EAC REGIONAL STRATEGY AND IMPLEMENTATION PLAN FOR SUSTAINABLE AQUACULTURE PLAN - Part 1

Michel de San
EAC Regional Strategy and Implementation Plan for sustainable Aquaculture Plan
Part 1

Arusha
Tanzania,
January 2013

GCP/RAF/466/EC SmartFish Project
Executive Summary

Principal Objective

Increase Aquaculture and mainly fresh fish production (tilapia and catfish) through commercial farming by supporting the entire value chain.

Secondary Objectives:

- Creation of welfare and employment estimated by 2030 at 500,000 part and full time job in the aquaculture value chain. That include women and children in rural area for production of fish and fish feed inputs.
- Contribute to solve protein nutritional deficit of a growing population.
- Help to manage the overfishing situation by alternative livelihoods.
- The progressive set up of major industries for fish, fish-feeds and its raw material inputs that will provide in the long-term hundreds of thousands of tonnes of product.

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...

The context to 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 to 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;
- overfishing of freshwater and marine (Kenya and Tanzania only) resources;
- a rapidly growing human population;
- a high level of formal unemployment;
- a fifty-year history of well-intentioned development projects for small-scale fish farming that have yielded little long-term sustainability. The only exception being Kenya, which has, recently, successfully developed an aquaculture production of 15,000 – 19,000 metric tonnes (mt)/year.
- The need within the EAC for a significant increase in production of fish in order to:
  - contribute to solving nutritional deficits;

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated and expected Tonnage/year of fish farmed in EAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-2013</td>
<td>30 - 40,000* mt/year</td>
</tr>
<tr>
<td>2023-2025</td>
<td>60 - 80,000 mt/year</td>
</tr>
<tr>
<td>2018-2020</td>
<td>150 – 200,000 mt/year</td>
</tr>
<tr>
<td>2028-2030</td>
<td>300 - 500,000 mt/year</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...

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• provide employment through the production of fish, fish-feeds and the raw material inputs;
• provide a stimulus to the wider rural economy;
• a significant potential market for farmed fish within the fast developing middle-class in EAC.

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;
• creation of policy, legal and institutional frameworks;
• delivery of research and sustainable management of aquaculture development;
• capitalization on positive developments to boost production through Public Private Partnerships (PPP);
• 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 five member states to develop a long-term, multi-donor support project that will help to implement the above points.

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**Preface**

The present document is the second version of the EAC Strategy and implementation plan for sustainable aquaculture. It takes into consideration the recommendations and comments of the regional workshop on EAC strategy and implementation plan for sustainable aquaculture held the 29 and 30 January 2013 in Arusha, Tanzania where main public and privates partners of the region discussed the first version of the document (Annex).

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<th>Acronym</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Anaf</td>
<td>Aquaculture Network for Africa</td>
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<tr>
<td>AAK</td>
<td>Aquaculture Association of Kenya</td>
</tr>
<tr>
<td>AARB</td>
<td>Aquaculture Advisory and Research Board</td>
</tr>
<tr>
<td>ADB-BAD</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>AP</td>
<td>Aquaculture Park</td>
</tr>
<tr>
<td>ARDC</td>
<td>Aquaculture Research &amp; Development Centre</td>
</tr>
<tr>
<td>ASARECA</td>
<td>Committee for Strengthening Agricultural Research in East and Central Africa</td>
</tr>
<tr>
<td>CNDAPA</td>
<td>Centre National de Développement de l’Aquaculture et de la Pêche Artisanale</td>
</tr>
<tr>
<td>COI</td>
<td>Commission de l’Océan Indien</td>
</tr>
<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>
</tr>
<tr>
<td>DGE</td>
<td>Direction Générale de l’Elevage</td>
</tr>
<tr>
<td>DPAE</td>
<td>Direction Provinciale de l’agriculture et de l’Elevage</td>
</tr>
<tr>
<td>ESP</td>
<td>Economic Stimulus Programme</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<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>
</tr>
<tr>
<td>FIRI</td>
<td>Fisheries Research Institute</td>
</tr>
<tr>
<td>FIRMS</td>
<td>Fisheries Resource Monitoring System (FAO)</td>
</tr>
<tr>
<td>FSCUs</td>
<td>Fish Seed Certification Units</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environmental Facility</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Funds for Agriculture development</td>
</tr>
<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>
</tr>
<tr>
<td>ITAB</td>
<td>Institut Technique Agricole du Burundi</td>
</tr>
<tr>
<td>KAPAP</td>
<td>Kenya Agricultural Productivity and Agribusiness Programme</td>
</tr>
<tr>
<td>KCDP</td>
<td>Kenya Costal Development Project</td>
</tr>
<tr>
<td>KEBS</td>
<td>Kenya Bureau of Standard</td>
</tr>
<tr>
<td>KEPHIS K</td>
<td>Kenya Plant Health Inspection Services</td>
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<tr>
<td>KFDA</td>
<td>Kenya Fisheries Development Authority</td>
</tr>
<tr>
<td>KMFR</td>
<td>Kenyan Marine and Fisheries Research Institute</td>
</tr>
<tr>
<td>LTA-ALT.org</td>
<td>FAO Directurat des Pêches de l’Autorité du Lac Tanganyika</td>
</tr>
<tr>
<td>LVFO</td>
<td>Lake Victoria Fisheries Organisation</td>
</tr>
<tr>
<td>MAAIF</td>
<td>Ministry of Agriculture Animal Industry and Fisheries</td>
</tr>
<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’Elevage</td>
</tr>
<tr>
<td>MSMEs</td>
<td>Micro, Small, and Medium Enterprises</td>
</tr>
<tr>
<td>Mt</td>
<td>Metric Tones</td>
</tr>
<tr>
<td>NaFIRRI</td>
<td>National Fisheries Resources Institute</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Environment Management Authority</td>
</tr>
<tr>
<td>NFFI</td>
<td>Nyegezi Freshwater Fisheries Institute Mwanza</td>
</tr>
<tr>
<td>PAIGELAC</td>
<td>BAD aquaculture project</td>
</tr>
<tr>
<td>PPP</td>
<td>Public-Private Partnerships</td>
</tr>
<tr>
<td>RAB</td>
<td>Rwanda Agricultural Board</td>
</tr>
<tr>
<td>SADEC</td>
<td>South Africa Development Community</td>
</tr>
<tr>
<td>SUA</td>
<td>Sokoine University of Agriculture</td>
</tr>
<tr>
<td>TAFIRI</td>
<td>Tanzania Fisheries Research Institute</td>
</tr>
<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>
</tr>
</tbody>
</table>
**Definition of Key Terms (issue from the Kenyan strategy)**

For the purposes of this EAC strategy and plan, the following terms and definitions apply. These terms and definitions are derived from existing and recognized materials.

**Policy**
A policy is a programme of action adopted by a government based on a set of principles to attain specific goals on the macro and national levels for economic and social good. It is a deliberate plan of action to guide decisions and achieve rational outcome. Appropriate policy for the aquaculture sector requires political will and vision. Policies change with time and circumstances but remain overarching targets.

Note: Generally speaking, a policy could be understood as set of principles or rules agreed upon or set by decisions makers to guide decisions or the course of actions in order to achieve rational out comes towards solving real or impending issues.

**Strategy**
Strategy describes the ways and means to reach policy objectives. Strategies describe the roles and responsibilities of the various stakeholder groups comprising the sector such as the public and private sectors as well as civil society. They are the pathways to follow to achieve politics' objectives and the guidelines for development plans. It is within the strategic framework that both the public and the private sector participants make their detailed short and medium term plans, which define the precise activities that are to be implemented to achieve the desired objectives.

**Plan**
A plan is more detailed than a strategy; going down the continuum from general to specific. Plans add the components of "where" and "when" to those elaborated through the strategy. Technically, plans are more precise than the two preceding steps in the process, describing specific priority aquaculture systems to promote with a discrete cluster of operators in specific high potential zones. Plans occupy a distinct and identified period of time, a given plan replaced by a new plan as opposed to being up-dated as is the case with strategies.

**Aquaculture**
Aquaculture is the farming of aquatic organisms involving interventions in the rearing process to enhance production. Aquaculture as practiced in EAC zone is diverse and is carried out in various production systems. These include earthen ponds, earthen ponds with liners, net cages in ponds, dams or rivers, rectangular raceway tanks, and circular or rectangular concrete tanks. Using these enclosure systems, the following farming practices are found in the region:

- Earthen pond without aeration
- Earthen ponds with aeration
- Shrimp Culture
- Oyster Culture
- Seaweed farming
- Cage fish farming
- Flow through system in concrete tanks
- Integrated fish-cum-livestock culture
- Rice-cum-fish culture
- Monosex tilapia culture
- Ornamental Fish Culture
- Polyculture of Catfish /Tilapia
- Recirculation aquaculture systems

**Government(s)**
Government(s) as used in this document refers mainly to the Ministry of Fisheries Development and to other relevant government ministries.

**Private Sector**
The private sector refers to two general groups of actors: direct investors, including producers along with service providers, and partners, principally producer organizations and civil society organizations.

**Zone**
Zone is an exclusive area with particular characteristics presenting varied levels of aquaculture potentials.

In EAC the bio-physical and socio-economic potential for aquaculture is not uniform, with some zones having greater intrinsic capacity for aquaculture growth than others. Aquaculture suitability mapping classifies areas into low, medium, and high potential aquaculture zones.

**Commercial Farming**
Commercial farming can be small, medium, or large-scale, with active participation in the market. Commercial farmers purchase inputs (including capital and labor) and engage in off-farm sales of the fish produced. For these individuals, aquaculture is a principal economic activity. To be more specific and practical for a regional approach, the commercial can be divided in semi-industrial and industrial farming. The goal of commercial aquaculture is to maximize profits. Thus, the distinction between commercial and non-commercial aquaculture operations relies primarily on the existence or absence of a business orientation and on how factors of production such as labour will be paid. Non-commercial farmers use a social calendar while commercial farmers use an economic calendar.

**Non-Commercial Farming**
Non-commercial farming may involve purchase of inputs, mainly seed and feed, but relying mainly on family labour and on-farm sales of the produce. An additional feature of non-commercial aquaculture is that it is but one of the varieties of enterprises comprising the farming system; it is undertaken to diversify production, improve resource use and reduce risks of such events as crop or market failure.
1. EAC Regional Strategy for Sustainable Aquaculture Development

1.1 General

Overall, aquaculture development can provide the following solutions:

- a substitute for the protein previously sourced from the now overfished fisheries;
- creation of employment related to fish and feeds production, as well as employment opportunities related to agriculture products that are used in the manufacture of fish-feeds;
- the progressive set up of major industries for fish, fish-feeds and its raw material inputs that will provide in the long-term hundreds of thousands of tonnes of product.

The EAC region incorporates the five countries of Burundi, Kenya, Tanzania, Rwanda and Uganda.

These Members States are typically characterized by:

- overfishing of freshwater and marine (Kenya and Tanzania only) resources;
- a rapidly growing human population;
- a significant deficit in protein supply;
- a high level of formal unemployment;
- a fifty-year history of well-intentioned development projects for small-scale fish farming that have yielded little long-term sustainability. The only exception being Kenya, which has successfully developed an aquaculture production of 15 000 - 19 000 metric tonnes (mt)/year.

However, there are also significant potential markets for farmed fish within the developing middle-class of the EAC countries. In fact, it is expected that the internal EAC market alone will be able to absorb, in the longer-term, hundreds of thousands of tons of farmed fish and that the EAC can also produce the necessary fish feeds and its agricultural inputs associated with this production. EAC countries therefore see aquaculture as an approach to food production that has enormous potential and, in consequence, there is a need to develop a Regional Strategy and Implementation Plan for its development.

Table 1. The estimated production (2012) of farmed fish (90 percent Tilapia and 10 percent Catfish) in the EAC Member States without water plan restocking.

<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...
A regional approach is likely bringing the following advantages to EAC countries:

- Increase the commercial exchanges of fish, seeds, fish-feeds and its inputs. For example, Kenyan millers are importing their raw materials from Uganda and Tanzania.
- Countries that are less developed in aquaculture can capitalize on the experiences of the more advanced countries within the EAC. For example:
  - The good quality seed and feeds already in production in Kenya and Uganda.
  - Industrial cage-farming experience (for example, at Jinja Uganda).
  - Infrastructure development, post-harvest, value addition and trade.
- In the creation of legal frameworks, standards for quality and consumer protection.
- The establishment of the EAC’s best training and research centres as regional Centre of Excellence.

However, it is clear that a regional strategy can only support national-level strategies rather than replace them, but a regional approach can improve communication of success stories and sharing of know-how between the countries. An example of this sharing of experience and know-how was incorporated into this Regional Strategy document with the inclusion of the Kenyan strategy for aquaculture development. The Kenyan Strategy is particularly useful and relevant because:

- It clarifies precisely at which levels the different responsibilities, support and interventions should be based or targeted; and,
- It provides a template, permitting less advanced countries to better understand what they should be aiming for with their aquaculture industry and thus it identifies what they still have to do.

If the EAC want to meet the long-term objective of hundreds of thousands of tonnes of fish per year, it is believed that, at the regional level at least, the focus should be to support the commercial aquaculture value-chain, this covers the semi-industrial, industrial and clusters.

The EAC’s executive body is the Lake Victoria Fisheries Organization (LVFO), whose mandate is in the process to be enlarged to the five countries and includes aquaculture production systems. However, the EAC and the LVFO have rather limited capacity for action on the ground and therefore the success of a regional approach, and the extent of their contribution, will depend on the ability of the EAC/LVFO to mobilize:

1. External funding for a multi-donor, regional and long-term project to support aquaculture production. This mobilization must involve a range of donors in order to avoid gaps in the implementation of actions and therefore to improve the chances of securing long-term sustainability;
2. The Member States themselves; while the private sector should always be considered in any regional funding initiatives.

### 1.2 Strategic Issues (points of focus)

The eventual productivity of aquaculture systems can be enhanced by considering the following ten key strategic issues:

<table>
<thead>
<tr>
<th>Strategic Issues</th>
<th>EAC Regional Level</th>
<th>National Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Policy, legal and institutional framework</td>
<td>Favour the expansion of commercial aquaculture in the region. Support the harmonization across national legal frameworks.</td>
<td>Establish national legal frameworks and harmonize with other Member States.</td>
</tr>
<tr>
<td>ii. Research</td>
<td>Share and communicate knowhow and secure a return of investment through the regional Centres of Excellence</td>
<td>Reinforce the supervision and training of producers and their staff.</td>
</tr>
<tr>
<td>iii. Increased production</td>
<td>Support the search for good quality in fish, seeds and feed production processes. Promotion of the PPP. Mobilise regional multi-donor project and a regional body bringing together stakeholders along the aquaculture value chain.</td>
<td>Support improved production systems for fish, seeds and feeds. Support the PPP.</td>
</tr>
<tr>
<td>iv. Aquaculture Species Diversification</td>
<td>Focus on local species where there are particular constraints due to local biodiversity issues (e.g. Lake Tanganyika).</td>
<td>Focus on native species where there are constraints due to local biodiversity issues and improve production of these species.</td>
</tr>
<tr>
<td>v. Access to water resources</td>
<td>Support the management of access to water resources for the shared lakes and their catchment basins.</td>
<td>Management of access to water resources across the different users.</td>
</tr>
<tr>
<td>vi. Access to Markets and Market information</td>
<td>Regional support to lift bottlenecks that prevent or slow down the circulation of aquaculture value-chain products.</td>
<td>Identify and enforce solutions to facilitate the regional circulation and marketing of aquaculture value chain products.</td>
</tr>
<tr>
<td>vii. Institutional capacity to manage bio-diversity risk and monitor environmental concerns</td>
<td>In the shared regional environment actors at the regional level have to support the development of respective national institutional capacities for the Monitoring, Control and Surveillance (MCS) of aquaculture.</td>
<td>This institutional capacity must be able to manage future aquaculture development, which will be significant in some areas.</td>
</tr>
<tr>
<td>viii. Corporate governance</td>
<td>Actors at the regional level must support the harmonization of quality standards and consumer protection. It also has the role, through regional projects, to support the organization of the value-chain producers.</td>
<td>The supervision and support of enterprises is a priority task at the national level.</td>
</tr>
</tbody>
</table>
The multiplicity of uncoordinated players has more often than not led to inefficiencies and confusion that has hampered growth of the sector. In order to address this:

- The role of the region will be to support the harmonization of the, always difficult, enforcement of management decisions.
- The riparian countries of the large Lakes have to share the responsibility for MCS and enforcement decisions.
- The region should promote and facilitate private sector engagement by removing unnecessary hurdles that adversely affect investment.
- The Private sector should participate in and support the aquaculture advisory board.
- National Authorities should establish an aquaculture advisory board to provide guidance and direction.

These elements are relevant across all scales, from subsistence aquaculture to commercial aquaculture, including semi-industrial, industrial and cluster producers covering multiple activities along the entire value chain.

Several activities along the entire value chain) via Centres of Excellence for research, training and technical support; 

Taking into account the disparities between the five countries, and to maintain clarity in the proposal, the regional strategy is presented as three interconnected levels: (i) at the Regional level, (ii) at the level of the National Authority and, (iii) at the level of the Private Sector. The latter two components are largely derived from the Kenyan Strategy marked in blue.

1.3 Strategic elements

Within the context of the ten key strategic issues described in Table 2, the following strategic elements have also been identified:

1. Creating conducive and enabling environment for investment
2. Suitable production systems
3. Availability and access to inputs (feeds, seed, capital, etc.)
4. Extension, advisory services, and outreach
5. Access and sustainable management of resources
6. Research
7. Education and training
8. Marketing: regional trade, market analysis, infrastructure development and post-harvest added value
9. Producer organizations
10. Regulation and Control
11. Monitoring and evaluation

The sustainable management of the aquaculture value-chain is primarily the responsibility of the individual Member States.

The Private sector should:

- promote and harmonized efficient procedures for launching aquaculture projects with: (i) a 'one-stop shop' office, (ii) fast and cost-effective Environment Impact Assessments (EIAs) and, (iii) efficient partnerships between the public and private sectors (so-called PPPs).
- participate in and support the aquaculture advisory board
- strengthen producer associations
- in collaboration with the public sector, promote public-private partnerships to establish an aquaculture trust fund.

These elements are relevant across all scales, from subsistence aquaculture to commercial aquaculture, including semi-industrial, industrial and cluster producers covering multiple activities along the entire value chain.

Taking into account the disparities between the five countries, and to maintain clarity in the proposal, the regional strategy is presented as three interconnected levels: (i) at the Regional level, (ii) at the level of the National Authority and, iii) at the level of the Private Sector. The latter two components are largely derived from the Kenyan Strategy and marked in blue.

1.3.1 Creating conducive and enabling environment for investment

The multiplicity of uncoordinated players has more often than not led to inefficiencies and confusion that has hampered growth of the sector. In order to address this:
National Authorities should:
- identify and promote appropriate technologies to relevant aquaculture zones
- promote adoption of appropriate aquaculture technology
- promote the generation and dissemination of information to stakeholders
- support technology innovations

The Private sector should:
- contribute to the development of appropriate aquaculture technologies and systems
- adopt appropriate strategies regarding different production systems within aquaculture zones.

1.3.3 Availability and access to inputs (feeds, seed, capital and supplies and materials)

The most important constraint against substantially increasing fish production, for both the semi-industrial and industrial sectors, is the availability of fish feeds and seed in adequate quantity, quality and at a competitive price. Therefore, the following actions are required at the three administrative levels:

The Region should:

a) Feeds
- promote a standardized quality of fish feeds across the Region and establish the means to monitor that standard;
- promote, facilitate and ensure fair competition between the countries’ industrial millers;
- promote research at the services of the EAC fish food producer for better standard;
- promote access to credit for fish-food producers (the millers) in order that they be able to invest in specific lines of fish-feed production (for example, to buy an extruder machine). A special taxation schedule could be foreseen for the importation of specific materials.

b) Seeds

The Region has an important role to play in the sharing of effort and investments for the improvement of the quality of brood stocks:
- support Centres of Excellence mandated to improve the genetics of brood stocks. Furthermore, these Centres should improve their understanding of the reproduction of endemic species in order to avoid threats to local biodiversity (for example, in Lake Tanganyika where the farming of Tilapia nilotica is not permitted);
- promote the certification of commercial producers of seeds and define regulations on the use of chemicals and drugs in the reproduction process;
- harmonization and facilitation of Regional marketing of the seed.

c) Capital
- In general, promote the establishment of regional aquaculture credit guarantees and revolving funds. For this purpose use (and/or adapt) as far as possible the existing system in place.

National Authorities should:
- More specifically, promote access to credit for millers in order for them to invest in modern and efficient production lines for fish-feeds.
- In practice, convince a private bank (or banks, or existing institutions), which is/are present in all five countries, to specialize in aquaculture credit, even if it means that they will be given a warranty fund to cover the risk and/or a special aquaculture revolving funds to be co-managed with a PPPs.

d) Supplies and Materials
- Promote the free circulation of raw material inputs for feeds and if possible set up a special tax scheme for these mainly agricultural products.

National authorities should:

a) Feeds (including commercial and tradable feeds, feed materials and other nutrient inputs)

National Authorities should:
- stimulate domestic feed industries by reducing or waiving taxes on such items as feed milling machinery, basic feed ingredients, etc...
- promote access to the appropriate quality and quantity of fish feeds and make information on feeds and feed materials, especially prices, regularly available to producers through all means of information communication
- promote development of a small-scale farming industry, with clusters of household-scale fish feeds production
- strengthen regulatory institutions to deal with emerging issues on feed quality
- ensure compliance to feed quality standards through inspections and feed certification
- accredit laboratories and provide list of accredited laboratories that conduct proximate analyses
- enforce prevailing procedures as regards use of drugs and chemicals
- promote the adoption of appropriate feed manufacturing guidelines such as the FAO Technical Guidelines for Good Aquaculture Feed Manufacturing Practice
- encourage commercial farmers and millers to facilitate access to sufficient quality feed for the entire sector

Millers should:
- produce and market necessary feedstuffs to growers
- provide quality products of approved standards at affordable prices
- develop feed distribution systems through Public Private Partnerships (PPP)
- provide certified proximate analyses to clients
- follow prevailing procedures as regards use of drugs, chemicals
- provide information on feed availability and efficacy to clients and the public sector
- provide relevant production data to collaborators and the public sector
- fund fish feed research programs in collaboration with the government
Producer organizations should:
- serve as a forum for information sharing among stakeholders
- lobby for collective bargaining and appropriate public sector intervention
- link with relevant institutions (e.g., research organizations)
- provide feedback to service providers on feed performance
- produce and distribute quality feed
- promote maintenance of fish feeding records

b) Seed:
National Authorities should limit themselves to:
- providing regular information on sources and prices of good quality seed to producers
- providing guidelines in producing/ensuring good quality seed through such measures as seed certification
- taking the lead in genetic improvement programmes
- maintaining brood-stock of selected culture organisms corresponding to the identified production systems
- support Regional Center of Excellence to improve their understanding of the reproduction of endemic species in order to avoid threats to local biodiversity (for example, in Lake Tanganyika where the farming of Tilapia nilotica is not permitted)
- promoting commercial farmers nurseries and hatcheries to facilitate access to quality seed for the entire sector
- enforce prevailing procedures as regards use of drugs and chemicals

The private sector (seed producers) should:
- produce and distribute quality seed
- facilitate access to high quality seed
- adhere to rules and regulations

Producer organizations should:
- serve as a forum for information sharing among stakeholders
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- link with relevant institutions (e.g., research organizations)
- provide feedback to service providers on seed performance

The private sector (seed producers) should:
- produce and distribute quality seed
- facilitate access to high quality seed
- adhere to rules and regulations

c) Capital:
The government should refrain from providing direct grants (gifts) to fish farmers.
Thus, in terms of investment capital for commercial aquaculture,
National Authorities should:
- play a key role in creating an enabling environment
- promote access to credit for producers by as far as possible using and adapting the existing
- provide information to lending agencies on the profitability of aquaculture
- advise farmers on where and how to access funding from specialized institutions interacting with these funding institutions to advise and negotiate on repayment schedule and preferential interest rates for aquaculture development
- increase budget allocation to the aquaculture sector/provide guidance on the use of budgets
- prioritize public sector support to MSMEs (micro, small, and medium enterprises) and for women and youth
- promote establishment of aquaculture guarantee and revolving funds
- promote provision of insurance cover as done for other enterprises

The private sector (lending institutions and schemes) should:
- familiarize themselves with bankable aquaculture and insist on business plans as a basis for lending
- tailor-make bans to suit various aquaculture production systems
- prioritize funding to MSMEs (micro, small, and medium enterprises)
- consider preferential interest rates for aquaculture enterprises when applicable
- establish buy-back arrangement with farmers and service providers
- expand policy coverage to include aquaculture

The private sector (investors) should:
- prepare clear and precise business plans
- ensure that they have appropriate business and financial management skills before requesting external financial support
- non-commercial producers should work with NGOs, CBOs, and other partners to develop financing options
- advocate for increased investment in aquaculture sector
- acquire insurance cover for investments

d) Supplies and Materials
Private sector has difficulties in accessing needed tools to produce their crops such as therapeutic chemicals, imported and controlled inputs
National Authorities commits itself to:
- provide information and enforce relevant regulations
- provide information on list of authorized suppliers
- provide incentives for aquaculture development such as tax reduction/exemptions on aqua culture inputs

The private sector should:
- develop capacity for producing inputs liaise with the government on emerging requirements

1.3.4 Extension, Advisory and Outreach Services
The Region should:
- reinforce Training Centres of Excellence through regional upgrading of the national extension, advisory and outreach services, including NGOs, and provide training materials;
• harmonize the standard of the training and extension services;
• in order to reduce risk for smaller-scale producers, promote, where appropriate, integrated farming techniques.

National Authorities should:
• develop and apply standards and certification for provision of advisory and outreach services
• provide quality technical assistance through efficient aquaculture extension and outreach programmes
• collaborate with relevant partners to meet information shortfalls that cannot be met with public resources including use of multi-media outlets that provide information access to broad segments of society
• make national and international aquaculture information networks accessible to stakeholders
• play a regulatory and co-coordinating role in extension, advisory, and outreach programmes
• put emphasis on equitable and participatory approaches when providing services to farmers
• institutionalize cluster formation for rationalizing marketing and purchase of inputs, as well as increasing outreach-farmer contact
• encourage commercial investors to provide outreach support to smaller operators
• define a cost-recovery mechanism for the provision of public sector technical assistance
• provide guidelines on optimal management practices (feeding, fertilization, liming, etc) to ensure economic efficiency
• promote farmer to farmer outreach and extension services

The private sector should:
• supplement/complement public sector outreach programmes
• evaluate outreach efficacy and advise on outreach needs
• apply good management practices favoring improved yields
• promote farmer to farmer outreach and extension services

1.3.5 Access to, and sustainable management of, natural resources

The Region should:
• harmonize at the regional level the management and the access to the shared water resources of the large lakes and their watersheds;
• promote responsible aquaculture and the application of the good environmental practises and reducing conflict between users;
• promote land mapping for aquaculture at the national level.

National Authorities should:
• ensure sustainable land and water use and management for aquaculture aiming at reducing conflict between users
• develop aquaculture resource management and environmental tools including land mapping
• develop aquaculture capacity in environmental regulatory institutions
• develop mechanisms for scaling environmental controls based on investment size, impact, and systems
• develop applicable guidelines and controls for aquatic bio-security
• provide human resources and facilities to implement bio-security standards
• encourage wetland and watershed conservation for aquaculture
• promote sustainable use of all aquaculture systems and technologies in fresh, brackish and marine waters

The private sector should:
• practice responsible aquaculture and apply best management practices
• conform to wetland and watershed conservation standards

1.3.6 Research

The Region should:
• promote the principle that research should be applied, and therefore at the service of the aquaculture value chain within a PPPs framework;
• channel donors through the regional Centres of Excellence for applied research for aquaculture;
• promote partnerships between EAC Centres of Excellence and leading international institutions in aquaculture research;
• disseminate the ‘success stories’ across the Region;
• support applied research on fish health, sanitation and disease control;
• support data collection and production of reliable statistics.

National Authorities should:
• support applied and farmer-participatory research directed at commercial farmers as well as non-commercial farmers
• ensure that research is responsive to the needs of farmers
• support applied research on fish health, sanitation and disease control
• create mechanisms for provision and sharing of research facilities by public and private sectors
• disseminate research findings to end users
• ensure data collection and production of reliable statistics
• establish an Aquaculture Research Board comprised of stakeholders to develop a multi-institutional national research agenda and solicit feedback

The Private sector should:
• provide supplemental funds for research as necessary
• disseminate research results
• evaluate research results and provide feedback to the aquaculture research board and other key stakeholders
• collaborate with research institutions
1.3.7 **Education**

The Region should:
- encourage national-level evaluations of aquaculture training needs for both the public and private sectors
- facilitate coordinated responses by the Centres of Excellences to producers’ needs
- channel the donor funds to provide support for training through:
  - curricula for multi-level training, targeting aquaculture in the EAC Region;
  - hands-on training programmes specialising in creating employment opportunities in aquaculture for women and youths
- promote partnerships between EAC Centres of Excellence and leading international institutions in aquaculture training and education
- promote regional collaboration in the transfer and adaptation of existing curricula and their use

National Authorities should:
- develop a mechanism to assess, evaluate and prioritize human resource needs in the sector
- develop and update a human resource development plan for the sector
- develop specific curricula for practical training (for each species, zones etc) of entry-level farm managers and aquaculture technicians
- design and undertake specialized programmes facilitating the entry of especially women and youth into the entire aquaculture value chain
- arrange and/or conduct on demand at regular intervals, short courses for in-service training and human resource enhancement including public private partnerships
- design and promote horizontal learning strategies for farmers
- develop standards for all levels of training
- develop a cost sharing policy on training
- facilitate exchange programs

The private sector should:
- develop human resource capacity
- participate in cost-sharing training programmes
- facilitate training opportunities on their farms
- provide feedback to the public sector regarding the efficacy of training
- participate with the public sector in human resource training needs assessment

1.3.8 **Marketing: regional trade, market analysis, infrastructure development, and post-harvest value addition**

The Region should:
- promote aquaculture certification and standards, across the value chain, in line with FAO and other international guidelines;
- promote the protection of local producers and nascent industries (feeds) against unfair foreign competition (imports), provided that the measures used fit within international trade conventions/agreements (e.g. WTO);
- promote inter-regional trade of all aquaculture value chain products and encourage value-addition and product branding;
- support negotiations for favorable multi-lateral trade agreements;
- promote market analysis and monitoring market capacity to absorb large production of farmed fish at sustainable price for the producer.

National Authorities should:
- disseminate aquaculture value chain information to value chain operators
- establish and enforce aquaculture certification and standards across the value chain in line with FAO and other international guidelines (for all products)
- protect local producers against unfair foreign competition (imports) provided that protective measures used fit within the international trade conventions/agreements
- negotiate favorable bi-lateral and multi-lateral trade agreements
- protect producers against unfair practices by middlemen
- improve marketing infrastructure, such as cold storage, roads and communication channels • assist producers in promoting aquaculture products (in order to stimulate demand) through agricultural fairs and other such opportunities
- encourage commercial producers to develop commodity market channels which can be accessed by smaller producers (market access by small producers not dependent to commercial producers)
- promote market analysis and monitoring market capacity to absorb large production of farmed fish at sustainable price for the producer
- promote diversification and value addition of aquaculture products
- prepare, publish, and regularly monitor guidelines on the implementation of quality standards of aquatic products to protect the public health as well as improve acceptability of aquaculture products

The private sector should:
- comply with regulations on quality and safety standards
- adhere to the aquaculture certification and standards
- provide quality and safe products meeting market requirements
- provide market guarantees for smaller producers (e.g. satellite production systems)
- adopt value-addition in marketing aquaculture products
- brand their products and search for post-harvest value addition

1.3.9 **Producer organizations**

The Region should:
- promote producer organizations and their effective representation in a regional body

National Authorities should:
- develop guidelines and regulations governing the formation and operations of producer organizations with legal status
The private sector should:
  • promote and advocate their mutual interests, facilitate access to inputs and markets, etc.
  • NGOs should play a catalytic role in establishing producer organizations
  • establish a national producer organization assembling the local organizations

1.3.10 Regulation and control

The Region should:
  • promote appropriate international codes to which EAC governments subscribe [e.g. Code of Conduct for Responsible Fisheries (CCRF)];
  • promote the semi-industrial and industrial production in cages in the three large lakes, with the respect of the international convention, and administrative efficiency by shortening the time for site allocation and EIA procedures. This is because in the medium and long-term cage production could eventually be responsible for 30 to 50 percent of the total EAC aquaculture production and that will in turn lead to a massive production of fish feeds. [E.g. Lake Harvest in Lake Kariba with 8 000 mt of fish and 13 000 mt of feeds (2012 data)];
  • participate in the regulation and control of the use of alien and genetically modified aquatic species;
  • participate in the monitoring and control of discharge and outfall standards (e.g. Biological Oxygen Demand-BOD limits or alien species, etc.);
  • promote harmonized criteria for the requirement of Environmental Impact Assessments (EIAs);
  • promote regulations for seed and feed production; and,
  • promote, in each country, the adoption of a ‘one-stop shop’ for obtaining permits and information relevant to aquaculture development. This should be done, as far as possible by using and adapting the existing.

National Authorities should:
  • establish clear and secure user rights to land and water which are favorable to aquaculture investment
  • make the process easy for applicants to acquire necessary rights to land and water for aquaculture operations
  • regulate and control the use of alien and genetically modified aquatic organisms
  • regulate and control the provision of discharge and outfall standards (e.g. Biological Oxygen Demand-BOD limits or alien species to receiving water bodies, etc.)
  • issue permits to commercial aquaculture farmers, which specify their rights and obligations
  • waive such permits for non-commercial aquaculture as long as Government regulatory thresholds are not exceeded
  • adopt a one-stop shop for obtaining permits and information relevant to aquaculture development. This should be done, as far as possible by using and adapting the existing

1.3.11 Monitoring and Evaluation

The Region should:
  • apply and enforce appropriate international codes to which Government subscribes (e.g. Code of Conduct for Responsible Fisheries — CCRF)
  • determine criteria for requiring environmental impact assessment studies
  • regulate seed production
  • regulate commercial feed production
  • register fish farmers

The private sector should:
  • comply with relevant regulations including the use of alien and genetically modified aquatic organisms
  • self-regulate to ensure good farm management practices with the goal of sustainable resource use as well as to ensure safety of aquaculture products
  • comply with regulations on the movement of aquatic organisms between watersheds and the provision of discharge and outfall standards
  • seek permits before establishing a commercial aquaculture farms
  • apply appropriate international codes to which Government subscribes
  • register with the government
  • have self-control mechanisms to ensure seed quality, commercial feeds & feed ingredients quality and aquaculture products quality

National Authorities should:
  • promote a harmonized system for data collection;
  • support international organizations (e.g. the FAO) to collaborate with national authorities in the collection and publishing of reliable and up-to-date statistics;
  • ensure that EIAs are properly conducted and any subsequent aquaculture developments are adequately monitored.

National Authorities should:
  • monitor the movement of aquatic organisms between watersheds
  • define a standard system for data collection
  • collect and publish reliable and up-to-date statistics
  • ensure that environmental impact assessment studies are properly conducted and ensure a PPP dialogue on the way Administration delivery EIA with efficiency, fast response and reasonable cost
  • regularly evaluate the sector development level
  • have one inter-agency monitoring unit and set up a database

Private sector should:
  • regularly provide reliable and up-to-date data
  • have self-monitoring mechanisms to ensure seed quality, commercial feeds & feed ingredients quality and aquaculture products quality
2. EAC Regional Plan for Sustainable Aquaculture Development

2.1 General

The EAC Aquaculture Development Plan has to take into consideration the following points:
- The different levels of production of the five countries (see Table 1) and their comparative range of knowledge.
- The fact that the estimated 50 percent difference in market price for farmed fish in the major cities of the EAC has important implications for the profitability and the ‘motivation’ of certain producers.
- The EAC-LVFO obligation to work with the national authorities and institutions including: (i) the centres of excellence for research and training, (ii) the clusters and, (iii) the value chain producers associations.
- That the potential actions and financial resources of the EAC-LVFO are limited and in consequence these institutions should apply to donors for regional aquaculture support projects with the support of national authorities.
- The EAC-LVFO must demonstrate their professional ability in the management of regional projects supporting private sector production, to ensure a sustainable funding stream.

2.1.1 The Long-Term (20 years) Development Objective

The long-term goal is achieving aquaculture's potential to contribute significantly to economic development of the Region through employment creation, food security improvement, and income generation.

In the long-term, the overall EAC tonnage is expected to run into the hundreds of thousands of tonnes per year. It will be mainly Tilapia and Catfish and this tonnage will be more than tripled by the production of feeds and its farm inputs.

2.1.2 The Medium-Term (five to ten years) Development Objectives

The EAC development objectives of the sector in the next five to 15 years are to promote at the national level the:

I. increase profitability of aqua-businesses
II. increase cultured fish production
III. strengthen aqua-business inputs (seed, feed, capital) and output markets
IV. address environmental concerns
V. rely on tested production systems
VI. improve support to producer institutions
VII. improve extension service delivery and information exchange
VIII. make research responsive to industry needs, establish mechanism for monitoring and evaluation

2.1.3 The Immediate Outputs

The EAC-LVFO must support the national governments to the following.

In the short-term, investments in aqua-businesses which are economically, socially and environmentally sound must increase for the sector to realize its potential. To stimulate investments, Governments will assume a new role. It will facilitate and monitor the development and expansion of aqua-business. Governments will improve policy and regulatory environment, facilitate secure and equitable access to land, water, credit and services while promoting access to quality input and output markets. Fish farmers will improve their business and managerial skills and the quality of their products in order to increase output, penetrate lucrative markets and take advantage of improved policy and regulatory environment.

2.1.4 Outcomes

Aquaculture production of the EAC region is estimated between 30 - 40 000 mt for 2012, this is without including restocking programmes or seaweed production.

The following outputs are expected during an initial five-seven year period in the EAC zone:

i. at least a 100 percent increase in EAC aquaculture production, raising it to ~60-80 000 mt/year;
ii. at least a 100 percent increase in consumption of aquaculture products;
iii. a 100 percent increase in the value of aquaculture harvest;
iv. more than 150 percent increase in fish-feed production. This will likely results in at least three industrial-scale companies in competition within the Region, each producing more than 10 000 mt/year;
v. 150 000 new full or part-time jobs created in the value chain; and
vi. a 50 percent increase in the number of women and youth participating in aquaculture.

Long-term Outcomes

The following general outcomes are expected during the 15 year period:

- significant contribution to GDP;
- significant contribution to food security;
- significant contribution to employment creation;
- positive impact on health and nutrition;
- improved environmental and aquatic resource management; and,
- at least one-third of the jobs along the entire aquaculture value chain held by women.

2.1.5 External Links

The following stakeholder groups have been identified as partners for implementation of programmes under this Strategy:

i. COMESA;
ii. Member States, through their Ministries responsible for fisheries and involving other relevant Ministries;
iii. Relevant community-level fisheries institutions and farmers groups;
iv. Competent Authorities in relevant areas;
v. Private sector associations;
vi. Sub-regional fisheries organizations;
vii. Universities;
viii. Research and training institutions;
ix. Civil society organizations working in the fisheries and aquaculture sector;
x. ASARECA;
xii. WorldFish Center;
xiii. FAO and other international organizations working in fisheries and aquaculture in the region;
xiv. EU funding for EDF Regional project.

2.1.6 Risks
The following risks may have adverse effect on successful implementation of the EAC and the five National Aquaculture Strategies and Implementation Plans:

i. inadequate and erratic funding;
ii. non-adherence to basic aquaculture requirements;
iii. hyper enthusiasm which may lead people to undertake activities without proper technical advice;
iv. fragmentation of the national program due to lack of collaboration amongst key players/actors;
v. marketing and distribution of inferior products;
vi. production of bad quality of feeds and seeds that will diminish profitability;
vii. inadequate human resources;
viii. disease outbreaks and parasitic infestations;
ix. market volatility between other low price in certain countries (like Uganda) due to competition with fisheries product;
xi. constraints on land and water use (climate change);
xii. political interference;
xiii. water use conflicts and;
xiv. un-harmonized regulations of various sectors (water, fisheries, environment, wild live services, International Convention managing the large lakes, etc); and
xv. a two-speed EAC aquaculture: considering the large differential in aquaculture production across between the five EAC member states, the regional approach 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 commercial sector.

o Altogether it is a win-win situation because, for example, the Kenyan industrial fish feeds producers are buying their inputs in the other EAC countries for the reason that it is cheaper. And that means employment in countries producing inputs for fish feeds.

2.1.7 Monitoring & Evaluation
In each country M&E group and producer organization(s) will have the responsibility of preparing a report to the Aquaculture Advisory Board (to be created in each country if they don't exist) for follow-ups and appropriate actions.

2.2 PRIORITY OBJECTIVES, RESULTS & ACTIVITIES (Reference Table 3)
As previously discussed, the Region should be more involved in commercial development in order to favor the increase of production through semi-industrial and industrial production scales.

2.2.1 Objective 1: To increase fish production
Results:

1. quality and adequate seeds available
2. quality and adequate feeds available
3. improved business skills for stakeholders
4. expanded aquaculture resource base
5. sufficient water quality and quantity available
6. increased access to fish products (value chain)

2.2.1.1 Quality and Quantity of seeds available
Regional inputs:

• promote the creation, in each of the five countries ,of a National Advisory and Research Board/Committee
• promote regional hands-on training and research Centers of Excellence, similar to the Sagana station in Kenya and the Kajjansi station in Uganda
• promote the development of multi-donor, region-wide projects supporting: (i) Centers of Excellence and, (ii) commercial production
• promote international partnerships with Centers of Excellence (e.g. Chinese involvement at Kajjansi station, Uganda)
• actively promote the exchange of know-how and success stories
• promote the development and dissemination of relevant hands-on curricula
• promote region-wide exchange and trade of commercial seeds
• promote the certification of seed producers

National Activities:

• conduct research on new species and improved organisms/strains based on recommendations from the National Aquaculture Advisory and Research Boards
• develop certification protocol
• assess the quality of seed stocks held by farmers
• certify seed producers
• identify and assist certified seed suppliers
• identify and improve existing private seed production facilities
• train nursery operators and seed suppliers
• facilitate distribution networks including cluster level nurseries
2.2.1.2 Quality and Quantity of feeds available - Activities:
Regional inputs
- promote region-wide exchange and/or trade of commercial feeds
- promote the set-up of industrial production lines for fish-feeds and access to credit;
- promote quality control and the improvement of the Food Ratio Conversion (FRC)
- promote feed certification protocols and the certification of feed producers

National Activities
- conduct research on quality feeds based on recommendations from the Aquaculture Advisory and Research Boards
- develop feed certification protocol
- assess the quality of feeds through proximate analyses and grow-out trials
- establish feed quality monitoring unit
- certify feed producers
- identify certified laboratories for feed testing
- identify sources of feed and feed ingredients
- identify and assist certified feed suppliers
- facilitate feed distribution networks
- train farmers on farm made feed formulation and production

2.2.1.3 Expanded aquaculture resource base - Activities:
Regional inputs
- promote, as a priority, the large-scale aquaculture of Tilapia and Catfish;
- promote the commercialization of new types of aquaculture, with the research under the management and direction of the individual countries; and,
- disseminate the lessons learned from the experience of the Aquaculture Park in Uganda.
- promote land mapping of suitable aquaculture region

National Activities:
- define current production systems in terms of viable investment packages
- secure land mapping for suitable aquaculture region
- assess, develop, and promote mariculture (sea weeds, algae, oyster, abalone etc.)
- identify and promote new aquaculture organisms and systems
- develop infrastructure development and promote aquaculture parks
- promote multiple use of aquatic resources e.g. dams, rivers, lagoons, estuaries,
- promote fish farming in arid and semi-arid areas
- promote farmed bait and ornamental fish industry
- promote large-scale aquaculture
- promote integrated farming where the fish price is too low and fish feeds are not affordable

2.2.1.4 Improved business skills for stakeholders - Activities:
Regional inputs
- Share and promote training in business skills through ad hoc Centers of Excellence (NGOs, projects, national teams, etc.) as well as the relevant curricula.

National Activities
- training in business skills (cost-benefit analysis, capital budgeting, record-keeping, financial analysis...)
- farmers to develop business plans
- conduct refresher courses for relevant stakeholders

2.2.1.5 Sufficient water quality and quantity available - Activities:
Regional inputs
- Promote the good management of shared water resources of the large lakes, and of their watersheds.

National Activities
- assess water quality and quantity
- establish water quality standards for aquaculture
- resolve water use conflicts
- promote water users association
- develop and implement water harvesting skills

2.2.1.6 Increased access to Markets - Activities:
Regional inputs
- promote aquaculture products and respect for quality standards along the value chain in order to reinforce and sustain the image of healthy products for consumers.
- promote post-harvest added value product

National Activities
- promote diversification of aquaculture products
- create awareness of aquaculture products
- increase market information dissemination
- improve markets and market infrastructure for aquaculture products
- Promote post-harvest added value product

2.2.2 Objective 2: To strengthen institutional and human capacities
Results
1. Farmers benefitting from improved extension and outreach services
2. Empowered producer organizations
3. Functional national aquaculture advisory and research boards
4. Streamlined and harmonized national programs
5. Functional national aquaculture network
6. Strengthened aquaculture value chains
2.2.2.1 Farmers benefitting from improved outreach services - Activities

Regional inputs
- Promote the dissemination of didactic outreach curricula and training in the ad hoc centers of excellence and to national agencies and NGOs involved in extension services

National activities
- Develop National Aquaculture Extension Framework
- Develop production system specific extension packages for countrywide use
- Develop aquaculture outreach programmes
- Establish standards for provision of outreach services
- Recruit, train and facilitate extension and change agents
- Enhance self-sufficiency in non-commercial fish farmers
- Engage and coordinate relevant stakeholders to provide basic extension services
- Establish farmer extension clusters
- Develop ICT tools that are accessible to farmers
- Develop aquaculture suitability maps
- Establish mechanisms for cost sharing in capacity building programs

2.2.2.2 Empowered producer organizations

Regional inputs
- Create a Regional Aquaculture Advisory Board incorporating producer associations
- Promote formation of regional and/or national producer associations

National activities
- Promote formation of producer organizations
- Training on identified best management practices
- Recruitment of members
- Establish farmer to farmer exchange program

2.2.2.3 Functional national and regional aquaculture Advisory and Research Board - Activities

Regional inputs
- Promote the creation of national Aquaculture Advisory and Research Boards
- Include the representatives of each National Aquaculture Board in the new Regional Advisory Board

National activities
- Constitute National Aquaculture Advisory and Research Board
- Establish full mandate for the board
- Bi-annual meetings of the board

2.2.2.4 Streamlined and harmonized national and regional programs

Regional inputs
- Promote the development of functional national aquaculture development program(s)
- Capitalize regularly on the experience of the more advance countries to improve aquaculture production in the less-advanced countries

National activities
- Develop functional national aquaculture development program(s)
- Define clearly the roles of various institutions
- Establish bi-annual stakeholder forums
- Establish a catalogue of actors and players in the sector
- Establish collaboration mechanisms with other institutions
- Link national programs to relevant global programs
- Hold annual development partners’ meeting for resource mobilization

2.2.2.5 Functional national and regional aquaculture network

Regional inputs
- Promote national and regional aquaculture networks

National activities
- Establish a functional national aquaculture network
- Link the National Aquaculture Network to Aquaculture Network for Africa (ANAF) and other networks
- Promote use of ICT in aquaculture
- Participate in regional ANAF activities
- Establish and maintain aquaculture websites

2.2.2.6 Strengthened aquaculture value chains

Regional inputs
- Build capacity along the aquaculture value chain
- Promote value chain analysis and the regional dissemination and communication of the results
- Promote a region-wide campaign for increased consumption of aquaculture products
- Promote development of satellite out-growers around industrial fish-farms

National activities
- Build capacity of the aquaculture value-chain
- Support development of cottage industries and private companies along the aquaculture value chain
- Promote development of out-growers around industrial fish farm
- Conduct value-chain analysis
- Conduct a nationwide campaign for increased consumption of aquaculture products
- Promote diversification of aquaculture products
- Establish a pricing system for value added products
2.2.3 Objective 3: To provide a sustainable and enabling aquaculture environment

Results:
1. appropriate legislation and regulations in place
2. a one-stop shop for investors established
3. best practices being applied
4. Monitoring and Evaluation framework developed
5. improved statistics, marketing analysis and information exchange
6. increased participation of women and youth
7. guidelines for responsible aquaculture in place
8. increased aquaculture investment

2.2.3.1 Appropriate legislation and regulations in place

Regional inputs
- promote establishment (where necessary) and harmonization of existing national aquaculture legislation by, inter alia, building on lessons learned from more advanced countries (for example: the aquaculture protocol to be developed for Lake Victoria)
- promote the development and dissemination of aquaculture-specific EIA guidelines
- promote, for the shared-waters of Lakes, the establishment and/or reinforcement of:
  - functional Fish Health Monitoring Units (FHMU)
  - Environmental Monitoring Units (EMU)

National Activities
- develop comprehensive aquaculture legislation
- develop and establish regulatory structures
- conduct stakeholders' sensitization workshops on the regulatory structures
- establish a functional Fish Health Monitoring Unit (FHMU)
- establish a functional Environmental Monitoring Unit (EMU)
- establish functional Linkages with other national, regional and international surveillance programs on aquatic bio-security
- establish Aquaculture specific EIA guidelines

2.2.3.2 A one-stop shop for investors developed

Regional inputs
- promote 'one-stop shops' in each country based on the improvement of the existing
- promote and highlight investment opportunities
- improve awareness of the adverse effect of administrative bottle-necks

National Activities
- establish a one-stop shop based on the improvement of the existing
- package and disseminate aquaculture business information
- link up with investment promotion council to flag aquaculture investment opportunities

2.2.3.3 Best practices being applied

Regional inputs
- promote and disseminate best management practice
- promote fish health, sanitation and disease control

National Activities
- identify and document best management practices specific to systems practiced
- disseminate information and sensitize stakeholders on best practices
- establish a reward scheme for best practicing farmers
- recognize and reward best practicing farmers based on the scheme
- promote fish health, sanitation and disease control

2.2.3.4 Monitoring and Evaluation framework

Regional inputs
- promote and disseminate best M&E practice

National Activities
- develop the necessary tools for M&E
- build capacity on M&E
- conduct M&E
- review and share M&E information

2.2.3.5 Improved statistics and information exchange and develop data collection tools

Regional inputs
- promote data collection in order to improve statistics and information exchange;
- promote a regional aquaculture inventory.
- Support market analysis and monitor its capacity to absorb the farmed fish at a sustainable price for the producers

National Activities
- sensitize farmers on importance of record-keeping
- update the existing aquaculture inventory
- establish and maintain data bases
- collect, collate, analyze data, improve statistics and share reports
- market analysis for farmed fish and its capacity to absorb it

2.2.3.6 Increased participation of women and youth

Regional inputs
- promote hands-on curricula and training programmes for women and youth.

National Activities
- allocate specific percentage slots for women participation
- design flexible women friendly programs
2.2.3.7 Guidelines for responsible aquaculture

- Increase budgetary allocation for developing aquaculture infrastructure
- Lobby for increased investment in aquaculture enterprises
- Promote formation of producer and marketing groups for effective aquaculture
- Establish a revolving aquaculture trust fund based if possible on the improvement of the existing real time aquaculture information to aquaculture stakeholders and feedback mechanism
- Lobby for increased investment in aquaculture enterprises

2.2.8 Increased aquaculture investment

- Develop models for financially-viable aquaculture
- Promote the development of models for financially-viable aquaculture
- Establish a regional revolving aquaculture trust fund through donors and the private sector

<table>
<thead>
<tr>
<th>EAC Regional Objectives</th>
<th>Result</th>
<th>Indicators</th>
<th>Means of verification 2012-2013</th>
<th>EAC Base line 2018</th>
<th>Five year period milestones 2023</th>
<th>EAC Target in fifteen year 2028</th>
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</thead>
<tbody>
<tr>
<td>Objective 1: to increase the farmed fish production in EAC</td>
<td>Total EAC farmed fish</td>
<td>1. In each country, number of commercial farms with more than 50,000 m²; 2. EAC fisheries produce fish feeds above 5,000 m³/year; 3. EAC-LVFO regional projects are funded by donors; 4. per country, credit for commercial operators are in place and the same for small farms microcredit; 5. harmonized legal, standard and didactic packages</td>
<td>1) National and FAO statistics; 2) National association of producers records; 3) Regional project records; 4) Government records</td>
<td></td>
<td>1) above 40 – 80,000 m³/year of fish; 2) 3 Million produced each 10,000 T (medium to FRC of 1.8); 3) at least 30 fish farm producing more than 1,000 m³/year; 4) National and regional M&amp;E Ad Hoc bodies are operational; 5) EAC-LVFO regional project are operational; 6) 10% access to credit for the aquaculture value chain; 7) Legal aspects, standards and didactic materials are harmonized; 8) Regional Centres of Excellence exist and provide improved brood stock and extension services</td>
<td>1) 4 – 900,000 m³/year and 40-50% from fish cages and 5% from sea; 2) 500,000 pt &amp; full time jobs in the aquaculture value chain; 3) at least 5 million produced 20,000 tonnes/year + FRC of 1.4; 4) M &amp; E bodies are in place; 5) EAC-LVFO regional projects are still operational and funded; 6) 40% access to credit for the aquaculture value chain; 7) Legal aspects, standards and didactic materials are harmonized; 8) Regional Centres of Excellence provide improved brood stock and extension services</td>
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<td>Objective 2:</td>
<td>Total EAC farmed fish</td>
<td>1. Quality and adequate seeds available; 2. seeds producers are certified in each country; 3. regional seeds Centres of Excellence</td>
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<td></td>
<td>Fish producers organization and government records</td>
<td>Number of certified seeds producers in each country in 2013</td>
<td>1. In each country at least 3 certified seeds producers above 1 million/monat; 2. At least two regional seeds research Centres of Excellence</td>
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<td>1) Free circulation of the certified seeds in the region; 2) average daily growth rate of 1.6g/fish/day; 3) at least two regional seeds research Centres of Excellence</td>
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Table 3: Priority Objectives and Results of the EAC Regional Aquaculture Implementation Plan
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<tr>
<td>3. improved business skills for stakeholders</td>
<td>1) number of farmers using business plans</td>
<td>Farms records and National Governments records</td>
<td>1) governments records on business plans in 2013</td>
<td>1) at least 20% of the commercial farm using business plans</td>
<td>1) at least 60% of the commercial farm using business plans</td>
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<td>2) number of banks extending credit facilities to fish farmers</td>
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<td>2) number of banks extending credit to fish farmers</td>
<td>2) at least 10% of banks extending credit to commercial farmers</td>
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<td>3) number of trainings held on the use of business package</td>
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<td>3) microcredit at disposal for cluster and small farmers</td>
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<td>4) number of Ad Hoc NGOs and Centres of Excellence for business</td>
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<td>4) 20% farmers trained in techniques and business</td>
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<td>5) number of commercial farms and annual yields</td>
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<td>4. expanded aquaculture resource base</td>
<td>1) number of production systems being used</td>
<td>National aquaculture inventory of farm records</td>
<td>1) EAC fish production in 2018</td>
<td>1) EAC fish production around 4-500 000 mt/y</td>
<td>1) EAC fish production around 30-200 000 MT/y</td>
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<td>2) number of Aquaculture Parks available</td>
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<td>2) six aquaculture fish production systems in use including out growers</td>
<td>2) six aquaculture fish production systems used including out growers and farming</td>
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<td>3) variety of aquatic species used in production</td>
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<td>3) some big farm promote</td>
<td>3) 30-50% produced in cages above 20 000mt/y</td>
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<td>4) number of new zones introduced</td>
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<td>4) at least one aquaculture park in each country</td>
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<td>5) number of commercial farms</td>
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<td>5) number of commercial farms and cluster benefiting of extension services in 2013</td>
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<td>6) annual yields</td>
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<td>6) annual yields/Parks available</td>
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<td>5. sufficient water quantity and availability</td>
<td>1) availability in each country of water quality standard</td>
<td>National Governments record</td>
<td>1) water quality standard in place</td>
<td>1) water quality standard in place in each country</td>
<td>1) water quality standard in place in each country</td>
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<td>2) number of water use conflicts</td>
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<td>2) 50% reduction in water conflicts</td>
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<td>3) number of lakes used for cages farming</td>
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<td>3) list of players/actors in sub-sector</td>
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<td>6. increased access to fish products (value chain)</td>
<td>1) number of aquaculture producers</td>
<td>National Governments record</td>
<td>1) EAC has at least three aquaculture parks</td>
<td>1) EAC fish production around 4-500 000 mt/y</td>
<td>1) EAC fish production around 30-200 000 MT/y</td>
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<td>2) number of fish market</td>
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<td>2) regional training Centres</td>
<td>2) regional training Centres</td>
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<td>3) number of cluster with marketing organisations</td>
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<td>3) number of organised cluster in production and marketing</td>
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<td>4) number of national and regional producer organisations</td>
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<td>4) at least 30% of the commercial farmers and cluster benefiting to producer association</td>
<td>4) at least 60% of the commercial farmers and cluster benefiting to producer association</td>
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<td>5) size of membership of producer organisations</td>
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<td>5) at least 30% of the commercial farmers and cluster benefiting to producer association</td>
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<td>6) number of national and regional producer organisations</td>
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<td>Objective 2: To strengthen institutional and human capacity</td>
<td>1. Farmers benefitting from improved extension and outreach services</td>
<td>1) number of commercial farmers and cluster benefiting from improved extension services</td>
<td>Number of commercial farmers and cluster benefiting of extension services in 2013</td>
<td>1) at least 50% of the commercial farmers and cluster benefiting of efficient extension services regional centres of excellence are in place</td>
<td>1) at least 80% of the commercial farmers and cluster benefiting of efficient extension services</td>
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<td>2) standardized extension package developed and in use in the region</td>
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<td>2) clearly define roles of the five national and regional institutional and human capacity</td>
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<td>3) regional training Centres of Excellence are in place</td>
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<td>3) mapping of actors/actors in the sub-sector</td>
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<td>4) harmonized and streamlined national and regional programs</td>
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<td>4) roles of different actors at present national and regional programs in the sub-sector</td>
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<td>5) inventory of actors in the sub-sector in the region</td>
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<td>5) list of players/actors in sub-sector</td>
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<td>7) inventory of actors in the sub-sector</td>
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<td>8) number of networks and memberships of national and regional boards</td>
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### EAC Regional Objectives

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<tr>
<td>6. Strengthened aquaculture value chains</td>
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<td>1) strong aquaculture value chain in place</td>
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<td>2) improved marketing of aquaculture products and number of marketed value chain</td>
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<td>3) number of product categories in the market</td>
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<td>Objective 3: To provide a sustainable and enabling aquaculture environment</td>
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<td>1. Appropriate legislation and regulations in place</td>
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<td>1) comprehensive aquaculture legislation, including EIA, in each country</td>
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<td>3) rate of implementation in each country</td>
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<td>1) no regional harmonisation</td>
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<td>EIA process still difficult, long and costly</td>
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<td>3) access to large shared lakes still difficult for small and even more for large cages farming</td>
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<td>1) the harmonization of the legislation and regulation allow the rapid flow of aquaculture value chain product through the five countries boarders</td>
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<td>2) EIA process start to improve with regional guideline</td>
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<td>3) cages production start in large lake</td>
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<td>2. A one-stop shop for investors established</td>
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<td>1) presence of one-stop aquaculture shop in each country</td>
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<td>3) cages production in the three large lake is 30-50% of the EAC production</td>
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<td>3. Best practices being applied</td>
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<td>1) frequency of disease outbreaks</td>
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<td>2) healthy aquaculture products</td>
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<td>3) number of reported cases of pollution concern</td>
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<td>4) number of farmers applying BMPs</td>
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<td>4. Monitoring and Evaluation frameworks developed</td>
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<td>1) number of monitoring report in each country</td>
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<td>2) success rate in project program implementation</td>
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### EAC Regional Objectives

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<th>Indicators</th>
<th>Means of verification</th>
<th>EAC Base line 2012-2013</th>
<th>Five year period milestones</th>
<th>EAC Target in fifteen year 2028</th>
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<td>5. Improved statistics, market analysis and information exchange</td>
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<td>7. Guidelines for responsible aquaculture in place</td>
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<td>2) EAC 2013 production of farmed fish</td>
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ANNEX I: Agenda for Regional Workshop Meeting on EAC strategy and implementation plan for sustainable aquaculture – 29 & 30 January 2013 Arusha, Tanzania

Opening remarks

1.1.1 East African Community:
Tim Wesonga on behalf of Deputy Secretary General - Productive and Social Sectors Hon. Jesca Eriyo

The Chairperson,
The EU Representative,
The FAO representative,
EAC Partner States delegates,
EAC Staff,
Distinguished Ladies and Gentlemen,

It gives me great honor and pleasure to officiate at the opening ceremony of this Regional workshop on draft EAC Strategy for Sustainable Aquaculture Production. I take this opportunity to welcome all of you to Arusha, Tanzania.

I would like to convey to you greetings from our Secretary General Amb. Richard Sezibera.

Allow me to take this earliest opportunity to thank the European Union for funding this workshop and FAO for its technical and logistical support in organizing this workshop. The FAO representative, The EU Representative, The Chairperson,

Chairperson,
Ladies and Gentlemen:

Food and nutritional security are the foundations of a decent life, a sound education and the achievement of the Millennium Development Goals. Fish production is aimed producing safe and nutritious quality food that will contribute to reducing food insecurity in the region.

Chairperson,
Ladies and Gentlemen:

The overall objective of the workshop is to make inputs and improve the draft EAC Strategy on Aquaculture. Specifically the workshop will:

- discuss the findings of the field mission to the EAC Partner States as well as the preliminary version of the EAC aquaculture strategy in order to finalize a first version of the strategy. The Mission determined a number of key issues that should be addressed at the regional level and that need to be discussed;
- discuss a supporting implementation plan that could be presented to development partners in order to boost the operationalization of the strategy; and
- develop a regional support to the commercial value chain of aquaculture by elaborating a multi donors regional project that will be proposed to donors with the support of EAC.

Chairperson,
Ladies and Gentlemen:

Currently, EAC is implementing the EAC Food Security Action plan (2011-15). One of the priority areas is improved production in all production areas. Fish production is one productive sector enterprise that has been marked in the region for improvement. This workshop is on development of the EAC Strategy on Sustainable Aquaculture therefore comes at opportune time when EAC is implementing the regional Food Security Action Plan. This workshop on development of a regional Aquaculture Strategy is in tandem with the Agriculture and Food security priorities in the current EAC Development Strategy.

Chairperson,
Ladies and Gentlemen:

Fish provides quality proteins and nutrients for human food. Fish is especially known for its 'white meat' and other vital vitamins and oils. In the region there are both marine and inland water fish resources.

As a result of increased human population the demand for fish has increased. The demand for fish and fisheries products has tremendously increased in the EAC region and beyond. This has resulted in so much fishing pressure on inland water bodies. The case of Lake Victoria provides evidence on this matter. Efforts to enhance monitoring, control and surveillance (MCS) have been made. The budget allocation for MCS activities is increasing. There is now need for more intensified enforcement of fishing regulations in the region. Currently, a minimal amount of fish is produced from the marine resources in the EAC. This is because the equipment being used for marine fishing are artisanal and consequently fishermen hardly venture beyond five kilometers of the coast line. This sub-sector requires needs support not only in investing in equipment but also addressing illegal unreported and unregulated fishing off the Coast of East Africa.

Chairperson,
Ladies and Gentlemen:

Fish farming remains one of the major ways that we can use to increase fish production for food supply. The question of food production in the region is of great importance. Food security matters have been discussed at the EAC summit level and are well captured in the EAC Food Security Action plan document and the EAC declaration on Food Security and Climate change signed in Dar es Salaam, Tanzania, in April 2011. The EAC region has huge potential for fish farming and its endowed with rivers and other water sources. Tilapia and cat fishes can be produced in fish cultures. Tilapia fish is particularly liked in the East African region. There is so much demand in all the EAC Partner States and beyond.
However, we believe that creation of a conductive environment for Public Private Partnerships (PPP) will boost production and enhance trade in the region and beyond. It may also be appropriate for this workshop to consider creation of a regional aquaculture Monitoring, Control and Surveillance (MCS) capacity that is linked with national equivalents.

I would therefore like to request all of you participants to take advantage of this workshop as a region and ensure that it is improved. The improved draft Strategy will be forwarded for approval to the relevant EAC organs after the regional experts and stakeholders are satisfied with the document. This will be achieved through consultative/validation forums like this workshop. This way EAC believes enhances internalization, ownership and acceptability of regional documents.

Chairperson
Ladies and Gentlemen
I am confident that during your workshop deliberations, the resolutions and recommendations you are going to make will be key in giving the direction on improving aquaculture production in the region.

Finally, dear participants allow me thank you once again for sparing your valuable time to attend this workshop and wish you fruitful deliberations.

Lastly, it is my pleasure to declare this workshop officially open.

I thank you.

ANNEX II: Opening Remarks from FAO

FAO
Ms. Diana Tempelman,
FAO Representative
Republic of Tanzania

- Honorable representative of the Deputy Secretary General of the East African Community, Mr. Wesonga, Senior Livestock and Fisheries Officer
- Honorable Representatives of the East African Community and participating Ministries
- Representatives of the European Delegations in Tanzania and in Uganda,
- Representatives of the private sector
- Dear Colleagues
- Distinguished Guest
- Ladies and Gentlemen.

It is my pleasure to welcome you today to the start of the Workshop on the East African Community Strategy and Implementation Plan for sustainable aquaculture that will take place today and tomorrow here in Arusha, organized by FAO’s SmartFish Project. On behalf of the Director-General of the Food and Agriculture Organization of the United Nations, José Graziano da Silva, and the Regional Representative for Africa, Ms Maria-Helena SEMEDO, I wish to express my sincere gratitude to the Government of Tanzania and to the Eastern African Community for hosting this Workshop on the development of an Aquaculture Strategy for the sub-region. I also wish to thank the European Union for their support to this regional initiative through their funding to the SmartFish project, implemented by the Indian Ocean Commission.

Let me briefly take you through some elements of the context leading to the creation of a regional strategy and implementation plan for the development of sustainable aquaculture in the East African Community.

- In 2012 aquaculture production in the East African Community was below 30,000 million tonnes, excluding re-stocking programmes or seaweed farming. The EAC’s five-year target is to double that production figure, as well as meeting the demand for fish-feeds and raw material inputs;
- The EAC Countries are facing overfishing of freshwater and marine resources and that in a context of a rapidly growing human population and a high level of formal unemployment;
- The numerous projects implemented over the past 50 years for the development of small-scale fish farming, have –however well-intentioned and with a few exceptions– yielded little long-term sustainability;
- There is great need in the EAC countries for increasing fish production in an effort to contribute to solving nutritional deficits, to create new employment opportunities.
in the production of fish, fish-feeds and the raw material inputs and to provide a stimulus to the wider rural economy;

• Furthermore, it is expected that the demand for farmed fish will increase significantly due to the fast growing middle-class in the East African Community.

Given these development opportunities the FAO component of SmartFish fielded a mission in September 2012 to meet with representatives from public administrations, the private sector as well as research and training centers, to discuss the necessary elements of an aquaculture strategy for the East African Community. These stakeholders - many of whom are present here today – were very clear in their recommendation and advised that any regional aquaculture effort should be focused on developing commercial aquaculture value chains that include semi-industrial and industrial producers, as well as clusters of smaller producers.

This brings me to the objectives of this workshop on the EAC Strategy and implementation plan for sustainable aquaculture starting today:

1. First, it will discuss the findings of last year’s mission, reviewing the zero draft of an EAC aquaculture strategy and agreeing in principal on the critical elements of the final EAC strategy to develop the aquaculture sub-sector;
2. The workshop will discuss details of a supporting implementation plan; and to operationalise the strategy; and
3. It will identify the kind of regional support required for the development of commercial value chains of aquaculture by elaborating a regional project that the five EAC countries will submit for further national and international donor support.

I wish you fruitful deliberations, and look forward to receive the outcome of your discussions.

I thank you for your kind attention.
1.0 INTRODUCTION

Fisheries are one of the most significant renewable resources that EAC Partner States have for food security, livelihoods and economic growth based on sustainable resources management plans apart from having significant potential for value-added production. As human populations in these countries continue to grow, the future benefits that these resources can provide will require balancing the increasing demands on fisheries with the capacity of oceanic, coastal and freshwater fish stocks to sustain those harvests.

Food Security is one of the pillars of social economic development and is important in public health, trade and food security among others. This is mentioned in several EAC documents including the EAC Treaty, the current (2011-15) EAC Development Strategy, EAC Agriculture and Rural Development Policy & Strategy and the EAC Food Security Action Plan (2011-15).

Article 105 (c) of the Treaty establishing of the East African Community provides for cooperation in Agriculture and Food Security.

One of the priority areas being implemented by the EAC is to improve production in all production areas. Fish production is one of the productive sector enterprises that have been marked in the region for improvement. This workshop is on the development of an EAC Strategy and Implementation Plan on Sustainable Aquaculture and therefore comes at opportune time when EAC is implementing the regional Food Security Action Plan. This is in tandem with the Agriculture and Food security priorities of the current EAC Development Strategy.

1.1 The Smartfish Project

The Program for the Implementation of a Regional Fisheries Strategy for Eastern-Southern Africa and Indian Ocean Region (IRFS Program) now called Smartfish, was launched in February 2011 with the aim of contributing to an increased level of social, economic and environmental development and deeper regional integration in the ESA-IO region through the sustainable exploitation of fisheries resources. Smartfish is financed by the European Union under the 10th European Development Fund within a total financial contribution of 21 million Euros. The program is implemented by the Indian Ocean Commission (IOC) in collaboration with the Common Market for East and Southern Africa (COMESA), the East Africa Community (EAC) and the Inter-Governmental Authority on Development (IGAD). Other regional institutions involved include the Southern African Development Community (SADC) and regional fisheries management organizations, such as the Indian Ocean Tuna Commission (IOTC), the Southwest Indian Ocean Fisheries Commission (SWIOTC), the Lake Victoria Fisheries Organization (LVFO), and the Lake Tanganyika Fisheries Organization (LTFO). The first phase of the Program will be implemented over a period of 31 months (March 2011-September 2013).

In an effort to help EAC improve its Aquaculture sub-sector, the SmartFish project has with EAC Secretariat initiated the development of a regional Strategy on Sustainable Aquaculture.

1.2 Draft EAC Strategy and Implementation Plan on Sustainable Aquaculture

The workshop was convened to improve the draft EAC Strategy and Implementation Plan on Sustainable Aquaculture and was funded by the European Union through Smartfish project.

1.2.1 Objectives

The overall objective of the meeting was to improve the EAC Strategy on Sustainable Aquaculture by ensuring that all aspects of regional concerns are adequately incorporated in the document.

Specific objectives

The meeting specific objectives were to;

i) discuss the findings of the field mission to the EAC Partner States as well as the preliminary version of the EAC aquaculture strategy and Implementation Plan in order to finalize a first version. The Mission determined a number of key issues that should be addressed at the regional level and that need to be discussed;

ii) discuss a supporting implementation plan that could be presented to development partners in order to boost the operationalization of the strategy;

iii) develop regional support for the commercial value chain of aquaculture by elaborating a multidonor regional project that will be proposed to donors with the support of EAC.

1.3 Participation

EAC Partner States experts responsible for Fisheries participated in the workshop. In addition, experts from Research Institutes, Universities, private farms, consultants and other non state actors in food safety participated. Further, Food and Agriculture Organization (FAO), European Union were represented at the workshop. The list of participants is attached hereto as Annex I.

1.4 Constitution of the Bureau

In accordance with the EAC Rules of Procedure, the meeting was chaired by Mr. Wadanya Jackson, Ag. Commissioner Fisheries, Department of Fisheries Resources. Republic of Uganda while Leonio Nseyle Direct.
Republic of Burundi was the rapporteur assisted by Mr. Timothy Wesonga, EAC Senior Livestock and Fisheries Officer.

1.5 Adoption of the Agenda

The Agenda/programme was adopted as presented by the EAC Secretariat and it is attached hereto as Annex II.

1.6 Opening Remarks

1.6.1 Chairperson remarks

The Chairperson welcomed all the participants to the meeting. He emphasized the importance of Fish and Fisheries to the economies and livelihoods of the people of EAC. He noted that as a region the EAC needed to improve fish production, in particular aquaculture. In this regard, the development of a regional aquaculture strategy and implementation plan is timely.

1.6.2 Food and Agriculture Organization - Opening Remarks

The opening remarks of FAO were given by Ms. Diana Tempelman, the FAO representative to the United Republic of Tanzania. She thanked EU for funding the SmartFish project. She highlighted some elements of the context leading to creation of the regional strategy and implementation plan for the development of sustainable aquaculture in the EAC. The remarks as delivered by Diana E. Tempelman are hereto attached as Annex III.

1.6.4 Opening Remarks by the EAC Secretariat

The opening remarks of the EAC were given by the Deputy Secretary General – Productive and Social Sectors Hon. Jesca Erayo. The opening remarks as delivered by Mr. Timothy Wesonga on behalf of the Deputy Secretary General are hereto attached as Annex IV.

2.0. BACKGROUND PAPER

The background paper noted that development EAC Regional Strategy and Implementation Plan for Development of Sustainable Aquaculture was in the context of the following facts: aquaculture production in the EAC was below 30,000 million tonnes, in 2012. This does not include re-stocking programmes 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; overfishing of freshwater and marine (Kenya and Tanzania only) resources; a rapidly growing human population; a high level of formal unemployment; a fifty-year history of well-intentioned development projects for small-scale fish farming that have yielded little long-term sustainability; need within the EAC for a significant increase in fish production in order to contribute to solving nutritional deficits, provide employment through the production of fish, fish feeds and the raw material inputs and provide a stimulus to the wider rural economy and a significant potential market for farmed fish within the fast developing middle class in EAC amongst others.

In September 2012, a mission supported by SmartFish-FAO went to meet the various partners from public administration, private sector as well as research and training centres to discuss what could be an aquaculture strategy for EAC. Stakeholders 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 workshop was convened to discuss the outcomes of the mission and the draft regional Strategy on aquaculture. The background paper is hereto attached as Annex V.

3.0 PRESENTATIONS

3.1 PRESENTATION ON FIELD VISITS TO EAC PARTNER STATES ON AQUACULTURE.

The presentation gave the country status of all the EAC Partner States. The presentation on each of the respective EAC Partner States outlined aquaculture situation, main aquaculture needs for the country, regional expectations, coordination and harmonization of national legislation and sanitary measures of the five EAC Partner States amongst other considerations. The presentations as made by Michel De San are hereto attached as Annex VI a, b, c, d and e.

3.2 PRESENTATION ON INDUSTRIAL FISH FARMING AND CAGES

The presentation focused on constraints to development of aquaculture in Africa and suggested issues that need to addressed to unlock the potential for the benefit East Africans. The second part of his presentation was on cage farming in Africa. The presentation as made by Mr. Damien Duprez of African Century Food Ltd is hereto attached as Annex VII.

3.3 PRESENTATION ON THE PROPOSED PROTOCOL ON AQUACULTURE FOR LAKE VICTORIA

The presentation outlined the process of development of the Protocol and the considerations. The presentation emphasized the need for identifying, discussing and agreeing upon core elements of harmonized protocol for aquaculture management in shared waters. The presentation highlighted the potential benefits of the protocol as harmonized/compatible management; minimum standards for aquaculture operations and species; information exchange; improved environmental quality and EIA process; Guidelines for access to, use of the Lake for aquaculture; Cooperation in MCS; Conflict prevention and resolution; Coordination of disaster prevention and response; and enhanced aquaculture production.
It was further explained that other protocol will be developed for Lakes Tanganyika and Kariba. The presentation as made by Judith Swan of SmartFish is hereto attached as Annex VIII.

3.4 PRESENTATION ON REGIONAL TRADE AND IMPLICATIONS FOR AQUACulture DEVELOPMENT

The presentation outlined and discussed key issues for consideration in fish trade. The issues discussed include: Policy and regulations, Sustainable fish supply, Processing, Marketing, Distribution, Information, Trade Associations amongst others. The presentation as made by Ms. Carol Mukasa is hereto attached as Annex IX.

4.0 THE FIRST DRAFT OF THE REGIONAL AQUACulture STRATEGY

The presentation is outlined the draft EAC Strategy in detail. The participants were then requested to improve on the document. The presentation as made Mr. Michel De San is hereto attached as Annex X.

5.0 PRESENTATION OF THE IMPLEMENTATION PLAN

The Implementation plan outlined the key elements. The presentation as made Mr. Michel De San is hereto attached as Annex XI.

6.0 PRESENTATION OF REGIONAL PROJECT SUPPORTING AQUACulture VALUE CHAIN

The proposed project is focused on development of aquaculture in the EAC region. The project would enhance aquaculture capacity in all aspects in the EAC Partner States. The presentation as made Mr. Michel De San is hereto attached as Annex XII.

7.0 MEETING OBSERVATIONS

i. The meeting welcomed the 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 on grey area 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 to simplify administrative procedures to develop private sector investment; this could be taking 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 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., 10 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 market capacity to absorb large production of farmed fish at sustainable price for the producer (for the time being above 2.5 $/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 necessity of 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 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 fishery products.

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

8.0 RECOMMENDATIONS

The workshop made the following recommendations:

a) The meeting recommends that the 2nd draft strategy implementation plan be presented for discussion to the 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 migration to finalize a full proposal to be presented to donors.

c) The meeting recommends constituting a EAC Aquaculture 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.

e) The EAC should support member countries to establish fisheries/aquaculture research programs that will guide development of aquaculture at national level.

f) The aquaculture inputs are grouped under agriculture input; therefore they should be zero-rated by customs protocol.

9.0 WAY FORWARD

i. The next step of the development of the EAC Strategy Implementation plan on Aquaculture is to hold national validation workshops in order to give stakeholders opportunities to make inputs and improve the document.
## List of Participants

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### Annexes

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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.