to Tanzania Dagaa producer/consumer and value-chain study. Stable and accessible. Involved in regional trade.

Due to previous support from other programmes provided to industrial and export orientated fisheries and the advances of standards and levels of handling and hygiene associated with the EU export sector attention needs to be paid to the needs of the less developed regional trade related small-scale sector, where opportunities to improve standards and practices are known to exist. In addition, the EAC have just developed a set of Harmonised Sanitary and Phytosanitary Guidelines of which Volume III is devoted to Fish and Fishery Products. These are designed to promote regional trade activities and provide an excellent entry point opportunity for the Programme in the five EAC countries (Burundi, Kenya, Rwanda, Uganda and Tanzania). At this early stage of the trade initiatives it was seen as logical to focus on groups of countries with common issues. The first nine countries identified as shown in Table I are all involved in small-scale inland fisheries either as producers or consumers or both. There is also a certain commonality in terms species and products produced and consumed within these countries. For example, fresh tilapia, smoked and dried tilapia and Nile perch, sun dried small pelagics such as Dagaa (*Rastronobola argentea*, *Stolothrissatanganicae*) and Kapenta (*Limnothrissamiodon*) are common, important, high volume products traded between countries. Aquaculture is also becoming an increasingly important sector in many countries and has an intrinsic post-harvest aspect. As such the focus on Phase I provides an opportunity to develop relatively generic training initiatives and materials. Moreover, strong trade flows of products occur between these countries e.g. from Lake Victoria south into Rwanda, Burundi and Zambia and east into DRC.

Following the selection of countries, secondary data was collated related to the countries and any previous TNA and training initiatives related to handling, hygiene, sanitation and quality improvements and opportunities. This was augmented by field visits to six of the targeted countries to undertake primary data collection and make preliminary preparations for training material develop and implementation. This provided an opportunity to understand progress regarding recent relevant ACP Fish II ToT work undertaken in Kenya, Uganda and Tanzania. A desk review of the EAC fish and fishery products standards was undertaken and discussions were held with key EAC stakeholders regarding the development of training workshops to support the implementation of the standards.

After summarising the EAC standards and COMESA fishery strategy, the data has been written up on a country by country basis and the information used to identify a series of proposed capacity building activities.

EAC STANDARDS AS BASIS FOR TRAINING

An entry point for the SmartFish Programme in terms of capacity building related to quality, handling and hygiene practices is to support the implementation of regionalised standards. The East African Community (EAC) began the process of harmonising Sanitary and Phytosanitary (SPS) standards in 2006. Harmonised SPS standards and measures and procedures Volume III refers to fish and fishery products and has gradually evolved over the past two years. The latest version was finalised in Kampala in May 2010. Along with the technical standards there two other key documents: a manual of standard operating procedures and an inspector's guide. The standards have been developed to help harmonise regional fish trade.

Cursory observations on the Kampala draft suggest that the document still requires some further updating for example there is no contents page and some important terms are absent from the definitions section. Nevertheless, the technical content appears to be thorough and draws inspiration from key international SPS guidelines developed by CODEX and the European Union. Technical issues covered are sanitary measures for fish trade, aquaculture, capture fisheries including fishing, landing sites, transport, processing, storage, loading and distribution, traceability, processing equipment and machinery, personnel, management practices, quality assurance, vermin control, cleaning systems, management control, domestic distribution and marketing and prohibited species. The coverage includes both internationally export orientated industrial, as well as small-scale fisheries. It is recognised by the EAC that Volume III still requires final editing and that this could be achieved by a final meeting of the guidelines developers e.g. fishery inspectors from the region.

The finalised standards will require interpretation and dissemination as part of the rolling out process. A simplified pictorial guide to help explain the standards to fishery operators and form the basis of capacity building activities would be a logical next step. Other initiatives would be the development or adjustment of national legislation and standards in line with any differences in the regional standards.

SmartFish/EAC Workshop

An EAC standards related workshop was held in Mwanza, Tanzania from 31 August to 2 September 2011. The workshop gathered together 16 fishery inspectors, EAC and resources persons some of whom had been involved in the development of the standards (see Annex 3). The countries represented were Burundi, Kenya, Tanzania and Uganda. The workshop was funded by the SmartFish program and facilitated by the BTDS and the consultant. The workshop involved an overview of the draft SPS Guidelines and current status followed by discussions related to regional fish trade. These helped identify technical and geographical priorities of focus. Discussions also concentrated on the regionalisation of standards and related training which has previously been conducted. In order to stimulate discussion on the quality, hygiene and sanitation issues field visits were also conducted to key local sites: Kirumba fish market, Bweru fish landing and location of a value-added dagaa processing business and New Igombe fish landing. Lessons learned from previous training are given in Annex 4. The workshop culminated in the development of national training action plans developed by the respective national working groups which is given as Annex 5. Key ideas from these are:

- Train private sector stakeholders, as well as fisheries officers and border post personnel
- Take a value-chain approach to capacity building
- Support rolling out of EAC standards
- Focus on major fisheries and key locations
- Lead to changes in knowledge and skills and improved practices and compliance with standards
- Reduction in post-harvest losses
- Pictorial material and local languages works best
- SPS training mainstreamed into work plans

A separate EAC workshop report was drafted, which includes the following recommendations:

- (i) an inventory of all development frameworks, legal instruments and standards of the fisheries sector of EAC Partner States should be carried out;
- (ii) convene a meeting to finalize updating the EAC SPS Vol. III urgently before proceeding to print;
- (iii) training of stakeholders/actors and support services providers along the fish value chain on SPS measures;
- (iv) develop user friendly versions of the EAC SPS Vol. III and training manuals with target group in mind;
- (v) the fisheries inspectorate should be included in the National SPS Committees;
- (vi) convene a focused sensitization workshop for policy makers in the Region;
- (vii) unhygienic drying of Dagaa should be discontinued by competent authorities of the respective EAC Partner States; and
- (viii) the EAC Secretariat should embark on resource mobilization for the fisheries sub-sector;

The workshop has helped informing the focus of the SmartFish program as well as generating lessons learned from previous capacity building in the region.

COMESA/SADC STRATEGY

The COMESA region is home to some of Africa's most important fisheries resources where fish is traded within member states and to international markets. The COMESA Fisheries and Aquaculture Strategy aims to increase and sustain the contribution of fisheries and aquaculture to the region's socio-economic development and food security. The strategy considers capture fisheries, aquaculture, trade and markets. In terms of trade and markets, COMESA has been supporting states with technical programmes and projects in order to increase benefits to the trade in fish and fish products.

Some of the challenges identified in the region related to trade and markets are as follows:

- Capacity, experience and opportunities regarding regional and international trade and markets vary between member states;
- Insufficient regulatory frameworks and standards, limited technical capacity to implement standards that have been adopted, lack of cross border trade facilities, weak cold chain capacity, poorly defined roles of private and public sector planning and implementation of, and lack of experience in fish exports;
- Poor access to financial services, inefficient cross-border trade facilities, lack of standards for fish products, lack of common trade regulations between member states and weak organizational capacity of small-scale operators.

Annex 6 gives the desired future outcomes for the fisheries and aquaculture sector in the region. It is taken from the AU-NEPAD Comprehensive Africa Agriculture Development Program (CAADP) Companion Document on Fisheries. The key short to medium term objectives include:

- Increased value addition;
- public and private sector investment in aquaculture developed;
- value chain approach to sector development;
- postharvest losses reduced;
- trade and market conditions improved;
- information and knowledge content and exchange improved.

Specific COMESA activities related to trade and market access are outlined below.

Aquaculture

Utilize the growing demand for aquaculture products in domestic and intra-COMESA markets by:

- a) Facilitating intra-regional marketing of aquaculture products;
- b) Facilitating regional exchange of market information;
- c) Improving access to value-addition technologies in the region;
- d) Monitoring supply and demand trends for aquaculture products;

Inland Fisheries

Enhance business growth / socio-economic benefits from intra-regional and international fish trade by:

- a) Enhancing trade infrastructure and facilities along main intra-regional trade routes;
- b) Streamlining and harmonizing existing regulations governing cross-border trade of fish products;
- c) Developing and implementing standards for regionally traded fish products;
- d) Implementing support programmes for artisanal processors and traders in key technical areas so that they can adhere to standards and regulations and access higher-value markets,

- e) Focusing these support programmes in particular on women who are the majority of small-scale entrepreneurs in the sector;
- f) Supporting regional fish trade expositions to promote regionally traded fish products;
- g) Harmonizing standards across the regions to facilitate access to international markets for fish products from the COMESA region;

Marine Fisheries

Increase economic development benefits from trade in marine products from the COMESA region in international markets by:

- a) Establishing a common COMESA market information system for fish;
- b) Strengthening capacity of Member States to negotiate favourable and appropriate international market access for their fish products;
- c) Improving trade infrastructure to reduce high costs of trade;
- d) Linking Island States more effectively to regional market system;
- e) Harmonizing standards across the regions to facilitate access to international markets for fish products from the COMESA region;

In terms of regulations, standards and policy COMESA propose the following:

Aquaculture

Support the development of a sustainable aquaculture sector through:

- a) Formulation and up-dating of policies, standards and legislation;
- b) Harmonization of policies, standards and legislation in the region;

Inland Fisheries

Enhance management of regional inland fisheries resources through:

- a) Development of a regional fisheries policy and protocols;
- b) Harmonization of existing national management standards and regulations for trans-boundary fisheries resources;
- c) Establishment of regional fora for discussion of fisheries policy and management;

Marine fisheries

Further enhance policy framework for sustainable, market-led development of marine fisheries resources through:

- a) Support to Member States to harmonize regulatory mechanisms for food safety and product quality standards;
- b) Development of a regional Fisheries Protocol (as for example SADC has done);
- c) Technical support to Member States to up-date policies in view of new challenges including climate change and rising food prices;
- d) Capacity building support to Member States in the area of food safety, quality and SPS;
- e) Training of technicians and equipping national quality assurance laboratories in the Member States;
- f) Establishment of more accredited laboratories in the COMESA region which could be used as regional referral laboratories.
- g) Formation of a regional fish inspection association which should meet regularly to review the progress on the fish inspection and quality assurance system in the region;

KENYA, UGANDA AND TANZANIA

Kenya, Uganda and Tanzania have experienced a great deal of fisheries development support over the past 20 years. This support has involved capacity building and infrastructure development and has particularly focused on the Lake Victoria fishery and the evolution of the international export trade in fish. Information on the three countries has been brought together and consequently in this report issues related to the terms of reference for these countries are described together. A recent training of trainers capacity building initiative to strengthen quality, handling and hygiene in the small-scale sector was also reviewed as part of the SmartFish program and is described here.

In terms of **Kenya, Uganda** and **Tanzania** according to LVFO (2006) a number of TNAs have been carried out for Lake Victoria fisheries, notably three studies carried out by the Commonwealth Secretariat, but also a number of others including:

- a) TNA in the Fisheries Sector in Tanzania, Mbegani FDC and Nyegezi FTI (2004)
- b) LVEMP TNA all 3 countries (1996)
- c) KMFRI TNA (2001)
- d) National TNA (2003) DoF, Kenya.
- e) ECOVIC Uganda Chapter. Expressed Needs(2004)
- f) LVFO/IUCN Training Programme for BMUs for the Border Areas on Lake Victoria

LVFO (2006) also points out a lack of trained trainers in the region for fisheries sector initiatives. Table 2 summarises key LVFO stakeholder groups, roles and general training needs presented. As can be seen hygiene, sanitation, handling and marketing features widely. One of the strategic objectives of the EU funded IFMP project was to provide training of trainers (ToT) support to BMUs and training in improved processing for women Daga processors (LVFO 2006).

Table 2 LVFO stakeholder groups and TNA results

Stakeholder	Role in Lake Victoria Fisheries Management	Training Needs
Beach Management Units (BMU)	This is a highly heterogeneous group, with clear differences in poverty and social status, and in their ability to influence their access to and benefits from fisheries resources. These comprise the fishers and boat/gear owners, a predominantly male dominated group, and the small scale processors and traders, where women find greater employment opportunities. Of these, the most clearly disadvantaged and poorer groups within the communities are the fishing crew and women.	<ul style="list-style-type: none"> • BMU Establishment and Operation • Community Based Development Planning • Fisheries Resource Management, including bye-laws and MCS • BMU Financial Management • Savings Mobilisation and Credit Skills • Sanitation and hygiene • Fisheries Information Collection and Use
Fishers, including boat and gear owners and crews	This includes 'active fishers', largely crews or Barias who hire boats and equipment or work for owners and 'passive fishers' who own the boats and equipment.	<ul style="list-style-type: none"> • Sanitation and hygiene • Fish Marketing • Small Business Development • Health and Safety

Fish transporters (boat), from primary to secondary landings or trans-shipped	Transport boats, with built-in ice boxes, collect fish from smaller landings, particularly on the islands and transport it to larger landings on the mainland. They have a critical role in ensuring 'up-stream' fish quality	<ul style="list-style-type: none"> • Use of Ice on Transport Vessels • Sanitation and hygiene • Health and Safety
Artisanal processors	Small scale processors, normally female, who sundry, salt, fry or smoke Dagaa, Nile perch or Tilapia	<ul style="list-style-type: none"> • Community Based Fish Processing Skills (3 species) • Fish Marketing • Small Business Development • Health and Safety
Fish traders	These people purchase fresh or processed fish and transport to local markets	<ul style="list-style-type: none"> • Fish Marketing • Small Business Development • Health and Safety

This capacity building never materialized under the IFMP project, but was subsequently undertaken by the ACP Fish II program in 2011. This initiative was reviewed as part of the development of this report and is described later in this section.

A TNA of the Lake Victoria post-harvest fisheries sector was carried out by the SFP I project in 2005 (SFP, undated). One of the objectives was an "assessment of upstream handling practices for fresh water and marine fisheries and inadequacies than can be addressed through training". In **Uganda**, the report states that previous training efforts had concentrated on assisting fish processing establishments to comply with EU regulations, leaving the artisanal sector with very little support. The Competent Authority (CA) was conscious of the need to bring artisanal activities under control but lacks resources to undertake the necessary QA training and quality assurance programs. Critical areas in the chain, where support is needed included:

- Fish handlers and suppliers
- Fish transporters
- BMUs and fishers themselves

Across the border in **Kenya**, the report noted that whilst BMUs were legal entities with a regulation role in pre-harvest and post-harvest activities, including ensuring hygiene is maintained at the landing sites and food safety regulations are complied with, their members were found to have had no formal training in food safety or food hygiene. And their level of understanding of current regulations was also very limited. The focus of training for BMUs there was identified as:

- Food safety
- Food hygiene
- Fish handling including the use of ice
- Project management
- Financial management
- Data collection and storage.
- Benefits of compliance with regulations.

Similar training was seen as also applicable to the needs of fish processors targeting the domestic/regional market as well as training on waste management and improved packaging techniques.

Overall the TNA made several recommendations:

- Training small scale fish processors in improved processing methods.
- Training fish handlers, BMUs and fish traders in food hygiene, improved fish handling, and quality assessment.
- Training of BMUs in project management.
- Training of BMUS in financial management.
- Training of BMUs in data collection and storage

A more recent desk review of the artisanal fishery sectors of Kenya, Tanzania and Uganda, (Chivers 2009), highlights, again, the need for capacity building for the small-scale sector. The report mentions that “Historically the artisanal sector has received little by way of training inputs. There are a very large number of persons involved in the small-scale fisheries who would benefit financially from better knowledge of handling the catch and their improved knowledge would have a beneficial impact on the sector. There was therefore a need for a continual process of training of the local communities in basic fish handling and quality maintenance. It is recommended that this be provided in the form of trainer training, targeting those leading members of the communities who are listened to and who have authority and responsibility. The objective would be to provide a source of on-going training through well-trained trainers, who would be capable of continuing the training within the community long after a project intervention”. The desk review went on to state that some training had been provided over the last five years to the artisanal sector but that it was limited in its scope and number of participants and reflected only a small proportion of the large number of persons that comprised the sector. Training had to date been of a top-down nature, starting with the CA, fish inspectors and private industry and occasionally dealing with the fishers but as far as can be determined never with the womenfolk. Training had also been directed more towards Lake Victoria and less towards the coastal industry.

On-going development of six landing sites earmarked for improvement in Kenya is also mentioned in Chivers(2009). The report mentions that since it was expected that the BMUs would be in charge of these landing sites, it was important that the members of the BMUs were adequately trained in fish handling. It is not clear from the report whether this training has taken place or when it was planned. Observations during the mission suggest that these landing sites have yet to be completed. Stamatis (2005) provides an overview of proposed landing site infrastructure development requirements for the region and in doing so also highlights the need for training of those involved in management of revamped landing sites. Derrick (2009) goes on to state that there is an urgent need to improve the sanitary knowledge and practices of persons involved in all steps of the fishery supply chain, due to their only having previously been pilot training/development schemes limited to specific districts and the high number of persons entering the sector without training. The current provision of training and facility development in the **Ugandan** fishery sector is totally reliant on donor funded projects to pay for not only the development and delivery of the course but also the facilitation of the training event (which includes transport & per diems for participants). The report goes on to state that there is undoubtedly a need to improve the operational and hygiene standards of the artisanal sector through training, however with materials developed and trainers (DFOs) currently being trained (by the ICEIDA program) the immediate needs are being adequately met. What is however required is the development of a long term strategy, with the backing of central Government, to develop the donor funded pilot projects into a sustainable training program throughout the country.

Whilst there is clear recognition of the role played by BMUs, and the small-scale operators they represent, in the supply chain and associated food safety and quality issues, the dispersed nature of the artisanal fishery sector presents a major challenge in terms of bringing the ‘upstream’ part of the supply chain under control. According to Chivers (2009) a lot of training of Lake Victoria fishers had taken place prior to 2006 in Uganda but the high turnover of fishers had led to the training impact disappearing from the communities. Lack of ‘upstream control’ was an issue identified by EC inspections of the 3 countries and delivering capacity building to the stakeholders involved is an obvious priority, but achieving this is known to be challenging. However, some success was achieved under SFP I by ensuring the cooperation of both public and private sector stakeholders as part of the capacity building process (Esser, 2007) and under the recent ICEIDA initiative in Uganda.

In terms of key technical post-harvest issues identified during a TNA carried out by the ACP Fish II Programme (NRInternational 2011) the technical needs of fishers, processors and traders on Lake Victoria were identified as mainly:

- understanding the causes of fish spoilage;
- being able to assess fish quality;
- being able to maintain fish quality;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site
- use of crates/boxes of fish handling;
- use of ice;
- personal hygiene;
- proper waste disposal;
- use of potable water

These issues were to become the focus of a training of trainer's workshop for 24 BMU trainers from the 3 countries held in Mwanza, Tanzania in May 2011. The impact of this activity was reviewed for the SmartFish programme. The ACP Fish II TNA checklist was modified and also used during field visits to Zimbabwe, Malawi and Zambia as part of the development of this report. It is given as Annex 7. The ACP Fish II TNA is also presented as Annex 8.

Some of the most important relevant capacity building initiatives undertaken in **Kenya, Uganda** and **Tanzania** in the recent past have been within the framework of the two ACP/EU Strengthening Fishery Products Health Conditions (SFP) projects from 2004 to 2010. The main beneficiaries have been the Competent Authorities, supporting institutions and fish processing establishments supplying fishery products to the EU market.

Other relevant training has been undertaken more recently by ICEIDA and the ACP Fish II Programme (see later in section). Table 3 summarises hygiene, sanitation and handling training that is known about that has been carried out since 2005.

Table 3 Previous training initiatives

Initiative and countries	Provider	Date
Sectoral Training Needs Analysis (TNA) completed (All) Quality management systems and internal auditing training courses held in Kenya for private sector QC managers Traceability course held in Uganda for CA inspectors and private sector stakeholders	ACP/EU SFP	2005
Training courses on traceability held for CA inspectors and private sector managers in Kenya, Tanzania and Uganda	ACP/EU SFP	2005-6
Training courses on upstream GHP, foundation HACCP and systems based approach to controlling insect infestation of traditionally processed fish held for CA personnel in Tanzania Training course on EU feed and food legislation and aquaculture inspection systems held for CA inspectors in Uganda Training course on control of food safety hazards held for CA inspectors at MFDC (All) Practical training on GHP audit of processing establishments for CA inspectors in Tanzania Training course on inspection techniques held for CA inspectors in Kenya Training course on national emergency recall procedures held for CA inspectors in Uganda Training of trainers (ToT) at MFDC (All) Regional training courses on lake and marine coastal upstream control held in Tanzania (Agrifor subproject) Training course held on EU legislation, principles of risk analysis and the use of audits to improve control system performance for private sector QC managers in Tanzania Training courses on implications of EU feed and food legislation for establishments exporting processed fish held for private sector QC managers in Tanzania and Uganda	ACP/EU SFP	2006
Training course on implications of EU feed and food legislation for upstream control held for lake beach inspectors in Kenya	ACP/EU SFP	2006-7

<p>Training course on upstream control procedures for fishing vessels, transport vessels & transport trucks held for CA inspectors and private sector QC managers in Uganda</p> <p>Training course on principles of upstream control held for lake beach inspectors in Kenya</p> <p>Upstream control checklists for Nile perch developed</p> <p>Updated Ugandan fisheries legislation (incorporating upstream control)</p> <p>Manual of Upstream Control (Agrifor sub-project) produced</p> <p>Field testing of upstream control procedures & documentation</p> <p>Training for Kenyan Private Sector on "Self Audit to Improve Standards" in both Lake and Marine Fisheries</p> <p>Training workshop on EU upstream control requirements held for Ugandan fish suppliers / agents</p> <p>RIPH HACCP Intermediate course delivered to MFDC lecturers and CA inspectors in Tanzania</p> <p>Training course on sensory assessment held for beach inspectors in Kenya</p> <p>Updated manuals of fish inspection SOPs (incorporating upstream control) developed for Uganda and Kenya</p>	ACP/EU SFP	2007
<p>Adult literacy (Uganda)</p> <p>Training fisheries inspectors (Uganda)</p> <p>Training in Kalangala District. Lake Kyoga and Albert (Uganda)</p>	ICEIDA	2007 onwards
<p>Training of lead personnel at selected landing sites in Kenya, Tanzania and Uganda</p>	ACP/EU SFP	2010
<p>Training of BMU trainers from Kenya, Tanzania and Uganda in hygiene, handling, sanitation and business skills</p>	ACP Fish II	2011

From: NRInternational (2011) Training of beach management units on Lake Victoria. ACP Fish II Report, Brussels

According to Chivers (2009) the LVFO produced a number of manuals on training and creating BMUs. ICEIDA has developed community level training guides related to better practice including hygiene, sanitation and handling. In 2011 the ACP Fish II programme produced a draft pictorial community level trainers manual in hygiene, sanitation, quality and business skills. This was piloted at a ToT workshop in Mwanza in 2011. Table 4 summarises key training materials/ outputs produced for use in the region in near past.

The SFP 2 project ran from 2009 to October 2010 and mainly focussed capacity building in the region on the marine sector. However the work which targeted the artisanal sector yielded useful pictorial training materials (see Training Materials section below). According to a desk study by SFP 2 (Chivers, 2009), whilst there were a number of donors active in the region few had any connection with the artisanal fishery sector. Amongst those operating at the time in Uganda, however was the Icelandic International Development Agency (ICEIDA, <http://www.iceida.is/english/main-activities/uganda/>).

Activities included adult literacy, a 10 year project involving training, infrastructure development and service delivery covering the fisheries sector of Kalangala District (Ssesse Islands).

A further initiative is the Quality Assurance for Fish Marketing Project which includes training of fisheries inspectors. According to Derrick (2009) training initiatives at the time in 2009 were:

- LVFO: Development of training program for DFOs and artisanal fishery sector, pilot trial in Kalangala region (2008).
- ICEIDA: Further development of the training materials for delivery as train the trainer program for DFOs in Kalangala District, Lakes Kyoga and Albert. This training is currently being delivered by the DFR inspectors.
- ICEIDA: Development and translation into local languages of course & materials to be integrated into their adult Literacy & Basic Education program for fishing communities (on-going).

Table 4 Training materials developed for use in Lake Victoria region

Source	Type
LVFO/ACP Fish II	Fish Handling on Lake Victoria and Business skills; BMU trainers training manual
LVFO	Fish Handling Trainers Manual
EU/ACP/SFP	Artisanal Training Guide booklet
IFMP	Business Skill for Women & BMUs Trainers Manual
IFMP	BMU Financial Management Trainers Manual
EU/ACP/SFP	Codes of GHP for upstream supply chains
ICEIDA	Beach Management Unit Training flipcharts & readers
EU/ACP/SFP	Upstream GHP posters
EU/ACP/SFP	Fishing canoe GHP posters
ACP Fish II	Trainers manual in handling, hygiene, sanitation and business skills

From: NRInternational (2011) Training of beach management units on Lake Victoria. ACP Fish II Report, Brussels

With ICEIDA support, the Ugandan DFR have developed simple practical guides on training for BMU trainers, fish quality and handling for BMUs, business management for BMUs and others. These guides have simplified key technical issues and presented these in the form of basic text and local context pictorial images. A set of flip charts showing key images based on the guides was also developed as a training and awareness raising tool. These materials are available in various local languages including Kiswahili, but had not yet been used extensively for training.

Building on from past initiatives by ACP SFP and ICEIDA, a comprehensive pictorial based trainers manual was produced under the ACP Fish II initiative. A total of 24 BMU representatives from key landing sites in Kenya, Tanzania and Uganda participated in a seven-day participatory training of trainers workshop held in Mwanza, Tanzania from May 18 to 25 2011.

Review of ACP Fish II ToT training

As part of the process of identifying capacity building initiatives for the SmartFish programme, the impact of the recent training of trainers work undertaken by the ACP Fish II project was assessed through 3 national level meetings with the BMU trainers involved (NRInternational, 2011). The objective of the meetings was to discuss post training workshop activities. At each meeting there was a recap on the Fish II Mwanza workshop and the results of the workshop evaluation. This was followed by a discussion on the post-workshop activities of the trainers and the implementation of action plans developed by the trainers. This helped understand the extent to which trainers had been able to conduct their own training and any challenges they faced. There was then a reflection on what could be done differently in terms of the training workshop, materials and post-workshop activities, which could help the SmartFish programme in the design of its own training action plan. The following summarises the outcome of the 3 meetings.

Tanzania

The first meeting was held at the Nyegezi Fisheries Inspection Laboratory on 2nd September. A list of participants is shown in Annex 9. Discussions identified that the 6 BMU trainers that attended had retained key technical knowledge particularly on things like Dagaa processing, use of ice, fish spoilage, use of boxes for carrying fish, traceability, record-keeping, business management, group formation and financial aspects of business.

Key issues from the meeting were that the Tanzanians would have preferred the training to have been conducted purely in Kiswahili, and copies of the CD with the trainers manual should have been made available to all participants. The 6 trainers (from a total of 8) who attended, had all attempted to carry out some form of training after the workshop. In Sengerema training had been conducted with the BMU committee. Topics were introduced by the trainer via monthly

committee meetings. There was also an interest in carrying out the same type of training at the assembly meetings which occur every 3 months.

Topics that were seen as pertinent and of interest at this location were fish spoilage, quality assessment, the use of ice, the use of proper containers for transporting fish, better sanitation practices, and the issue of spoilage during fishing due to time temperature abuse. A key challenge faced by the trainer here was that the trainees expected to be paid an allowance to participate in the training. Some funds were allocated to buy soft drinks as a way of dealing with this issue. As a result of the training fishermen are said to be using more ice and the proportion of rejected fish has reduced. Furthermore, the beach area is now kept clean as a result of regular cleaning being undertaken. At Kibuyi training was conducted over a period of five days. During each day an evening training session was held which lasted between 1.5 and 2 hours. During each session a particular topic was introduced.

The topics chosen were: managing a business, hygiene at the landing site, use of ice, fish spoilage, quality assessment, and the transportation of fish. Again participants expected allowances and as a consequence the number of participants dropped from 22 in the first session to 5 in the final. As a consequence of the training one group started to smoke Dagaa as a means of improved processing. One of the conclusions of the trainer was that it's best not to call it training, but in fact incorporate it into a village meeting as a topic of discussion. Once the word training is mentioned then often participants will be expecting some form of remuneration. At Suguti the trainer sought permission from the village executive committee for a meeting and then distributed copies of the pictures used in the training manual. However, the executive members of the BMU wanted allowances for attending the meeting/training. One of the conclusions of this training was that there is a need to produce large images of the training pictures and a poster which presents a series of pictures and at once. This can be used by the trainer to more easily help explain technical issues to the trainees. As a consequence of the training the committee decided to develop new bylaws related to wearing uniforms when handling fish, record-keeping, and other bylaws to help enforce better practices at the landing site. At Malehe landing in Bukoba, the trainer emphasised the importance of beach landing site sanitation and as a consequence he managed to secure a supply of "water guard" to purify water used at the landing site and also for cleaning purposes. Here again the training led to the creation of new bylaws related to hygiene at the landing site and record-keeping. Now daily records of fish being transported from the landing site are being kept and an allowance is paid to those taking the records. This allowance is funded from the enforcement of bylaws. Here also the trainer convinced certain members of the community to form their own co-operative society in order to help them access loans to develop their businesses. Here an incentive is also given to fishermen to keep their boats clean and a prize is given on a regular basis for the cleanest boat. The training here has been introduced to the community via village meetings. Interestingly at times representatives from three villages will join together hence the training has reached a wider group and not just the community from which the trainer has come from. During the discussion it was pointed out that some fishing communities are in quite remote areas and difficult to access and the village council may be reluctant to provide the trainer with transportation to reach these other communities. Furthermore, local government appears reluctant to provide funds for training. Even though local governments are obtaining significant funds from the fishery sector. It is felt that the village councils are key players as they can provide funds towards training costs at the local level.

At Nyamukazi fishing community again in Bukoba the trainer introduced training topics via the assembly meeting. As a consequence there is a regular inspection of fishing boats for hygiene and sanitation issues and regular beach cleaning. The trainer also managed to visit and train people in nearby communities. At Shoka Island in Magu district the trainer particularly focused on improved processing of dagaa. Whilst on a technical level the issues were straightforward and there was an interest in adopting the improved processing methods, the stumbling block was identified as the market for the final products.

In terms of what could be done to improve such training it was suggested that posters should be created to go along with the training manual and that these posters could be used by the trainers to deliver training at the community level. Additional copies of the training manual would also be useful for the trainer to hand out during the training process. Laminating the pages of the training manual would increase its shelf-life. During the training workshop, trainer's should receive a per diem rather than having their accommodation and food paid for by the provider. It was suggested that the BMU trainers should be seen now as extension agents for the Fisheries Department. In which case, they should be

facilitated by the fisheries extension officer in Dar es Salaam to continue to carry out training across other landing sites and with different communities. Overall the meeting showed that after the training in May the trainers have made some attempt at carrying out their own training, but primarily this has been hindered by a culture of expecting allowances to be paid for attending training workshops. As was mentioned one way of avoiding this issue could be to deliver the training not as training, but as topics during the regular community or BMU meeting processes.

Kenya

The second trainers review meeting took place on 5th Sept. at the Department of Fisheries office, Nyanza District in Kisumu. The meeting was attended by 10 participants, including 8 trainers and the 2 facilitators from Kenya involved in the Mwanza workshop. In terms of the priority technical issues identified by the participants these were: hygienic landing requirements, Omena/Dagaa preservation and improved practices, presentation skills, use of ice, fish spoilage, quality assessment, fish handling, personal hygiene, record-keeping and traceability.

Key issues from the meeting are as follows. The Fisheries Department is currently in the process of strengthening the BMU network and are intending to provide laptops and communication equipment to key landing sites. It was pointed out by one of the trainers that the DoF should publicise the fact that the trainers exist as this may help them to be more accepted within their own communities and further afield. It also may encourage District Fisheries Officers (DFO) to involve the trainers in future training activities organised by the DoF. The Kenyan training action plan developed during the Mwanza workshop which focused on rolling out the training to BMUs and landing sites and training other trainers had not been implemented as no one took responsibility to coordinate the implementation of the plan and there was a lack of finance to help facilitate meetings and the training itself. There was also a perception by the trainers and by the DoF that the ACP Fish II programme would support follow-on activities.

One trainer had visited five beaches after the workshop and the BMU executive committee members at these landing sites. However the training process became difficult as the committee members wanted allowances. The topics that the trainer thought were a priority were beach sanitation, canoe cleaning and the use of ice. The trainer commented that the fishermen felt that the better practices that were promoted by the training were too expensive and require government support to help implement. It was suggested that the trainers should work in teams of two or three rather than as individuals as this will help their confidence and acceptance of training at community level. In terms of impact, people see that the training provides good ideas but they are not prepared to make the changes required. It was also suggested that the DFO's should help request the BMU to organise training meetings as this will have more impact than if the trainers ask the BMU's to do the same thing.

The trainer at Port Victoria prepared his own work plan and started training in fish spoilage, quality assessment and personal hygiene in June. Altogether he managed to cover five beaches and eight training sessions. These lasted for between 1 1/2 and 2 hours per session. A further 16 beaches remain to be covered. He used his own funds to facilitate travel and the printing of training materials. Again one of the stumbling blocks he came up against was the demand from trainees for allowances to attend the training. The total cost for the eight sessions was estimated to be at least 6000 Kenyan shillings. This is equivalent to about US\$70. He announced training sessions through the BMU system and it was on an open invitation system whereby anybody that felt interested could attend. The number of people attending his session ranged from 9 to 29. As a result of the training it has been observed that improvements have been seen at two beaches. The fish are now no longer put on the ground but are put on wooden tables at the landing site. Operators are wearing uniforms and are implementing good hygienic practices at the landing site. He suggested that more copies of the training manual would be useful for future training. At this point one of the training facilitators from the Department of Fisheries suggested that the Divisional Fishery Officers should present the case for funding to the Ministry Planning officer in Nairobi. This could be supported by the director of FIQA. If this was successful than it would mean that the Ministry could authorise the provision of funds for DFO's to use to facilitate the BMU trainers to carry out training at the landing sites. This would appear to be an important mechanism to enable long-term sustainability of the training. This is something perhaps that the Fish II program should take up with the authorities in Nairobi.

At KenduBay the trainer carried out training at 5 local beaches, but was constrained due to a lack of funds. The topics

seen as a priority were personal hygiene, processing and distribution of dagaa, fish spoilage, quality assessment, and hygienic practices on board the canoe and hygienic requirements for fish landing sites. It was pointed out that black-and-white photocopies of the images contained in the training manual are not clear and ineffective and colour photocopies are preferred. The trainer had used his own finances to facilitate the training. The training had led to one boat owner in one landing site building a shade on his canoe to protect fish from the sun between capture and landing. Others are using wet sacks to cover fish to keep it fresh. These changes are done in the absence of ice. It was suggested that the allowance given to participants at the landing sites for attending training should be in the region of 200 Kenyan shillings per person for a 2 hour maximum training session. Beyond 2 hours people will become restless and attention wane and many are also busy with other activities and cannot spare longer periods of time in training.

The trainer from Suna-Migori intended to cover 27 landing beaches in his district, but in practice has carried out training in 2 beaches nearby to his community. The training covered fish spoilage, transport of fish, handling, hygiene and temperature control. At the first session he had 34 people attend and the Divisional Fishery Officer helped organise the meeting. The NGO culture had brought in expectation of allowances and whenever a meeting or training session is held people now expect an allowance to be paid. Again the trainer was hampered by a lack of funds for travel and copying of materials. Furthermore, the location where he resides is quite remote and it is difficult to access photocopying and other services.

The trainer from Dunga initially trained 2 friends as trainers. He had also tried to train people as individuals or in small groups rather than hold a large meeting or gathering. He had disseminated information from the training manual at public BMU gatherings which has been effective. He has also trained organised youth groups involved in fishery activities. He used posters, prepared notes from the training manual, lent out the training manual to interested parties, and used simple training techniques involving flipcharts. In terms of changes as a result of his efforts, there has been some improvement in the sanitation at his BMU compound and the surrounding facilities. A proposal has also been generated to acquire improved drying racks for Dagaa drying. Some fishermen have also begun to use plastic crates to hold their fish in the canoe after fishing. There has also been the acquisition of two more hand washing buckets from the Kenyan Red Cross Society. Personally he feels he has acquired technical skills and a better understanding of business particularly record-keeping and savings. Nevertheless some challenges were identified. There was a poor attendance at training due to a lack of snacks and allowances. There was also some opposition to him carrying out training by fellow members of the BMU. They felt that "what can we learn from this man". There was also a lack of funds to travel and reach other BMUs in the area. Trainees were also reluctant to give too much of their time. He also has a lack of time to carry out training due to his other commitments. There was also a lack of training materials on hand to help deliver the training. He suggested that refreshments should be made available for participants during training. That the training manual could be simplified and more training materials be provided to trainers. The Ministry of Fisheries should also help facilitate further training. And that a designated trainer is employed for at least one year to carry out training at all the BMUs and landing sites. He had also tried to put images/pictures up at the landing site however these got washed away during the rain. It was also suggested that the images in the training manual could be improved if more text was added to explain the message to be conveyed.

The trainer from the Mbita discussed the need to carry out further training with the DFO. As a consequence a workshop was scheduled for early June and this was sponsored by the local BMU which provided funds for photocopies, flipcharts, pens, notebooks and refreshments. This workshop was attended by the DFO who encouraged the participants to put into practice whatever they learn. Of the 15 members invited, 8 attended the workshop as another meeting was undertaken elsewhere at the same time. Attempts to carry out further training in other landing sites with other BMU has failed due to the expectation of allowances and food for participants. It was suggested that there should be more cooperation between the 8 Kenyan trainers and that they should work together on future training. It was noted that the Lake Victoria Environmental Management plan project is looking at the creation of a joint trust fund for research and training activities in the region. The idea is soon to be piloted. Funding is to come from BMUs and fish exporters associations, amongst others. It was also suggested that future efforts should focus on creating examples of good practice at 1 or 2 beaches. These would then act as examples of what the training and follow-on activities can achieve. This could promote the work and attract the attention of donors the Ministry of Fisheries and the LVEMP trust fund.

The trainer from Geta was handicapped by the lack of transportation. Many of the BMUs and landing beaches are situated on small island islands in and around the area. Nevertheless he managed to carry out three training sessions the first one at the BMU office in his own location where he focused on personal hygiene and hygiene at the landing site he then went on to 2 more nearby beaches and carried out a similar training on fish spoilage and the use of ice. He found that it was difficult to find a peaceful setting to carry out the training and there was a lack of training equipment such as flipcharts and pens and funding for transport. He also felt that he had other commitments which meant less time for training. As a result of his training he has seen some improvements in landing site hygiene and sanitation.

Another trainer carried out training at 4 beaches with the assistance of the BMU, in particular the hygiene and sanitation manager. As a consequence processors are now drying dagga on nets rather than on sand. At one beach the hygiene and sanitation conditions are improving. However due to a lack of funds for transportation and the demand for allowances from participants he has not carried out any further training. His sessions lasted 2 to 3.5 hours.

No NGOs are operating in any of the districts although ActionAid had carried out some work with fishery communities in the past but on a small-scale. It was suggested that the images be developed into posters that use the local language and are half flipcharts size. It was also suggested that photographs rather than drawings are more effective. In terms of concluding remarks it was mentioned by the BMU representative that they should be officially introduced to all BMU in their areas by the DFO. Also it is important to strengthen the linkages between the trainers and the local fisheries officers on the ground as their support is seen as vital for the success of any training activities. The two facilitators at the meeting (who are also fisheries officers) agreed to do this.

In terms of SmartFish, one scenario for intervention is to help facilitate the trainers to work towards creating tangible benefits/ improvements at one or two landing sites. The training and training materials are having a positive impact and equipping trainers to go out and do the training what's missing is the final stage where trainers are working at field level and trying to encourage their colleagues to improve and introduce better practices. If this missing link can be developed then a model process could be in place or demonstrated which could then be rolled out and replicated perhaps in other areas/countries.

Uganda

The third meeting was held at the Fisheries Training Institute in Entebbe, Uganda and was attended by 7 of the 8 Uganda trainers as well as the Department of Fisheries training facilitator and Regional Coordinator of the ACP Fish II program for Eastern Africa. In terms of the topics which the trainers felt were the most important, these were mentioned as fish handling, fish spoilage, business skills, savings and credit, transport and fish, personal hygiene, landing site sanitation, use of ice, on-board handling, and the processing of dagaa. It was pointed out by the group that for future workshops there needs to be careful vetting of those who are selected to attend by the Fisheries Department concerned. This is to avoid favouritism and the selection of participants who are unable to participate fully in the training either because of educational level or language ability.

One of the conclusions is that it is more effective to carry out training in pairs or teams rather than as an individual. The presence of a trainer from another community is an attraction and is more likely to mean that people will attend and participate in the training. Many of the trainers had tried to do the training as individuals, but they had found this difficult. As in the other countries those attending the training requested allowances. Some participants refused to sign participants lists at training as they thought the list would be used by the trainer to obtain more money e.g. the more people are trained the more money the trainer will get. It was also suggested that the BMU chairman or representative should be present at training to make it effective and show that the training is important otherwise participants are less likely to take it seriously.

The 7 trainers had conducted 27 individual training activities since the workshop in their own and neighbouring communities. There had also been 5 group training activities whereby 2 or 3 of the trainers had worked together in a particular community. The trainers would like to continue the training particularly in other landing sites where catches

are known to be high. For this they require more training material as well as travel costs and other costs associated with the training. They feel that flipchart sized pictures or posters as well as handouts of the pictures in the training manual and extra copies of the BMU training manual would be useful for any future work. They felt that the pictures in the current training manual are fine and photos as well as cartoons/ drawings are equally as effective in terms of transmitting the training message.

The stakeholders at Kasensero have invited the training team back to do more training based on the initial interactions. Fisheries Officers have not been as involved in the training as much as perhaps they could be. In terms of providing a sustainable source of funding for the trainers to continue training in communities it was pointed out that the BMU is already mandated to collect funds and some of these funds should be used for training. Some landings such as Kasensero generate a large amount of income and have large balances of funds available. It was felt that some of this funding should be allocated for training. To help with this it was suggested that the Department of Fisheries should produce a directive that makes the BMUs allocate a certain proportion of funds for training.

As a result of the training, a number of changes have been identified. In Kasenyi people are now wearing clean coats and fish tubs used for transporting fish are being washed. In Kaya, dagaa processors are now using racks. In Kigungu better personal hygiene is being practiced and people are wearing clean clothes and putting fish in sacks as opposed to leaving it on the ground. Traders are more aware of the problem of bacteria and how to handle fish better. The Kasensero BMU chairman has now enforced strict hygiene rules at the landing site for example there is now a total ban on the presence of animals in the landing area. There is also evidence of better icing practice being used. In Kasenyi people used to throw fish at the landing site causing damage and bruising and increasing spoilage, this has now reduced. In Kyindi fish handlers now wear clean clothes the dagaa fishermen are cleaning their boats and the processors are also cleaning their areas. Boat owners in particular have taken most interest in the training, particularly because they fear that they may be prosecuted or penalised if they do not take notice of the training content. This influential group are prepared to change and are aware that fish spoilage is linked to unhygienic conditions e.g. dirty canoes.

There was a request from one of the trainers for a source of food grade paint that could be used for painting the inside of canoes. There was also a request that the Commissioner of Fisheries produces a directive to sub-districts that requests the officers to allow the trainers to use the Fisheries Department boats which are present in many areas. The trainers should also be integrated into ongoing and new adult literacy programs in the country which are commonly promoted by the Ministry of Gender and Social Development. Support from District Community Development officers and Fishery Officers should also be given to trainers to enable them to provide training as part of adult literacy programs.

There is a move afoot to revamp the BMU committee selection process in Uganda and have a greater involvement by the Department of Fisheries. This is to try and curb the corruption and poorly managed current BMU committee system. In terms of mobilising communities and helping them or encouraging them to participate in the training, this should involve at the local level the RC I and Community Development Officers at sub county levels. The Department of Fishery officers in the local area should also be involved in the organisation of training and also attend the training to show how important it is to the participants. In terms of business skills the trainers found it difficult to train people who were "richer" than themselves.

ZIMBABWE

A visit was made to Zimbabwe by the SmartFish Fish Quality Training Specialist from September 20th to 24th. The aim was to better understand training needs related to opportunities for handling, hygiene and sanitation training related to improving regional trade and standards. In conjunction with staff from the Department of Livestock Production and Development, meetings were held with key stakeholders in Harare and Lake's Chivero and Kariba.

Priorities of key stakeholders for sector

Zimbabwe representatives at a SmartFish workshop in Lusaka, Zambia in 2011 provided the following synopsis of the current situation, with key objectives identified as:

- To identify and promote sustainable investment and development of Zimbabwe's natural advantages for freshwater aquaculture and fisheries;
- To improve market-led development, including capacity building, efficient supply chains, product integrity, market access and branding
- To develop and implement a best practice management and regulation framework in accordance with the laws of Zimbabwe
- To increase public awareness of the benefits of sustainable aquaculture and fisheries practices and its products
- To become one of Southern Africa's leading producers and exporters of freshwater fish and fish products targeting 60 000 tonnes per annum by 2020

It was suggested that the following actions were required in order to achieve these objectives:

- a) There is an urgent need for a comprehensive data collection exercise on the actual status of the fisheries and aquaculture industry and also a value-chain analysis;
- b) Increase fish production to meet domestic demand and also for regional and international trade will be achieved through:
 - Improved management of capture fisheries
 - An accelerated aquaculture development programme that aims at utilising the 12 000 dams in the country and also a cluster model with Lake Harvest as the hub facilitating seed, feeds, post-harvest processing and marketing;
- c) Development of infrastructure for fisheries and aquaculture such as landing sites, hatcheries, storage facilities and accessibility to markets;
- d) Value addition of fish products through filleting, packaging etc.;
- e) Improve Monitoring, Inspection and Surveillance through better training of resource persons and also collaboration on the setting of regional quality standards for imports and exports;
- f) Enhance capacity building in fisheries management, aquaculture, fish trade, post-harvest technologies and bio-security;
- g) Develop and adopt a National strategy and policy for fisheries management and aquaculture development;
- h) Establish a revolving fund for Small to Medium Enterprises for the fisheries and aquaculture sector administered through a financial institution;
- i) Evaluate existing structures of fisheries associations (both fishermen and traders) and find ways to capacitate these institutions;
- j) Evaluate socio-economic issues, gender and other cross cutting issues such as HIV/AIDS in the fisheries and aquaculture sectors with special reference to fish trade and find ways to empower and protect women in the industry;
- k) Identify NTB to trade at the national level and find ways to minimize them

Priorities from the perspective of key public sector stakeholders were also garnered during a meeting with representatives from the Ministry of Agriculture, including fisheries specialists, veterinary officers, as well as Aquaculture Zimbabwe, a national NGO sponsored by a donor trust fund. Other priorities were identified from key stakeholder meetings in

Harare, the Chivero Dam and Lake Kariba areas. Key priorities identified are as follows:

There is a lack of information on all aspects of the fishery sector including issues concerning training and regional trade. Whilst fish is imported from Mozambique, South Africa, Namibia and Malawi as well as exported to Zambia, South Africa and Botswana, very little is known of the quality, quantity and trade patterns, implications and benefits to the economy. Improving the understanding for decision makers of what is going on in the sector and the development of strategy and policy is therefore a key and fundamental objective. As is the development of fishery management plans. A survey/study/assessment is required to understand the current situation and define a way-forward. An off-the-shelf option for this is the participatory post-harvest overview process involving research centres and key stakeholders from the public and private sector. This would entail capacity building in the methodology and would also lead in to the development of policy and the identification of key interventions. It would also have obvious implications for regional trade.

Although traditionally a meat (beef) eating nation, the consumption (or interest in the consumption) of fish appears to be increasing mainly due to price and health reasons. Local demand for fish appears to be outstripping supply at the moment, and fish is also being exported to neighbouring countries. Options to increase supplies from indigenous capture fisheries appear to be limited with production already suffering from over and illegal fishing. Increased supplies are expected to come from an expansion of aquaculture production, especially integrated systems. Training of extension agents in China and of some potential farmers and other stakeholders in the country has already taken place. Increasing aquaculture's contribution to GDP is seen as a key priority. Developing aquaculture policy and capacity building for financial institutions to help them support the expansion of aquaculture are also key short term priorities.

Public sector departments, whilst containing capable individuals, operate with limited resources including few support staff and are generally ill-equipped to carry out their duties. There is also a high staff turnover especially in research institutes as incentives to remain in post are weak. Those entering vacant posts usually require training. Improved human resource capacity is required.

Enforcement of existing management measures designed to protect resources, the environment, biodiversity and the wellbeing of consumers is weak. Improvements in fisheries management are required to protect existing fisheries. Due to the increased competition for fish and the difficulties in earning a living from what appears to be overexploited capture fishers, efforts are required to create alternative income generating opportunities for those that want to leave the sector voluntarily or as and when permits expire and are not renewed.

Monitoring and surveillance of producers in terms of food safety controls (if they exist) related to domestic trade, imported and exported fish and fishery products is limited. There are no modern fish and fishery products regulations in place. Food safety concerns are linked to the pollution of water bodies such as Lake Chivero and the importation of dried fish from Mozambique (observations in Zambia shows some of these products are treated with insecticides). This poses risks to consumer health and sustainable trade both nationally and regionally. There is no national laboratory capable of analysing fishing fishery products to the required standards. The current situation is an impediment to international trade with the EU and other major world markets, if this was desired. Food safety legislation and controls are required.

Zimbabwe has not benefitted from recent EU/ACP fishery development programs such as the ACP Strengthening Fishery Products and the current Fish II program. FAO undertook the last major donor funded programme which ended in 2004 and focussed on aquaculture. Zimbabwe appears not to have the same levels of skills and knowledge and institutional capability compared to other countries in the region, particularly those associated with the Lake Victoria fishery. Improving SPS controls through the development of modern legislation as well as the capacity to implement these and at the same time supporting producers from fishermen to retailers to meet the required standards is a key priority. There would appear to be scope to also raise awareness amongst consumers about key issues as a way of trying to stimulate improved handling and hygiene practices in the chain. Capacity building would also entail providing operators with access to services and improved infrastructure (landing sites, water supplies, ice) and equipment (insulated fish boxes) in order to implement improved practices.

Audit of existing skills and knowledge related to quality & hygiene

There has been little attention given to food safety, handling, quality and hygiene issues in the sector over the last 10 years and no evidence of systematic training was noted. Although some contact has been made by the University and Parks and Wildlife with INFOSA.

A cursory audit of knowledge of tilapia fishermen showed that they generally are not aware of the basic causes of fish spoilage. Some infrastructure has been built and toilets are in some fishing camps and other equipment for infrastructure includes sheds and tables for marketing. Ice and domestic type insulated boxes are used on Lake Kariba.

Lake Kariba is the most important capture fishery. The inshore fishery for tilapia and Tigerfish is relatively undeveloped and has had little support for handling, processing and marketing. The fresh fish trade seems to be important and vulnerable. Increased availability of ice may come on stream from Lake Harvest's intended 30 tonne per day plant, depending on what excess supply may be available.

Tilapia fishery Lake Kariba

"Tilapia is collected by traders using ice and insulated boxes from fishing camps situated along the lake shore. The fish is brought to nearby urban centres such as Nyamhunga and frozen by local traders using domestic chest freezers before being bought by traders from Harare, Bulawayo and Mutare. Some fish is also sold on ice, fresh. The latter is preferred by the Zambian market, although export permits for fish trade to Zambia are restricted to Lake Harvest only. At the moment traders buy fresh tilapia for \$1.20 per kilogram at the fishing camps. And sell to visiting traders for between \$1.6 and \$2 dollars a kilo. Ice is expensive and because of the prevailing high ambient temperatures and lack of proper insulated boxes, melts quickly. In 2008 a cholera outbreak led to some improvements in hygiene and sanitation practices in fishing camps. For example "water guard" is now used to purify drinking water. Large scale traders blast freezer large quantities of fresh fish and use the freezers to produce ice. Domestic demand for fish is said to be strong and the market would appear to be under supplied. Interestingly at the time of the visit, the price of wild caught tilapia in Zimbabwe was lower than that of farmed fish from Lake Harvest."

Meanwhile the Kapenta fishery is relatively well organised, has over capacity and has few losses.

Lake KaribaKapenta

"Kapenta processing starts soon after capture on the "rig" when the fresh fish is salted using a ratio of 1 kg of salt to 50 kg of fish. After landing and weighing the fish are dried on racks covered with "shade" matting. In good conditions drying takes approximately 5 hours for small fish or 10 hours for larger fish. 500 kg of fresh fish will yield 200 kg of dry. The process is very efficient there appeared to be minimum losses. The dried product sells for \$4 to \$5 per kilogram wholesale. Again packed in 30 kg sacks and delivered to Harare. Catches are higher during the rainy season but drying during this time is more problematic. Plastic sheets used to cover the fish on the racks during periods of rain. Even so it was said that losses are minimal. Unfortunately, the Kapenta fishery is blighted by overfishing as well as illegal fishing in breeding areas. In the past the fishery is said to have yielded up 100,000 tonnes of fish per year now the catch is thought to be down to 10,000 tonnes per year. "

Lake Victoria stakeholders involved in the Daga fishery may benefit from understanding better handling practices, fisheries management and harvesting issues related to Kapenta.

Training method/approach proposed

A capacity building initiative could focus on the private sector/small-scale fishery operators to encourage the introduction of better practices through a training of trainers approach. Potential trainers include permit holders, fishing camp village committee members, key traders who buy and freeze fish, port health authority staff, aquaculture investors/farmers

and extension agents who have been trained in extension skills and who could provide a facilitating role in training delivery. The focus would be on Lake Kariba from which it is estimated 90% of the countries fish is produced and the associated value-chain, and the aquaculture sector.

As Kariba is shared with Zambia consideration would be given to carrying out a joint capacity building activity involving representatives from both countries. Zambia is also seen as a growing market and one of the most important for fish in the region. There would also appear to be an opportunity to liaise with INFOSA in terms of harmonization of efforts and perhaps in terms of delivery as well as introduce aspects of the training of trainers approach and materials piloted on Lake Victoria by Fish II.

Learning objectives of beneficiaries

Capacity building would focus on key technical post-harvest issues related to the prevailing COMESA/SADC standards which are based on Codex and EAC standards and the needs of fishers, processors and traders covering issues such as:

- understanding the causes of fish spoilage;
- assessing fish quality;
- maintaining fish quality;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site;
- use of crates/boxes of fish handling;
- use of ice and insulated boxes;
- freezing;
- personal hygiene;
- proper waste disposal;
- use of potable water
- value-addition

Influences on uptake of training

Assuming capacity building is carried out, several issues (there may be more) were identified which could influence the uptake and application of new knowledge and skills:

- Fishery operators generally lack access to credit or funding to help them invest in new ideas/better practices. Therefore improved access to finance needs to be considered;
- One of the difficulties of training fishermen and cooperative members is that there is a chance that they will exit the fishery once their permit expires, hence the knowledge and skills would also leave the sector. Selection of the right people to be trained is seen as key;
- There needs to be more awareness of fisheries and aquaculture and the management of natural resources amongst various stakeholders. Training must therefore be accompanied by wider awareness raising activities targeting other stakeholders including consumers;
- Lack of proper landing facilities and services, equipment will constrain the implementation of better and hygienic practices. Investment is required by government in better infrastructure at key locations where fish are landed and handled and marketed;
- Lack of food safety legislation and bylaws at all levels will hamper the introduction of better practices. There is a need for such legislation to be developed as quickly as possible

Non-training solutions to capacity building

As well as training workshops, other initiatives to consider to improve knowledge and skills of fishery operators include:

- Awareness raising on topics covered in the training during community meetings;
- Production of posters to depict key messages using pictures and images and local language that can be displayed in

- key locations. More permanent messages could be presented using murals painted on walls and on fishing canoes;
- Use of radios for communicating key messages to fisheries stakeholders. Many people in fishing communities listen to radio.
- Drama to entertain and educate whether it be live in the community or films and then shown via DVD;
- Production of songs and music giving key messages;
- It may be difficult to bring people together for training at the community level, especially if there are no incentives. Instead messages could be delivered using a PA system.

Conclusions

Very little current information is available on the sector's current status. This is recognised as a major impediment to development, and requires urgent attention if informed decisions are to be made, policy is to be developed and modern legislation is introduced. A survey or study is required to understand the current situation and define a way-forward. One option is to conduct a participatory post-harvest overview (PHO) used in other countries (e.g. India, Indonesia, Ghana, Cambodia) which have faced similar situations. This process would involve research centres and key stakeholders from the public and private sectors. And would entail capacity building in the PHO methodology and would inform policy and the identification of key interventions and the clarification of knowledge gaps which would form the basis for future research.

Weak management of capture fisheries, means it would not be prudent to encourage new investment of any sort into this sector, rather try to put in place more effective management of the existing systems as a priority. Any growth in production in the future to meet the strong local and regional demand for fish should be focussed on aquaculture, whilst better management of natural fisheries is being dealt with, including research on resource potential and the development of inclusive fishery management plans for key water bodies such as Lake Kariba.

Very little development activity appears to be taking place, except that undertaken un-monitored by the private sector themselves. Public sector departments responsible for planning and management, whilst containing capable individuals, operate with limited resources including few support staff and are generally ill-equipped to carry out their duties. As a consequence enforcement of existing management measures designed to protect resources, the environment, biodiversity and the well being of consumers is weak.

The current situation is an impediment to international trade with the EU and other major world markets, if this was desired at some stage. Zimbabwe was not included in recent key EU/ACP food safety orientated fishery development programs in Africa. Consequently it lags behind in terms of skills and knowledge and institutional capability, compared to that of some other countries, particularly those associated with the Lake Victoria fishery. Improving SPS controls through the development of modern legislation as well as the capacity to implement these at all levels, including support for producers to meet the required national, regional and international standards is a key priority. Such capacity building would also entail providing operators with access to services and improved infrastructure (landing sites, water supplies, ice) and equipment (insulated fish boxes) in order to implement improved practices. In line with this there is a need for greater awareness amongst consumers regarding key issues as a way to stimulate improved handling and hygiene practices in the chain.

There was no evidence of recent capacity building related to hygiene, sanitation and fish handling. It is suggested that training focussed on support to the private sector/small-scale fishery operators to encourage the introduction of better practices leading to improved prices and income using a pictorial training of trainers approach could be undertaken. Greater awareness of basic issues related to fish spoilage, quality, hygiene and sanitation can often lead to better practices, even in the absence of extension support, food safety legislation and controls. Training would equip trainers to undertake their own training at the local level and ideally lead to the development of pilot scale examples of improved practice in key locations that would then be used to disseminate ideas and raise awareness amongst others in the sector. Pictorial training material would be available for further training and the creation of posters and other visual message giving tools. It would be prudent to concentrate efforts on Lake Kariba from which it is estimated 90% of the

countries fish is produced and also the aquaculture sector, where fresh fish handling is also important. As Kariba is shared with Zambia consideration would be given to carrying out a joint capacity building initiative involving representatives from both countries. Potential trainers would include fishing permit holders, fishing camp village committee members, key traders, port health authority staff, aquaculture investors and extension agents that would provide a facilitating role in training delivery. There would also appear to be an opportunity to liaise with INFOSA in terms of harmonization of efforts and perhaps in terms of delivery as well as introduce aspects of the training of trainers approach and materials piloted by recent EU/ACP initiatives in Africa.

A carefully managed exchange visit for stakeholders from the Lake Victoria and Tanganyika fisheries related to kapenta fishing, processing and management could also be considered as means of developing capacity and exchanging ideas.

MALAWI

A visit was made to Malawi by the SmartFish Trade and Business Development Training Specialist from September 24 to 29th. The aim was to better understand training needs related to opportunities for handling, hygiene and sanitation training related to improving regional trade and standards. In conjunction with counterparts from the Department of Fisheries, key stakeholder meetings were held in Lilongwe, Blantyre and at locations on Lake Chilwa and Malawi.

Priorities of key stakeholders for sector

A number of priorities were identified during the mission as a result of discussions with a variety of stakeholders. These were:

- Ensure the revised fisheries policy adequately captures handling and quality issues (Govt.)
- Small-scale fishermen processors and traders raise their standards of handling, hygiene and processing with a view to them being able to access the international market (Govt.)
- Access for fishery products to the international market e.g. EU including creation of a competent authority (Govt.)
- Maximise the benefits from fisheries and increase the contribution of the sector to the national economy e.g. forex generation (Govt.)
- Finalise development of fish quality and hygiene standards (Govt.)
- Laboratory to enable certification of exports to EU (Govt.)
- Facilities for small-scale operators (Govt.)
- Proper monitoring of imports of fish at border points (Govt.)
- Investment in aquaculture sector (Govt.)
- Increase production to enable exports of fish and processing (Govt.)

Malawi exported more fish up until the late 1990s, now there is a shortage of fish and no exports are recorded at the moment. Domestic demand for fish remains strong yet catches are declining and the number of stakeholders involved in fishery activities is increasing. The use of illegal gears is common. A key priority is improved fisheries management.

Due to the increased competition for fish and the difficulties in earning a living from what appears to be overexploited fishery resources, efforts are required to create alternative income generating opportunities for those that want to leave the sector voluntarily and as a means of attracting out those who are engaged in illegal activities.

Audit of existing skills and knowledge related to quality & hygiene

Some training had been conducted for small-scale operators in the past on quality and handling issues. ICEIDA had carried out work on improved technology and the local WorldFishCentre office is undertaking research and development into the use of solar driers. Through the Malawi College of Fisheries, CIDA recently undertook a loss reduction project that entailed the development of pictorial training material, the training of extension staff and communities in two locations. Anecdotal evidence suggest this led to improvements at community level in terms of handling and processing practices. The EU Tradecom project also developed a pictorial do's and don'ts hygiene and sanitation manual for fishermen as a step towards improving practices and accessing the international market.

Nevertheless, the majority of stakeholders appear not to have benefitted from capacity building. From a group of about 50 fishermen and processors met at one of the more accessible and developed landing sites on Lake Malawi, only three people admitted to having been involved in any previous training initiative. This training had focussed on business development skills, as part of a micro-finance initiative, the identification of fish species and research techniques to collect information on fish landings and prices. Some of the BVC committee involved in the meeting were trained six years ago in fishery management and other topics. There had been no post-harvest training at this location.

Landing sites visited had poor sanitary conditions, fish was placed directly on the ground/sand and generally handled poorly. Although ice is used by some traders, it is not handled or used properly. Some landing sites have been developed with agency support e.g. the ADB, which had recently ended project.

Observations at a retail market showed that fish is handled poorly, with substandard icing practice, and in poor hygienic and sanitary conditions. Working conditions are harsh also with traders exposed to the sun/elements. Fresh fish traders spoke with were unaware of the underlying causes of fish spoilage and quality deterioration, but appeared receptive to learning about such issues.

At a landing site a group of fishermen and processors were asked whether there was anything that they would like to learn about. The following is a list of issues:

- safety at sea
- developing a business plan
- fish handling and processing to increase profits
- value addition
- offshore fishing and the use of echo sounder
- use of fishing gears
- how to reduce the use of illegal fishing gears.

Maldeco fisheries (larger scale catching, aquaculture, processing, trading business) were visited and identified several capacity building requirements. The company needs include:

- staff trained in refrigeration engineering.
- ice production
- adequate vessels that facilitate on-board handling
- captains and crew training in GHP
- factory staff with hygiene, handling and sanitation skills
- cold storage
- proper equipped vehicles for fish distribution
- new locations for their shops in urban centres.

The company employs casual workers on a daily basis and so those working in the factory can vary depending on who is available. This poses a problem in terms of capacity building. The company is also affected by declining catches.

The Commonwealth Secretariat are about to implement a project to support the development of quality standards. The objective of the project is to improve the quality and safety of fishery products by:

- Improved handling of fish by fishermen (capture fisheries) leading to a reduction in both quality and physical losses.
- Improved awareness of the real constraints to adoption of any new quality and safety standards by fishermen and small-scale enterprise, including lack of market related imperatives;
- More strategic interventions by DoF to address fish quality and food safety issues that are consistent with its mandate and existing capacities, taking into account the comparative advantage of other relevant institutions, including District Assemblies, to support efforts in this direction.
- Improved cooperation amongst key stakeholders in the fish supply/value chain with respect to addressing existing and future challenges to the quality and safety of fishery products from aquaculture.
- Supportive policies that promote a business environment where market forces and competition drive improvements in the quality and safety of fishery products.

Three outputs are envisaged:

a) Staff of relevant local institutions trained in techniques designed to improve the quality of fishery products. This will include strengthening the capacity of Malawi College of Fisheries (MCF) and Malawi Bureau of Standards (MBS) or

other relevant institutions. The capacity of MCF to undertake certain official controls (e.g. Competent Authority) with respect to improving the safety of fishery products placed on markets will also be assessed and clear recommendations made.

Key deliverables will be:

- Training workshop for selected MCF Staff (or other relevant institutions) on fish handling conducted
- MBS training courses reviewed for relevance to small-scale fisheries enterprise
- Inspection and auditing capabilities of MBS in fisheries assessed
- MCF curriculum reviewed, with recommendations on fish handling and processing
- Assessment of the MCF to serve as Competent Authority for export of fishery products to the EU completed.

b) DoF staff trained in a participatory process of fish quality standards development for small-scale enterprise. In consultation with the Malawi Bureau of Standards (MBS) and Department of Fisheries (DoF), the project will provide relevant guidance to fish quality standards based on best practice applied elsewhere. At least one major workshop on the potential food safety challenges facing the aquaculture sub-sector is envisaged.

Key deliverables will be:

- DoF priority areas of intervention relevant to fish quality and food safety articulated.
- A practical manual/set of guidelines to facilitate the development of fish quality standards for small scale-enterprise developed.
- National workshop on food safety hazards in fisheries and aquaculture conducted. Extension materials in form of posters, etc. produced.

c) Fish quality and safety requirements in a number of COMESA (or SADC) countries elaborated for the benefit of DoF. This will be achieved by undertaking a desk study of the fish quality and safety requirements of imports as applied in at least three (3) COMESA member states.

Key deliverable will be:

- Paper to DoF on fish quality and related food safety requirements in other COMESA countries developed

Underlined are aspects of the work which SmartFish could contribute to or compliment.

Value-addition of dried fish would appear to have potential. Improving handling and processing practices and package, label high quality small pelagic fish for supermarkets is worth exploring on a small-scale. Trap caught fish tend to have a better initial quality and consideration should be given to focussing on such fish as a marketing ploy. What is most likely to be needed in such an initiative is someone who can facilitate the marketing and management of the business.

Introducing salting before drying as a value-added technique, as well as a way to reduce rainy season losses, should be explored. Although some market development is likely to be needed here to convince consumers about such a product. This is often part and parcel of the marketing new products anyway.

Training method/approach proposed

Capacity building would focus on a training of trainers approach to developing skills, knowledge and ultimately improving practices at key points along a designated (model) value-chain. This would ideally be preceded by a value-chain analyses to provide benchmark data for monitoring the impact of training. From observations, the Lake Malawi to Blantyre fresh fish chain could be chosen. Efforts should be made to build on the CIDA, Tradecom and ADB initiatives. Capacity building would ideally entail access to or the provision of basic equipment, services and facilities. Such an approach would aim to help stakeholders demonstrate or implement better practice and would be used for awareness raising/dissemination.

Malawi College of Fisheries have a training mandate and a Community Outreach Unit, there is also a fish quality unit earmarked for location at the college. Some staff were involved in CIDA project. It would make sense to capitalise on this expertise in any future capacity building. As it would involve fisheries extension assistants, many of who are located at landing sites.

There is potential for well managed exchange visits. For example, to Zimbabwe or Zambia to learn about small-pelagic value-addition. And to the Lake Victoria region to learn about accessing the international market.

Learning objectives of beneficiaries

Key technical post-harvest issues would relate to the prevailing COMESA/SADC standards and the needs of fishers, processors and traders covering issues such as:

- understanding the causes of fish spoilage;
- assessing fish quality;
- maintaining fish quality and reducing losses;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site
- use of crates/boxes of fish handling;
- use of ice and insulated boxes;
- personal hygiene;
- proper waste disposal;
- use of potable water
- value-addition

Influences on uptake of training

Previous development efforts in the sector are said to have focussed on training and developing human capacity. Previous training initiatives have failed to take hold as facilities and equipment have not been available to facilitate the application of new knowledge and skills. However, the ADB infrastructure development project was an opportunity to address this issue, but this seems to have been an opportunity that has so far not lived up to expectations. The ADB undertook a project to develop centralised fish landing sites however not all of these have been finished and the project has ended. Those facilities completed have not been handed over to those who are to manage them e.g. communities.

The World Bank and ICEIDA have developed some landing sites by providing landing slabs, drying racks and improved smoking kilns. Drying racks are used at some landing sites for drying small pelagic fish.

Ice is used during the distribution of fish after landing and at retailing. However, generally, access to ice seems to be poor and equipment to use ice effectively, such as proper insulated boxes, lacking. Simple ice stores may help address the availability of ice at landing sites. Ice provision was part of the ADB project, but it appears that the proposed objectives have yet to be met.

The Malawi Bureau of Standards (MBS) have developed several fishery products standards: fresh, frozen, salted, smoked and canned and have a food hygiene standard. There is a desire to develop a separate fish quality hygiene standard also. The MBS have not rolled these out to the small-scale sector yet. However, there is scope and interest from the MBS to see how these standards could be translated for the benefit of small-scale operators. MBS have a team of inspectors who could monitor the implementation of standards, given the required resources. There is already some inspection of imports at border crossings.

Small-scale operators do not have access to credit and investment funding to help expand businesses and apply any new skills and knowledge they may have acquired. At least two microfinance initiatives have been tried with fisheries stakeholders, but nothing has been sustainable. FINCA have been involved in providing micro-finance. However their

scheme has not been too successful as those borrowing had found it too demanding in terms of paying back. SEDOM tried a similar type of scheme.

Acute shortages of foreign exchange are likely to hamper the importation of equipment and materials required to assist implementation of improved practices.

Incentives to change will also assist the uptake of better practices. Accessing new and perhaps higher value markets is an example. Providing information on regional markets and market development support would support capacity building.

The beach village committee (BVC) approach to fisheries management was introduced on Lake Malomba to improve resource management. A BVC is the sub-committee of the Village Development Committee (VDC), a local governance organ. BVCs are composed of representatives from the fishing community including fishermen, gear owners, processors and other business people. Representatives from BVCs make up the fishery associations. An Association represents a particular area or district and is composed of 11 executive committee members. One of the main activities of the associations is to deal with issues which cannot be resolved at community level such as major conflicts. Some BVCs appear to be unable to carry out their management role e.g. have limited means of controlling illegal fishing and are faced with other issues which counteract their intentions. In terms of improving handling, hygiene and sanitation, it is envisaged that BVCs would have a role in introducing and implementing supportive by-laws. Weaknesses in their capabilities in this area would influence the achievement of better standards promoted in capacity building. In terms of landing sites it may be prudent to focus on those where the BVC is relatively strong and organised.

Previous initiatives have tended to focus on a few chosen, easily accessible communities which have created an element of support fatigue as well as an allowance culture. It is felt that future capacity building may have more impact if it is targeted at new, more inaccessible communities that be more willing to engage. On the other hand, building on previous initiatives may also yield results if carefully managed.

Key to effective capacity building will be ensuring that the right people are trained and based on experiences elsewhere, these people should be local trainers who can act as resources persons in key locations. Such trainers would be orientated/coached in how to deliver short training activities at community level. They should also have access to sufficient resource materials, which has been a constraint in the past.

Non-training solutions to capacity building

Non-training initiatives to improve knowledge and skills of fishery operators would include:

- Awareness raising on topics covered in the training during community meetings;
- Production of posters to depict key messages using pictures and images and local language that can be displayed in key locations. More permanent messages could be presented using murals painted on walls and on fishing canoes;
- Use of radios for communicating key messages to fisheries stakeholders. Many people in fishing communities listen to radio.
- Drama to entertain and educate whether it be live in the community or films and then shown via DVD;
- Production of songs and music to give key messages;
- It may be difficult to bring people together for training at the community level, especially if there are no incentives. Instead messages could be delivered using a PA system.

Conclusions

Overexploitation of natural fisheries means improvement is required in fisheries management practices and development of the aquaculture sector, if supply is to meet domestic and future export demand.

Some training has been conducted for small-scale operators in the past on quality and handling issues by ICEIDA, WorldFish Centre, by Malawi College of Fisheries, with CIDA support and the EU Tradecom project. This capacity building has only reached a minority of stakeholders.

Capacity building should aim to implement existing MBS and COMESA (codex) standards. Raising awareness of market opportunities in the region or domestic market would also help facilitate uptake of better practices and value-addition. Packaging and labelling of small-pelagics may provide value-added opportunities.

Capacity building would focus on key points along a designated value-chain in order to create a model chain(s) was discussed and agreed as good overall approach. This could be preceded by a value-chain analyses to provide benchmark data for monitoring the impact of capacity building.

A number of technical issues have been identified from the mission that would be the focus of capacity building. These include reducing spoilage and rainy season losses, handling on-board and on-shore, value-addition and the use of ice. Strengthening handling and hygiene practices will help work towards accessing the international market e.g. the EU as well as benefit producers through increased prices, better market access and better working environments. Better food safety would also benefit consumers.

Capacity building would follow-on naturally from the recent CIDA initiative and complement aspects of the Commonwealth Secretariat initiative. SmartFish may have a comparative advantage in terms of training of trainers, as it brings recent experience of this from previous SFP and Fish II initiatives. Pooling resources to develop pictorial training materials including posters should be considered. Developing a Handling for Aquaculture guide to fish handling hygiene and quality as a standalone output with a regional focus should be considered.

The uptake of capacity building will be influenced by access to equipment such as insulated boxes, drying racks, services such as water and ice and facilities such as landing site infrastructure. Access to credit for working capital or investment in new technology is also important. Many locations lack these, but it would increase the effectiveness of training if these were available to beneficiaries. Concentrating efforts on locations where as many of these as possible are already available should be considered e.g. at the most complete ADB landing sites. BVC's also have a role to play and working with the more organised or effective BVCs is also worth considering if better practices are to be sustained and training is to continue at community level.

Delivery of training of trainers capacity building should build on the experience of the Malawi College of Fisheries and their Outreach Unit, MBS and the interest from Maldeco Fisheries. Trainers trained should be carefully chosen representatives of communities as well as extension staff and fish farmers. Such trainers would be orientated/coached in how to deliver short training activities at community level. They should also have access to sufficient resource materials, which has been a constraint in the past.

There is also potential for well managed exchange visits for key stakeholders. For example, to Zimbabwe or Zambia to learn more about small-pelagic value-addition. And to Lake Victoria for Maldeco, MCF and DoF to learn more about accessing the international market.

ZAMBIA

A visit was made to Zambia by the SmartFish Trade and Business Development Training Specialist from September 29 to October 5th. The aim was to better understand training needs related to opportunities for handling, hygiene and sanitation capacity building related to improving regional trade and standards. The visit came just after the 2011 general presidential election and political changes were still in progress. As well as meeting key stakeholders in Lusaka, field visits were made to the Kafue River and Lake Kariba in conjunction with staff from the Department of Fisheries.

Priorities of key stakeholders for sector

A number of priorities were identified during the mission as a result of discussions with a variety of stakeholders. These were:

- increase annual fish production to 300,000 tonnes by 2030 from current production of 90,000 tonnes - expansion in production to come from aquaculture (DoF)
- to be able to develop a sustainable export sector (DoF)
- develop landing sites and improve the cold chain (DoF)
- equipment for enforcing and monitoring fisheries management measures (DoF)
- increased manpower for enforcement, extension and training activities (DoF)
- re-instatement of data collection systems (DoF)
- lower fuel and electricity costs (private sector)
- market infrastructure (private sector)
- access to loans for boats and nets (fishermen)
- prevention of illegal fishing practices (communities, government)
- prevention of undersize fish being sold (traders at Mobil market, Lusaka)

Due to the increased competition for fish and the difficulties in earning a living from what appears to be an overexploited resource, efforts are required to create alternative income generating opportunities for those that want to leave the sector voluntarily and as a means of attracting out those who are engaged in illegal activities.

Audit of existing skills and knowledge related to quality & hygiene

Zambia is a large country with several major fisheries spread throughout the country as well as having some limited aquaculture production, imports of fish and some exports into DRC. There is also an established market for frozen fish.

There is a general lack of understanding of the current situation in the fishery sector and data collection has ceased making planning and decision making difficult. Competition for fish is high. There has been an increase in the number of fishers and also the use of illegal fishing methods. Individual catches are now small and landings are dispersed rather than concentrated in key centralised locations, complicating the targeting of capacity building. The supply of fish is a key constraint to development, improved food security and expansion of trade. Whilst some fishermen are coping by improving the catching efficiency of their fishing gear, long term improvements in fisheries management must come from ensuring a more sustainable harvest from the natural fisheries, inevitably leading to a reduction in fishing effort and an exit of fishers from the sector compounding unemployment issues. Increased production from aquaculture has the potential to increase fish supply and create employment and income opportunities, providing investment can be encouraged and access to good quality affordable feed can be guaranteed. There is interest from various stakeholders in developing aquaculture production. These include Lake Harvest, an intensive tilapia cage culture producer from neighbouring Zimbabwe, from Capital Fisheries and large fish trading and importing business and from Jordaan's fishing and trading company in Saivonga on the shores of Lake Kariba. Aquaculture stakeholders may be receptive to post-harvest capacity building.

There have been few previous interventions in the fishery sector that have provided lasting support in terms of capacity building in quality, handling, hygiene and sanitation. A cursory examination of the understanding of key technical issues revealed that generally stakeholders lack a fundamental understanding of fish quality, handling and hygiene issues. The benefits of ice are realised, but ice is not always readily available and is not used well. As a consequence the storage life of fresh fish is less than optimum and fishermen and traders are often price takers as a consequence. The long distances fresh fish is transported from islands on Lake Kariba and using the road system also has an effect on quality and is leading to losses. In floodplain areas where fish is smoked, fuel for smoking and preservation is difficult to come by and losses are said to be high. Frozen fish has a ready market and there are opportunities to improve freezing practice. Frozen kapenta is kept in cold storage for long periods by those who can afford too, and then sold when prices are high. Smoked and dried fish is more easily marketed or can be kept in anticipation of achieving the right price. Value-added frozen and dried products are already visible in urban supermarkets. Although, the domestic market is said to be limited for these at the moment.

Mobil Market Lusaka

“Mobil market is the main fresh fish wholesale market in Lusaka. It receives fish from all over the country as well as from Lake Harvest fish farm in Zimbabwe. It has no market infrastructure facilities and suffers from very serious hygiene and sanitation problems. Refuse is strewn around, there is no cleaning. Fish is brought to the market in old refrigerators, which are very difficult to clean. Whilst previously controlled by a political party, market is now back under the control of Lusaka city council. Key constraints mentioned by traders at the market include the lack of ice at fishing camps. They also complained about an increase in illegal fishing causing a reduction in fish catches. There is also a general lack of ice at the market most of the time. There is an opportunity to lobby donors and other interested providers to help develop a proper market at the site. The council have plans to clear the area and build a proper market. Although the timeline for this to happen is unclear. Some traders are selling undersized fish in the market. They would like the Department of Fisheries to enable the traders Association to arrest those that are selling illegally caught undersized fish. The site has some toilets, but they do not work. In the rainy season conditions are extremely bad.”

High electricity and fuel costs are limiting business expansion and profits. Regional trade is hampered by complicated and expensive export licence procedures as well as the lack of domestic fish supply. Zambia appears to be a major importer of fish due to strong domestic demand. The profitability of small producer's and trader's activities are in some cases negatively affected by imports of cheap frozen fish from China. Imports of farmed tilapia are also coming from Zimbabwe. Less imported fish from Zimbabwe is sold in some markets now because it is more expensive. Consumers are said to be price sensitive, preferring the cheapest fish available.

Lake Kariba crayfish

The relatively new and little understood Lake Kariba crayfish fishery may provide an opportunity for handling, processing and market development support. Crayfish (*Cherax quadricarinatus*), common names “Australian red claw crayfish, tropical blue claw crayfish” started being caught accidentally by fishermen in their gillnets in 2008. The crayfish were eating fish and causing large losses. They are now found along a 30 km stretch of the lake. With permission from the DoF the crayfish were brought from Swaziland to Zambia for farming. It is thought to have escaped into the Lake Kariba in 2004. One local entrepreneur developed his own improvised traps from washing baskets. And using fish as bait started a small commercial fishery. Catches were initially good and the catch can be stored in baskets in the lake for 2 to 3 weeks. There is now a local market, but the major market is in Lusaka. Consumers are mainly Chinese as well as some embassies like the Swedish, Italian and French. There is also a market in Kitwe. The fishermen interviewed takes 100 to 150 kg of product per trip to Lusaka and using 50 traps he can catch 20 kg product per day with individuals reaching 150g in weight. Crayfish are usually found in 5 to 10 m depths. He initially started selling at around \$80 per kilogram. However now there are more fishermen and competition and the current price is around 10,000 kwacha per kilogram fresh. Market opportunities are thought to exist in South Africa where there is a large Chinese population, although South Africa does not allow imports of fresh live crayfish. Also eastern Europe maybe a potential market. There is also the possibility of freezing the product. Some areas of the lake have now been heavily fished. As well as developing a better understanding of the resource potential and market opportunities, promoting farming of crayfish

may make sense if catches from the wild are dwindling.

There is a limited government extension service. Kasaka Fisheries Training Institute will soon be the only designated fisheries education institution in the country. It provides training in a two-year certificate course. Graduates are to take up employment with the Department of Fisheries (DoF). The Institute is understaffed and of the recent 80 graduates only 10 were able to obtain employment. There is also a lack of training facilities.

Training method/approach proposed

Capacity building could focus on a training of trainers approach to developing the skills and knowledge of a cadre of key individuals (potential trainers) from the main fisheries and stakeholders/businesses. These trainers would be equipped to undertake their own capacity building back in their own environments. Capacity building would work best if those trained had access to basic equipment, services and facilities. There are DoF plans to develop 2 unidentified key landing sites in future, beneficiaries from these locations should be included as trainers. As should representatives from Mobil Market, Capital Fisheries, Jordaan's, Kasaka Fisheries Institute as well as influential traders involved in accumulating fish from fishermen at key locations. Staff of the larger fishing and trading companies such as Capital Fisheries and Jordaan's are more likely to have access to ice and equipment to apply better practices. By involving them in training and the validation of training materials is likely to lead to more use of improved practices and awareness raising amongst beneficiaries in general.

In terms of where to focus training it was suggested that the suppliers who consolidate the fish at the fishing areas and who then freeze it and send it on to market and factories would be important people to concentrate on in terms of developing capacity.

Provision should be made to provide post-training support to some beneficiaries to assist the uptake of better practices. This would lead to evidence based examples of better practice that could be used for later dissemination purposes by DoF and SmartFish. To assist with this a baseline survey should be undertaken and possibly a value-chain analyses.

Learning objectives of beneficiaries

Key technical post-harvest issues would relate to prevailing COMESA/SADC standards and the needs of fishers, processors and traders covering issues such as:

- understanding the causes of fish spoilage;
- assessing fish quality;
- maintaining fish quality and reducing losses;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site;
- transportation of fish;
- use of crates/boxes of fish handling;
- use of ice and insulated boxes;
- freezing and storage of frozen products;
- personal hygiene;
- proper waste disposal;
- use of potable water;
- value-addition;
- crayfish harvesting, processing and marketing

Influences on uptake of training

Infrastructure, equipment and services such as landing sites, proper markets, ice, insulated boxes and water supplies are lacking in key locations and this will limit the ability of beneficiaries to apply new improved practices.

The government's rural electrification programme has the potential to help improve handling and processing activities in remote areas through ice production, freezing and value-added processing.

Non-training solutions to capacity building

Non-training initiatives to improve knowledge and skills of fishery operators knowledge include:

- Awareness raising on topics covered in the training during regular community meetings;
- Production of posters to depict key messages using pictures and images and local language that can be displayed in key locations. More permanent messages could be presented using murals painted on walls and on fishing canoes;
- Use of radios for communicating key messages to fisheries stakeholders. Many people in fishing communities listen to radio.
- Drama to entertain and educate whether it be live in the community or films and then shown via DVD;
- Production of songs and music to give key messages;
- It may be difficult to bring people together for training at the community level, especially if there are no incentives. Instead messages could be delivered using a PA system

Conclusions

Zambia is a large country with several major fisheries as well as aquaculture, imports and some exports into DRC and an established frozen fish trade. Infrastructure, equipment and services such as landing sites, proper markets, ice, insulated boxes and water supplies are lacking in key locations and this will limit the ability of beneficiaries to apply new improved practices. Regional trade is hampered by complicated and expensive export licence procedures as well as the lack of domestic fish supply. Strengthening fisheries management, improving the current understanding of the sector and boosting aquaculture are key government priorities. Provision of basic landing facilities is earmarked as a future developmental priority. At the moment the country remains a net importer of fish rather than exporter, with a strong domestic demand not met by national production.

There have been few previous interventions in the fishery sector that have provided support in terms of capacity building in quality, handling, hygiene and sanitation related to the small-scale sector. Awareness of fundamental issues related to handling and hygiene are poor.

Capacity building could focus on a training of trainers (ToT) approach to developing the skills and knowledge of key individuals from the main fisheries and stakeholders/businesses. Capacity building will work best if beneficiaries have access to basic equipment, services and facilities. Such an approach would aim to help stakeholders demonstrate or implement better practice and would be used for awareness raising/dissemination. There are DoF plans to develop 2 key landing sites in future, beneficiaries from these locations should be included in capacity building as well as representatives from Kaskaka fisheries Training Institute, Capital Fisheries and Jordans, aquaculture businesses and the Lake Kariba crayfish fishery. Holding a national level ToT workshop that brought key stakeholders together from various fisheries and key locations (Mobil market) would be an option. Provision would be made to provide post-training support to enhance the uptake of better practices. Training would focus on:

- understanding the causes of fish spoilage;
- assessing fish quality;
- maintaining fish quality and reducing losses;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site
- use of crates/boxes of fish handling;
- use of ice and insulated boxes;
- freezing and storage of frozen products;
- personal hygiene;
- proper waste disposal;
- use of potable water

- value-addition
- crayfish harvesting and marketing.

Due to the increased competition for fish and the difficulties in earning a living from what appears to be an overexploited resource, efforts are required to create alternative income generating opportunities for those that want to leave the sector voluntarily and as a means of attracting out those who are engaged in illegal activities.

PROPOSED TRAINING ACTION PLAN

This section of the report outlines guiding principles based on lessons learnt from previous capacity building activities in target countries followed by suggested capacity building activities.

Guiding principles for capacity building

Derived from lessons learned from previous capacity building initiatives, the following are a number of guiding principles that should be considered when planning or implementing capacity building initiatives:

Preparation for training

- Trainers/trainees should be selected according to specific criteria and choice should reflect location such as important landing centers, markets and border points;
- Consider a value-chain approach to identification of training locations and beneficiaries;
- Ensure key stakeholders such as local authorities are aware of the training beforehand;
- Mechanisms to enable the sustainability of capacity building should be encouraged through involvement of government and/or NGOs in providing on-going support;
- Training materials are prepared in the appropriate language;
- Copies of training materials made available in soft and hard copy;
- Including preliminary awareness raising of capacity building at local level;
- Focus capacity building on critical issues in the value chain;
- Send out invitations in time and specify the target group of the trainees to avoid scenarios of monopoly of one trainee in the same training and worse still attendance of completely a non-targeted trainee.
- Try to assess the level of knowledge and skills of trainees beforehand and prepare the training accordingly;

Delivery of training

- Involve local focal points/counterparts and SPS stakeholders in the delivery of training to enhance their abilities to provide post-training support;
- Training of trainers should provide training skills and experience/confidence building, technical knowledge in basic fish spoilage, quality, food safety as well as particular distribution stages and products;
- Training of trainers should equip potential trainers with basic facilitation skills, a good technical understanding of fish hygiene, sanitation and handling, pictorial materials to carry out their own training and other materials (flip charts, felt pens etc.) to help facilitate local level training;
- Well organised and managed site visits can be effective capacity building activities;
- Deliver training in the most appropriate language;
- Community trainers should develop action plans as part of training of trainers capacity building to assist implement follow-on training activities;
- Develop posters or appropriate visual training and dissemination materials for use at community level;
- Responsibility for implementing training action plans agreed beforehand along with roles and responsibilities;
- Training should be participatory, use different training/learning techniques, be hands-on/practical and use pictorial, posters, simplified handouts;
- Training materials were user friendly and handouts were given to the participants;
- Training programme and materials developed early enough and agreed by all the facilitators;
- Conduct quality assurance of training materials before delivery of training to ensure suitability, applicability and authenticity to the target group

Aftertraining

- Provision of training equipment maybe required to help delivery of capacity building...training equipment to include training materials as well as technical equipment;
- Community level training delivered via existing/regular meetings;
- Expectation of allowances for training at community level;
- Keep community level training sessions short e.g. 1.5 to 2 hours maximum;
- Consider calling community level training something else rather than training;
- Mainstream support for community level trainers into government and other programme work plans e.g. LVEMP trust fund , community management by-laws/operating procedures
- Community trainers may be more effective if they work in teams;
- Post-training of community trainers should include support to help uptake of better practices by small-scale fisheries operators to demonstrate on-the-ground examples that can be used for dissemination purposes;
- Development of new bylaws to support uptake of better practices;
- Incentives to take up better practices;
- Logistics made available to help undertake community level training;
- Improved processing and value-addition may require marketing support;
- Community trainers should be seen as extension workers and given recognition by government and local authorities and management groups;
- Government support should be given to community level training e.g. fishery officers help organize and/or participate in training;
- Training undertaken at the most appropriate time;
- Location for training should be convenient and conducive to delivery process/learning and enable trainees to concentrate and avoid absenteeism;
- Cost sharing to be considered if new technology or equipment is required to introduce better practices;
- Capacity building should include discussion of constraints to uptake of better practices and solutions to these;
- Trainees issued with certificates of training attendance;
- Consider the appropriate gender balance when selecting trainees;
- Ensure funding and resources are available on time and when required for implementation of training and post-training activities;
- Ensure adequate copies of training and dissemination materials are available for post-training activities;
- Undertake follow-up of training to evaluate uptake;
- Conduct assessment evaluation / of the trainers before end of training sessions;
- Provide appropriate resources for trainees/participants according to expectations and in accordance with normal practice and the duration of the training;

Capacity building activities

Based on the understanding generated from previous capacity building initiatives and the situation observed in the target countries from the visits made, a number of proposed capacity building or training activities have been identified and are summarised by country in Table 5 along with country priorities and related SmartFish objectives.

Table 5 Proposed capacity building activities

Country	Kenya	Malawi	Tanzania	Uganda	Zambia	Zimbabwe
<p>Nation/ regional Priorities</p>	<p>BMUs know why and how to handle fish properly; National hygiene and sanitation standards met at landing sites; Improve the Hygiene, sanitation, handling of Rastreonobolaargentea; Post harvest fish losses reduced;</p>	<p>Small-scale fishermen processors and traders raise their standards of handling, hygiene and processing with a view to them being able to access the international market; Access for fishery products to the international market e.g. EU including creation of a competent authority;</p> <p>Maximise the benefits from fisheries and increase the contribution of the sector to the national economy e.g. forex generation;</p>	<p>BMUs know why and how to handle fish properly; National hygiene and sanitation standards met at landing sites; Improve the Hygiene, sanitation, handling of Rastreonobolaargentea; Post harvest fish losses reduced;</p>	<p>BMUs know why and how to handle fish properly; National hygiene and sanitation standards met at landing sites; Improve the Hygiene, sanitation, handling of Rastreonobolaargentea; Post harvest fish losses reduced;</p>	<p>Develop a sustainable export sector; Develop landing sites and improve the cold chain;</p>	<p>To improve market-led development, including capacity building, efficient supply chains, product integrity, market access and branding To develop and implement a best practice management and regulation framework in accordance with the laws of Zimbabwe To become one of Southern Africa's leading producers and exporters of freshwater fish data collection exercise on the actual status of the fisheries and aquaculture industry and also a value-chain analysis; Value addition of fish products through filleting, packaging etc. ; Improve Monitoring, Inspection and Surveillance through better training of resource persons and</p>

Country	Kenya	Malawi	Tanzania	Uganda	Zambia	Zimbabwe
Capacity building initiative(s)	Development of mechanism to introduce sustained support for community trainers e.g. Govt. or LVEMP trust fund, BMU organization/by-laws. Support to demonstrate better practices linked to EAC/ Codex standards in ACP Fish II trainer communities through provision of equipment.	To support to develop a model value-chain building on CIDA initiative and in close collaboration with Commonwealth Secretariat; Support for improved handling for aquaculture and associated materials;	Development of mechanism to introduce sustained support for community trainers e.g. Govt. or LVEMP trust fund, BMU organization/by-laws. Support to demonstrate better practices linked to EAC/ Codex standards in ACP Fish II trainer communities through provision of equipment.	Development of mechanism to introduce sustained support for community trainers e.g. Govt. or LVEMP trust fund, BMU organization/by-laws. Support to demonstrate better practices linked to EAC/ Codex standards in ACP Fish II trainer communities through provision of equipment.	To T to develop national trainers for different fisheries including designated landing sites, key markets, private sector, aquaculture. Understanding crayfish fishery and marketing potential;	also collaboration on the setting of regional quality standards for imports and exports; Enhance capacity building in fisheries management, aquaculture, fish trade, post-harvest technologies and bio-security;

Country	Kenya	Malawi	Tanzania	Uganda	Zambia	Zimbabwe
	<p>Training of trainers for other fisheries e.g. Turkana</p> <p>Provision of posters and pictorial materials for further training.</p>	<p>Value-added small-pelagics;</p> <p>Site visits to regional countries to improve understanding of value-addition, access to international markets;</p>	<p>Training of trainers for other fisheries e.g. key border posts such as Nebbi, Albert, Edward. George, Kioga</p> <p>Provision of posters and pictorial materials for further training.</p>	<p>Training of trainers for other fisheries e.g. key border posts such as Nebbi, Albert, Edward. George, Kioga</p> <p>Provision of posters</p>		
Contribution to SmartFish objectives development objectives	<p>Regionalization of EAC standards</p> <p>Reduced post-harvest fish losses</p> <p>Improved food security</p> <p>Improved marketing opportunities</p> <p>Capacity building</p>	<p>Regionalization of COMESA/Codex standards</p> <p>Reduced post-harvest fish losses</p> <p>Improved food security</p> <p>Improved marketing opportunities</p> <p>Capacity building</p>	<p>Regionalization of EAC standards</p> <p>Reduced post-harvest fish losses</p> <p>Improved food security</p> <p>Improved marketing opportunities</p> <p>Capacity building</p>	<p>Regionalization of EAC standards</p> <p>Reduced post-harvest fish losses</p> <p>Improved food security</p> <p>Improved marketing opportunities</p> <p>Capacity building</p>	<p>Regionalization of COMESA/Codex standards</p> <p>Reduced post-harvest fish losses</p> <p>Improved food security</p> <p>Improved marketing opportunities</p> <p>Capacity building</p>	<p>Regionalization of COMESA/Codex standards</p> <p>Reduced post-harvest fish losses</p> <p>Improved food security</p> <p>Improved marketing opportunities</p> <p>Capacity building</p>

CONCLUSIONS AND RECOMMENDATIONS

Available secondary data was reviewed related to previous capacity building initiatives, standards and regional strategies and missions undertaken to 6 prioritised countries: Kenya, Tanzania, Uganda, Malawi, Zambia and Zimbabwe. A further 3 countries are also planned to benefit from capacity building: Burundi, DRC and Rwanda. The consultant participated in an EAC standards workshop which helped inform the focus of the SmartFish program as well as generating lessons learned from previous capacity building in the region. This was followed by country missions including review meetings with BMU community trainers from the Lake Victoria region.

The EAC are in the process of finalising Harmonised Sanitary and Phytosanitary (SPS) Measures for Fish and Fishery Products. These are designed to promote regional trade activities and provide an excellent entry point. Technical issues covered are sanitary measures for fish trade, aquaculture, capture fisheries including fishing, landing sites, transport, processing, storage, loading and distribution, traceability, processing equipment and machinery, personnel, management practices, quality assurance, vermin control, cleaning systems, management control, domestic distribution and marketing and prohibited species. The coverage includes both internationally export orientated industrial as well as small-scale fisheries.

COMESA countries are working towards CODEX standards, which have been used to develop the EAC standards. The key short, to medium term objectives include:

- Increased value addition;
- public and private sector investment in aquaculture developed;
- value chain approach to sector development document;
- postharvest losses reduced;
- trade and market conditions improved;
- information and knowledge content and exchange improved.

Training implemented and lessons learned

Kenya, Tanzania and Uganda have benefited from capacity building support from the EU and other donors over the past 2 decades primarily to develop the Nile perch export sector. Whereas Malawi, Zambia and Zimbabwe (and it is assumed Burundi, DRC and Rwanda also) have not received so much support.

Previous capacity building has produced a range of training materials and a number of lessons learnt. The latter have been compiled as a set of guiding principles to inform the planning, delivery and follow-on activities of future training initiatives.

A recent ACP Fish II training of trainer's initiative developed the capacity of community trainers to deliver fish quality, handling and hygiene training to small-scale fishermen, processors and traders. This has led to some positive changes in terms of better practices and greater awareness of handling and hygiene at landing sites, however, sustainability of the approach has been hampered by a lack of mechanisms to provide resources for local level training activities and recognition of the trainers amongst peers and by government.

Primary data collection for the TNA via workshop, interviews with key stakeholders in 4/5 target countries. This could be combined with a regional workshop for key stakeholders (competent authorities and fishing community representatives).

Primary data collection was undertaken in 6 countries. Priorities and capacity building opportunities were understood. It shows that despite the fact that capacity building has taken place, the majority of stakeholders appear not to have benefitted and still lack an understanding of key technical issues such as:

- understanding the causes of fish spoilage;
- being able to assess fish quality;
- being able to maintain fish quality;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site
- use of crates/boxes of fish handling;
- use of ice;
- personal hygiene;
- proper waste disposal;
- use of potable water

As well as technical knowledge and skills, many small-scale fishermen, processors and traders lack access to infrastructure (landing sites and markets), services (electricity, roads, water, ice) and equipment (insulated boxes, packaging) to be able to apply better practices. Fishery operators also generally lack access to credit or funding to help them invest in new ideas/better practices. A lack of food safety legislation and bylaws at all levels, or awareness of these if they exist, will also hamper the introduction of better practices.

An understanding of the current situation regarding the fisheries sector is lacking, particularly in Zimbabwe and Zambia. Public sector capacity is weak in many countries with less than optimum numbers of staff and weak or poorly resource extension services with no regular capacity building activities for the small-scale sector. Few examples of effective fisheries management were noted, with the norm being overexploited natural resources and IUU fishing. More and more attention is being given to aquaculture and its development / expansion as a means to increase fish production.

Opportunities for capacity building in target countries related to draft regional SPS fish quality, handling standards and the proposed provision of support for local trainers in those countries.

A number of capacity building activities have been identified that would contribute to SmartFish objectives related to:

- Regionalization of EAC/COMESA standards;
- Reducing non-tariff barriers to trade related to quality, handling and hygiene;
- Reduced post-harvest fish losses;
- Improved food security;
- Improved marketing opportunities;
- Capacity building

The activities would also contribute to various national development priorities identified during the mission. The ToT trainers approach promoted is something which the ACP Fish II programme has supported and has been identified by EAC stakeholders as an appropriate model during the recent SmartFish workshop in Mwanza, Sept 2011.

For **Kenya, Tanzania and Uganda** it is proposed that capacity building initiatives would focus on:

- A mechanism developed/fostered to introduce sustained support for existing community trainers supported by the ACP Fish II. The mechanisms include mainstreaming support into government policy and plans and the LVEMP trust fund as well as through better provision for training through BMU organization and by-laws;
- Support to ACP Fish II trainers in selected communities to help uptake and demonstration of better practices and improvements made so far linked into implementation of EAC/Codex standards;
- Further training of trainers capacity building for fisheries other than Lake Victoria and aquaculture sector;
- Provision of pictorial materials such as manuals and posters to complement further training by trainers.

For **Malawi** it is suggested that capacity building opportunities centre on:

- ToT support to develop a model value-chain building on the recent CIDA initiative and in close collaboration with the imminent Commonwealth Secretariat project with Malawi College of Fisheries (MCF). This would build on the

ACP Fish II ToT work on Lake Victoria and involve the community outreach centre of MCF;

- Development of a an improved handling for aquaculture pictorial community trainers manual and associated materials which would also be applicable for other countries;
- Value-added small-pelagics support focussed on improved quality, packaging and labelling;
- Site visits to regional countries and markets to improve understanding of value-addition and requirements for access to international markets.

For **Zambia** it is suggested that capacity building opportunities centre on:

- ToT to develop national trainers for different fisheries and organizations including designated landing sites earmarked for development, key markets, private sector, and aquaculture. Again the approach would build on the ACP Fish II approach piloted on Lake Victoria. It would also include support for post-training uptake of improved practices in key locations;
- Understanding the sustainability of the Lake Karibacrayfish fishery and regional marketing potential with pilot scale support to demonstrate improved access to new markets, depending on sustainable harvest potential;

For **Zimbabwe** it is suggested that there is:

- ToT to develop national trainers for Lake Kariba and aquaculture sectors. Again the approach would build on the ACP Fish II approach piloted on Lake Victoria. It would also include support for post-training uptake of improved practices in key locations;
- Due to the lack of understanding of the current situation in the fisheries sector it is recommended that a post-harvest overview is undertaken to better inform decision and policy making for the future development of the sector.

The ACP Fish II pictorial trainer manual has been well received and field tested by 24 community trainers in Kenya, Tanzania and Uganda. It is recommended that the manual be adapted to support the interpretation of EAC and COMESA/Codex standards and then used as a standard training resource for SmartFish activities. A key adaptation will be to standardise the images and solicit the involvement of an artist from the region to refine and produce new images to depict key messages. Additional text on some images is also required to enable the images to be stand alone. The manual once finalised, ideally through pilot testing, would be used to develop posters for use by trainers and for general dissemination purposes. The manual and posters would be translated into French and use to run ToT workshops in Burundi, DRC and Rwanda. Publication of the manual and posters will be an important contribution of the SmartFish Programme to improving fish quality, handling and hygiene in the target countries. The idea of developing a separate trainers manual for aquaculture stakeholders should also be explored during the next steps of the programme.

ANNEX

ANNEX 1 TERMS OF REFERENCE

Training materials for fish quality improvement.

Objective - Regional Harmonization of Quality Standards

Conduct TNA

1. Review of available literature including any TNA assessments for the region (from ACP FISH II and others) with a view to defining the training that has already been implemented requirements in relation to fish quality improvement to be implemented
2. Undertake primary data collection for the TNA via workshop, interviews with key stakeholders in 4/5 target countries. This could be combined with a regional workshop for key stakeholders (competent authorities and fishing community representatives).
3. Finalise a TNA report which clarifies the opportunities for capacity building in target countries related to draft regional SPS fish quality, handling standards and the proposed provision of support for local trainers in those countries.
4. Draft a training of trainers (ToT) programme in fish quality and handling outlining the training beneficiaries (fishermen, processors, traders, fish farmers, transporters), national trainers, training objectives and potential training solutions (workshops, dissemination by media etc).

Preparation of training materials and training

1. In conjunction with national trainers (local counterparts) from the region, draft training modules for regional and national training of trainers workshops. (Regional workshops could be used to train the trainers and finalise training modules and materials and then followed by national workshops which would provide the trainers with an opportunity to deliver their own training supervised by the consultant).
2. Prepare and write the training materials that can be used by trainers to deliver training at national level to beneficiaries. These will include a trainers manual and pictorial training material for trainers to use at community level such as posters and handouts and other useful communication tools for training and ongoing communication to fishers.
3. Identify small items of equipment that would enhance training delivery and practical activities.
4. Pilot test the materials and training process at the first regional trainers workshop and produce final versions for publication.
5. Arrange production of training manuals and materials for use in national training workshops. This may involve translation into key national languages.
6. In conjunction with the Programme, make all necessary arrangements for regional and national training workshops.

Delivery of training

1. Facilitate a regional training of trainers workshop (3 to 5 days) for national trainers from 4 or 5 countries (2 to 3 trainers from each country).

2. In conjunction with national trainers conduct 4 or 5 national trainers workshops each for approximately 20 community level trainers (5 to 6 days each workshop) to equip community trainers with skills and knowledge to train beneficiaries (fishermen, processors, traders etc) in better practices. Development of plans for follow-on local level training in country at community level.
3. Provision of materials and equipment to trainers to facilitate on-going local level training initiatives.

Monitoring of training uptake and application

1. Supervision of community level training initiatives and monitoring and evaluation.
2. Preparation of final technical report.

ANNEX 2 PEOPLE MET & ITINERARY

Date	Location	Name and Title	Remarks/Activities
1/08/11	UK	Travel	Depart UK for Mauritius
2/08/11	QuatreBornes, Mauritius	Mr. Chris Short , Business & Trade Specialist, PMU SmartFish Project, QuatreBornes, Mauritius Tel: +230 250 7180 mr.chrisshort@gmail.com	Defining TNA requirements, meetings with IOC
3/8/11	QuatreBornes, Mauritius	Dr Dominic Greboval, Team Leader, PMU, SmartFish.Dominique.Greboval@coi-ioc.org Marcel Kroese, MCS Specialist, PMU, SmartFish.Marcel.Kroese@coi-ioc.org SoudhaNunkoo, Secretary/Finance Officer, PMU Smartfish. Soudha.nunkoo@coi-ioc.org	Preparing workplans
4/8/11	QuatreBornes, Mauritius	PMU office	Defining requirements for workshop / planning
5/8/11	QuatreBornes, Mauritius	PMU office	Preparing TNA report outlines
6/8/11	QuatreBornes, Mauritius		Preparing TNA report, Secondary data collection/ review
7/8/11	QuatreBornes, Mauritius		Debriefing with IRFS/ Smartfish Depart Mauritius for UK
8/8/11	UK		Arrive UK
9/8/11	UK	Homebase	Preparing TNA and field visits
10/8/11	UK	Homebase	Preparing TNA and field visits
29/8/11	UK	Travel	Depart UK for Tanzania
30/8/11	Mwanza, Tanzania	Chris Short, SmartFish PMU Minakshi Pallut , Project Accounts, PMU SmartFish Project, Quatre Bornes, Mauritius Tel +230 4276502 mpallut1511@yahoo.co.uk Caroline T. Kirema-Mukasa Lake Victoria Fisheries Organization, P.O Box 1625, Jinja , Uganda . Phone: 256 43 120205/6. Fax 256 43 123123 Email: mukasa@lvfo.org; ctkirema@hotmail.com	Arrive Mwanza Preparation for EAC workshop/TNA

		Mr. Timothy Wesonga Senior Livestock and Fisheries Officer, East African Community, P O Box 1096, Arusha, TANZANIA. Tel: +255 27 250 4253 / 8 Fax: +255 27 250 4255 E-mail: twesonga@eachq.org	
31/8/11	Mwanza, Tanzania	Various stakeholders from EAC, Kenya, Uganda, Tanzania (see Annex 3)	EAC / SmartFish workshop facilitation and participation
1/9/11	Mwanza, Tanzania	Various stakeholders from EAC, Kenya, Uganda, Tanzania (see Annex 3)	EAC / SmartFish workshop facilitation and participation
2/9/11	Mwanza, Tanzania	Various stakeholders from EAC, Kenya, Uganda, Tanzania (see Annex 3)	EAC / SmartFish workshop facilitation and participation
	Nyegezi	Mr Stephen Lukanga, Zonal Fisheries Inspector, National Fish Quality Control Laboratories, Nyegezi, Tanzania. Tel. +255754437234. Email salukanga@yahoo.co.uk Mr Tharcisse Higi, LVFO HRD Tel: +255 784281298 Email: higi@yahoo.com Mr Charles Swai, Acting Vice Principal Nyegezi Fisheries Institute Tel: + 255 754650996 Email: swcharles@yahoo.com BMU Trainers from Tanzania (See Annex 9)	ACP Fish II Trainers review meeting
3/9/11	Mwanza, Tanzania		Report writing
4/9/11	Nairobi, Kenya		Report writing Depart Mwanza for Kisumu
5/9/11	Kisumu, Kenya	Mr Maurice Otieno, Assistant Director of Fisheries i/c Quality Assurance – Nyanza Province LVFO RWG-FIQA Tel: +254 721259551 Tel: 254 733833016 Email: otiwataga@yahoo.co.uk	Arrive Kisumu ACP Fish II Trainers review meeting
		Ms Joyce Lugonzo (representing Mr Tim Odende), Chief Fisheries Officer, Ministry of Fisheries Development, Kenya. Tel +254722251640, Email lugonzojoy@yahoo.com BMU Trainers from Kenya (See Annex 9)	

6/9/11	Kampala, Uganda		Depart Kisumu for Uganda Report writing
7/9/11	Kampala, Uganda	Mr.KoaneMindjimba Regional Manager for Eastern Africa ACP FISH II Programme Tel: +256 414 251 640 mailto:K.Mindjimba@acpfish2-eu.org kmindjimba@yahoo.com	Meeting preparation. Briefing with ACP Fish II Regional Coordinator
	Entebbe, Uganda	Mr. Robin Ibale, National RWG-HRD, Senior Fisheries Officer, DFR, Entebbe – Cell: +256 (0)772 647 681 – E-mail: rdwibale@yahoo. co.ug BMU Trainers from Uganda (See Annex 9)	ACP Fish II Trainers review meeting Depart Uganda for UK
8/9/11	UK	Homebase	Arrive UK Preparations for next mission
19/09/11	UK	Travel	Depart for Zimbabwe
20/9/11	Zimbabwe	BothwellMakodza, Director, Department of Livestock Production and Development (LPD) (SmartFish Focul Point) Tel: +263 712884 Email: bmakodza@gmail. com	Arrive Harare Briefing Preparation for TNA
21/9/11	Zimbabwe	Dr Joan Burumu, Veterinary Research Officer Tel: +263 773776064 Email: jvbummu@yahoo.com M Ngoshi, Fisheries Specialist, Dept. LPD Tel: +263 772929424 Email: mishech.ngoshi@yahoo.com Joseph Sikosawa, Livestock Researcher Tel: +263 712615573	
		Email: jlms6@yahoo.com UnesuUshewokunyeObatolu, Veterinary Field Service Dr AlardworkMachakwa, D/DirVeterinary Technician Email: zhmachakwa@gmail.com Martin Dingwa, Aquaculture Zimbabwe Tel: +263 772881398 Email: mdingwa@gmail.com GarikaimoseTongowona, Aquaculture Zimbabwe Tel: +263 773802355 Email: gtongowona@gmail.com	

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22/9/11	Zimbabwe	<p>Michael Tiki, Ecologist, Lake Chivero Fisheries Research Station Tel: +263 772433905 G Chayita, Senior Ranger, Dept. Parks and Wildlife Tel: +263 772274661</p> <p>GiftySemsem, Goal Fisheries, Lake Chivero Tel: +263 772920528</p> <p>Wonder Hamadziripi, Fishermen, Lake Chivero Tel: +263 776151117</p> <p>CrispenPhiri, Lake Kariba Research Station Tel: +263 774161718 Email: crispnphiri@gmail.com</p> <p>TafadzwaMahere, University of Zimbabwe Tel: +263 712394408 Email: herestics@gmail.com</p>	Field visits and key stakeholder discussions at Lake Chivero and Lake Kariba
23/9/11	Zimbabwe	<p>NobuhleNdhlovu, Senior Aquatic Ecologist Zimbabwe Parks and Wildlife Management Authority, Lake Kariba Fisheries Research Institute Tel: +263 773303710 Email:nobuhle07@yahoo.com</p> <p>GarkaiMunatsirei, General Manager, Lake Harvest Tel: +263 772288949 Email: gmunatsirei@lakeharvest.com</p> <p>Watson Pasipamire, Lake Operations Manager, Lake Harvest Tel: +263 912262966 Email: Watson@lakeharvest.com</p> <p>Edwin Mberi, Fish Trader Tel: +263 773921498/9</p>	Field visits and key stakeholder discussions at Lake Kariba

24/9/11	Malawi		Arrive Lilongwe Report writing
25/9/11	Malawi		Report writing Preparation for TNA
26/9/11	Malawi, Lilongwe	<p>Orton Kachinjika, Chief Fisheries Officer (SmartFish Focul Point), Ministry of Agriculture and Food Security, Dept of Fisheries, Fisheries Extension Services Tel: +265 9510127 Email: kachinjika@yahoo.co.uk</p> <p>Dr Steve Donda, Deputy Director of Fisheries, MoAFS, DoF Tel: +265 999950035 Email: sdonda@sdpn.org.mw</p> <p>ChikondiPasani, Principal Fisheries Officer Planning, MoAFS, DoF Tel: +265 993901029 Email: cpasani@yahoo.co.uk</p> <p>Dr Friday Njaya, Chief Fisheries Officer Planning, MoAFS, DoF Tel: +265 999278088 Email: fnjaya@sdpn.org.mw</p> <p>Jacqueline Kazembe, Deputy Chief Fisheries Officer, MoAFS, DoF Tel: +265 888936866 Email: jkazemb@yahoo.co.uk</p> <p>Joe Mfune, Asst. Chief Fisheries Officer (Extension), MoAFS, DoF Tel: +265 999125006 Email: kazgeba@gmail.com</p> <p>Alban Pulaizi, Principal Fisheries Officer (Extension), MoAFS, DoF Tel: +265 888516693 Email: albanpulaizi@yahoo.com</p> <p>Patricia Kaupa, Investment Promotion Executive, Malawi Investment Promotion Authority Email: pkaupa@mipawa.org</p>	Briefings, planning and TNA stakeholder interviews
		<p>Dr Gilson Njunga, Chief Animal Health and Livestock Development Officer, Central Veterinary Laboratory Email: gilsonnjunga@yahoo.co.uk</p> <p>Oliver Chirambo, Epidemiology Unit, CVL Email: okchirambo@yahoo.co.uk</p>	

Blantyre		Travel to Blantyre	
27/9/11	Blantyre	Limbe Fish Market – various stakeholders	TNA interviews and observations
		<p>BisaNamarika, Manager, Malawi Export Promotion Council Tel: +265 999301440 Email: bissanamarika@yahoo.co.uk</p> <p>TawainaMbalu, Product Development Manager, MEPC</p> <p>Willy Muyila, Deputy Director General, Malawi Bureau of Standards Tel: +265 888104514 Email: willymuyila@mbsmw.org</p> <p>Fred Sikwese, Director Standards, MBS Tel: +265 888534221 Email: fsikwese@mbsmw.org</p> <p>Stephen Chalimba, MBS Tel: +265 888339269 Email: stephenchalimba@mbsmw.org</p>	TNA interviews
		Lake Chilwa – various stakeholders	Travel to Zomba
			TNA interviews and observations
			Travel to Mangochi
28/09/11	Mangochi	<p>Ken Mthuzi, General Manager, Maldeco Fisheries Tel: +265 888828972 Email: ken@presscorp.com</p> <p>Joseph Siliya, Maldeco Fisheries Email: joseph@presscorp.com</p> <p>Anthony Nanthambwe, Maldeco Fisheries Email: Anthony@presscorp.com</p> <p>Chris Nyasa, Act Principal, Malawi College of Fisheries Tel: +265 999941740 Email: chris.nyasa@yahoo.com</p> <p>JosiaChamweka, District Fisheries Officer, Mangochi Tel: +265 999231873 Email: chamvej@yahoo.com</p>	TNA interviews and observations

		<p>Steve Wemba, Community Outreach Unit & Extension, MCF Tel: +265 999341218 Email: wembasteve@yahoo.co.uk</p> <p>Winnie Tsaka, Fisheries officer, MCF Email: winnietsaka@rocketmail.com</p> <p>Nevarson Msusa, Post-harvest Technology, MCF Email: nevarsonmsusa@yahoo.co.uk</p> <p>Harold Sungani, Principal Fisheries Research Officer, Monkey Bay Tel: +265 999558774 Email: hsungani@yahoo.com</p> <p>Geoffrey Kanyerere, Principal Fisheries Research Officer, Monkey Bay Tel: +265 999224673 Email: gtzkanyerere@yahoo.co.uk</p> <p>Chilambula Fish landing site – various stakeholders</p>	
29/09/11	Malawi, Lilongwe	<p>Orton Kachinjika, Chief Fisheries Officer (SmartFish Focul Point), Ministry of Agriculture and Food Security, Dept of Fisheries, Fisheries Extension Services Tel: +265 9510127 Email: kachinjika@yahoo.co.uk</p> <p>Dr Steve Donda, Deputy Director of Fisheries, MoAFS, DoF Tel: +265 999950035 Email: sdonda@sdpn.org.mw</p> <p>Chikondi Pasani, Principal Fisheries Officer Planning, MoAFS, DoF Tel: +265 993901029 Email: cpasani@yahoo.co.uk</p> <p>Dr Friday Njaya, Chief Fisheries Officer Planning, MoAFS, DoF Tel: +265 999278088 Email: fnjaya@sdpn.org.mw</p>	Debriefing with DoF
	Zambia		Travel to Zambia
30/09/11	Zambia	<p>Mainza Kalonga, Deputy Director, Department of Fisheries (SmartFish Focul Point) Tel: +260 977427935 Email: mukanzubo@gmail.com</p>	

		Robert Lugilo, Principal Fisheries Technician, Post-Harvest, DoF Tel: +260 977633081	Briefing and planning meeting Report writing Preparation for TNA
1/10/11	Zambia	Mobil Fresh Fish Market – Lusaka – various stakeholders LacksonSakala, Chairman, Mobil Market Tel: +260 974765344 Central Market	TNA interviews and observations
2/10/11	Zambia		Report writing Project admin
3/10/11	Zambia	Channyanya Fish landing site – Kafue River – various stakeholders Anthony Kapya, Village management Committee, Channyanya Tel: 260 977541395 Michael Mhango, Principal, Kasaka Fisheries Training Institute Tel: +260 977605129 Email: mercosus@yahoo.com Patrick Ngalande, Director, Department of Fisheries Tel: +260 9777887300 Email: pngalande@yahoo.co.uk Brent Stubbs, General Manager, Capital Fisheries Tel: +260 961624920 Email: brent@capitalfisheries.co.zm	TNA interviews and observations Travel to Saivonga
4/10/11	Zambia	Lake Kariba field visits – various stakeholders WamulumeMebelo, Officer in Charge, Dept. of Fisheries, Siavonga Tel: +260 978150050 Email: mebelowamulume@yahoo.com M K Wamulume, Fisheries Technician, DoF, Saivonga Tel: +260 979900716 Victor Hazemba, Crayfish Fisherman Tel: +260 979992588 Email: victorhazemba@yahoo.com	TNA interviews and observations Travel to Lusaka

		<p>Nicholas Mbita, Trader Tel: +260 965491890</p> <p>GertJordaan, Fishermen and Trader Email: jordaan.gert@gmail.com</p> <p>Malcolm Dimena, Asst. Fisheries Officer, Chirundu Border Post</p>	
5/10/11	Travel		<p>Report writing</p> <p>Depart Zambia</p>
6/10/11	UK	<p>Derrick Akintade, Adviser – Enterprise Development, Commonwealth Secretariat, London Tel: +44 207 7476375 Email: d-akintade@dfid.gov.uk</p>	<p>Arrive London</p> <p>Briefing meeting</p> <p>Report writing</p>

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ANNEX 4 WORKING GROUP SESSION: LESSONS FROM PREVIOUS TRAINING

KEY ISSUE	TANZANIA/BURUNDI	KENYA	UGANDA
TRAINING of changes in new knowledge, understanding, skills, attitude/behaviour and who was affected?EXAMPLE	<p>Technology for smoking fish using Chorkor oven</p> <p>Quality, safety, sanitation and hygiene issue</p> <p>Efficient use of firewood</p> <p>Smoking technology</p> <p>Involved as trainer after acquiring</p>	<p>Training of fish farmers on fish handling, processing and marketing</p>	<p>Example taken was the case of the EU/SFP/ACP Training module of support the capacity of Competent Authority Inspection services.</p>
What did the training achieve in terms	<p>Acquired new knowledge and technology</p> <p>Participatory and hands-on hence ended with high level of understanding and acceptability</p> <p>Skills were well acquired</p> <p>Change of attitude/behaviour</p> <p>Variable</p> <p>Market response</p> <p>Socio-cultural behaviour</p> <p>Who benefited</p> <p>Fishermen, processors, traders, consumers</p>	<p>Farmers were sensitized on basic hygienic fish handling</p> <p>Fish Processing and preservation</p> <p>Reduction in product abuse through farm inputs</p> <p>Fish preparation and consumption</p> <p>Temperature control and packaging</p> <p>The attitude that the government would market farmed fish for the farmers' minds</p> <p>Affected : fish farmers, households and local communities</p>	<p>This training enabled inspectors to acquire knowledge and skills in fish inspection and updated the changes in the EU food and feed law together with the hygiene pieces of legislations.</p> <p>Output:</p> <p>Revised the Fish Quality and safety regulation to meet the equivalency of the EU food and Feed law.</p> <p>This regulation streamlined the upstream operations which had been identified deficient during the EU/FVO inspection mission of 2006.</p> <p>For instance the revised regulation demands for meeting required sanitary conditions of fishing vessels before operational licenses is issued.</p> <p>One of the core objectives of the recent EU FVO Inspection Mission, May 2011 was to establish conformity to the deficiencies that were identified in the previous</p>

KEY ISSUE	TANZANIA/BURUNDI	KENYA	UGANDA
<p>What aspect of the training worked well....think about the way it was organized, delivered, location, participant choice, materials, etc.?</p>	<p>Organization Appropriate approach at village level Including preliminary awareness raising through meetings Right choice of participants with gender consideration in collaboration with village leaders Timing for training Delivery method Participatory Hands-on Pictorial, posters, simplified handouts Location On-site Participants choice Organized groups BMUs (Fishermen, processors & traders), gender considerations Materials Shared cost Project: iron sheets, cement, wire-mesh, timber, nails, containers, knives, salt etc. Beneficiaries: Some building materials (stones, bricks, sand etc.) and labour Use of locally available materials for construction Pictorial, posters, simplified handouts</p>	<p>Farmers participated adequately and shared experiences The attendance was 101% The fish farmers contributed in identifying problems and ways of solving were discussed/proposed Organization was good; participants were drawn from diverse communities and education levels to reduce the power distance Delivery language was in the local Kiswahili language, a lot of visual material (photographs and illustrations) Training materials were user friendly and handouts were given to the participants Training programme and materials were developed early enough and moderated by all the facilitators The trainees were given incentive in form of accommodation, food and transport The location was far from home and therefore there were no incidences of absenteeism</p>	<p>Mission of 2006 and to this effect, the mission team found the revised fish regulation equivalent to that of EU Food and Feed Law. Who was it effected: The CA inspectors had to understand the requirements of official controls. The boat owners had to meet the sanitary criteria for the boats.</p> <p>The training identified the right target group, built capacity then using the knowledge and skills, the CA inspectors led the process of reviewing the regulation. The fish regulation was revised disseminate and enforced. The CA translated the Hygiene requirements in the regulation to popular versions (Pictorial forms) and the Good hygiene Practices were compared with bad practices and the two were linked to the overall social economic benefits Thus Poverty. These popular versions formed part of the training materials for the upstream operations.</p>

KEY ISSUE	TANZANIA/BURUNDI	KENYA	UGANDA
<p>What aspect of the training did not work so well....think about the way it was organized, delivered, location, participant choice, materials, etc?</p>	<p>Inappropriate organization in some of the location Wrong timing Short cuts in approaching beneficiaries directly without consulting local authorities Project not well received</p>	<p>It was a good forum for networking between among fish farmers Trainees were issued with certificates of attendance I enjoyed the training</p> <p>The training room was not spacious enough for the number of participants The attendance was 101% the facilitators had to source for extra funds The training was conducted in Kiswahili, some facilitators were not proficient in Kiswahili language Lack of field visits (factories and fish farm) Gender imbalance, the number of females who attended did not meet the 30% constitutional requirement Training was not publicized Training funds were not availed on time</p>	<p>The training was not rolled out due to premature end of the SFP Project and since the sustainability measures had not been designed all activities came to a complete stand still. The popular versions were only in English and the funds could not allow developing the same materials in the commonly spoken local language. Even the versions that were printed in English could only suffice two landing sites out of 33 gazetted landing sites on lake Victoria alone leaving out other four major water bodies(L. Albert, L. Kyoga, L. Edward and L. George)</p>
<p>What are the key issues to consider in delivering training to support regional quality, hygiene and sanitation standards?</p>	<p>Training module (several depending on the need) Quality, safety, hygiene and sanitation Curricular development Training materials Harmonized protocols for quality, hygiene, and sanitation standards Right choice of trainers and trainees (gender, socio-cultural issues) Language of the targeted group Timing</p>	<p>Target group (broad spectrum of participants) Training needs assessment should be done to ease development of the curriculum Language of dissemination and translation of training material Location, accommodation, transport and training facility Participation of competent authority and other related SPS enforcing authorities Periodical training and follow-ups Study tours and practical sessions Follow up of training to evaluate uptake</p>	<p>Conduct a training needs assessment. Establish critical quality and safety concerns along the value chain that need to be addressed thus focus resources on areas of high risks. Identify the target group. Identify the right resource personnel's/facilitator (Where the trainer is an international expert, then Copt local subject matter experts to relate with the local conditions). Develop and or source out the relevant training materials. Conduct quality assurance of training materials before delivery of training to ensure suitability, applicability and authenticity to the target group.</p>

KEY ISSUE	TANZANIA/BURUNDI	KENYA	UGANDA
			<p>Send out invitations in time and specify the target group of the trainees to avoid scenarios of monopoly of one trainee in the same training and worse still attendance of completely a non targeted trainee. If it is a follow up activity then specify the name of the participant who initially got involved in such trainings for effective feedback. If the objective of the training is build sufficient capacity/ pool of trainees then include a clause in the invitation that excludes any participant who could have undergone such trainings.</p> <p>Send out pre-course questionnaires to assess the level of knowledge and skills of trainees thus prepare the training materials accordingly.</p> <p>Apply different training methods/ field visits, practical sessions, demonstrations, discussions, role plays etc.</p> <p>Where necessary conduct assessment evaluation / of the trainers before end of training sessions.</p> <p>Locate the training preferable away from area of operation for maximum output from participants.</p> <p>Provide sufficient logistical support and the current common practice is to pay the participants their per diems for their own reservations.</p> <p>The trainers should consider first the input and contribution of the participants rather than the location to work place as a basis to determine payment of per diem.</p> <p>Choose the right time to conduct the training.</p>

ANNEX 5 TRAINING ACTION PLANS

ACTIVITY	BURUNDI	TANZANIA	KENYA	UGANDA
WHO TO BE TRAINED AS TOT	Traders, fishers Processors Fisheries officers (Some) Enforcement units (border posts, surveillance units)	Fishers Traders Processors Fisheries officers (Some) Enforcement units (border posts & surveillance units)	To develop a sustainable National SPS capacity	<ul style="list-style-type: none"> Identify critical areas along the value chain that require intervention to improve quality and safety of fish. Create awareness on key EAC SPS measures for regional fish trade. Build capacity/pool of resource to conduct subsequent trainings whenever need arises.
OBJECTIVE OF TRAINING	<ul style="list-style-type: none"> Adoption of SPS measures and procedures as well as rolling out of the prepared volume III 	<ol style="list-style-type: none"> Rolling out of EAC SPS measures Vol III To promote compliance to safety, quality, hygiene and sanitation standards in regional fish trade through recognition of different actors and support systems 	<p>Dagaa: From fishing, landing/preservation- because of unhygienic handling/preservation;</p> <p>Nile Perch by-product: Unhygienic handling of post-factory Nile perch product;</p> <p>Tilapia (Lake Turkana): From fishing, landing/preservation- because of unhygienic handling/preservation.</p>	<p>Priority</p> <ul style="list-style-type: none"> Major commercial fish spp(s) (Tilapia; Nile perch and Mukene). Product form(Cured products and fresh) <p>Distribution chain</p> <ul style="list-style-type: none"> Raw material handling for products of RFT bse it determines the quality and safety of final products. <p>Processing</p> <ul style="list-style-type: none"> Poor handling Facilities for processing Processing methods Packaging Storage

ACTIVITY	BURUNDI	TANZANIA	KENYA	UGANDA
PRIORITY FISHERY/ DISTRIBUTION CHAIN/ STAGE IN CHAIN AND WHY	<ul style="list-style-type: none"> • Fishers • Traders • Processors • Fisheries Officers 	<ul style="list-style-type: none"> • Promotion of inland Fishery • Processors • Handling and storage by fishers & traders • Reason: Inland contribution (> 80%); Processors & traders form key linkage between fishers & consumers 	<p>Policy makers: Ministers, Astd. Minister, Permanent secretary, Fisheries Secretary, Fish processors Association (AFIPEK) executive (CEO) and local government representative;</p> <p>BMU: Regional BMU representatives;</p> <p>Investors: Small scale fish processor, Animal feed processor, traders and fishermen;</p> <p>Others: Community Based Organization (CBO)</p>	<p>Transportation</p> <ul style="list-style-type: none"> • Mode/ means of transport – open trucks for fish by products • Method of transport- fish transported with other goods. <p>Documentation</p> <ul style="list-style-type: none"> • Lack of documents to back up traceability • Data storage • Lack of knowledge on key documents by the enforcement officers. • Lack of harmonized procedures/ requirements from partner states. <ul style="list-style-type: none"> • Prominent Artisanal fish processors dominated by women. • Officials at key border posts and landing sites engaged in inspection, certification and clearing of consignments. • BMUs officials from landing sites that are engaged in handling large quantities of fish for regional markets. • BMU- net work executives. • Representative of fish traders associations • Representative of UFPEA- • Representative of fish farmers Association • Local government

ACTIVITY	BURUNDI	TANZANIA	KENYA	UGANDA
CHARACTERISTICS OF TRAINEES TO ENABLE SUSTAINABILITY OF TRAINING AND WHO (GENDER)	<ul style="list-style-type: none"> Community groups / leaders Both males and females Profession Fisheries groups 	<ul style="list-style-type: none"> Involvement as key actor or support service provider in fishery sector Sex, age profile (supporting staff), group approach in selecting who to be trained 	<p>On-site training : Close to a landing site that need intervention to enable policy makers have a site visit</p>	<p>District with border market and landing sites where fish is handled.</p> <ul style="list-style-type: none"> Nebbi District- , Panyamur landing site serves both Congo DRC & S. Sudan Borders.
LOCATION OF TRAINING	Kabonga	Lake Victoria zone (Magu) Western Zone (Tunduma)	<p>Materials: Handout, and relevant regional video Pictorial(fliers, charts) Language: Kiswahili and English or engage translator</p>	<ul style="list-style-type: none"> Visual aids; documentary ; Copies of key documents(Certificates, permits and regulations, Regional fish Guidelines); brochures Field visits to landing site and border point. Language –English.
OVERVIEW OF MATERIALS NEEDED AND FORMAT/ LANGUAGES	<p>MATERIALS</p> <ul style="list-style-type: none"> Hand-outs, Brochures, Training manuals, Theory, Practical, Study tour <p>Language</p> <ul style="list-style-type: none"> Kirundi, Kiswahili 	<p>Materials</p> <ul style="list-style-type: none"> Training manuals (pictorial) Brochures Posters Hand-outs (PPT etc.) Video, DVDs <p>Format</p> <ul style="list-style-type: none"> Theory Practical's and field visits <p>Language</p> <ul style="list-style-type: none"> Kiswahili 	<p>Output: Action plan, Training Manual</p> <p>Outcome: Behavioural Change, Compliance with SPS,</p>	<ul style="list-style-type: none"> Data on regional fish trade compiled for future planning & Decision making Effective monitoring of IUU Reduction in postharvest losses and increased income Improved awareness on hygiene, sanitation and documentation. <p>Compliance of SPS Measures hence increased trade.</p>

ACTIVITY	BURUNDI	TANZANIA	KENYA	UGANDA
EXPECTED OUTPUTS/ CHANGES	<ul style="list-style-type: none"> • 20 trainees • Training materials and approach which can be adopted • Change of skills knowledge and behaviour for the targeted group • Improved safety, QUALITY and standards IN the region • Adoption of the SPS Measures 	<p>Output</p> <ul style="list-style-type: none"> • 40 TOT • Training material and approach that can be adopted and used elsewhere <p>Impact</p> <ul style="list-style-type: none"> • Change of knowledge, skills and behaviour towards improved safety, quality and hygienic standards for regional fish trade 	<ul style="list-style-type: none"> • Adequate notification and preparation; • Gender balance; • Involvement of local leadership for community mobilization; • Involvement of the Competent Authority (CA) 	<ul style="list-style-type: none"> • Identification of the rightful resource persons(involvement of local experts and CA Inspection services) • Provide sufficient logistical support and the current common practice is to pay the participants their perdiems for their own reservations. • Timing of the training- Send out invitations in time • Conduct quality assurance of the materials to be presented
WHAT WILL HELP THE TRAINING TO BE SUCCESSFUL?	<ul style="list-style-type: none"> • Availability of Funds • Availability of training materials • Acceptability of the training to be provided • Location of the site • Timing 	<ul style="list-style-type: none"> • Availability of qualified trainers • Availability of training materials • Financial resources • Timing of the activity 	<ul style="list-style-type: none"> • If the training coincide with election period or other National activities; • If funds are not released on time; • Language barrier; 	<ul style="list-style-type: none"> • Inadequate Logistics • Untimely release of funds. • Festive periods
WHAT WILL MAKE IT DIFFICULT FOR TRAINING TO BE SUCCESSFUL?	<ul style="list-style-type: none"> • Lack of infrastructure or enough or good equipment • Lack of Supervision after training i.e monitoring and evaluation 	<ol style="list-style-type: none"> 1. Possibility for change in mind set of actors and support service providers 2. Availability of adequate training materials and financial resources 	<ul style="list-style-type: none"> • Adequate facilitation to enable TOT to disseminate the in formation/ skills after the training; 	<ul style="list-style-type: none"> • Identify resources to roll out the training to beneficiaries • CA to conduct follow up- support supervision • Prepare monitoring and evaluation report. • Enforcement strengthened.

ACTIVITY	BURUNDI	TANZANIA	KENYA	UGANDA
WHAT SHOULD HAPPEN AFTER THE TRAINING	<ul style="list-style-type: none"> Change of mind, behaviour and attitude, improved regional trade 	<ul style="list-style-type: none"> Monitoring and evaluation Continue support of TOT to implement the training 	Mainstreaming the SPS training components in the Ministry's strategic plan, work plan and budget line to ensure sustainability.	<ul style="list-style-type: none"> Mainstream training in the DFR work plan routine activities. BMUs to include in the work plans
HOW CAN WE ENSURE CONTINUITY/SUSTAINABILITY OF IMPACT OF TRAINING?	<ul style="list-style-type: none"> Adopt in the policy and ministerial plans, and continuing funding of the activity to ensure wide coverage and dissemination 	<ul style="list-style-type: none"> Enforcement of regulations with regard to compliance to safety, quality and hygienic issues Full involvement of Regional Fisheries advisor in whole process <ul style="list-style-type: none"> RFA: overall in-charge of surveillance unit in the region 		
KEY COSTS AND ESTIMATED BUDGET	To be submitted later	<p>To be submitted depending on:</p> <ul style="list-style-type: none"> Number of days Number of participants Source/origin of participants (Transport and Living costs) Training package (venue and support service) Cost for training materials (preparation and production) 	<p>Per diem = € 19,700</p> <p>Transport Reimbursement = € 593</p> <p>Return air tickets = € 800</p> <p>Training Materials = € 740</p> <p>Sensitization (Radio and TV) = € 2,222</p> <p>TOTAL = € 24,055</p>	<p>Key costs</p> <ul style="list-style-type: none"> Training venue (Meals and teas)- Training materials Transport Communication Per diem to facilitators and participants. Certificate of attendance. <p>UG SHs. 56,450,000 USD 18,950</p>

ANNEX 6 COMESA FISHERIES DEVELOPMENT OUTCOMES

Current status	Desired outcomes		
	1 year	5 years	15 years
Purpose: To increase and sustain the contributions of fisheries and aquaculture to socio-economic development and food security in the COMESA region			
Increasing awareness of issues and challenges, and series of instruments and protocols developed; there is a momentum of change, policies being reviewed, but implementation needs to be defined.	Coherent, co-ordinated approach is agreed at regional level, targets and indicators defined, stake-holders committed to implementation, and investors are aware of options and opportunities in public, private and other sectors.	Cross-sector investments and programs are in place, important actions taken to secure longer-term aims; measurable development gains have been achieved; case for further investment is made and accepted.	Achievement of major defined targets, all sector elements fully institutionalised, secure base and processes are in place for continued benefit delivery.
1. Human and institutional capacity			
Fragmented sectoral approach, lack of regional and national capacity, and limited linkages with stakeholders.	Identify regional, national and local capacity in management and development. Linkages with private sector and civil society agents are developed. Strategies for sector resource management defined. Capacity building targets determined.	Increased capacity to manage sector resources. Structures oversee resource management, with linkages to stakeholders. Increased production and value addition due to capacity building.	Structures with resident capacity capable of achieving sectoral goals. Structures with robust linkages with relevant stakeholders.
2. Management tools and implementation			
Poor understanding of stock and resource status. Limited capacity to manage stocks and develop resources. Significant pressure to exploit certain resources.	Best practice management defined. Key resources identified for development of management plans. Capacity needs for implementation assessed. Strategies developed for better understanding of stocks/ resources.	Major fisheries and resource systems under best practice management. Management plans implemented by stakeholders. Total resource value and capacity better understood.	As pressure to exploit resources increase, management strategies are further developed and adapted to ensure sustainability of resources utilisation.

Current status	Desired outcomes		
	1 year	5 years	15 years
3. Sustaining and increasing production			
Capture fisheries production stagnating, with limited underexploited fisheries; limited aquaculture production, with centres of growth and innovation emerging; scope for fisheries enhancement not fully understood.	Priority zones and targets for aquaculture development identified and investment strategy developed between public and private sector; priority areas for fisheries enhancement identified and intervention plans agreed; opportunities for fuller exploitation of natural stocks ascertained and strategies for utilization agreed	Medium term targets for aquaculture in priority zones achieved (production increase, diversification, type of enterprise); zones for further expansion identified; Fisheries enhancement delivering medium term production increases; scope for further expansion understood; Investments in full exploitation of natural stocks established and well integrated into management	Diversified aquaculture sector established and well-integrated markets (domestic, region, export); generating significant employment; sustainability of aquaculture production systems understood; capture fisheries production stabilized at sustainable levels; fisheries enhancement generates production increase over 2008 levels
4. Developing and adding value			
Total value of sector supply chain not well understood, but probably significant scope for increasing value through investments in technologies, infrastructure and policy	Value chain approach to sector development adopted and targets and investment strategies identified; roles of public and private investors clarified; baseline established for total economic value in national accounts	Post-harvest losses in small-scale and industrial fisheries reduced; diversified value-added and processing sector emerging in fisheries and aquaculture; significant increase in value of product chains; trade and market conditions improved to attract further investments in supply chain (domestic, regional, international)	Value addition, processing and service industry contribute at significantly to sector value; domestic and regional markets and trade provide enhanced food security and employment; well-established access to export markets for range of products and producers
5. Sharing benefits			
Poverty, food security, health and livelihoods issues emerging but limited understanding of benefit distribution; recognition of equity, access and rights issues, but no strategy for action	Raised awareness at all levels of social development issues; sectoral options for addressing equity, potential links with MDGs; potential food security impact understood; agreements to develop and apply targeted approaches; recognition of linkages with other sectors	Range of examples of securing and enhancing equity, rights access, reducing vulnerability in all major sub sectors/ resource domains; food security impact of investment well established; strategies in place to scale up to more substantial MDG impact	Significant contribution of sector to achieving MDGs and putting in place longer term mechanisms for securing human development gains

Current status	Desired outcomes		
	1 year	5 years	15 years
6. Learning and exchanging knowledge			
Limited and unorganized functions in place, though recognized that monitoring roles are increasingly required; knowledge scattered and poorly accessible.	Framework and processes established for defining change, monitoring indicators, building and exchanging knowledge; parameters for ICT, knowledge links, decision-making, accountability	Range of monitoring processes operational, definable change in information and knowledge content and exchange across stakeholders, resulting in improved decision making, resource allocation, management action	Well-developed, fully institutionalized process linking scalar and operational levels, clear understanding of benefits, long-term commitment to support and extend; lessons widened outside sector

ANNEX 7 TNA CHECKLIST FOR FIELD VISITS

Priorities

What are the priorities in terms of handling, hygiene, sanitation, regional trade, training....where would you like the situation to be in 12 months time (DoF, CA, Export processors, key traders)?

Expectations

Define key tasks of different stakeholders.

What are the main ways in which fishermen, traders, processors, fish farmers (operators) need to change or do things differently in terms of improving landing site hygiene, sanitation, fish handling and conducting business in general (what is the problem, level of desired performance and actual performance and what is causing the problem)?

Who should do what differently...to define the performance goal (all)?

What behaviour pattern based on knowledge skills and attitudes do operators need to carry out tasks with competence?

Influences

Use force field analysis to identify what will help of hinder operators as they learn and try to apply new knowledge, skills and attitudes?

Solutions

What are the solutions to the obstacles identified during the force field analysis (f)?

Non-training

Other than training what other cost/effective ways are there to achieve the desired performance/expectation / development of knowledge, skills attitudes (brainstorm) (g)?

Training

What kind of training will best help operators achieve the desired level of competence (h)?

Learning objectives (Table i)

Define learning objectives for each performance goal requiring training...SAS:

Situation – what situation with the operator be in when they need to perform the task skilfully?

Action – what will they be able to do specifically after the training session is over?

Standard – some measure by which they will be able to judge success

Audit (Table j)

Which individuals need how much training (questionnaire)?

What training of trainers' exposure have you had in terms of formal training and/or experience in practice (for potential trainers)?

Please describe examples of the way in which you (or others) have carried out any training?

What training material or guides do you have to help you train others in handling, hygiene, sanitation, marketing etc and can you describe how these are used?

ANNEX 8 LAKE VICTORIA BMU TNA

The TNA conducted is based on secondary data from recent studies and primary data from field visits conducted in September 2011. The TNA approach used was influenced by the guidance given in the LVFO HRD strategy (LVFO 2006) document and training needs assessment guidance from Donovan & Townsend (2005). The main focus of the TNA was to identify the priorities for the sector according to key stakeholders, the more detailed needs of different stakeholders and learning objectives that would be used to inform training. A checklist to guide the TNA process was developed and discussed with Program focal points.??).

Priorities

The development priorities in terms of BMUs were identified as:

- BMUs are effective and carry out their duties (fish exporters);
- Greater awareness of good fisheries management practice and need to conserve stocks (DoF, local govt TZ, fish exporters, BMU Ug);
- BMUs sufficiently organised and understand fully their roles and responsibilities (CA TZ, RWG HRD TZ, fish exporters);
- Implementation of a coordinated effort between the three countries to control illegal fishing on the lake (BMU network chairman Uganda);
- BMUs know why and how to handle fish properly (DoF, local govt TZ, UgDoF);
- In terms of training per se the following was identified:
- System in place whereby training is provided as a continuous process (RWG HRD & DoF K, TZ, CA TZ, Ug BMU)

Regarding technical post-harvest issues the following was mentioned:

- National hygiene and sanitation standards met at landing sites (DoF, local govt TZ, UgDoF);
- Improve the Hygiene, sanitation, handling of *Rastreonobolaargentea* (RWG HRD, DoF K, local govt TZ, CA TZ); Note *R. argentea* is the scientific name for dagaa, omena, mukene
- Landing site facilities improved (fish exporters);
- Bulk boat transport of fresh fish undertaken using insulated tubs (fish exporters);
- Post harvest fish losses reduced (DoF, local govt TZ);
- Fishers ice fish after catching and ice is more accessible to remote fishing areas (fish exporters);
- Landings sites properly serviced and facilities and activities carried out meet national and international standards (BMU Regional Chair)

Of these priorities it is likely that the training will contribute to those which are shown in italics.

Furthremore, a lot of attention and development has been focused on the Nile perch fishery and distribution chain which has meant that standards of handling and hygiene are said to be relatively good, whereas less attention has been given to the burgeoning dagaa fishery and post harvest practices.

Beneficiaries expectations and desired performance

The ToT workshop is for trainers from BMUs. Key Expert 2 who conducted the TNA, therefore assumed that the trainers would be from the BMUs/community. Information from the HRD RWG suggests that trainers from the community in Uganda have proven to be effective. Community trainers, if highly motivated, have also been effective in fishing communities in coastal West Africa (Ward 2010). However, at one point during the TNA process there was a debate with the RWG HRD group regarding whether the trainers should be from the BMU committee, from the community or from government extension services. Basic criteria to guide the selection of trainers to be invited were clarified.

In terms of the skills and knowledge that potential BMU trainers require, the regional response was that ToT training should equip them with facilitation skills, a good technical understanding of fish hygiene, sanitation and handling, charts/

pictures e.g. showing the benefits of eating quality fish; how cholera can be transmitted; contrasting good and bad fishing practices etc, computers & LCDs and training on use to facilitate efficient information dissemination. Also writing materials (flip charts, felt pens etc) to help facilitate local level training.

Factors influencing uptake of training

Some factors which can assist in the uptake and adoption of training under the assignment include:

- Local government agencies have community development mandates and could use resources to provide equipment such as fish crates, facilities and services such as water supplies, as well as explore alternative income generating activities for fishing communities;
- Bylaws exist to help the communities implement better handling and hygiene practices. For example in Kenya BMU bylaws exist to prevent people dragging fish on the ground and to identify where fish should be landed e.g. at the jetty. Anyone caught breaking a bylaw faces some form of punishment such as a fine, imprisonment or ban from fishing for a certain period of time. The training may help identify new bylaws;
- Examples/experiences of training undertaken by community representatives exist e.g. from Uganda (Kalangala) and Kenya (Ogal), and related training materials should be used to inform the implementation of training during this mission.
- Factors which could hinder the effectiveness of training include:
- Lack of proper landing facilities and services constraining implementation of hygienic practices within a sanitary environment. Jetties to facilitate landing from canoes to shore are few and far between and where they do exist the receding of the lake water has made their use difficult. Many landing sites are multiuse areas and access is free for anyone and anything e.g. animals. This has certain negative hygiene and sanitation implications with regard to fish handling and food safety;
- Scarcity of Nile perch. A major decline in catch per unit effort has occurred over the last approximately 10 years. Less fish being landed equates to less activity and income (although fish price has increased). One of the knock on effects of this is that there is less revenue generation to fund BMUs. Such revenue can be used to fund local training activities: the less revenue generated the fewer funds available to be allocated for training;
- Lack of awareness of existing food safety legislation and bylaws at all levels. At the local level this means that bylaws if they do exist are not understood by fishers, processors and traders and are not enforced. Because quality standards are not applied at markets or border points then the incentive to produce better quality products is also reduced;
- Difficulties in earning a living from fishing means people will leave the sector in search of other work. In some cases this means that BMU committee members will leave the community and their responsibilities at the landing site;
- Cultural beliefs and habits influence the willingness of some people to use toilets;
- Lack of proper waste disposal systems lead to the accumulation of rubbish and waste at landing sites;
- Political influences make it difficult for BMUs to carry out their duties and implement bylaws;
- Ethnic differences in some fishing communities also influence the effectiveness of BMUs.
-

Solutions to uptake issues

Factors which hinder the uptake of training potential solutions include:

- Incentives/rewards for better practice and performance;
- Resources for BMU training made available through revenue collection;
- General strengthening of BMUs;
- Improving access to credit and capital for investment in new ideas and equipment;
- Developing market opportunities to encourage uptake of better practices;
- Proper implementation of existing bylaws;
- Trainer a permanent resident of a community, conversant with local languages;
- Hygiene, sanitation and handling and business skills are the concern of different agencies. They are not simply fisheries issues. Improved coordination between health, education, commerce and fisheries agencies is something which needs to be encouraged more in the future to address more fully the needs of fishing communities;

- An important issue to stress during training will be the economic reasons for carrying out improved practices. This is perhaps more easily done with reference to the export sector. Messages could include “the reasons why the price of fish is high is because people are willing to pay a high price for it in other countries but to pay the high price people expect the fish to be handled properly and that if it’s not handled properly then there is a chance that this market will be lost”;
- Development of landing sites and service provision;
- Key learning objectives should be reinforced by regular sensitization activities by the trainers;
- New bylaws formulated to address some of the problems identified e.g. the turnover of fishers and other stakeholders at landing sites can mean that new entrants arrive without training. A bylaw could be introduced along the lines of “a new entrant to the community should undergo basic training by the BMU before they are allowed to carry out their activities. . . .the trainee will be asked to pay a given amount for such training”.

Non-training initiatives

Non-training initiatives to improve knowledge and skills of BMU and fishing community stakeholders' knowledge include:

- Awareness raising on topics covered in the training during regular BMU meetings;
- Availability of large posters (as were discussed with and used by the workshop participants delivering field based training) depicting key messages using pictures and images and local language that can be displayed in the landing site. More permanent messages could be presented using murals painted on walls and canoes;
- Use of radios for communicating with fisheries stakeholders. Many people in fishing communities listen to radio. Some stations air fisheries related programs. Fishers usually carry radios with them when they go fishing;
- Drama to entertain and educate whether it be live in the community or films and then shown via DVD;
- Songs and music;
- PA systems; It may be difficult to bring people together for training at the community level, especially if there are no incentives. Instead messages could be delivered using a PA system.

Training requirements

It was clarified that the current LVFO fish handling training manual (LVFO 2007) provides a good training resource for undergraduate level trainees, but a simplified translation of the key technical issues into the local context is required to produce a resource or tool which can be used by BMU trainers to train members of their groups. One suggested scenario was to retain the current LVFO manual chapter headings and, based on these, produce a simplified pictorial manual with basic text and training tips for the BMU trainers similar in style to the SFP training manual presented in Ward (2010) and the recent, MoGLSD, MAAIF, ICEIDA (undated).

A general simplified guide such as this could be used to develop national level or species specific guides in the required languages.

Training skills and knowledge audit

In order to understand what training needs to focus on to achieve the learning objectives, current levels of knowledge and skills of BMU trainers and fishers processes and traders were assessed as accurately as possible through discussion, observation and document review. This highlighted gaps which the training would address.

From field discussions it would appear that some BMUs are better organised than others; many lack the power or incentive to implement bylaws. Some of the influencing factors which determine the effectiveness of BMUs appear to be:

- low fish catches mean less activity and less revenue generation for BMUs;
- lack of capacity of new elected committee members;
- committee members lack the required leadership, administration, technical and planning skills;
- benefits of capacity building can be lost at the local level when those who have benefited migrate to other areas or in an out of the sector;

- patrol / surveillance costs such as fuel can also be prohibitive;
- BMU committee members fear repercussions from enforcing bylaws;
- lack of police or enforcement agency presence/availability;
- lack of awareness of civil responsibilities and responsibilities in terms of fisheries management;
- incentives to carry out duties and implement better practices not clear;
- BMU system seen by fishery officers as a competitor or threat to the historical government fishery management approach;
- not all fishery stakeholders in a community are part of the BMU system;
- BMU is seen as simply the elected committee only;
- capacity building has remained with the core BMU committee members and has not been passed on;
- Lack of donor support has resulted in activities of BMUs in some locations slowing down following the end of the IFMP project;
- landing site management carried out by a non BMU entity which are more successful in the tendering process (Tanzania).

Whilst bylaws exist or are known in some locations, in other locations the BMU committee members met were not aware of their bylaws and did not have a record of them at the time of the field visits. The bylaw issue would appear to be something which requires more attention in the short-term to help BMUs develop the local rules governing issues such as fish handling, hygiene and sanitation. However, the enforcement of bylaws is also a key issue which needs to be very seriously addressed.

The adoption of training in good hygienic practice and improved fish handling is facilitated by access to proper landing site facilities, equipment and services. Therefore, the uptake of training delivered is more likely to occur amongst stakeholders who operate at the improved landing sites that exist within the three countries. For example there are 26 sites in Tanzania and six under construction in Kenya. In landing sites where facilities and equipment do not exist, uptake of improved practices will be hampered by a lack of investment capacity at the local level. In this respect efforts to encourage traders and middleman to invest in landing sites should be explored.

From the TNA field visits it is concluded that very few, if any, community level stakeholders have been trained in improved handling, hygiene, sanitation and business skills. Some BMU committee members have received some orientation in hygiene and sanitation issues, although it is understood that efforts have been made to develop local capacity in some locations in all three countries. In Uganda, recent work funded by ICEIDA has focused on developing community capacity to deliver such training within the lake shore communities.

Learning objectives

In terms of key technical post harvest issues identified during the TNA process that would be the focus of training and relate to the needs of fishers, processors and traders, these are mainly:

- understanding the causes of fish spoilage;
- assessing fish quality;
- maintaining fish quality;
- avoiding contamination;
- hygiene and handling from fishing to transportation from landing site
- use of crates/boxes of fish handling;
- use of ice;
- personal hygiene;
- proper waste disposal;
- use of potable water.

As well as training in technical fish handling hygiene and sanitation issues, strengthening business and financial management is also seen as a key issue. In terms of business development capacity building, issues to consider include market development, value addition including improved packaging and labelling for processed products, bookkeeping and financial management especially the benefits of saving for fishers. Due to the increased competition for fish and the difficulties in earning a living from what appears to be an overexploited resource, efforts are required to create alternative income generating opportunities for those that want to leave the sector voluntarily and as a means of attracting out those who are engaged in illegal activities.

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LIST OF PUBLICATIONS – LISTE DES PUBLICATIONS

SmartFish Programme

1. *Report of the Inception / Focal Point Meeting of the SmartFish Programme – Flic en Flac, Mauritius, 15th-16th June 2011*. REPORT/RAPPORT: SF/2011/01. August/Août 2011. SmartFish Programme. Indian Ocean Commission (55 pages).
2. *Report of the First Steering Committee Meeting of the SmartFish Programme – Flic en Flac, Mauritius, 17th June 2011*. REPORT/RAPPORT: SF/2011/02. August/Août 2011. SmartFish Programme Indian Ocean Commission (51 pages).
3. *Rapport de la réunion de présentation du programme SmartFish aux points focaux – Flic en Flac, Ile Maurice, 15-16 juin 2011*. REPORT/RAPPORT: SF/2011/03. August/Août 2011. SmartFish Programme. Indian Ocean Commission (55 pages).
4. *Eco-Certification for the Tuna Industry, Technical Assistance for Implementation of a Regional Fisheries Strategy for ESA-IO (IRFS)*. REPORT/RAPPORT: SF/2011/04. May 2011. SmartFish Programme. Indian Ocean Commission (40 pages).
5. *Regional Market Assessment (Supply and Demand)*. REPORT/RAPPORT: SF/2012/05. March/Mars 2012. SmartFish Programme. Indian Ocean Commission (264 pages).
6. *Trade Assessment Study*. REPORT/RAPPORT: SF/2012/06. March/Mars 2012. SmartFish Programme. Indian Ocean Commission (120 pages).
7. *Gouvernance des Pêches Maritimes dans l'Ouest de l'Océan Indien*. REPORT/RAPPORT: SF/2012/07. June/Juin 2012. SmartFish Programme. Indian Ocean Commission (101 pages).
8. *Value Chain Assessment of the Artisanal Fisheries – Mauritius*. REPORT/RAPPORT: SF/2012/08. June/Juin 2012. SmartFish Programme. Indian Ocean Commission (85 pages).
9. *Kenya Fisheries Governance*. REPORT/RAPPORT: SF/2012/09. June/Juin 2012. SmartFish Programme. Indian Ocean Commission (36 pages).
10. *Training Needs Analysis – Quality and Hygiene*: REPORT/RAPPORT: SF/2012/10. June/Juin 2012. SmartFish Programme. Indian Ocean Commission (95 pages).

La bonne gouvernance et de la gestion des pêches et de l'aquaculture permettent d'améliorer la contribution du secteur à la sécurité alimentaire, au développement social, à la croissance économique et au commerce régional ; ceci en assurant par ailleurs une protection renforcée des ressources halieutiques et de leurs écosystèmes.

La Commission de l'Océan Indien (COI) ainsi que la COMESA (Common Market for Eastern and Southern Africa), l'EAC (East African Community) et l'IGAD (Inter-Governmental Authority on Development) ont développé des stratégies à cette fin et se sont engagés à promouvoir la pêche et l'aquaculture responsable.

SmartFish supporte la mise en œuvre de ces stratégies régionales en mettant l'accent sur le renforcement des capacités et des interventions connexes visant à :

- mettre en place des mécanismes pour la gestion et le développement durable des pêches ;
- développer un cadre de gouvernance des pêches au niveau régional ;
- renforcer le suivi-contrôle-surveillance pour les pêcheries partagées ;
- développer des stratégies et supporter des initiatives propres à accroître le commerce régional du poisson ;
- contribuer à la sécurité alimentaire en particulier par la réduction des pertes après captures et la diversification de la production.

SmartFish est financé par l'Union Européenne dans le cadre du 10^{ème} Fond Européen de Développement.

SmartFish est mis en œuvre par la COI en partenariat avec la COMESA, l'EAC et l'IGAD et en collaboration avec la SADC. Une collaboration étroite a également été développée avec les organisations régionales de pêche de la région. L'assistance technique est fournie par la FAO et le consortium Agrotec SpA.

By improving the governance and management of our fisheries and aquaculture development, we can also improve food security, social benefits, regional trade and increase economic growth, while also ensuring that we protect our fisheries resources and their ecosystems.

The Indian Ocean Commission (IOC), the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC) and the Inter-Governmental Authority on Development (IGAD) have developed strategies to that effect and committed to regional approaches to the promotion of responsible fisheries and aquaculture.

SmartFish is supporting the implementation of these regional fisheries strategies, through capacity building and related interventions aimed specifically at:

- implementing sustainable regional fisheries management and development;
- initiating a governance framework for sustainable regional fisheries;
- developing effective monitoring, control and surveillance for transboundary fisheries resources;
- developing regional trade strategies and implementing regional trade initiatives;
- contributing to food security through the reduction of post harvest losses and diversification.

SmartFish is financed by the European Union under the 10th European Development Fund.

SmartFish is implemented by the IOC in partnership with the COMESA, EAC, and IGAD and in collaboration with SADC. An effective collaboration with all relevant regional fisheries organisations has also been established. Technical support is provided by Food and Agriculture Organization (FAO) and the Agrotec SpA consortium.

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