EAC REGIONAL STRATEGY AND IMPLEMENTATION PLAN FOR SUSTAINABLE AQUACULTURE PLAN - Part 2 and 3

Michel de San
The Five EAC’s Countries Aquaculture Situation, Needs and Regional Expectations
Part 2

Proposal for a Regional EAC Aquaculture project for increasing significantly fish farmed
Part 3

Arusha
Tanzania,
January 2013

GCP/RAF/466/EC SmartFish Project
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# Acronyms and abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>Anaf</td>
<td>Aquaculture Network for Africa</td>
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<td>AAK</td>
<td>Aquaculture Association of Kenya</td>
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<tr>
<td>AARB</td>
<td>Aquaculture Advisory and Research Board</td>
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<tr>
<td>ADB-BAD</td>
<td>African Development Bank</td>
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<tr>
<td>AP</td>
<td>Aquaculture Park</td>
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<tr>
<td>ARDC</td>
<td>Aquaculture Research &amp; Development Centre</td>
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<tr>
<td>ASARECA</td>
<td>Association for Strengthening Agricultural Research in East and Central Africa</td>
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<tr>
<td>CIFAA</td>
<td>Committee for Inland Fisheries and Aquaculture in Africa</td>
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<tr>
<td>CNDAPA</td>
<td>Centre National de Développement de l'Aquaculture et de la Pêche Artisanale</td>
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<tr>
<td>COI</td>
<td>Commission de l'Océan Indien</td>
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<tr>
<td>CTA</td>
<td>Chief Technical Advisor</td>
</tr>
<tr>
<td>DAD</td>
<td>Directorate of Aquaculture Development</td>
</tr>
<tr>
<td>DEPP</td>
<td>Direction des Eaux, Pêches et Pisciculture</td>
</tr>
<tr>
<td>DFR</td>
<td>Department of Fisheries Resources</td>
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<tr>
<td>DGE</td>
<td>Direction Générale de l'Élevage</td>
</tr>
<tr>
<td>DPME</td>
<td>Direction Provinciale de l'agriculture et de l'Élevage</td>
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<tr>
<td>ESP</td>
<td>Economic Stimulus Programme</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>FAO</td>
<td>Food and Aquaculture Organisation of the United Nations</td>
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<tr>
<td>FETA</td>
<td>Fishery Education Training Agency</td>
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<tr>
<td>FIRI</td>
<td>Fisheries Research Institute</td>
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<tr>
<td>FIRMS</td>
<td>Fisheries Resource Monitoring System (FAO)</td>
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<tr>
<td>FSCUs</td>
<td>Fish Seed Certification Units</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environmental Facility</td>
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<tr>
<td>IFAD</td>
<td>International Funds for Agriculture development</td>
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<tr>
<td>IMS</td>
<td>Institute of Marine Research</td>
</tr>
<tr>
<td>IRD</td>
<td>Institut de Recherche pour le Développement</td>
</tr>
<tr>
<td>IRFS</td>
<td>Programme pour la mise en œuvre d’une stratégie de pêche pour la région Afrique orientale-australe et océan Indien (a.k.a. SmartFish)</td>
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<tr>
<td>ITAB</td>
<td>Institut Technique Agricole du Burundi</td>
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<tr>
<td>KAPAP</td>
<td>Kenya Agricultural Productivity and Agribusiness Programme</td>
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<tr>
<td>KCDP</td>
<td>Kenya Costal Development Project</td>
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<tr>
<td>KEBS</td>
<td>Kenya Bureau of Standard</td>
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<tr>
<td>KEPHIS K</td>
<td>Kenya Plant Health Inspection Services</td>
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<tr>
<td>KFRA</td>
<td>Kenya Fisheries Development Authority</td>
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<tr>
<td>KMFR</td>
<td>Kenyan Marine and Fisheries and Research Institute</td>
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<tr>
<td>LTA-ALT.org</td>
<td>FAO Directorat des Pêches de l'Autorité du Lac Tanganyika</td>
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<td>LVFO</td>
<td>Lake Victoria Fisheries Organisation</td>
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<tr>
<td>MAAIF</td>
<td>Ministry of Agriculture Animal Industry and Fisheries</td>
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<tr>
<td>MFDC</td>
<td>Mbegani Fisheries Development Centre in Bagamoyo</td>
</tr>
<tr>
<td>MINAGRIE</td>
<td>Ministère de l’Agriculture et de l’Élevage</td>
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<tr>
<td>MSMEs</td>
<td>Micro, Small, and Medium Enterprises</td>
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<td>Mt</td>
<td>Metric Tones</td>
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<tr>
<td>NaFIRRI</td>
<td>National Fisheries Resources Institute</td>
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<tr>
<td>NEMA</td>
<td>National Environment Management Authority</td>
</tr>
<tr>
<td>NFFI</td>
<td>Nyegezi Freshwater Fisheries Institute Mwanza</td>
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<tr>
<td>PAIGELAC</td>
<td>BAD aquaculture project</td>
</tr>
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<td>PPP</td>
<td>Public-Private Partnerships</td>
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<td>RAB</td>
<td>Rwanda Agricultural Board</td>
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<tr>
<td>SADEC</td>
<td>South Africa Development Community</td>
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<tr>
<td>SUA</td>
<td>Sokoine University of Agriculture</td>
</tr>
<tr>
<td>TAFIRI</td>
<td>Tanzania Fisheries Research Institute</td>
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<tr>
<td>UDSM</td>
<td>University of Dar es Salaam</td>
</tr>
<tr>
<td>UFFRO</td>
<td>Uganda Freshwater Fisheries Research Organization</td>
</tr>
<tr>
<td>UNR</td>
<td>Université Nationale du Rwanda</td>
</tr>
<tr>
<td>VETA</td>
<td>Vocational Education Training Authority</td>
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PART 2
THE FIVE EAC’S COUNTRIES AQUACULTURE SITUATION, NEEDS AND REGIONAL EXPECTATIONS
Executive Summary (Reminder from the main document)

The context for the creation of an EAC Regional Strategy and Implementation Plan for the development of sustainable aquaculture is the following:

- In 2012, aquaculture production in the EAC was between 30-40 000 *mt. This does not include restocking programs or seaweed farming. The five-year target is to double that production figure, as well as meeting the demand for fish-feeds and raw material inputs;

- a significant potential market for farmed fish within the fast developing middle-class in EAC.

There is a need within the EAC for a significant increase in production of fish in order to:

- contribute to solving nutritional deficits;
- provide employment through the production of fish, fish-feeds and the raw material inputs;
- provide a stimulus to the wider rural economy; and

During a recent FAO/SmartFish/COI-EU mission to develop an EAC Regional Aquaculture Strategy, stakeholders, considering the rather limited capacity for action on the ground of EAC and its implementation arm LVFO, recommended that any regional aquaculture effort should be focused on commercial aquaculture value-chains that include semi-industrial and industrial producers, as well as clusters of smaller producers.

The mission determined a number of key issues that must be addressed at the Regional level, and these are presented, in order of priority, as follows:

- availability of seeds in the required quantity and certified quality;
- availability of feeds in the required quantity and certified quality;
- free movement throughout the EAC Region of fish, seed and fish-feeds;
- access to credit and revolving funds;
- the organization and training along the aquaculture value chain;
- delivery of research and sustainable management of aquaculture development;
- capitalization on positive developments to boost production through Public Private Partnerships (PPP); and
- creation of a regional aquaculture Monitoring, Control and Surveillance (MCS) capacity that is linked with national equivalents.

The region, in order to support the national level, should convince its 5 member states to develop a long-term, multi-donor support project that will help to implement the above points.


<table>
<thead>
<tr>
<th>EAC Member States</th>
<th>Est. Capture Fisheries Production (mt)</th>
<th>Est. Farmed fish Production (mt)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>15 000</td>
<td>200</td>
<td>Weak development due to competition with Lake Tanganyika fisheries, more profitable agricultural product and other priorities within Government</td>
</tr>
<tr>
<td>Kenya</td>
<td>140 000</td>
<td>15-19 000*</td>
<td>The bulk of the production is from semi-intensive farming in +/- 70,000 ponds (typically of 300m²). It is difficult to estimate the total tonnage because some producers are still in the expansion phase and other are in consolidation phase. This remarkable effort was initiated by the Economic Stimulus Program (EPS) for aquaculture. In addition, there is also a nascent production of seaweed of 100 mt/dry for 2012.</td>
</tr>
<tr>
<td>Uganda</td>
<td>400 000</td>
<td>5-10 000 to more*</td>
<td>That includes 420 mt produced in small cages in Jinja. These figures are more important if the restocking figures are included. The prices of farmed fish are low compared to those of urban centers in Kenya, due largely to competition with Lake Victoria fisheries.</td>
</tr>
<tr>
<td>Rwanda</td>
<td>9 000</td>
<td>1 000</td>
<td>Rwanda is focusing on the development of integrated fish farming with chicken and rabbit farms. Small-scale cage-farming is increasing up.</td>
</tr>
<tr>
<td>Tanzania</td>
<td>350 000</td>
<td>3-5 000*</td>
<td>This estimate does not include above 13 000 of dry seaweed (95 % of Spinosum) but does include 350 tonnes of farmed shrimp from Mafia Island.</td>
</tr>
</tbody>
</table>

* Aquaculture data collection is not fully reliable mainly at small farmers’ level where the production by hectare could vary from 500 kg to 3 000 kg by hectare or even more. This is depending on farmer capacity, water, seeds and feeds availability and their quality, temperature, depth of the pond, price & marketing etc.…
Summary of the Regional Expectation of the five EAC’s Countries

**Kenya**

Any regional effort in aquaculture should support the ESP sustainability and that means between other:
- support rural economy and its drivers;
- support rural cluster linked to aquaculture value chain (including marketing);
- if semi or full industrial fish producers are supported this should target and promote imperatively out growers;
- Kenya needs two to three manufacturers well qualified in fish feeds production; and
- Kenya needs one breeding program based in Sagana linked with the qualified fingerling producers.

Harmonization and coordination of the different five national legislations and sanitary quality issues in order to facilitated:
- the movement of the input (feeds, feeds inputs, seeds, materials...);
- the marketing of the fish production in the region;
- improved EAC Governments and Industries Partnership and commitment to aquaculture; development by also removal of obstacles; and
- develop and enact the necessary legislation, legal and regulatory framework to guide the sub sector.

**The value chain of semi industrial and collectively organized (cluster) small producer should be supported by an EAC Regional Aquaculture Technical “Project”**.

**Rwanda**

Rwanda expectation is to cover the actual importation of fish by local aquaculture. This national production increase will be linked to development of direct and indirect employments and availability of fish protein for the population in response to a growing overfishing situation.

It was clearly presented by the administration that they should find the clear interest for Rwanda in whatever EAC regional effort is done on Aquaculture. This is because they have started to develop successful integrated farming with cooperatives and small cages development.

In general the interviewed persons agree on the following by order of importance:
- Access and distribution of good quality seeds and feeds.
- Funds for Appropriated farm technologies with management and capacity building in order to adapt those to reality.
- Funds for extension support enabling them to delivery appropriated farm technologies.
- Attract private sector investment because the cooperative approach has its weakness and limits when the support has gone.
- There is definitively a credit access problem that should be resolve one way or another.
- A value chain approach.

**Burundi (English and in French)**

Harmonization and coordination of the five EAC’s countries legislation in order to:
- facilitate the movement of the input (feeds, feeds inputs, seeds, materials...);
- facilitate the production marketing; and
- improve the PPPs and develop their will to promote aquaculture.

This task should be the responsibility of LVFO-EAC (Lake Victoria Fisheries Organization) which is becoming the EAC executive arm for the whole region and no longer focused on the riparian countries of the Lake Victoria.

- The country should support the semi-industrial producers and the cluster of small farmers by a regional technical project of EAC.
- It is recognized that if Burundi wants to develop an aquaculture of 1 000 mt/year, it should be done through private operators with proved business capacity and experience.
- At this stage, that could only be done by a regional technical project for at least ten years of support.

**En français**

Harmonisation et coordination des législations des 5 pays de EAC dans le but de faciliter:
- Le mouvement des intrants (nourriture, alvins, matériels...) et une certaine garantie de qualité.
- La commercialisation de la production.
- Améliorer le partenariat des Administrations et du privé et développer leur volonté de promouvoir l’aquaculture.

Cette tâche devrait être confiée au LVFO-EAC (Lake Victoria Fisheries Organisation) qui est en train de devenir le bras exécutif de l’EAC pour l’ensemble de la région et qui n’est plus uniquement centré sur le Lac Victoria.

Support des producteurs semi industriels et des coopératives de petit producteurs bien organisées par un Projet régional technique de l’CAE.

Il est reconnu que si l’on veut développer une aquaculture de plus de 1.000 tonnes/an au Burundi cela doit se faire au travers de promoteurs avec la capacité reconnue de gérer une affaire (business capacity).

A ce stade, pour le Burundi, cela ne peut se faire que par un projet régional technique financé par différents donneurs afin d’en assurer le financement régulier sur au moins 10 an.

**Tanzania and Zanzibar**

The expectation of Tanzania is to urge production for thousands of tons of aquaculture products (mainly fish) that are linked to development of direct and indirect employments.

This is of course associated with availability of fish protein for the population in response to a growing overfishing situation.
Tanzania

- Linkage between the institutions (one-stop desk) to promote private sector.
- Exchange of knowledge and learning and sharing experiences.
- Policy harmonization (shared water) / fingerling and feeds import or exportation.

Zanzibar

- Employment
- In one way or another the regional action should help the small producers.
- The regional aquaculture entity discussed should have regional training centres where the semi industrial private sector and the extension services can receive appropriate training.

Uganda

1. Harmonization and coordination of the different five national legislations and sanitary issues in order to facilitated:
   - the movement of the input (feeds, seeds, materials...);
   - the movement of the production; and
   - improved Governments and Industries Partnership and commitment to aquaculture development and removal of obstacles by a one-stop shop.
   ➔ That task should be entrust to LVFO-EAC

2. The semi industrial and collectively organized small producer should be supported by an EAC Regional Aquaculture Technical “Project – Body”.

Kenya

**EAC Aquaculture Development Strategy**

**Summary of the aquaculture situation, needs and regional expectations**

- FAO data up to 2010 for Kenya

**Fisheries Production Statistics**

This database contains the annual volume of aquatic species caught by country or area, species items and FAO major fishing areas for all commercial, industrial, recreational and subsistence purposes.

**Caption Production**

**Aquaculture Production**

**A) Situation of the aquaculture in Kenya**

A general comment to be highlight is the urge marketing potential for farmed fish in Kenya due to population and welfare growth, linked with the general overfishing situation and more specifically the one of the Lake Victoria which provides 85 percent of the fresh water fish eaten by the population.

- Small Scale Aquaculture Fish Production

Although fish farming in rural Kenya has a relatively long history dating back to the 1920s, it was only made popular in the 1960s through the "Eat More Fish" campaign. However, no spectacular progress has been achieved until 2007 (1 000 to 4 000 t/year), when the number of farmers engaged in aquaculture increased exponentially. A further boost was
First successful Major effort (ESP) on semi intensive fish production

Now in 2012 the aquaculture production is estimated around 19 000 t/year (90 percent Tilapia and 10 percent Catfish), thanks to the 48 000 ponds (300 m² each) given to individual farmers by ESP. This national massive effort includes feeds and juveniles for the first production cycle, and those two supports are rapidly being reduced. It is estimated that 50 percent of those farmers plus new comers have dig out new ponds bringing the figure to a cautious estimation of 70 000 units. Altogether that is an increase of at least 2 000 hectares of ponds. Now that the “ponds” are well on the way, one of the challenges for the third ESP phase is to increase the number of privately done ponds and their productivity per hectare. For that, the Private Public Partnership (PPP) has to:

- Assure the availability and quality of the feeds and the seeds by the private sectors.
- Improve farmers’ technical skill and business ability.
- Improve and organize the fish marketing for the small producer and implement fish safety and quality assurance.
- The administration has to reinforce the sustainability of the aquaculture business environment and the legal environment of the value chain.
- Develop demand driven research.
- Promote the integrated farming (long term).

In the short term, the two main challenges are seeds and feeds availability and that has found an answer through the private sector.

For the seeds, out of 200 some 130 producers of fingerling are recognized and recommended on the Authority list and they are still building their production capacity. For the feeds, this is more challenging even if the semi industrial (not yet industrial at this stage for fish feeds) producers have overcapacity production. There is a lot of local production by individual farmers, or semi industrial production but for all of them there is a quality consistency issue and the FRC should be improved.

Other details

- The fish (250 to 400 gr) produced by aquaculture are sold fresh, on ice or frozen on the national market.
- Polyculture farming is more used as a tool of population size regulation.
- The production system is semi intensive.
- The production of Catfish is not so important in term of tonnage and is facing some consumer lack of habitude. On the contrary of West and Central Africa, the producers have difficulties to get better price for catfish than tilapia. And that means that intensive production of catfish is a financial challenge for the time being before consumers are “used” to catfish.

- Industrial Tilapia and Catfish Production

- Second major effort, still to be done, on intensive production
- The market is there, the feeds production capacity is there (not yet the quality), now it is in the hand the PPP to build the foreseen increase of intensive production of Tilapia and Catfish in Kenya.
- Cage farming: At this stage there is no significant movement for cage production neither in fresh water nor in sea water.
- Industrial production in ponds: there is little semi industrial production companies that have a production well above 100 tonnes/year but they intend to increase rapidly their production above the 1 000 tonnes/y.
- An example is Dominion Farms with a production of 300 tonnes/y, which is moving progressively to 1 600 tonnes/y for 2014-15. And this company is also selling seeds and feeds.
- Seaweed farming (EU funded) South of the coast around Shimoni is still nascent but probably successful, with a production expected around 100 tonnes/dry for 2012 and between 150 and 200 tonnes for 2013.
- Sanitary issue for export
  The export international sanitary needs are well implement by the administration and fish exporters. At this stage for aquaculture production (mainly tilapia) the local market offers better opportunities and less sanitary constrains for fresh fish on ice.
- Research center & training Center
  - The principal aquaculture research and training centres for Tilapia are the Sagana Aquaculture Station and the Moi University.
  - KEMFRI (Kenyan Marine and Fisheries Research Institute) is the management and research arms of the Ministry of Fisheries Development.
- Aquaculture Policy
  The most relevant documents on aquaculture are:
  - The strategic plan will be implemented through five broad based strategic objectives comprising of an effective institutional policy and legal framework; promotion of aquaculture development; promotion of fish safety and quality assurance, value addition and marketing; improvement of infrastructure, strengthening human resource capacity, conducting fisheries research and strengthen monitoring and patrol monitoring and evaluation.

B) In aquaculture the main needs at the Kenya level are the following

In general the interviewed persons agree on the following by order of importance:

- For semi intensive and intensive: access and distribution of good quality feeds. The consistency of the quality and the FRC should be improved. On top of the small scale production the national industrial production must be able to provide in short term
20,000 tonnes/year and to be able to backup the increase of the fish production in medium term. Considering the EAC over fishing situation, we could expect the needs for more than 100,000 tonnes/year of fish feeds.

For semi intensive: access and distribution of good quality tilapia seeds. This is already happening thanks to PPP and positive effect of the ESP but it should have the backup by a national or even EAC breeding program linked with the approved fingerling producers.

Appropriated farm technologies with management and capacity building in order to adapt those to reality. That includes for the long term in rural areas, the development of integrated farming as an option.

Improve and organize the fish marketing for the small producers.

Access to credit for both types of production.

The Authority has to reinforce the sustainability of the aquaculture business and its legal environment in order to smooth the bottlenecks and protect consumers.

Comments of Kenyan Fisheries Authority

Any regional effort in aquaculture should support the ESP sustainability and that means:

- Support rural economy and its drivers.
- Support rural cluster linked to aquaculture value chain (including marketing).
- If semi or full industrial fish producers are support this should target and promote imperatively out growers.
- Kenya needs two to three manufacturers well qualified in fish feeds production. Kenya needs one breeding program based in Sagana linked with the qualified fingerling producer.

Considering the overexploitation of the Lake Victoria, the major source of fish for the region, the expectation of the three major countries (Kenya, Tanzania and Uganda) in the EAC region is to urge production of hundred thousand tonnes of aquaculture products (mainly fish) in order to:

- help solve the nutritional problems;
- provide work through the feeds and fish production; and
- develop rural economy and its drivers.

At the question, what are you expecting from the region, they understand the utility of the following three points that have emerge from the countries.

1. Harmonization and coordination of the different five national legislations and sanitary quality issues in order to facilitated:
   - the movement of the input (feeds, feeds inputs, seeds, materials...);
   - the marketing of the fish production in the region;

Kenya private sector comments

Considering the advance they have taken in aquaculture, these two points are in the long term of paramount importance for Kenya, for the following reasons:

- export of fish and juveniles;
- export of feeds (inputs = national rural employment) and possibly in long term export of feeds technology; and
- import of feeds inputs from the region (already the case).

- improved governments and industries partnership and commitment to aquaculture development by also removal of obstacles; and
- develop and enact the necessary legislation, legal and regulatory framework to guide the sub sector.

That task should be entrusted to LVFO as the regional designed aim of EAC in Fisheries and related activities.

- The value chain of semi industrial and collectively organized (cluster) small producer should be supported by an EAC Regional Aquaculture Technical "Project".

This project could be, for long term sustainability, a multi donor* project in charge of boosting the aquaculture production in the region.

* Multi-donors project: in order to avoid the activities stopping at the end the single donor funding.

- This project should rely on at least two regional training and research centers (use the existing and reinforce it).
- Besides the permanents Technical Assistant this project should have important capacity in short term technical support for the value chain.
- This support will concern an estimated of 50 to 60 entities in the five countries.
- This support should cover all the value chain.
- This support will facilitate the access to credit through a system of progressive and conditional revolving funds. This will be developed through a private national bank in each country. Considering the size of the Kenyan industry, it is an option for the government to top with extra money the Kenyan revolving funds.
- Each authority will receive a grant (discussed € 300,000) in order to reinforce their aquaculture station and extension services.
- Reminder: Kenyan Fisheries Authority insist on
- If semi or full industrial in fish production are support this should target and promote imperatively out growers.
- Kenya needs two to three industrial well qualified in fish feeds production.
- Kenya needs one breeding program based in Sagana linked with the qualified fingerling producer. That breeding program will be at the disposal of the region.
Besides this semi industrial support the administration aquaculture extension services will be trained in order to support:

- the small farmer in general in their development with the help of the national donors;
- where it is possible the development of small out growers around the bigger farm; and
- organize the marketing for cluster of small farmers.

The administration will also try to develop some kind of incentive like:

- Taxes facilities for inputs materials at the beginning.
- EIA at reasonable prices and in reasonable timing.
- Other credit like microfinance facilities guarantee partially by donors.

The private sector, as compensation for the help received, will be supposed, whenever it is economically possible, to:

- Sell defined quotas of its production on the national and/or regional market.
- Sell at market price seeds and feeds, which is of paramount importance for the small farmers.
- To collaborate to a reasonable but efficient extent with the administration for the value chain development of out growers in the vicinity of their production site.

2. Reflection on the Regional aquaculture technical project umbrella

Concerning the regional project umbrella some comments highlight that LVFO was more oriented on fisheries management and administrative legislation harmonization. It was advised to put the regional technical project under the umbrella of both LVFO – EAC and a private sector body like for example the **East African Industrial Fishers and Fish Processor Association**.

The project should have a clear mandate to support the semi industrial operator, and the smaller farmers seriously collectively organized.

**Kenya Fisheries Authority comments:**

- EAC and LVFO aims for Fisheries and related matters are very important for the future of the region.

The co-management of a regional project by Industrial Association (as above) should be considered with caution because the capitalist view is not always linked with employment and rural development, so the matter should be discussed.

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**A) Situation of the aquaculture in Rwanda**

- **Small Scale Aquaculture Fish Production**
  - The Rwandan aquaculture started middle of the last century. There are some 25,000 agro aquaculture farmers, organized in cooperatives producing around 4,000 mt/year (1,000 tonnes of pond fish and 3,000 from lake restocking). The Tilapia Niloticus is the by far the main fish produced and the production is sold at a size of 250 gr to 400 gr per fish on the local market.
  - The 17 aquaculture stations (Kigembe, Rwasave, Runyinya, Rushashi, Ruli, Rusumo, Ngarama, Cyamutara, Muko, Bwafu, Ngorwa, Kazabe, Mabanza, Kivumu, Karengera, Nkungu and Nyamishabat) have been more or less rehabilitated by different projects including the latest PAIGELAC (BAD). Most of them are used by cooperatives for fingerling and fish production. The station of Kigembe is managed jointly by PAIGELAC Project and by the Rwanda Agricultural Board and will produce...
The five EAC’s Countries Aquaculture situation, Needs and Regional Expectations Part 2

The more relevant documents on aquaculture are:
- Aquaculture Policy
- Sanitary issue for export
- Industrial Tilapia Production
  - Cage farming: There is promising development for cage farming in the lake Kivu, lake Muhazi, and two lakes in the North (Bulera and Ruhondo) due to effort by the administration and PAIGELAC project. This cage farming is still nascent and those are promoted by the cooperatives and by the private sector.
  - Industrial production in ponds: there are at least two private companies that are investing in large production of fish in ponds.
- List of the new comer in aquaculture:
  - Lake Side: Private at 40 km from Kigali United States owner targeting in long term 2 000 t/year from ponds using recirculation system with aerators because the stocking density is between eight to ten fingerlings of Tilapia (Gilt).
  - Two lakes in the North : +/- 20 cooperatives with 325 small cages.
  - Lake Kivu: three cooperatives on three districts with 150 small cages.
  - Lake Kivu Gisenyi private moving with 50 small cages.
  - H2O: private fish ponds targeting 2.500 tonnes per year in raceways.
  - RwaFIL: Private on Lake Muhazi with 80 ponds, small cages, and 15 large cages of 90 cubic meters.
- Sanitary issue for export
  - As there is no export of fish the sanitary issue as requested by EU market is not at this stage really endorsed by the local market.
  - Research center & training Center
  - The Principal potential aquaculture research centre is the station of Rwasave managed by the National University of Rwanda. The Kigembe station can be also considered as a potential research centre but more linked to production of seeds.
- Aquaculture Policy
The more relevant documents on aquaculture are:
- The Master Plan for Fisheries and Fish Farming in Rwanda (2011).
- Loi n° 58/2008 portant organisation de l’aquaculture et de la pêche au Rwanda.
- Arrêté ministériel nº 006/11.30 du 18/11/2010 déterminant la forme et le contenu du contrat de location de concession d’aquaculture et de pêche.

B) In aquaculture the main needs at the Rwanda level are the following:

In general the interviewed persons agree on the following by order of importance:
- access and distribution of good quality seeds and feeds;
- funds for appropriated farm technologies with management and capacity building in order to adapt those to reality;
- funds for extension support enabling them to delivery appropriated farm technologies;
- attract private sector investment because the cooperative approach has its weakness and limits when the support has gone;
- there is definitely a credit access problem that should be resolve one way or another; and
- they want a value chain approach.

C) In aquaculture the main Regional support expectation are the following:

It was understood by the different stakeholder that “the whatever regional intervention” cannot be directed to small farmers which is more a national activity.

But it was also clearly stated by the different administration that the small farmer should not be forgotten and that means supporting the effort of the administration in that task.

The expectation of the three major countries (Kenya, Tanzania and Uganda) of the EAC region is an urge production of hundred thousand tonnes of aquaculture products (mainly fishes), and that is moderately endorsed by Rwanda.

At the question what are you expecting from the region they understand the utility of the following three points that have emerge from Tanzania and Uganda (at this stage).

Rwanda comments
Their expectation is more like covering the actual importation of fish by local aquaculture. This national production increase will be linked to development of direct and indirect employments and availability of fish protein for the population in response to a growing overfishing situation.

It was clearly presented by the administration that they should find the clear interest of Rwanda in whatever EAC regional effort is done on Aquaculture. This is because they have started to develop a successful integrated farming with cooperatives and small cages development.
1. Harmonization and coordination of the different five national legislations and sanitary issues in order to facilitated:
   • the movement of the input (feeds, seeds, materials...);
   • the movement of the production;
   • and improved Governments and Industries Partnership and commitment to aquaculture development & removal of obstacles.

   ➔ That task should be entrust to LVFO-EAC

2. The semi industrial and collectively organized small producer should be supported by an EAC Regional Aquaculture Technical "Project – Body".

   It is recognized that a regional project cannot help directly the small farmers in each country, but on the contrary can support semi industrial (50 to 500 tonnes/year of mainly fishes) operator with business management skill.
   • This “body” could be a multi donors’ project in charge of boosting the aquaculture production.
   • This project should rely on one or two Regional Technical Centers (use the existing and reinforce it).
   • Besides the permanents Technical Assistant this project should have important capacity in short term technical support.
   • This support will concern an estimated of 30 to 50 entities in the five countries.
   • This support can cover also feeds and seeds producers.
   • This support will facilitate the access to credit through a system of progressive and conditional revolving funds.

   Rwanda comments
   ➔ Successful cooperatives should be supported besides the semi industrial.
   ➔ A value chain approach is necessary.
   ➔ For the long term sustainability the revolving funds should be placed in on local bank.
   ➔ An agreement should be found in the share of the revolving funds between the five countries.

   They request that each country should receive direct grant in support of the administration in charge of aquaculture. The figure of € 300 000 for each country was discussed

   Besides this semi industrial support the administration aquaculture extension services will be trained in order to support:
   • the small farmer in general with development thanks to the help of the national donors; and
   • where it is possible the development of small out growers around the bigger farm.

   The administration will also try to develop some kind of incentive like:
   • taxes facilities for inputs materials at the beginning (already of application in Rwanda);
   • EIA at reasonable prices and in reasonable timing; and
   • other like credit facilities guarantee partially by donors.

   The private sector, as compensation for the help received, will be supposed, whenever it is economically possible, to:
   • sell defined quota of his production (fishes mainly) on the national or regional market;
   • sell at market price seeds and feeds that are of paramount importance for the small farmers; and
   • to collaborate to a reasonable extent with the administration for the development of out growers in the vicinity of their production site.

3. Reflection on the Regional aquaculture technical project umbrella

   Concerning the Regional project umbrella some comments highlight that LVFO was more fisheries management oriented and administrative legislation harmonization.

   It was advised to put the regional technical project under the umbrella of both LVFO – EAC and a private sector body like the East African Industrial Fishers and Fish Processor Association. Additionally to have a clear mandate to support the semi industrial operator, which the smaller farmers collectively organized. The full industrial operator will be excluded of this project support.

   Rwanda comments

   Rwanda will consider positively the relative working independence of the regional project if it materializes.

A) Situation de l’aquaculture au Burundi
- Aquaculture villageoise
  Actuellement le Tilapia du Nil (Oreochromis niloticus) est de facto la seule espèce cultivée au Burundi. Toutefois, le CNDAPA est en train d’initier les activités sur la reproduction artiﬁcielle et l’alevinage de Clarias gariepinus dans les environs de Bujumbura. En ce qui concerne le Tilapia du Nil cultivés actuellement, les alevins proviennent des géniteurs capturés dans les plans d’eaux naturels de la région du Nord. Le CNADAP est l’unique source d’approvisionnement sporadique d’alevins subventionnés au Burundi mais sa production reste limitée et le marché n’est pas encore existant. Le système de gestion des étangs est encore rudimentaire car les exploitants comptent quasi uniquement sur la fertilisation pour la multiplication d’aliment naturel du poisson.

La production de l’aquaculture est estimée à quelques centaines de tonnes par an.

Le CNDAPA essaye d’approvisionner sporadiquement les membres des associations et les stations gouvernementales en cours de rénovation avec de l’aliment pour poisson fabriqué artisanalement à Bujumbura. Jusque là cet aliment est subventionné car l’Etat supporte toutes les charges de production et le transport aux sites de démonstration. Il n’y a pas d’usine de fabrication d’aliments spéciﬁque pour poisson au Burundi, et ceux pour la fabrication d’aliments pour les animaux de ferme ou les volailles sont encore au niveau embryonnaire.

- Production industrielle
  - Production en cage:
    - Pour le Lac Tanganyika, Une étude de faisabilité ﬁnancière et environnementale à été demandée par la FAO. Les résultats seront disponible début 2013.
    - Une des contraintes est l’obligation d’après les accords Internationaux signés de ne cultiver que les espèces endémiques du Lac Tanganyika. Càd le tilapia Tanganyika dont les caractéristique d’élevage sont fort peu connue ce qui pourrait décourager les professionnels.
  - Note: En fait on se retrouve dans une situation identique à celle Lac Malawi avec l’obligation de cultiver 2 des 3 espèces de tilapia endémique au lac Malawi qui ont un taux de croissance inférieur au niloticus. Il faut cependant savoir que cette contrainte a été compensée par un prix autour de 4$ le kg de poisson ce qui a rendu le projet de la société MALDECO Ltd rentable.
    - Un autre projet de petite cage est en stade de pré-démarrage dans un lac au Nord.
    - Une production industrielle ou semi industrielle en étangs n’existe pas encore au Burundi.

- Les problèmes de normes sanitaires des produits de la pêche et de l’aquaculture ne sont pas encore résolu ni pour l’exportation inexistante mais non plus pour les marché locaux.
- Centre de recherché et de formation
  - La capacité de l’Administration burundaise dans ses domaines est encore en reedevine et nécessite encore beaucoup de support et du temps.
  - Stratégie de Développement de l’aquaculture
    Un excellent, courageux et pertinent ouvrage a été produit par le Ministère de l’Agriculture et de l’Elevage (Décembre 2010) avec l’aide de la FAO.

B) En aquaculture les principaux besoins du Burundi sont les suivants

En général les personnes interrogées sont d’accord sur l’ordre suivant:
- Au Buruni suite aux événements politiques l’aquaculture est un secteur que l’on a laissé aller, avec un manque de techniciens, de vulgarisateurs, de station piscicole en état etc. De facto il n’y a que très peu de support à l’aquaculture villageoise. De plus cette dernière est restée méfiance quant aux possibilités de l’aquaculture et beaucoup d'étangs sont devenus des rizières.

- Besoins d’un support technique de qualité et approprié pendant longtemps.
- Besoins de promotion du l’élevage intégré de qualité
- Besoins d’une régularité d’approvisionnement d’alvin et de nourriture de qualité si l’option d’élevage intégré n’est pas choisie.

- Avoir le courage politique de cibler les endroits les plus prometteurs, de bien choisir les fermiers et de ne pas monopoliser du foncier avec des associations d’opportunités à qui l’état donne des intrants gratuits et/ou subsidiés.

- Atteindre l’option privée semi industriel et sortir partiellement du cercle « bien pensant » qu’est le support aux coopératives de petits fermiers car les résultats se feront attendre 30 ans.

- Développer la coopération régionale en termes d’acquisition de technologie appropriée et de formation.

- Besoin de crédit pour des entrepreneurs voulant se lancer dans l’aquaculture.

Références du consultant et des personnes interrogées

Aquatique villageoise (la route est longue)
Dans le cadre du développement de l’aquaculture villageoise une approche de petit pas à succès semble la plus approprié en lieu et place d’un saupoudrage. Qui dit succès veut dire gaining de l’argent de façon pérenne et non subsidié. Cela tient compte des faibles moyens de l’Administration et du manque de confiance des potentiels aquaculteurs échaudés par les expériences passées. La seule issue pour les villageois est un élevage intégré de qualité avec production de 4 à 5 tonnes à l’hectare.

Aquiture semi industriel
Pour cela il faudra « attirer » des professionnels de l’aquaculture de l’extérieur ou aider des opérateurs nationaux avec des supports techniques venant de l’extérieur comme le possible projet régional ciblant le développement des semi industriel (voir point C).
C) En aquaculture les principales attentes régionales du Burundi sont les suivants

**Rappel des étapes**

a) Mission d’identification (en cours FAO SmartFish) des besoins nationaux pour i) une Stratégie Régionale de l’Aquaculture et ii) un Plan d’Implantation pour un développement de l’aquaculture dans la région

b) Atelier de restitution (Janvier 2013) à Arusha CEA et finalisation des points a et c)

demande des pays via CEA d’un projet régional en aquaculture semi industriel

Il a été bien compris qu’une possible intervention régionale ne peut pas aider directement les petits fermiers nationaux mais doit cibler les promoteurs semi industriels (à terme une production de 20 à 200 tonnes au Burundi) et renforcer les compétences en formation et en vulgarisation des services de l’Administration.

Dans le cadre régionale les espoirs, à une génération, des 3 grands pays que sont la Tanzanie, le Kenya et l’Ouganda sont une importante augmentation de la production aquacole de plusieurs centaines de milliers de tonnes par an.

Pour le Burundi les espoirs sont moindres et comme un peu le Rwanda les réponses à la question, qu’espérez de la coopération et de la stratégie régionale sous l’égide de l’CAE, sont les suivantes.

1. Harmonisation et coordination des législations des 5 pays de CAE dans le but de faciliter :
   - Le mouvement des intrants (nourriture, alvins, matériels...) et une certaine garantie de qualité.
   - La commercialisation de la production.
   - Améliorer le partenariat des Administrations et du privé et développer leur volonté de promouvoir l’aquaculture.
   - Cette tâche devrait être confiée au LVFO-EAC (Lake Victoria Fisheries Organisation) qui est en train de devenir le bras exécutif de la CAE pour l’ensemble de la région et qui n’est plus uniquement centré sur le Lac Victoria.

2. Support des producteurs semi industriel et des coopératives de petit producteur bien organisées par un Projet régional technique de l’CAE.

Il est reconnu que si l’on veut développer une aquaculture de plus de 1.000 tonnes/an au Burundi cela doit se faire au travers de promoteurs avec la capacité reconnue de gérer une affaire (business capacity).

A ce stade, pour le Burundi, cela ne peut se faire que par un projet régional technique financé par différents donneurs afin d’en assurer le financement régulier sur au moins 10 ans.

Ce possible projet doit être « proposé » par les pays à CAE qui le répercutera chez les bailleurs dont la FAO, l’UE et d’autre.

- Ce projet devrait s’appuyer sur 2 ou 3 centres techniques de la région qu’il renforcerait.
- En dehors de 2 assistants techniques permanents le projet aurait à sa disposition un important budget pour des assistants techniques de courte durée.
- Ce support concernerait 30 à 50 entités dans la les 5 pays.
- Ce support couvrirait l’ensemble des besoins de la filière, de la production de nourriture et d’alvins à l’organisation de la commercialisation.
- Le projet pourrait mettre à disposition un crédit dit “rotatif” (revolving funds) à la disposition des promoteurs de l’ensemble de la filière.
- Le Rwanda a suggéré que le projet ait aussi un volet de dons (évocation de 300 000 €) comme support à l’Administration de l’aquaculture pour renforcer les stations piscicoles pour la production d’alvin et la vulgarisation.

Au-delà de ce support aux semi industriels les services nationaux de l’aquaculture recevront une aide de formation afin de:
- D’aider les petits fermiers en collaboration avec les bailleurs nationaux.
- Et où c’est possible de soutenir des petits fermiers périphériques à un développement semi industriel.

L’Administration locale devrait aussi promouvoir une politique incitative incluant entre autres:
- Des exemptions de taxes sur les intrants de l’aquaculture.
- Veiller à ce que les Etudes d’Impacts Environnementale soit rapide et à des prix abordables.
- Développer des lignes de crédits nationales pour l’aquaculture.

Le secteur privé industriel devrait de son côté s’engager à:
- Garantir l’approvisionnement du marché local par un % de la production.
- S’organiser pour fournir le marché avec de la nourriture et des alvins à des prix raisonnables.
- Et où c’est possible de soutenir des petits fermiers périphériques à un développement semi industriel.

3. Réflexion sur la tutelle du projet régional de l’aquaculture

En principe ce projet devrait être sous la tutelle du bras exécutif de la CAE qui est le LVFO. Cependant certains intervenants ont proposé que la gestion du projet soit aussi sous l’autorité d’une entité représentant le secteur privé comme « the East African Industrial Fishers and Fish Processor Association » et que LVFO soit plus directement impliqué dans l’harmonisation des législations nationales et la levée des goulots d’étranglement qu’aurait rencontrer le développement de l’aquaculture.
TANZANIA AND ZANZIBAR

EAC Aquaculture Development Strategy
Summary of the aquaculture situation, needs and regional expectations

- FAO data up to 2010 for United Republic of Tanzania
- Note: The aquaculture production is estimated for 2012 above 13 000 mt because of a production of 12 to 13 000 mt of dry seaweed plus an estimation of 3-5 000* fish farmed (see below).
- *Aquaculture data collection is not fully reliable mainly at small farmers’ level where the production by hectare could vary from 500 kg to 3 000 kg by hectare or even more. This is depending on farmer capacity, water, seeds and feeds availability and quality, temperature, depth of the pond, price & marketing etc...

Total aquatic species caught in Tanzania
(FAO Fishery Statistic)

Tanzania, Aquaculture Production
(FAO Fishery Statistic)

A) Situation of the aquaculture in Tanzania main land
- The aquaculture development on the main land is still nascent with the following characteristics: Fishes Production (mainly Tilapia and some Milkfish) is estimated at 3-5 000 mt/2012, produced by small scale farmers in extensive system.

- Marketing is local with table size fish of 200 gr average and bigger size for milkfish.
- They produce or collect their own seeds and make their own locally mixed. No polyculture farming is in place.
- No really catfish and mullet sizable production.
- Crab fattening is nascent.

- Industrial Monodon shrimp is industrially produced on Mafia Island (350 mt/year).
  - Marketing is done internationally.
  - Feeds are coming from Seychelles and Thailand.
  - Seeds are produced at the farm.

- Seaweed production mainly spinosum is estimated around 12-13 thousand dry mt/year (personal quote by one of the main exporter).
  - Marketing internationally through national established buyer or new comers from far East (Chinese).
  - At this stage the Tanzanian production is consider of lower quality and there is an effort to do in drying process in order to match the new quality requirement (viscosity and gel) of the world market.

Nascent industrial production of fish: There is five “private sector” investing in an industrial approach for fish production. Between them two exporters of Nile perch are investing in fish cages on Lake Victoria.

Feeds: There is no industrial production of industrial fish feeds because between other the market doesn’t exist yet.

Sanitary issue for export
The expertise exists in the fisheries sector and will be rapidly adapted to the industrial aquaculture if necessary, as it was the case for shrimp production in Mafia.

Research center & training Center
There are three main training centers in the fisheries and aquaculture administration and the biggest one, Mbegani, is developing five satellite centers.
The main research centres are the University of Dar Es Salaam, the University of Sokoine and the Tanzanian Fisheries Research Institute (TAFIRI).

Policy
The old 1997 Fisheries policy paper is not considered to be up to date and the administration is working on a new one.
B) The situation of the aquaculture in Zanzibar

The aquaculture of Zanzibar is characterized by a success story of seaweed (spinosum) production done by the villagers. The Zanzibar’s production is estimated to be above 11,000 dry mt/year. The total export of dry seaweed from Tanzania and Zanzibar is estimated to be between 12 - 13,000 by the international buyer FMC (personal quote).

- The marketing is done internationally through national established buyers or new comers from the far East.
- At this stage the Tanzanian production is considered to be of not very high quality. There is an effort to do in the drying process at the villages’ level in order to match the new gel and viscosity quality required by the world market.

Aquaculture

- Aquaculture fish production is still nascent and concerns Milkfish.
- Pearls and pearl shells production is also nascent.
- Crab fattening is also still nascent.

Research center & training Center

The University of Dar Es Salaam has developed, in Zanzibar, the institute of Marine Research (IMS).

Policy

Zanzibar does not have a standalone policy on fisheries. It is part of the Agriculture Development Policy.

C) In aquaculture the main needs at the Tanzanian level are the following

Tanzania

- A clear and elaborate aquaculture development plan that put emphasis on the assessment of all suitable/potential sites and zoning to avoid resource use conflict and environmental impacts.
- Appropriated farm technologies with management and capacity building in order to adapt those to reality.
- The training should concern the Administration extension services and medium scale private sector.
- Access and distribution of good quality seeds and feeds.
- Proper linkage between the different administration (Aquaculture, Environment, Finance) in order to facilitate investment of the private sector by providing a better service.
- Credit access problem → aquaculture still need success story to convince the banks.
- Implementation of integrating farming for smaller farmers.

Zanzibar

- Efficient one desk administration service to support and supervise the private sector.
- Training the middlemen technicians (existence of a big gap).
- Access and distribution of good quality seeds (hatchery big gap for sea fish).
- Creation of employment through aquaculture.
- Credit access → aquaculture still need a success story to convince the banks.

D) In aquaculture the main Regional support expectation are the following:

Tanzania

- Linkage between the institutions to promote private sector
- Exchange of knowledge and learning and sharing experiences
- Policy harmonization (shared water)
- Fingerling and feeds import or exportation

Zanzibar

- Employment
- The regional action should help the small producers.
- The regional aquaculture entity discussed should have regional training centres where the semi industrial private sector and the extension services can receive appropriate training.

The expectation of the region, and Tanzania, is an urgent production of a thousand tonnes of aquaculture products (mainly fish) that are linked to development of direct and indirect employments. This is of course associated with availability of fish protein for the population in response to a growing overfishing situation.

The discussions turn around the creation of an EAC regional aquaculture technical body. This "body" could be a multi donors’t project in charge of boosting the aquaculture production. This "body" should lean on one or two Regional Technical Centers (use the existing and reinforce it).

It is recognized that a regional body cannot help directly the small farmers in each country, but on the contrary can support semi industrial (50 to 500 tonnes/year mainly of fish) operator with business management skill. This support can cover also feeds and seeds producers and will facilitate the access to credit.

Around this semi industrial support the administration aquaculture extension services will be trained in order to support:

- the small farmers in general development with the help of the national donors;
- where it is possible the development of small out growers around the bigger farm; and
- other
The administration will also try to develop some kind of incentive like:
- taxes facilities for inputs materials at the beginning;
- EIA at reasonable prices and in reasonable timing; and
- other like credit facilities guarantee partially by donors.

The private sector, as compensation for the help received, will be supposed, whenever it is economically possible, to:
- sell defined quota of the production (fishes mainly) on the national or regional market;
- sell at market price seeds and feeds that are of paramount importance for the small farmers;
- to collaborate to a reasonable extend with the administration for the development of out growers in the vicinity of their production site.

This body will target, in each country, the semi industrial private entrepreneurs with an expected production of 50 to 500 tonnes/year per farm.

We can expect to reach in the five EAC countries a number of 30 to 50 entrepreneurs.

Concerning the umbrella of LVFO, some comments highlight that LVFO was more fisheries management oriented and it should be made clear that this regional technical ‘body’ is mandated on development of regional semi industrial aquaculture. Above that it should be financed by donors with the budget line oriented towards the defined objectives.

A) Situation of the aquaculture in Uganda

It is commonly accepted that Uganda is one of the more developed EAC country in term of aquaculture, with a 5 - 10 000 mt to more* fish farmed per year without counting an important production coming from water plan restocking.

* Aquaculture data collection is not fully reliable mainly at small farmers’ level where the production by hectare could vary from 500 kg to 3 000 kg by hectare or even more. This is depending on farmer capacity, water, seeds and feeds availability and quality, temperature, depth of the pond, price & marketing etc...

- Small Scale Aquaculture Fish Production
  Currently the number of fish farmers is estimated at 8 000, with an estimated 20 000 ponds and a total of 1 200 ha. These ponds are currently producing at an average rate of 1 800 kg/ha/year, which gives a total annual production of over 2 000 tonnes/year. (FAO)
  - The production is done mainly by small scale farmers in extensive and semi intensive system.
  - It is estimated that 60 percent of the production is Nile Tilapia (Oreochromis niloticus) and 40 percent of Catfish (Clarias gariepinus)
  - Marketing of both fish is local with fish size for Tilapia around 300 to 400 grams and for Catfish from 1/5 to 1 kg. The fish is sold mainly fresh and some time salted and dry.
  - For the farmers there are some difficulties to organize the marketing because they are in competition with the bigger size fishing coming from the different lakes. They
will have to organize themselves in order to secure a regular flow of production that give them a better paid access to market and/or to reach the quantity that open the access to the more lucrative regional market.

- No polyculture farming is in place but more a kind of biological control with the Catfish eating the Tilapia fry.
- Mirror Carp could be solution for some highland part of the country.

- **Industrial Tilapia Production**
  - There is only one industrial cages farm in Jinja with an expected 420 mt production for 2012 and 310 tonnes in 2011.
  - Marketing is done regionally, fresh on ice with whole fish of 400 gr.
  - Feeds are coming from Ugachick Uganda and Mauritius LF Ltd.
  - Mono-sex seeds are produced at the farm and over 2 million is sold locally or to Kenya (more than 50 percent) and Rwanda.

- **Aquaculture Park** is a Ugandan initiative to promote concentrated aquaculture production area in a Public Private Partnership through a value chain approach.

- **Feeds**: Ugachick, a very large animal feeds factory, had set up a production line of fish feeds.
  - For the last 12 months the production reach 4 000 mt with respectively 2 400 tonnes delivered to Kenya, 1 200 tonnes to Uganda and 200 tonnes to Rwanda.
  - Thanks to years of training effort of the support services and donors (US AID) Ugachick had received an industrial extruder and has secured knowledge of the feeds production on the farm even if the quality could be improved.

- **Sanitary issue for export**
  The expertise exists in the Lake Victoria fisheries sector and will be rapidly adapted to the industrial aquaculture if necessary. Considering constrainst (sanitary, necessity of bigger fish for filets) of the international export market the national and even more the regional market remains more attractive with product going to Burundi, Kenya, RDC, Rwanda, and South Soudan.

- **Research center & training Center**
  The principal aquaculture research centre is Kajansi (NaFFIRI). A partnership is ongoing with the Chinese leading to urge investment in terms of: offices; feeds facility production; ponds and reproduction center; and know how.

- **Aquaculture Policy**
  Relevant documents on aquaculture are the “Draft National Aquaculture Parks in Uganda (January 2012), and the National Development Plan (2010-2011 to2014-2015).

**B) In aquaculture the main needs at the Ugandans level are the following**

In general the interviewed persons agree on the following by order of importance:

- Access and distribution of good quality seeds and feeds.
- Appropriated farm technologies with management and capacity building in order to adapt those to reality.

- Extension support should be able to delivery appropriated farm technologies.
- One shop administration: proper linkage between the different administrations (Aquaculture, Environment, Finance, Land...) in order to reduce the bottleneck sand to facilitate investment of the private sector. Organization of the marketing for the small farmer in terms of regrouping the production in order to have regular flow, enough quantity supply to reach better price or even the regional market.
- There is definitively a credit access problem that should be resolved.

**C) In aquaculture the main Regional support expectation are the following**

It was understood by the different stakeholders that “the whatever regional intervention” cannot be directed to small farmers which is more a National activity.
But it was also clearly stated by the different administration that the small farmer should not be forgotten.
The expectation of the region, endorsed strongly by Uganda, is an urgent production of ten thousand tonnes of aquaculture products (mainly fish). Those tonnages are linked to development of direct and indirect employments. This is of course associated to availability of fish protein for the population in response to a growing overfishing situation.

From the question “what are you expecting from the region?” The following three points emerge:

1. Harmonization and coordination of the different five national legislations and sanitary issues in order to facilitated:
   - the movement of the input (feeds, seeds, materials...);
   - the movement of the production;
   - improved governments and industries partnership and commitment to aquaculture development and removal of obstacles.
   - That task should be entrust to LVFO-EAC

2. The semi industrial and collectively organized small producer should be supported by an EAC Regional Aquaculture Technical "Project – Body".

It is recognize that a regional project cannot help directly the small farmers in each country, but on the contrary can support semi industrial (50 to 500 tonnes/year of mainly fishes) operator with business management skill.

a. This "body" could be a multi donors’ project in charge of boosting the aquaculture production.
b. This project should rely on one or two Regional Technical Centers (use the existing and reinforce it).
c. Besides the permanents Technical Assistant this project should have important capacity in short term technical support.
d. This support will concern an estimated of 30 to 50 entity in the five countries.
e. This support can cover also feeds and seeds producers.
f. This support will facilitate the access to credit through a system of progressive and conditional revolving funds.
Besides this semi industrial support the administration aquaculture extension services will be trained in order to support:
- the small farmer in general in their development with the help of the national donors;
- where it is possible the development of small out growers around the bigger farm; and
- this support will reinforced the Aquaculture Park promoted by Ugandan Administration.

The administration will also try to develop some kind of incentive like:
- taxes facilities for inputs materials at the beginning;
- EIA at reasonable prices and in reasonable timing; and
- other like credit facilities guarantee partially by donors.

The private sector, as compensation for the help received, will be required, whenever it is economically possible, to:
- sell defined quota of their production (fish mainly) on the national or regional market;
- sell at market price seeds and feeds that are of paramount importance for the small farmers; and
- to collaborate to a reasonable extend with the administration for the development of out growers in the vicinity of their production site.

3. Reflection on the Regional aquaculture technical project umbrella

Concerning the Regional project umbrella some comments highlight that LVFO was more fisheries management oriented and administrative legislation harmonization. It was advised to put the regional technical project under the umbrella of both LVFO – EAC and a private sector body like the East African Industrial Fishers and Fish Processor Association; and have a clear mandate to support the semi industrial operator, the smaller farmers seriously collectively organized. The full industrial operator will be excluded from this project support.
A) Recommendations and Comments from the Arusha validation workshop

Note: This will serve as guide line for the consultation mission in charge to finalize the aquaculture regional project.

A.1) Recommendations and observations of the workshop

• Meeting observations

i. The meeting welcomed the East African Community (EAC) initiative of developing a Regional Aquaculture Development Strategy and implementation plan, as complementary framework to National Aquaculture Strategies.

ii. The meeting agreed upon the main findings related to regional and country status, with the recognition of grey areas such as statistical information.

iii. The meeting recognizes that aquaculture production figures should be presented with precaution because data collection systems are not fully reliable, mainly at the small farmers’ level. The meeting recommends that the strategy fully recognizes the need for improvement of data collection and production of statistics and integrate it in the foreseen regional project.

iv. The meeting agrees on the importance of simplifying administrative procedures to develop private sector investment; this could take the form of an administrative one stop shop. The meeting recommended to integrate it in the regional strategy and to ensure its support through the foreseen regional project.

v. The meeting agrees that initiatives at the regional level for improving applied research and training capacity should be implemented on the following basis to empower private sector:

a. using and improving the capacities of existing public & private facilities/institutions;

b. avoiding costly duplication;

c. capitalizing on expertise from within and outside EAC;

d. promote the regional approach;

e. highlight the national and regional priorities through a step by step approach;

f. encourage collaboration between existing national and regional associations and institutions engaged in aquaculture training/research.

vi. The public sector will be promoting and guiding the private sector while the private sector should be in charge of increasing the production.

vii. The meeting advises that the standardization of the farming techniques should be highlighted in the regional strategy and supported by the foreseen regional project.

viii. The meeting recognizes that the EAC countries are to a large extent still in promotion stage for farmed fish. This industry could mature quite fast (e.g. ten years.) and may have a difficult period of adjustment with prices going down. Therefore the meeting recognizes the importance of market analysis and monitoring to know the market capacity to absorb large production of farmed fish at sustainable price for the producer (for the time being above 2.5 USD/kg).

ix. The meeting recommends that a regional and national market analysis and monitoring system should be put in place, highlighted in the regional strategy and supported by the regional project.

x. The meeting fully recognizes the difficulties in accessing funding for small and medium commercial aquaculture enterprises. Therefore the meeting recommends that credit facilities should be improved and that needed support should be highlighted in the regional strategy. The meeting recommends building on existing mechanisms that may need to be improved and adapted for aquaculture.

xi. The EAC regional proposal should be revised to include support to EAC and Lake Victoria Fisheries Organization (LVFO) Secretariats.

xii. The EAC take action to mainstream and fund fish health, sanitation and disease control.

xiii. The EAC should support investment in the production of value added fishery products.

xiv. Development of the Lake Victoria fisheries protocol should involve the EAC legal departments’ experts.

RECOMMENDATIONS

The workshop made the following recommendations:

a) The meeting recommends that the 2nd draft strategy and implementation plan be presented for discussion to the EAC partner states for improvement and endorsement.

b) The meeting recognizes the need for a regional aquaculture technical project and the necessity to mobilize a second mission to finalize a full proposal to be presented to donors.

c) The meeting recommends constituting an EAC Aquaculture Technical Working Group.

d) The meeting recommends that the project start as soon as possible. The project should provide support for the finalization of the draft aquaculture strategy and implementation plan.
Proposal for a Regional EAC Aquaculture project for increasing significantly fish farmed

B) Draft of the proposed regional aquaculture project for commercial fish farming development in the EAC zone

**Identification**

<table>
<thead>
<tr>
<th>Title/Number</th>
<th>Supporting the value chain of semi-industrial and clusters of small-scale aquaculture producers in the EAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost</td>
<td>~15 500 000 (EU contribution through 11th EDF and other donors)</td>
</tr>
<tr>
<td>Aid method/Method of implementation</td>
<td>Project approach: Decentralised management (East African Community) multi-donor project</td>
</tr>
<tr>
<td>DAC-code</td>
<td>Sector Aquaculture</td>
</tr>
</tbody>
</table>

**Rational**

Current production figures* for farmed fresh-water species in the EAC are as follows:

<table>
<thead>
<tr>
<th>EAC Member States</th>
<th>Est. Capture Fisheries Production (mt)</th>
<th>Est. Farmed fish Production (mt)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>15 000</td>
<td>200</td>
<td>Weak development due to competition with Lake Tanganyika fisheries, more profitable agricultural product and other priorities within Government</td>
</tr>
<tr>
<td>Kenya</td>
<td>140 000</td>
<td>15-19 000*</td>
<td>The bulk of the production is from semi-intensive farming in +/- 70 000 ponds (typically of 300m²). It is difficult to estimate the total tonnage because some producers are still in the expansion phase and other are in consolidation phase. This remarkable effort was initiated by the Economic Stimulus Program (ESP) for aquaculture. In addition, there is also a nascent production of seaweed of 100 mt/dry for 2012.</td>
</tr>
<tr>
<td>Uganda</td>
<td>400 000</td>
<td>5-10 000 to more*</td>
<td>That includes 420 mt produced in small cages in Jinja. These figures are more important if the restocking figures are included. The prices of farmed fish are low compared to those of urban centers in Kenya, due largely to competition with Lake Victoria fisheries.</td>
</tr>
<tr>
<td>Rwanda</td>
<td>9 000</td>
<td>1 000</td>
<td>Rwanda is focusing on the development of integrated fish farming with chicken and rabbit farms. Small-scale cage-farming is increasing up.</td>
</tr>
<tr>
<td>Tanzania</td>
<td>350 000</td>
<td>3-5 000*</td>
<td>This estimate does not include above 13 000 of dry seaweed (95% of Spinosum) but does include 350 tonness of farmed shrimp from Mafia Island.</td>
</tr>
</tbody>
</table>

1. The project funding by the EDF is one foreseen solution but does not imply a commitment from the EU.
Acquaculture data collection is not fully reliable mainly at small farmers’ level where the production by hectare could vary from 500 kg to 3 000 kg by hectare or even more. This is depending on farmer capacity, water, seeds and feeds availability and their quality, temperature, depth of the pond, price & marketing etc...

During a recent mission by the Food and Agriculture Organization [within the project SmartFish, which is under the overall supervision of the Indian Ocean Commission (IOC) and funded by the European Union (EU)] to develop an EAC Regional Aquaculture Strategy and Implementation Plan, stakeholders within the five Member States of the EAC also expressed a strong interest in developing a regional aquaculture project. The need and justification for such a project is as follows:

- a general problem of overfishing in the EAC, particularly of Lake Victoria, which nevertheless still provides more or less 50 percent of the fresh-water fish consumed within the region;
- with the exception of Kenya (due to recent aquaculture developments) and despite the real potential, there is a 40-year history of well-intended projects to develop small-scale fish farming that have yielded little long-term sustainability;
- There is a significant potential market for farmed fish due, not only to population growth, but also within the developing middle-class in EAC economies.

The need within the EAC for a significant increase in production of fish in order to:
- contribute to solving nutritional deficits;
- provide employment through the feed industry, as well as in the production of fish; and,
- provide a stimulus to the wider rural economy.

MISSION FINDING:

It was clear that the various stakeholders consulted during the mission believed that any regional aquaculture intervention cannot be delivered directly to individual small-scale farmers, given that this is more the role of national fishery departments and their extension services. A more relevant approach would be delivery through well-organised clusters of small-scale producers and semi-industrial (50 to 500 mt/year fish and well above for feeds) producers. BOTH these groups possess business management skills and they are already active in the value chain.

The following section provides a summary of the main National needs for aquaculture development in the five countries, as communicated to the Consultant:

- Quality and Quantity of Fish-Feeds: In both semi-intensive and intensive aquaculture, the fish-feeds need to be of a reliable quality and providing the necessary Food Conversion Ratio (FCR). In addition to the small-scale production of fish-feeds, larger-scale, industrial production must be able, in the short-term, to produce an additional 50 000 mt/year for the EAC Region and to be able to sustain a further increase in supply over the medium-term. A realistic estimate for longer-term needs for fish-feeds would be well above 4-500 000 mt/year.

- Access to good quality tilapia and catfish seed: This is a particular need for semi-intensive fish-farming. In fact, there is already some progress in Kenya as a result of a recent Private Public Partnership (PPP) approach to aquaculture development in the country, supported by the Economic Stimulus Program (ESP) of USD 50.7 million. But it should have the backup of a national and EAC breeding program linked with the approved fingerling producers.

- Appropriate farm technologies with management and capacity building:
  - Improved fish marketing for clusters of small-scale producers;
  - Improved access to credit across all scales of production:
    - For semi-intensive small farmers through microcredit schemes; and,
    - For the semi-intensive and intensive semi-industrial farmers and fish-feed producers through access to “bank” credit.
  - An improved legal framework and regulations for the aquaculture sector designed to give confidence to investors, as well as to protect consumers;
  - A demand-driven research programme, with the necessary communication channels established between the governments, the producers, scientists, as well as consumers.

Following how stakeholders’ view a regional approach to aquaculture development.

1. Harmonization and coordination of national legislation and sanitary standards.

That would deliver a number of specific benefits, including:
- the improved movement and transport of inputs (e.g. feeds, feed inputs, seed etc.);
- a regional marketing option for fish production;
- improved Government and Industry partnership, with a political commitment to aquaculture development and the removal of the various administrative, legal etc... bottle-necks that currently hinder development; and,
- develop and enact necessary legislation and establish an appropriate legal and regulatory framework to guide the sub-sector, protect the consumer and safeguard the environment.

2. The ability to develop and leverage funds for an EAC Regional Aquaculture Technical Project:

The value-chain of semi-industrial and collectively organized (i.e. clusters) of small-scale producers would be supported directly, as well as through support to the improved delivery of the five national aquaculture authorities and their research, extension and legal services.

Perspectives on Funding Strategies

This project could be, for long-term sustainability, a multi-donor* project in charge of boosting the aquaculture production in the region.

* Multi-donors project: in order to avoid the activities stopping at the end the single donor funding...

2. Stakeholders consulted consisted of the following institutions: Government, Training Centres and the Private Sector.
Proposal for a Regional EAC Aquaculture project for increasing significantly fish farmed

From a strategic perspective, achieving sustainable funding could be more likely if this project devises a series of medium-term (5-10-15 years) desired outcomes, and an associated monitoring and evaluation framework. This can provide potential donors with a clear vision of East African Aquaculture in 2030 [for example]. Such an approach could facilitate a number of important issues in terms of the flow of inputs to aquaculture in the region and therefore food security itself:

- It would allow governments, research centers and the private sector to better plan their medium-term investments including, *inter alia*, education and training provision to provide for a cadre of fully-equipped staff, in extension services, and in policy development.
- It would also allow the overall programme’s actual achievements and anticipated achievements to be easily reviewed by potential donors therefore reducing the need for expensive and time-consuming evaluation and project identification missions.

**Potential Scope of Intervention:**

- It is anticipated that an estimated 80 to 100 entities in the five countries will be supported.
- The Project would focus its resources on two existing institutions to establish *de facto* Regional Training and Research Centers of Excellence. This would allow concentrated effort and strategic inputs over the necessary time-scale to develop high quality tilapia and catfish breeding programmes, linked with approved fingerling producers. Options for these Centers would include Sagana in Kenya and Kajjansi in Uganda.
- In terms of human resource requirements, in addition to a suggested team of two permanent Technical Advisors (a technical team leader and an administrative specialist) this project should be provisioned with sufficient resources to mobilize Short Term Technical Assistances (from within the region and internationally) to support aquaculture development throughout its value chain.
- It is crucial that the programme acknowledge the central importance of, and be capable of facilitating access to, credit. This is necessary throughout the value chain, including the critical aspect of the production of quality fish-feeds:
  - At the scale of semi-industrial production this support would facilitate access to credit through a system of progressive and conditional revolving funds. This will be developed through a private bank in each country supervised by the National Technical Authority.
  - **Note 1:** If semi- or fully-industrial fish production is supported by credit, this should be imperatively linked to promote out growers.
  - **Note 2:** The revolving funds for private semi-industrial are probably not eligible for EU funds and therefore should be financed by another partner donor still to be identified.

- **For small-scale farmers:** microcredit should be made available through well-established and respected existing microfinance systems.

- **Support to the relevant National Aquaculture Authority (NAA) (aquaculture, fisheries extension and legal services):**
  - Each NAA would receive a direct grant (a figure of €300 000 / country has been discussed with stakeholders) in order to reinforce their aquaculture research station and extension services.
  - Each NAA would have access to training funds and Short-Term Technical Assistance in order to help clusters of small-scale farmers. This would be coordinated with the support available from pre-existing bilateral donor programmes.
  - Support given to the development of satellite out-growers around a core large-scale farm.
  - Improvements in the organization of marketing for clusters of small-scale farmers;
  - A regional fund (e.g. €500 000) would be made available to the countries’ legal authority/Ministry services to develop and enact the necessary legislation, legal and regulatory framework to guide the sub-sector, protect the consumer and the environment. This will be usefully informed by the Kenyan experience.

  **Note:** the Administration will also try to develop some kind of incentive like:
  - taxes facilities for inputs materials at the beginning;
  - EIA at reasonable prices and in reasonable timing;
  - other microfinance facilities and/or loan guarantee through donors.

- **A PPP Approach**
  The project is very much built on an ethos of a Public-Private Partnership (PPP). There is a requirement therefore that the terms of this partnership are equitable, from both parties perspective. It will be necessary to negotiate an agreement with the private sector, by way of their contribution to the programme’s overall investment, which could include the following conditions:
  - to sell pre-determined percentages of the production on the national market in case the regional market is more attractive; and
  - collaborate to a reasonable but efficient (targeting win win deals) extent with the extension service for the development of out-growers in the vicinity of their production site.

3. **Umbrella on the Regional aquaculture technical project**

The Regional aquaculture technical project should be implemented beyond the umbrella of EAC and LVFO which is its arms on fisheries and related matter.

Some comments highlight that LVFO was more oriented on Fisheries management and
The preliminary budget of this five-year project is estimated to be around 15.5 million Euros

<table>
<thead>
<tr>
<th>Table 1: A preliminary budget for the EACAP</th>
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<tbody>
<tr>
<td><strong>Budget Items</strong></td>
</tr>
<tr>
<td><strong>Activity 1:</strong> Kenyan (Sagana) and Uganda (Kajjansi) research and training stations will be used for tilapia and catfish breeding program (two grants of €300,000).</td>
</tr>
<tr>
<td><strong>Activity 2:</strong> Training activities for the aquaculture value chain, including extension staff training, private sector staff training and the training of clusters of small-scale farmers. It will include promotion of successful pilot integrated farming.</td>
</tr>
<tr>
<td><strong>Activity 3:</strong> Revolving funds for the semi-industrial aquaculture value chain, including small-scale farmer clusters (€1.5 million each for Kenya and Uganda, €1 million for Tanzania and €600,000 for Rwanda and €400,000 for Burundi).</td>
</tr>
<tr>
<td><strong>Activity 4:</strong> Grants to National Aquaculture Authorities (NAA) for improving outputs from aquaculture research stations (5 countries x € 300,000 investment).</td>
</tr>
<tr>
<td><strong>Activity 5:</strong> A Regional Aquaculture Fund to develop and enact the necessary legislation, and legal and regulatory framework to guide the sub-sector, to protect the consumer and the environment.</td>
</tr>
<tr>
<td><strong>Technical Assistance:</strong></td>
</tr>
<tr>
<td>LTA: one team leader and one Administrative for 5 years (1,800,000)</td>
</tr>
<tr>
<td>STTA: Regional and international. 150 person/months (1,500,000)</td>
</tr>
<tr>
<td>- Expenditures</td>
</tr>
<tr>
<td>- Auditing</td>
</tr>
<tr>
<td><strong>Operational Costs</strong></td>
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<tr>
<td>Communication and Visibility</td>
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<tr>
<td>External evaluation (mid-term and final)</td>
</tr>
<tr>
<td>Audit</td>
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<tr>
<td>Contingencies</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

administrative legislation harmonization than on the aquaculture production value chain. Given the nature of this programme, it was recommended by the range of stakeholders consulted, that the project Steering Committee should include the private sector through some form of relevant aquaculture associations. Such associations would include fish-feed producers, fingerling producers, and the regional East African Industrial Fishers and Fish Processor Association. The Steering Committee would need to establish its standard operating procedures/rules of business so that there is some balance between private and public interest in decision-making on the direction the project takes.

The project should have a clear mandate and autonomy from producers as well as governments to support the full scope of the value chain, from the semi-industrial operator to the small-scale farmers.

4. **Budget Estimate**

The purpose of this document is to summarize the findings from a recent, preliminary scoping mission. This scoping mission observed a significant willingness amongst the range of stakeholders consulted for a regional technical project mandated to further develop aquaculture production in the EAC.

The document will be made available to EAC national stakeholders allowing them to discuss it, improve it and to decide on the following steps. This process will be completed at restitution workshop planned to take place in Arusha, Tanzania in mid-January, 2013.

However, this project will still require an in-depth regional mission by a team of experts in order to develop it further into a relevant, practical and coherent approach to developing aquaculture in the EAC and subsequent submission to potential donors.
To promote efficiency and flexibility in the delivery of this programme, it is recommended if this programme is to be financed by the EU then it should be implemented under indirect management. This means that the project is managed directly by a private Consulting Company contracted by and under the supervision of the Regional Authorizing Authority EAC-LVFO.

The project, if it performs well, should have the possibility of a second phase.

5. Some Potential Challenges

- Avoiding a two-speed EAC: Considering the large differential in aquaculture production across between the five EAC member states, the regional project should be careful to ensure that Burundi, Rwanda and Tanzania, which currently have a much smaller output than Kenya and Uganda, are not left behind. On the contrary, the expertise of Kenya and Uganda, and their current feed and seed production, should be mobilized to ignite aquaculture development in the other countries, particularly in the private semi-industrial sector;

- The PPP implementation could be difficult in certain circumstances and country;

- The Regional project should have the private sector efficiency;

6. Some socio-economic forces

At the level of the countries the following should be known in order understand the market forces in place.

- The Kenyan industrial fish feeds producers are buying the inputs in the other EAC countries because it is cheaper. This results in employment for countries producing inputs for fish feeds.

- The feeds and seeds availability from Kenya and Uganda is of paramount importance to permit the catch up by the three other countries.

- The market for fish is there, in each country’s main cities but at different price (up to 50 percent difference).
SmartFish is a regional fisheries project managed by the Indian Ocean Commission, funded by the European Union and co-implemented by the Food and Agriculture Organization of the United Nations. SmartFish, which operates in twenty countries throughout the Indian Ocean Region, Southern and Eastern Africa, focuses on fisheries governance, management, monitoring control and surveillance, trade, and food security.

The East African Community Regional Strategy and Implementation Plan for Sustainable Aquaculture report presents the second version of the EAC Strategy and implementation plan for sustainable aquaculture. It integrates recommendations and comments from the regional workshop on EAC strategy for sustainable aquaculture held the 29 and 30 January 2013 in Arusha, Tanzania, which gathered main public and private partners of the region.

The primary objective of the strategy is to increase sustainable aquaculture production in the region, mainly fresh fish production (tilapia and catfish), through commercial farming, bringing support to the entire value chain.