# Development of the Inland Fisheries Export Sectors in ESA Region: SPS and other Barriers

**Prepared for**

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## TEXT BOXES

# GLOSSARY

| | |
|---|---|
| **ACP** | **African Caribbean and Pacific** |
| **ATSP** | **Africa and Standards Project (World Bank)** |
| **CTA** | **Technical Centre for Agricultural and Rural Cooperation ACP-EU** |
| **CIFA** | **Committee for Inland Fisheries of Africa** |
| **ECDPM** | **European Centre for Economic Policy Management** |
| **EPA** | **Economic Partnership Agreements (Cotonou)** |
| **ESA** | **East and Southern Africa** |
| **EU** | **European Union** |
| **FAO** | **Food and Agricultural Organisation** |
| **FDA** | **Food and Drug Administration (USA)** |
| **FTA** | **Free Trade Agreement** |
| **GHP** | **Good Hygiene Practice** |
| **GLP** | **Good Laboratory Practice** |
| **HACCP** | **Hazard Analysis Critical Control Points** |
| **HIPC** | **Heavily Indebted Poor Countries** |
| **IFPRI** | **The International Food Policy Research Institute** |
| **NEPAD** | **New Partnership for Africa's Development** |
| **OECD** | **Organisation for Economic Cooperation and Development** |
| **SEATINI** | **Southern and Eastern Africa trade Information and Negotiations Institution** |
| **SPS** | **Sanitary and Phytosanitary** |
| **SSA** | **Sub Saharan Africa** |
| **TBT** | **Technical Barriers to Trade** |

# BACKGROUND AND REMIT

The ESA EPA Negotiating Group has requested assistance to prepare a road map to achieve the general policy statements which have been made in terms of development of inland fisheries export sectors, including aquiculture, with particular reference to Sanitary and Phytosanitary issues.

This study aims to produce data which can inform the strategies and processes of the organisations and people engaged in the fisheries discussions in a practical way. It is already acknowledged that SPS issues are a major problem to the development of inland fisheries. The report is required to outline, in specific terms, what needs to be done in terms of building capacity and what are the costs of particular projects and programmes needed to allow ESA countries to be able to conform to the SPS requirements of the European Union in the fisheries sector.

This involves a focus on what the barriers to the export of inland fish and fish products are to the EU and quantification the cost of remedial action. Without a comprehensive country by country audit any such costs must necessarily be indicative as specific projects will have different needs. However, it is possible to produce examples of costs of typical and relevant activities which should be close enough for individual organisations to get a good idea of what a particular remedy would cost in terms of finance and technical input.

Aquaculture is included as a separate distinct area as this sector has a number of divergent as well as overlapping aspects with the more traditional capture fisheries. The development potential of aquaculture is significant in Africa but SPS issues also loom large in several areas of its activities.

The remit outlined refers to the role and related cost that SPS plays in constituting a hurdle to the development of Inland fisheries. However, the very concept of food safety that underlies all SPS legislation, standards etc, necessarily involves a range of other topics which have to be considered. As far as possible the Paper keeps to the issue of the costs related to SPS in its traditionally recognised form but does also refer to related issues eg, a need for uncontaminated water and an enabling environment. In addition it is not always possible to extract SPS specific cost elements from wider processes which may be required but which also incorporate a complementary emphasis on quality control, eg, traceability and hygiene within a HACCP system.

The Paper therefore establishes a general background against which development must take place as well as setting out a series of costs related to SPS activities and processes. These costs relate to the physical upgrading of infrastructure and the training of the human resources involved in operating a “safe“ system and cover both

the public and private sector. Some sample programmes are included which could constitute elements of capacity building projects at both national and/or regional level.

In order to have some reference material available fairly quickly, the costs cited are based on a review of published information and examination of projects and programmes of assistance in a number of developing countries. The costs are usually cited in US$ or Euro and when considering these, regard must be paid to the influence of fluctuations in exchange rates since the time of the activities

These activities were carried out by a range of organisations such as the FAO, World Bank, EU etc. This data has been augmented with the personal experience of the author and other consultants. Neither the Paper nor the figures quoted are definitive but intended to provide an input to negotiators seeking to put together quantifiable bids for capacity building assistance under Cotonou.

# Development of the Inland Fisheries Export Sectors in ESA Region: SPS and other Barriers

## INTRODUCTION

The inland fisheries of the ESA region are dominated by three rift valley lakes - Lake Victoria, Lake Malawi/Nyasa, and Lake Tanganyika - which are located within the territories of Kenya, Uganda, Rwanda, Burundi, Malawi, Mozambique and Zambia. To a lesser extent, rivers, small lakes, and man-made lakes and reservoirs contribute to inland fisheries production and fishery-related employment.

Artisanal fisheries exist along the coasts of all the countries in the region, and in lakes, rivers and other inland water bodies. At least 500,000 persons work directly in the primary fishing sector. About 2 million people are employed in processing, trading, input supply and allied activities. Existing data most probably underestimates the number of people who are involved in, or depend on, the sector, particularly in the diverse inland fisheries sector.

With some notable exceptions, such as Mozambique, few countries in the region depend on fishing and fishery-related activities to contribute significantly to their gross domestic product and export earnings, and to overall employment and income. In most coastal and landlocked States, fishing is dominated by artisanal, small-scale and subsistence fisheries

Geographical East Africa is a region with large natural lakes (the Great Lakes) and varied inland waters; and inland fisheries are thus of great importance. Over-exploitation of fish stocks is reported in inland waters, particularly in the export-oriented fisheries of Lake Victoria. This has been attributed to the rising demand from a growing population and from export markets; and poor regulation of the sector.

Aquaculture production is still in the very early stages of development in most countries of the region. Aquaculture accounted for only about 1.5% of total fisheries production in 2003. In three countries, aquaculture is beginning to make a significant contribution to overall fisheries production - Tanzania (2%), Madagascar (5%) and South Africa (0.5%). The new emphasis on aquaculture, particularly on its export-oriented and intensive forms, has raised some concern that development of this resource should not be at the expense of ecosystems and biodiversity, and sustainable social and economic development.

When considering capacity building in relation to inland fisheries, it is important to understand the background against which any such activity might take place, as this is relevant to the extent and pace at which any change may be anticipated. Firstly, with two exceptions (Seychelles and Mauritius), the ESA region is characterised by relatively low per capita fish supplies - well below the 10 kg average for developing countries. Fish also makes a relatively low overall contribution to protein supplies, except in the island states.

Secondly in socio-economic terms the region is generally seen as vulnerable. The Human Development Report 2005 classifies six of the twelve countries as reporting

"low human development" - Madagascar, Kenya, Tanzania, Malawi, Zambia and Mozambique. The life expectancy in eight of them is below fifty and in three countries - Malawi, Zambia and Zimbabwe - it is below forty. Eight countries are part of the Heavily Indebted Poor Countries (HIPCs) grouping of the World Bank.

This situation requires urgent attention, particularly as a study by IFPRI and the WorldFish Center suggests that for the sub-Saharan region simply maintaining consumption at present levels up to 2020 will require capture fishing to be at least sustained and preferably enhanced and that aquaculture needs to be developed by over 260%. This underlines the need to tackle the obstacles to growth in this sector.

Studies by FAO have shown that there is considerable physical potential to respond to the growing demand for fish by improving aquaculture production. For SSA alone it is estimated that 9.2mkm$^2$ or 31% of the land area is suitable for smallholder fish farming and that only 0.5% of this area would be needed to produce 35% of the regions increased need for fish up to 2010.

## 1.0 INLAND FISHERIES

With the exception of semi industrial fisheries in a few large lakes and reservoirs, the level of private and public investment in inland fisheries is low. Yet in regions where these activities are present their potential contribution to the decentralised economic development process is substantial. However, to realise this potential an appropriate level of policy support and investment is required. This is in different areas including infrastructure and landing facilities but particularly in activities aiming to reduce the post harvest losses that severely hampers the development of inland fisheries generally.

A primary aim of such development is to exploit the market opportunities that the EU represents. For this there is no problem in relation to the presence of buyers in the shape of the large EU import chains. The problem that does exist and represents a formidable barrier to increasing exports from this sector, relates to the level of food safety. This can be categorised under several heads

a) Lack of trust by buyers in a product which is sourced from a fragmented industry whose working and production practices are beyond the control/knowledge of buyers

b) Inadequate public sector application /enforcement of the SPS requirements of the EU

c) Lack of understanding of EU requirements

d) Lack of private sector resources, both technical and financial, to meet the EU requirements

Problem a) resolves itself through action to tackle b, c and d.

## 2.0 EU Requirements

### 2.1 Public sector

Although this paper relates primarily to inland fisheries (as opposed to marine) there is in practice little substantial difference in the EU requirements. Of these the overriding prerequisite is to be placed on a list of countries which are deemed eligible to export to the EU. The principle eligibility criteria for this are:

- A Competent Authority (CA) must exist which is responsible for official controls throughout the food production chain. This authority must be empowered, structured and resourced to implement effective inspection and guarantee credible certification of the relevant hygiene conditions. As background to its operations the country must have food safety legislation that requires an equivalent level of safety as that delivered by the EU's own hygiene legislation.
- The national authorities must guarantee that the relevant hygiene and public health requirements are met. The hygiene legislation contains specific requirements on landing sites, processing establishments and on operational processes, freezing and storage. These are aimed at preventing contamination of a product during processing.
- Imports are only authorised from approved establishments (eg, processing plants, cold stores) which have been inspected by the competent authority and are found to meet EU requirements. The authority provides the necessary guarantees and is obliged to carry out regular inspections and to take corrective action as necessary.
- Additionally in the case of aquaculture products, a control plan on heavy metals, contaminants, residues of pesticides and veterinary drugs must be in place to verify compliance with EU requirements.

### 2.2 Private sector

In order to satisfy the competent authority that it is meeting EU hygiene requirements an establishment must be able to produce evidence of safe (from a food safety viewpoint) handling of the product. This evidence must cover the entire supply chain from where the fish first entered the chain to the point of export of the finished product. The risk minimisation and monitoring tools that this involves necessarily involves aspects of quality control that might normally be expected in any commercial enterprise that valued its commercial credibility.

However, in some instances the demands of importers go beyond this and reflect purely commercial marketing interests. It is sometimes difficult to distinguish where legislative requirements end and additional market driven requests (eg, premium quality, environmental and social) come in but as they are often tied closely to supplier contracts these are difficult to avoid and have to be met along with the more pertinent hygiene requirements. The following sets out the requirements for the two areas into which businesses will fall:

### 2.3 Primary Production

The farm-to-fork approach of EU legislation includes primary production and the general principles of food hygiene legislation now extend to all operations engaged in the primary production of food.

'Primary production' is defined as the production, rearing or growing of primary products up to and including harvesting, hunting, fishing, milking and all stages of animal production prior to slaughter. Fish and shellfish farmers as primary producers and certain associated operations need to follow good practice and manage their operations as set out in Annex 1 of Regulation (EC) 852/2004. Primary producers are not, however, required to implement a HACCP system.

In practical terms, the requirements for primary producers amount, in the main, to fairly basic hygiene procedures. Primary producers must ensure that hazards are acceptably controlled and that they comply with existing legislation. Under the current rules, primary producers need to take steps, for example, to:

- prevent contamination arising from water, soil, feed, veterinary products, waste, etc;
- take account of results from tests relevant to animal and human health;
- use medicines appropriately.

The requirements for food business operators also apply to certain associated activities that include:

- the transport, handling and storage of primary products at the place of production, where their nature has not been substantially altered.

## 2.4 Food business operators

Food business operators making or handling products of animal origin must comply with the provisions of Regulation (EC) 853/2004 and where appropriate, certain specific rules concerning microbiological criteria for foodstuffs, temperature control and compliance with the cold chain, and sampling and analysis requirements. Foods of animal origin include live bi-valve molluscs and fishery products.

Regulation (EC) No 854/2004 lays down specific rules for the organisation of official controls on products of animal origin intended for human consumption, The Regulation supplements Regulation (EC) 852/2004 on hygiene of foodstuffs and Regulation (EC) 853/2004 on specific hygiene rules for foodstuffs of animal origin. This official control regulation gives details of the controls to be carried out on live bi-valve molluscs and fishery products.

The official controls include audits of good hygiene practices and HACCP principles, as well as specific controls that have requirements determined by sector (including live bivalve molluscs and fishery products).

Specific requirements in the new legislation for fishery products (of which only some may be entirely relevant to all categories of inland fisheries) cover the following elements:

- equipment and facilities on fishing vessels, factory vessels and freezer vessels: areas for receiving products taken on board, work and storage areas, refrigeration and freezing installations, pumping of waste and disinfection;
- hygiene on board fishing vessels, factory vessels and freezer vessels: cleanliness, protection from any form of contamination, washing with water and cold treatment;
- conditions of hygiene during and after the landing of fishery products: protection against any form of contamination, equipment used, auction and wholesale markets;
- fresh and frozen products, mechanically separated fish flesh, endo-parasites harmful to human health (visual examination), and cooked crustaceans and molluscs;
- processed fishery products;
- health standards applicable to fishery products: evaluation of the presence of substances and toxins harmful to human health;
- wrapping, packaging, storage and transport of fishery products.

Regulation 853/2004 requires the use of potable water in relation to fish processing but transitional arrangements in (EC) Regulation 2076/2005 allow clean water to be used up to 31st December 2009 in certain situations including for making ice for chilling fresh fishery products, during gutting and filleting operations and for cooling after cooking crustaceans and molluscs.

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Hazard Analysis Critical Control Point (HACCP)

The new legislation requires food business operators (except primary producers) to put in place, implement and maintain a permanent procedure, or procedures, based on the principles of HACCP. The requirements take a risk based approach and can be applied flexibly in all food businesses regardless of size.

Traceability and withdrawal of food products

In accordance with Regulation (EC) 178/2002, traceability systems must be established for the fish and all constituent elements associated with production.

# 3.0 Focus Areas and Costs

## 3.1 Competent Authority

As noted above, the existence of an approved CA is necessary for fish to be exported to the EU. In the ESA region all countries have bodies which may be referred to as CAs but not all of these would satisfy the EU requirements. There is no formal definition of a CA in terms of location, size etc as its structure must necessarily reflect its responsibilities. It must however be in the public sector and it is here that problems can exist if the role of the CA is assigned to an institution that does not itself carry out control work. e.g. a Bureau of Standards. In considering the effectiveness of a CA the EU is more likely to approve a role situated within a body having a real regulatory authority for fish and direct linkages with fish inspectors. Where there exists a problem within the overall working mechanism relating to divided responsibility there is likely to be a consequent problem of an unreliable fish

inspection framework. Fig 1 reflects a specimen FAO project to rectify deficiencies such as:

- lack of training in GHP (Good Hygiene Practice) and HACCP (Hazard Analysis Critical Control Points);
- the absence of comprehensive operational manuals and guidance as to inspection procedures at landing sites, sampling, recording and documentation for traceability and auditing of GHPs and HACCP in fish establishments;
- Out of date regulations that fail to meet the current fish industry and international markets requirements, eg, no HACCP requirements, water quality undefined in legislation;
- Poor enforcement both at the source of the problem and, in the case of non compliance, in the courts;
- No monitoring programme for pesticides, bio toxins and heavy metals or other residues defined or implemented for fishery and/or aquaculture products;
- Confusion between monitoring for aquaculture products and other hazards.

**Objective: To strengthen and rationalise food inspection services**

**Fig 1**

Specimen Activity

| | |
|---|---|
| i. Improvement of inspection services | |
| Indicative cost: (average per country) | |
| • International consultants (6 m/m) | US$90,000 |
| • National consultants (6 m/m) | US$24,000 |
| Total | US$114,000 |
| ii. Training of food inspectorate trainers in modern food inspection techniques and direct training | |
| Indicative cost: (average per country) | |
| • 2 training of trainers courses (20 persons) | US$80,000 |
| • 8 training courses (20 courses) | US$160,000 |
| Total | US$240,000 |
| iii. Provision of inspection equipment and materials | |
| Indicative cost: (average per country) | |
| • Sampling kits, refrigeration Boxes (20) | US$50,000 |
| • 4 equipped inspection vehicles | US$200,000 |
| Total | US$250,000 |
| **Indicative total cost** | **US$604,000** |

Source FAO

### 3.2 The National Food Control System

In addition inadequacies in the supporting infrastructure on which the operation of a CA and total " farm to fork" system depends frequently exposes areas of risk:

- Laboratories with outdated equipment and staff not fully trained in GLP (Good Laboratory Practice);
- Landing sites without proper hygiene facilities;
- The absence of a fully integrated disease reporting and monitoring system to enable preventative or remedial action to be quickly taken.

**Indicative costs of capacity building**

Overall costs will depend upon the size of the facility that is developed but Figs 2 to 5 give some indication of the likely costs. It is also important to note that where supplies are obtained from, for example, European suppliers that the ex-factory price may be increased considerably by the time it arrives on site. In some instances where technical back up in a country is inadequate the cost of a service agreement with the suppliers' agents will also increase the ultimate costs. Consequently the costs indicated should be taken as being at the conservative end of a range rather than absolute indicators. The cost of becoming suitable for accreditation can also be significant, however, and preparation for this is built into the estimated costs for laboratory establishments given in Fig 3.

**Objective: To Strengthen the Institutional framework for National Food Control**

**Fig 2**

Specimen Activity (average per country)

i. Review of national institutions and co-ordinating mechanisms and recommendations

Indicative costs (average per country)

| | |
|---|---|
| • International consultant (2 m/m) | US$30,000 |
| • National consultant (4 m/m) | US$16,000 |
| • National food quality and safety Workshop | US10,000 |
| Total | US$56,000 |

ii. Support for capacity to design and prioritise food quality

Indicative cost (average per country)

| | |
|---|---|
| • Three seminars and training Workshops on risk analysis | US$30,000 |
| Indicative total cost | **US$86,000** |

Source FAO

**Objective: To upgrade the scientific and technical capabilities of food control laboratories**

**Fig 3**

Specimen Activity

i. Identification of requirements
Indicative cost: (average per country)
- International consultant (2 m/m) US$30,000

ii. Improvement of physical infrastructure to meet international requirements
Indicative cost: (average per country) US$200,000

iii. Provision, installation and operation of additional laboratory equipment
Indicative costs (average per country)
- Purchase of laboratory equipment on average for each country – 3 gas liquid chromatographs; 2 high performance liquid chromatographs; 1 atomic spectrophometer, general laboratory appliances and reagents
  Estimated cost US$1,200,000

iv. On the job training of laboratory staff
Indicative cost (average per country)
- International consultants (6 m/m) US$75,000

**Total indicative costs US$1,505,000**

Source FAO

**Objective: To update the legal and regulatory framework governing food quality throughout the food chain**

**Fig 4**

Specimen Activity

i. Review of national legislation and recommendations
Indicative cost (average per country)
- 1 international consultant (2 m/m) US$30,000
- 1 national consultant (2 m/m) US$8,000

Total US$38,000

ii. Development of new food legislation
Indicative cost: (average per country)
- 1 international consultant (2 m/m) US$30,000
- 1 national consultant (2 m/m) US$ 8,000

Total US$38,000

**Indicative total cost US$76,000**

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The cost of equipment will necessarily vary with the nature of the laboratory. The figure of US$1.2mn cited in iii of Fig 3 is a middle range of the total purely indicative purchases for the laboratories. Fig 5 represents a breakdown of equipment costs by type of laboratory.

| **LABORATORY COSTS BY FUNCTION** **Type of Laboratory** | **Fig 5** **Cost of Equipment $US** | |
|---|---|---|
| Microbiology | 100,000-150000 | |
| Pesticide residues | 400,000-500,000 | |
| Veterinary Drugs | 250000- 350000 | |
| Heavy metals | 300,000-400,000 | |

**Source John Cox**

## 3.3 Private sector

The above illustrates the size and nature of the requirements that the public sector must meet. However this is merely establishing a framework within which individual businesses must themselves be able to demonstrate that their product is in conformity with the legal requirements that the CA has undertaken to enforce. This demonstration is also considerable both in terms of finance and the supply of human trained resources.

The nature of the impact reflects the position in the supply chain but whilst suppliers at the bottom (e.g. artisanal) may not have to meet the high bills of larger processors the impact may be greater in relation to the resources available to this sector. Looking at the overall picture the principal areas of impact in terms of CA (EU) requirements are HACCP.

HACCP has become a central requirement of EU hygiene policy. For many fish exporters however the system has already been in place for many years reflecting the needs of the market place for consistency in quality and output. What has changed however is the nature of the requirements which a CA may look for within a HACCP system.

This relates to increased testing/sampling and much higher standards of hygiene relating to workers than previously might have been considered necessary under purely commercial considerations. The cost of upgrading plant and equipment to the EU hygiene specifications can be significant. The costs are relative to individual operations but as an example in Bangladesh expenditure on upgrading shrimp processing plants for export was estimated to be in the region of €240,000 per establishment.

Case studies of HACCP implementation in ACP countries are not readily available in any detail. However, looking at a study[1] carried out in the US in 2000 in the breaded fish industry provides some useful indicators of component costs. Some of the types of fish processed and the filleting and freezing elements have relevance to the seafood sector in many ACP countries.

It is possible that the costs may vary but as it is likely that foreign consultants/technicians will be used and foreign equipment imported there should not be a great difference in the monetary cost incurred by an ACP exporter. There is, however, a much greater cost to a firm in a developing country when this is looked at in the context of their available resources.

Fig 6 outlines the average component costs for firms installing a minimum of two control points (regarded as the minimum to satisfy domestic US FDA requirements) and those installing a more sophisticated system covering five or six major control points. The costs are not the total costs incurred, many of which are firm specific (or multi purpose) but intended to indicate those that are likely to constitute substantial additional SPS specific related expenditure.

In most HACCP operations one of the heaviest costs in a multi point control system relates to the cost of creating several new administrative overheads in the form of quality control monitoring and analytical personnel. (Item 3 fig. 6)

However, it is also worth noting that throughout the developing world a major cost in HACCP relates to the employment of foreign consultants for the basic design and implementation stages of HACCP systems. Consequently for similar work undertaken in Africa and the EU or US that if carried out in Africa could easily be more expensive. When relative spending power is considered the cost to African businesses Africa becomes even more expensive.

It is interesting to note that a survey of businesses in India identified expenditure on HACCP set up costs as being highest in the fisheries sector compared with dairy or fruit and vegetable processing. External consultants contributed heavily to this.

[1] *The Model of the Cost of HACCP Implementation in the Seafood Industry. State University of New York and Cornell University 2000*

| HACCP Fig 6<br>Indicative First Year Costs for Breaded Fish Companies in the United States<br>Fig. | | |
|---|---|---|
| Activity | Complexity of HACCP Plan | |
| | 2 Control Points | 5/6 Control Points |
| 1. HACCP Plan Design<br>2. Training<br>3. Control and record keeping e.g. equipment, laboratory analysis, additional monitoring personnel | US$8700<br>US$4900<br>US$17400 | US$19300<br>US$16400<br>US$93,000 |
| Note:<br>(a) The costs are the result of a survey of eight companies in the US and are an average of the costs involved under each activity, which necessarily varied from company to company.<br>(b) The raw material is cod, haddock, pollock, flounder, sole, perch or whiting.<br>(c) The finfish meat is subjected to heading, eviscerating, filleting, skinning and freezing before undergoing a process of breading.<br>(d) The finished product is commercially sold frozen in the shape of portions, sticks and fillets. | | |
| Source: Department of Agriculture and Consumer Economics, University of Illinois | | |

**Traceability**

Tracing techniques (traceability) from the primary producer (including animal feed and therapeutants used in aquaculture), through post-harvest treatment, processing and distribution are now a requirement in the fisheries sector. The cost of this reflects the nature of the system (i.e. paper records or sophisticated technology) but impact most heavily on the small independent fish supplier .This not only involves purchase of equipment but also use of more skilled (and expensive) personnel.

**Landing Sites**

The EU hygiene regulations extend to the landing sites however small. These must be inspected and samples taken for testing by the CA. Hygiene conditions are however a problem both in relation to the facilities provided for people handling the fish and the temperature of storage arrangements. Ice is not always available or used adequately and knowledge about the hygiene requirements is often limited among the people involved in the capture, handling and transport of the fish.

Aspects of traceability also impact here as upstream processors need to have in place some system that allows identification of the source of individual consignments in the event of a problem arising. Considerable work has been carried out around Lake Victoria in tackling this problem area and fig 7 provides some indication of costs. The costs must however also reflect the size and complexity of the project. Where upgrading of infrastructure (roads etc as shown in Fig 7) is not required the cost per landing site in other locations has been cited as US$ 10-20,000

**Kenya** **Fig 7**

Upgrade small landing areas for fish including better road access @ €88,600 for each of 10 designated beaches: total € 886,000

Source World Bank .Africa and Standards Project (ATSP) 2003

One study estimated that the cost of upgrading a single large landing site on Lake Victoria to provide potable running water, cooling facilities etc was around $1.2 million (Lake Victoria Management Project). Given that there are five main beaches that supply fish for export the total cost is estimated to be $5.8 million. The cost of upgrading laboratory facilities for chemical and microbiological analysis is estimated to be $1.1 million (Lake Victoria Management Project).

Source: Food Safety Requirements and Food Exports for Developing Countries. Spencer Henson et al 2001

**Cold Storage**

Refrigeration and cold stores are an essential element in the supply chain for exporting fish. Typically EU regulations relating to frozen fish require that fishery products be held below -18ºC, but this is not cold enough for maintenance of good quality for more than 2-3 months. More usual commercial considerations require fish products should be held at/below -30ºC if good quality is to be maintained. Product storage life, assuming good packaging to prevent oxidation and dehydration, is then more than 12 months. This may be relevant for some ESA seasonal fisheries when products might want to be held and sold throughout the year, but caught over a short period.

Whilst larger fish processors will have cold storage as an integral part of their operation the potential development of the smaller inland fisheries sub sector may require the establishment of additional cold storage facilities. Post harvest losses are a prominent feature of African fisheries and such facilities can tackle this problem providing the twin advantages of additional animal protein becoming available to the population and the potential for additional exports. The costs of such establishments are variable but when looked at as a package to assist the development of small fishing enterprises, includes cold rooms, freezers, ice machines, as well as boats with suitable cold storage/handling facilities.

**Senegal** **Fig 8**

Figures extracted from a study in Senegal indicate that seven ice plants and two refrigerated warehouses cost € 70,000

Source .Study of the costs of Compliance with Export Standards in the Senegalese Fisheries Industry 2005

Fig 9 is the result of a FAO review of the requirements of the private sector in Tanzania for fish products. Although not recent it is useful in illustrating the general size and nature of individual company specific expenditure. This covers the establishment of new plants at an average cost of US$ 80,000 each and the upgrading of existing plants at US$ 40,000 each.

**Tanzania** **Fig 9**

Estimated Cost of Specific SPS-related Private Sector Investments in Fish Sector

| Investment | Units | Costs |
|---|---|---|
| 1. Upgrading of processing plants | | |
| General refurbishment | 11 | US$ 66,000 |
| Equipment | 11 | US$ 374,000 |
| Sub total | | US$ 440,000 |
| | | |
| 2. Establishment of new plants | 2 | US$ 160,000 |
| 3. Construction of ice and chilling plants | | |
| - Ice plants | 17 | US$ 32,000 |
| - Chilling rooms | 16 | US$ 19,200 |
| Sub total | | US$ 51,200 |
| | | |
| 1. Improved artisanal Gillnetting | 200 | US$ 14,600 |
| | | |
| Total Private Sector Investment | | US$ 765,800 |

Note: Approximately 26,000 artisanal fishermen are directly employed in the sector and nearly 500,000 people are employed in some way in fisheries related activities

Source: FAO 1997

Whilst the economic circumstances may not be exactly comparable to Africa some additional idea of the costs of upgrading hygiene related capacity can be obtained by examining the experience of other developing countries .There is a scarcity of comprehensive information generally but the example of India provides some useful parameters. Here the World Bank undertook a survey in 2005 of the cost of bringing the fish processors of an Indian sub region (Kerala) up to the required EU standard. Fig 10 indicates the costs for different implementation activities which firms had to introduce. These are all hygiene focussed and would be highly relevant to any programme of assistance to develop inland fisheries.

**Costs of Upgrading Fish Processing plants in India 2000-2003 Fig 10**

| Activity | No of Units | Cost $US | Average Cost/Unit |
|---|---|---|---|
| Ice making facilities | 129 | 523,350 | 4,056 |
| Insulated fish boxes | 269 | 207,740 | 772 |
| Chill rooms | 62 | 250,907 | 4,033 |
| Water purification facilities | 85 | 202,391 | 2,381 |
| Effluent treatment plants | 65 | 821,740 | 12,642 |
| Refrigerated trucks/containers | 27 | 184900 | 6,848 |
| Standby generator sets | 73 | 306,175 | 4194 |

Source World Bank Survey 2005

## 4.0 Aquaculture

Drug residues in fish are also covered by the EC legislation. In addition to legislation on production of safe food in general terms, several directives deal with drugs specifically. This results in there being two types of plants which can receive approved status **a)** plants which can process only wild catches, and **b)** plants which can process both wild catches and/or aquaculture products.

The reason for this differentiation is that to export aquaculture products to the EU, third countries must have a specific "residue monitoring plan" approved by the Commission, in accordance with Council Directive 96/23 The components specified in this Directive include legally applied drugs, drugs that are not permitted as hormones and other growth promoters, organic and inorganic pollutants, mycotoxins and certain dyes.

Aquaculture in sub-Saharan Africa has been orientated to domestic markets and practised mainly by small-scale farmers. According to the FAO Fisheries Department (see Fig 11) the physical potential for expansion of production based on this form of aquaculture is much larger than the present levels of production. Given the physical potential, a horizontal expansion of small-scale aquaculture seems to be the most likely scenario, as a core of producers with sufficient experience emerges in the various countries.

It is useful to note that the Namibian government has made aquaculture a development priority in its second National Development Plan and has established support arrangements both in terms of credit and SPS requirements.[2]

[2] A Review of Aquaculture Policy and Institutional Capacity in BCLME Region .Enviro-Fish 2006

**FAO Report on Aquaculture** **Fig 11**

According to an FAO Report in 2006, southern Africa has an estimated 20,000 small bodies of water, mostly reservoirs built to provide water for domestic use, watering cattle and irrigating crops. Some of these were stocked with fish, but lacking adequate management, production remained low. The report says that countries along the east coast of Africa, like Mozambique and South Africa, have the potential to develop shrimp farming, and "there is good potential to develop oyster and mussel farming which is already happening in South Africa."

Aquaculture development appears to be strongest in Namibia, South Africa, Zambia, Mozambique, Zimbabwe and Malawi, but "all with some degree of success, but falling short of the real potential". Most efforts to kick-start fish farming for subsistence, farmers have been thwarted by lack of resources, skills and funding. The Report notes "Even aquaculture of tilapia, which is native to the continent, has not developed significantly." This situation exists even though there is a growing global demand for fish like tilapia and catfish, bass and carp which are cost-effective species and suitable for subsistence aquaculture.

The SOFIA report noted that there "are some encouraging signs in the continent: black tiger shrimp (Penaeus monodon) in Madagascar, and Eucheuma seaweed in the United Republic of Tanzania, are thriving and production of niche species such as abalone (Haliotis spp.) in South Africa is increasing.

Source: State of World fisheries and Aquaculture 2006 (SOFIA)

Rural aquaculture is not the only possible form of aquaculture in the sub-region. In recent years, trials with mariculture have led to a sizeable production in South Africa and Madagascar, and the potential for replication of these successful examples appears to exist. Nevertheless in general, the novelty of aquaculture, combined with the economic difficulties experienced by many countries of the sub-region and the relative lack of entrepreneurs and credit for aquaculture development, presents an important obstacle to the expansion and consolidation of this new practice.

However in order to understand the barriers to realising this potential it is necessary to appreciate that production-oriented aquaculture development projects differ substantially from those typical of production in other land based sectors such as agriculture.

Agriculture production projects are often concerned with large-scale development over wide areas of land for which there may be options for different crops, such as sorghum, corn, maize, tobacco, vegetables, etc. Aquaculture production projects in general are more constrained physically by their need for existing water bodies, or water resources adjacent to suitable land. Consequently these basic requirements immediately limit options for:

- the species which can be farmed (into those which tolerate fresh-water, brackish -water, or marine environments); Lack of knowledge of the reproductive biology, nutrition, and diseases of specific aquatic organisms represents the major biologic constraint to their culture.
- the systems which can used (as extensive, semi-intensive, and intensive systems all depend on the availability of resources and inputs); and
- the practices which can be used (as all farm units, such as ponds, raceways, floating cages, rafts, etc., each have characteristics which make them particularly applicable in certain conditions).

These physical constraints influence the types of projects which can be formulated. Notably, projects with activities which extend over large areas are not usually characteristic of aquaculture development (although exceptions do exist) and are typically relatively small, and highly specific in terms of their objectives.

As a consequence of the constraints and the limitations noted above, potential for aquaculture projects basically fall into four categories

- Private sector projects where investment is by commercial interests. For example, an entrepreneur wants to build a trout farm on his own land; or a shrimp farming company wants to build a new hatchery; or an international corporation wants to convert its low-grade sugarcane plantations into catfish production.

- Public sector projects where the investment is in a publicly owned entity. For example, the Ministry of Fisheries wants to build a state hatchery to support its programme to enhance inland fisheries; or the national extension service requires a new farm to demonstrate fresh-water shrimp production; or the Ministry of Technology wishes to build a national research and development centre; or a parastatal organization wants to build a new fish market.

- Public sector projects where investment is by private farmers supported by government services. For example, the Ministry of Agriculture wants to increase inland fisheries production; or the Department of Aquaculture wishes to increase national production of molluscs; or the Ministry of Planning and Development seeks to increase national foreign exchange earnings through marine shrimp production.

- Public sector projects concerned only with institution building. For example, the Ministry of Agriculture needs to be strengthened to improve its organization and management of the aquaculture sub-sector; or a parastatal body needs training in market research and product promotion; or certain universities want to upgrade their graduate and post-graduate education programmes in aquaculture.

## 5.0 Regional and National Programmes

Whist the above can be looked at from a purely national viewpoint the issues must also have a relevance to the overall aim of regional integration represented by ESA. In this regard there are some functions which can be regarded as being more cost effectively made available on a regional or sub regional basis. Examples of this would cover, for example, training, reference laboratories, certification, laboratory accreditation, data bases etc.

The development of data bases and information about available technology, permissible feed and other issues of common interest is a particularly important element in encouraging the growth of entrepreneurs in this sector. Figs 12 and 13 identify and suggest indicative costs for some activities at both national and regional level.

**Fig 12**

**Objective: To enhance the capability of institutions operating in the field of food quality and safety to serve as regional/sub regional reference and training centres**

***Specimen Activity (Regional)***

i. Identify capacity building needs in various fields such as HACCP; inspection; certification; risk analysis; laboratories;
Identify scope for regional data bases and project costs
- Indicative cost: 4 m/m international consultants with travel to institution US$ 60,000

ii. Training workshops to upgrade the training skills ( train the trainers )in the institutions in the areas identified in (i)
- Indicative cost: 20 training workshops of 1 week each US$ 800,000

iii. Provision of additional equipment to upgrade regional training and reference centres
- Indicative cost: 5 regional training and reference centres at an average $1,200,000 per centre US$ 6,000,000
-

**Indicative total cost** **US$ 6,860 ,000**

Source FAO

**Fig 13**

***Specimen Activity (national)***

| | | | |
|---|---|---|---|
| 1 | **Review legislation** | | |
| | International consultant - 2 man-months | | 30,000 |
| | National consultant - 2 man-months | | 8,000 |
| | Development of new food legislation | | |
| | International consultant - 2 man-months | | 30,000 |
| | National consultant - 2 man-months | | 8,000 |
| | | **Total** | **76,000** |
| 2 | **Improve inspection services** | | |
| | International consultant…6 man-months | | 90,000 |
| | National consultant - 6 man-months | | 24,000 |
| | Train and update food inspectorate trainers | | |
| | 2 training of trainers courses for 20 persons each | | 79,000 |
| | 8 training courses for 20 persons each | | 160,000 |
| | Provision of inspection equipment/materials | | |
| | Sampling kits refrigeration boxes (20) | | 50,000 |
| | 4 equipped inspection vehicles | | 200,000 |
| | | **Total** | **603,000** |
| 3 | **Identification of needs of food control laboratories** | | |
| | International consultant - 2 man-months | | 30,000 |
| | Upgrade physical infrastructure to international standards | | 197,000 |
| | **Provision, installation and operation of new laboratory equipment** | | |
| | e.g. typical requirements for 1 laboratory: 3 gas liquid chromatographs, 2 high performance chromatographs, and 1 atomic spectrophotometer; general laboratory appliances and reagents | | 1,200,000 |
| | | **Total** | **1,427,000** |
| 4 | **To train food industry quality control managers in food quality Assurance systems including HACCP, and Hygiene** | | |
| | 20 courses with 20 persons each | | 800,,000 |
| | | **Total** | **800,000** |

Source FAO

The sample activities identified in Figs 12 and 13 amount to US$ 2,906,000 per country plus an additional US$ 6,860,000 for the regional activity. These amounts only relate to the initial work required to bring countries' infrastructure up to the

standard necessary to comply with SPS requirements. To this must be added the ongoing costs of maintaining and running the facilities, which in the absence of any outside financial contributions must be borne by individual country's exchequer

It must however be pointed out that these costs could be higher or lower depending on the existing condition and status of individual countries. Countries with fully functioning and EU approved CAs for example would require less upgrading. Nevertheless a significant proportion of such expenditure will be required if the potential for exports represented by the current unexploited inland fisheries in the ESA region is to be realised. In countries with no recognised CA the task will involve significant allocation of resources.

## 6.0 Treatment of SPS in the EU-Chile Association Agreement

Whilst the above relates to the scope and nature of capacity building that may be needed in order to develop inland fisheries, it is also necessary to consider how assistance might be obtained for this. The EU is extremely focussed on finding more supplies of fish for its processing industries and domestic markets. The current negotiations under the Cotonou Agreement provides an opportunity for ESA countries to exploit this need by obtaining assistance to develop additional inland capacity

Most of the capacity building required relates in some way to the safety of the end product be it through uncontaminated water, availability of safe feed (for aquaculture) or the certification, testing and approval process that forms part of the necessary operational environment required by EU legislation. Capacity building is already available through established programmes such as the EU Fish Support Programme and much work has been carried out under its umbrella, particularly in the area of upgrading Competent Authorities. However the simple existence of this programme (due to finish in 2007, but likely to be extended) is no guarantee that assistance will be available either in the format or on the scale that inland fisheries in the ESA region may need.

Attention, therefore, needs to be focussed on what might be achieved within the context of an EPA. In this regard it is important to note that these EPAs are different to the earlier Lome Agreement or any of the EU assistance programmes. The latter are based on a concept of one side giving (donating) something to the developing world. The EPAs represent a different scenario in that ACP countries have the right to negotiate for anything they want within the framework of Cotonou. Assistance is provided for trade and development aims under Cotonou and developing the inland fisheries of ESA can reasonably be argued as falling under both heads. SPS issues constitute a major barrier in this area and need to be identified and treated in a clear and transparent manner that ensures that any commitments to assistance obtained during negotiations are in practice delivered once the EPA has been signed.

In order to achieve this it is useful to see how other countries, who whilst not ACP, do nevertheless also have similar problems. The trade provisions of the Association Agreement with Chile, concluded by the EU in November 2002, stand out as the most advanced in EU bilateral agreements and are potentially the ones from which

negotiators can learn most. The Agreement recognises the importance of SPS in trade between the two signatories and contains comprehensive annexes, which specifically cover SPS measures applicable to trade in animals and animal products, plants, plant products and other goods, along with animal welfare. These set out procedures for dealing with problems raised by either party. These procedures, together with definitions of what is required in relation to equivalence and competency with respect to testing/certification standards, etc., were agreed by the negotiators and enshrined in the annexes.

Consequently a much clearer and formulated understanding of what is required exists and neither party can *arbitrarily* introduce SPS-related measures which may be regarded as unfair or unsubstantiated by the other. Of particular importance, is the inclusion of commitments to specific SPS related assistance.

The substantive provisions on norms and standards follow those of the WTO. However, several procedural rules make this agreement different and more detailed than other FTAs Technical assistance is specified for SPS-related matters and is included within the provisions on support for the agricultural and rural sectors (Art. 24.2g). Another aspect that makes the agreement unique is the comprehensive provisions on equivalence integrated into Annex IV. These provisions require strong co-operation between the responsible institutions of both partners.

A joint committee, called the Joint Management Committee, is responsible for monitoring and control of the implementation of the agreement Flexibility is provided by additional ad hoc groups that deliberate on SPS-related issues. These groups are made up of expert representatives of the parties or external experts.

For information exchange, the Agreement details specific information requirements for verification procedures, import checks and relevant scientific opinions. Further detailed provisions ensure transparency by defining strict time schedules and deadlines for the submission of required information. The Agreement also contains concrete steps for consultation when a party fails to comply with notification requirements. A safeguard clause reiterates WTO rules on implementing transitional SPS measures when scientific evidence is insufficient.

A comprehensive article in Annex IV covers the determination and suspension of equivalence and considers time schedules for the consultation process between the parties (Art. 7). The provisions are supplemented by appendices with procedural details on the consultation process, the priority sectors concerned, and conditions for provisional approval of establishments without prior inspection by the importing party (appendices V and VI). Other appendices of procedural relevance provide guidelines for conducting verifications, for import checks and inspection fees and for certification (appendices VII-IX).

A comprehensive and detailed institutional design characterises the SPS-related provisions in the Chile Association Agreement. The agreement targets strong cooperation between the respective authorities. SPS provisions are more directly operational than those in the other agreements. Being an integral part of the FTA, they provide more legal security for exporters.

The EU Chile Agreement is too big to attach to this paper but it is available (in English, and French) **http://www.sice.oas.org/Trade/chieu_e/chieu1_e.asp.To** assist however Annex 1 contains copies of some of the FTAs relevant Articles relating to SPS and technical standards.

## 7.0 Overview of Capacity Building Needs

Whilst it is clear that on paper considerable potential exists for the exploitation of inland fisheries as a sub sector, in practice this may not be practical on a widespread basis in the immediate future. Local conditions, geographical, social and political must all be incorporated into any assessment of the overall package of assistance that could be sought under the EPA. Priority should be given to schemes which have a realistic chance of achieving success in the commercial environment within which they must operate

To address such issues properly needs as a starting point some indication of the scale and nature of the difficulties expressed in financial terms. According to a CTA financed study[3], on average the cost of establishing an effective national food-safety control capacity in an ACP country can range from €2 million upwards. An OECD report [4] says that in general it costs a minimum of $US 3 million to establish a small fish processing factory able to meet conditions for export to the EU. See Fig 14.

**Establishing a Small Fish Processing Factory** **Fig 14**

This involves

- costs of approved construction materials and processing equipment
- Investment in water ( usually boreholes ) supply
- Investment in ice production facilities
- Purchase of insulated trucks for collection of fish from remote landing sites
- Refrigerated trucks to transport finished product to export port

Due to this high cost most factories need to process about 10 Mt of medium value fishery products in order to achieve the economies of scale necessary to achieve a return on investment. Aquaculture represents good potential and costs will reflect the size of operation. The Ugandan Department of Fisheries Resources confirms this and indicates that a closed fish farming system, capable of producing up to 200 tonnes per acre annually would cost about US$1.5 million. This covers equipment for breeding, hatching, fish fattening and sales tanks. Fish diseases are not as common in Uganda as in some other African states and fish feed is available.

Until these SPS requirements were exported to developing countries, fish processing was largely undertaken by small and medium enterprises often owned by people from riparian communities. This new threshold of costs both at public and private sector level has marginalised small scale processors and made it very difficult for other than large scale enterprises that are able to meet the large bank collaterals required to finance investment.

[3] Study of the Consequences of the Application of Sanitary and Phytosanitary Measures on ACP Countries. CTA 2005. www. agritrade.**cta**.int/en/content/view/full/1792

[4] Trade Issues and Policy Coherence in Fisheries: A developing countries perspective April 2006

However, not all countries export demand can support the establishment of the full range of institutional support mechanisms such as accredited laboratories. The formation of EPAs presents the opportunity to tackle some of these national deficiencies on a regional basis. Not all services may be suitable for regionalisation but it is clear that there is definite scope for some consolidation and the creation of new SPS capacity in this area. The costs necessarily reflect the size and existing compliance structure of particular geographical groupings but are estimated to cost upwards of €5 million for each region. As ESA represents a large grouping of diverse economies the starting figure could easily be very much higher. In the case of fisheries the existence of a Competent Authority is of fundamental importance as the establishment of this facility can be an expensive enterprise

This relates to fairly straightforward measures to enhance food-safety control capacity in the ACP bloc. For some countries needing a significant investment in their laboratory capacity (equipment, human resources etc) the figure for this alone could be €5 million. The cost for any regional capacity such as accreditation bodies etc would be on top of this. Without some degree of audit of the existing infrastructure and potential areas for developing against which requires capacity building could be costed it is not possible to be more precise in this Paper. These figures are provided purely to indicate the general area that negotiators might start looking at when discussing the incorporation of capacity building commitments into any ESA.

## 8.0 Conclusions and Recommendations

Looking at inland fisheries overall it must be recognised that whilst SPS is a potential blocker of all potential its removal does not automatically mean that the development of inland fisheries becomes feasible. The commercial considerations of likely volumes and the possible need to establish feeder inputs from a number of landing sites to support local processing plant all are relevant to answering the question, "How much of the acknowledged potential can in reality be transformed into commercial product capable of competing on EU markets?" Whilst capacity building assistance is available under Cotonou it is not unlimited and care must be taken to ensure that requests are focussed on those areas where some justification exists for considering that improving SPS capacity will in fact facilitate the development of more inland fisheries within the ESA region.

### 8.1 Creation of an Enabling Environment

For increased development of inland fisheries on a commercial basis major and wide ranging intervention priorities would be needed so as to produce an environment in which businesses can be established with a realistic chance of survival and success. In particular:

- It is difficult to obtain credit for aquaculture mainly because Banks consider it a new and therefore risky activity. *Consequently*

**Banks need to be educated as to the profitability of commercial aquaculture and credit lines should be developed to encourage both new businesses and the upgrading of existing enterprises e.g. in meeting EU sanitary requirements.**

- The development of commercial aquaculture has been overlooked by governments in favour of small scale or subsistence farming. As a result there are very few special policies to promote aquaculture. *Consequently*

**Changes are needed in government policies to develop commercial inland fisheries, e.g. through tax incentives, credit guarantee schemes , import facilities and better permit processing and allocation of land.**

- There is a lack of affordable and adapted fish feeds and the supply of good quality seeds is poor. *Consequently*

**The technology for fish feed production based mainly on local products needs to be encouraged to provide for the development of a proper fish feed industry.**

## 8.2 SPS Issues and Barriers

Looking more specifically at SPS issues it is clear that inland fisheries is an area for development within the scope of Cotonou. It has clear gender, social, labour and poverty benefits attached to success in this sector and the removal of SPS barriers would, given the presence of an enabling environment, help alleviate some of these problem areas. *Consequently*

**Capacity building and technical assistance should be requested in relation to:**

- **Identification and prioritisation of those geographical locations within ESA which would produce the most cost effective return on investment**
- **Establishment of a regional data base to disseminate information about Best Practice, allowable feed, fish stock, training sources etc**
- **Establishment of aquaculture/inland fisheries secretariats within the sub regional bodies.**
- **Upgrading the elements of national food control systems that support the effective operation of a Competent Authority approved by the EU**
- **Identification and remedial action in relation to hygiene problem areas at the artisanal level such as landing sites and boats e.g. ice making**
- **Increased capacity of cold storage particularly at the export choke points**
- **Provision of operationally adequate refrigerated transport**
- **Development of Community Fishery Centres where the input from small scale fisheries could be a) held in a cold store and b) marketed in commercial volumes. This could also be useful in tackling the problem relating to the traceability and origin of fish coming from scattered sources.**

# ANNEX

# ASSOCIATION AGREEMENT BETWEEN THE EU and CHILE

## Article 18
## Cooperation on standards, technical regulations and conformity assessment procedures

**1**. Cooperation on standards, technical regulations and conformity assessment is a key objective in order to avoid and reduce technical barriers to trade and to ensure the satisfactory functioning of trade liberalisation as provided for in Part IV, Title II.

2. Cooperation between the Parties will seek to promote efforts in:

(a) regulatory co-operation;

(b) compatibility of technical regulations on the basis of international and European standards; and

(c) technical assistance to create a network of conformity assessment bodies on a non discriminatory basis.

3. In practice, cooperation will:

(a) encourage any measures aimed at bridging the gaps between the Parties in the areas of conformity assessment and standardisation;

(b) provide organisational support between the Parties to foster the establishment of regional networks and bodies, and increase coordination of policies to promote a common approach to the use of international and regional standards and similar technical regulations and conformity assessment procedures; and

(c) encourage any measure aiming at improving convergence and compatibility between the respective system of the Parties in the above areas, including transparency, good regulatory practices and the promotion of quality standards for products and business practices

## Article 24

## Co-operation on agriculture and rural sectors and sanitary and phytosanitary measures

1. Cooperation in this area is designed to support and stimulate agricultural policy measures in order to promote and consolidate the Parties' efforts towards a sustainable agriculture and agricultural and rural development.

2. The cooperation will focus on capacity-building, infrastructure and technology transfer, addressing matters such as:

(a) specific projects aimed at supporting sanitary, phytosanitary, environmental and food quality measures, taking into account the legislation in force for both Parties, in compliance with WTO rules and other competent international organisations;

(b) diversification and restructuring of agricultural sectors;

(c) the mutual exchange of information, including that concerning the development of the Parties' agricultural policies;

(d) technical assistance for the improvement of productivity and the exchange of alternative crop technologies;

(e) scientific and technological experiments;

(f) measures aimed at enhancing the quality of agricultural products and supporting trade promotion activities;

(g) technical assistance for the strengthening of sanitary and phytosanitary control systems, with a view to supporting as far as possible the promotion of equivalence and mutual recognition agreements.

http://www.sice.oas.org/Trade/chieu_e/chieu1_e.asp

## REFERENCES


ACP-EU Economic Partnership Agreements Sanitary and Phytosanitary Measures (ECDPM/CTA) M. Doherty 2006

Committee for Inland Fisheries of Africa (FAO) – document data base

Cost Benefit Framework for SPS related Technical Assistance Kalstad & Wiig 2002

Demanding Innovation in African fisheries and Aquaculture. S. Chimatiro (NEPAD

Food Safety Requirements and Food Exports for Developing Countries. Spencer Henson et al 2001

Hidden Harvests .Unlocking the potential of Aquaculture in Africa .J.F.Moor 2005

Impact of Sanitary Measures on Exports of Fishery Products from India World Bank 2005

Meeting Food Safety Standards in Export Markets: Issues and Challenges Facing Firms Exporting from developing Countries. D. MacLean 2006

Regional Review of Aquaculture Development in Sub Saharan Africa P. Olin 2005

Review of Aquaculture Policy and Regional Options. Enviro Fish Africa 2005

Sanitary and Phytosanitary Requirements for testing Laboratories. J. Cox 2005

Southern and Eastern African Trade Information and Negotiations Institution Workshop Reports

Strengthening Fishery Production Health Conditions. EC SFP Projects in ACP/OCT Countries 2006

Study of the Consequences of the Application of Sanitary and Phytosanitary (SPS) Measures on ACP Countries 2003 .Cerrex Ltd for ACP-EU (CTA)

Study of the Costs of Compliance with Export Standards in the Senegalese fisheries Industry 2005

Trade Issues and Policy Coherence in Fisheries: A developing countries perspective OECD April 2006

The Cost of HACCP Implementation in the Sea food Industry C.Calatore & J. Caswell 2002

The Model of the Cost of HACCP Implementation in the Seafood Industry. State University of New York and Cornell University 2000

The State of World Fisheries and Aquaculture FAO 2006