1 Workshop presentation

Past considerations — In the past, economics considerations consisted mainly to the evaluation of fisherman revenues and fishery rent and social considerations meant number jobs in the fishery sector. Economists used (and still!) to play with bio-economic models to define optimal capital investment and fishing effort based on MSEP but their impact in the fishery management was limited as these tools were not able to reflect changes in the fisheries.

Current considerations — Nowadays, economics is more and more present in fishery management, fishery policies and national development policies through:

- The evaluation of the fishery contribution to regional or island development (fishery is one component of the development process...like tourism). Sophisticated methods to assess the contribution of fishery to local, national development have been developed (EU-AXES project) and fishery sector and regional development is now links with marine ecology and biology of fish stocks (EU-PECHDEV and EU-ECOST projects)
- The recognition that management is not only fish stock management but also fishery development in a context of island development with many other options... The fact also that management is dedicated to high commercial value species
- The fact that market is the main driving forces in many fisheries and that has management implications. The attractiveness of international markets (prices, growing demand) compared to local or national ones lead to:
  - Some shifts of fishing efforts;
  - The lack of supply of local and national markets with imports of imports of white meat to compensate;
- The analysis of the effect of the propensity of fishery sectors to be more and more open-up (export orientated) with knowing side effects on other fishery components (highly selective = by-catches; sophisticated = push others to adapt; quality orientated = standards for other fisheries ... with costs). Globally that leads to a progressive degradation of both fishery sector and ecosystem and a pervasive system where . Fishermen develop all the time new strategies to adapt to the market (See: UNEP work, CARICOM 2004 Trade liberalisation and related policies impacts, etc.)

West African fisheries are a good example of open-up fisheries with a contribution to the national economies and well-being of population in significant decline. Overall, the current operating system is participating both to the collapse of ecosystem and production system. The figure 1 is the first step to the evaluation of the economic and social contribution of the fishery sector to a countries or a region. It presents main producers and main trade flows of the most important fishery both in terms of quantities and source of animal proteins in West Africa. Such a simple graph presents give an idea of the economic and social contribution of the fishery sector (including processing and marketing) as soon as you put employment and revenues at each level of the fish chain. It helps also to identify where are the main constraints to the implementation of a new management measure that tends to reduce the catches level.
Figure 1: Average yearly (1996-2000) sardinella production, processing and distribution (note: DWF: Distant water fleets; all figures are in live weight equivalent)

The evaluation of management effectiveness is another new area where economists can bring elements for thought. What are the economics and social effects of management measures? This question is rarely asked and never answered in most of the fisheries in the world. Why? Simply because managers assume that the new measure will sort it all the problems (that the previous measure failed to solve!)…so effects of a new management measure are positive on the whole system. For instance, measures such as biological rests, closure seasons, MPA, etc. can be monitored and evaluated if set up on time.

**Social considerations** — Social considerations are of course jobs but not only as they relate also to:

- Fishing communities livelihoods and well-being
- Fishing communities culture and role of conservation of marine resources and ecosystems
- National level: Poverty, equity, food security and nutrition issues
- Management as to be regarded as a process of reconnection between people and the sea
- Use people knowledge, social process of control
- Involvement of stakeholders in the management process

For instance, nutrition concerns are in the hart of the stake of most of the African and Asian Fisheries. The table below presents some of nutritional characteristic of fish species and chicken for comparison. This table help to identify if a species shift on the national market supply will affect the population health.
Table 1: Nutritional values of some fish species and chicken

<table>
<thead>
<tr>
<th>Species</th>
<th>FAO Code</th>
<th>Species Group</th>
<th>Energy(Kcal)</th>
<th>Protein(g)</th>
<th>Lipid(g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octopus nei</td>
<td>OCT</td>
<td>Cephalopods</td>
<td>82</td>
<td>14,91</td>
<td>1,04</td>
</tr>
<tr>
<td>Lesser African threadfin</td>
<td>GAL</td>
<td>Demersal</td>
<td>87</td>
<td>19,2</td>
<td>0,6</td>
</tr>
<tr>
<td>Flatfishes nei</td>
<td>FLX</td>
<td>Marine fish, demersal</td>
<td>91</td>
<td>18,84</td>
<td>1,19</td>
</tr>
<tr>
<td>Cuttlefishes/bobtail/squids</td>
<td>CTL</td>
<td>Cephalopods</td>
<td>92</td>
<td>15,58</td>
<td>1,38</td>
</tr>
<tr>
<td>Pargo breams nei</td>
<td>SBP</td>
<td>Demersal</td>
<td>91</td>
<td>18,4</td>
<td>1,5</td>
</tr>
<tr>
<td>Congo dentex</td>
<td>DNC</td>
<td>Demersal</td>
<td>91</td>
<td>18,8</td>
<td>1,3</td>
</tr>
<tr>
<td>Groupers nei</td>
<td>GPX</td>
<td>Demersal</td>
<td>92</td>
<td>19,38</td>
<td>1,02</td>
</tr>
<tr>
<td>Goatfishes, red mullet nei</td>
<td>MUM</td>
<td>Demersal</td>
<td>96</td>
<td>20,4</td>
<td>1</td>
</tr>
<tr>
<td>Skipjack tuna</td>
<td>SKJ</td>
<td>Pelagic/Tunas</td>
<td>100</td>
<td>20,51</td>
<td>1,34</td>
</tr>
<tr>
<td>Snappers nei</td>
<td>SNA</td>
<td>Demersal</td>
<td>100</td>
<td>20,51</td>
<td>1,34</td>
</tr>
<tr>
<td>Sardinellas nei</td>
<td>SIX</td>
<td>Pelagic</td>
<td>101</td>
<td>21</td>
<td>1,9</td>
</tr>
<tr>
<td>Shrimp</td>
<td>CNZ</td>
<td>Crustaceans</td>
<td>102</td>
<td>17,9</td>
<td>0,6</td>
</tr>
<tr>
<td>Common shrimp</td>
<td>CSH</td>
<td>Crustaceans</td>
<td>120</td>
<td>23,08</td>
<td>1,96</td>
</tr>
<tr>
<td>Shark</td>
<td>SKH</td>
<td>Demersal</td>
<td>130</td>
<td>20,98</td>
<td>4,51</td>
</tr>
<tr>
<td>Chiken</td>
<td></td>
<td></td>
<td>139</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Hakes nei</td>
<td>HKX</td>
<td>Demersal</td>
<td>142</td>
<td>21,8</td>
<td>5,4</td>
</tr>
<tr>
<td>European pilchard(=Sardine)</td>
<td>PIL</td>
<td>Pelagic</td>
<td>143</td>
<td>17,6</td>
<td>7,5</td>
</tr>
<tr>
<td>Jack and horse mackerels nei</td>
<td>JAX</td>
<td>Pelagic, small</td>
<td>143</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Plain bonito</td>
<td>BOP</td>
<td>Pelagic</td>
<td>151</td>
<td>22,6</td>
<td>6</td>
</tr>
<tr>
<td>Yellowfin tuna</td>
<td>YFT</td>
<td>Pelagic/Tunas</td>
<td>170</td>
<td>24</td>
<td>7,5</td>
</tr>
<tr>
<td>Atlantic mackerel</td>
<td>MAC</td>
<td>Marine fish, pelagic</td>
<td>205</td>
<td>18,6</td>
<td>13,89</td>
</tr>
</tbody>
</table>


Governance considerations — Economists have extended their area of expertise recently by looking at the Governance of fishery systems and the coherence of fishery and national development policies. The tendency is to move from the management approaches, characterised by a sectorial approach, mechanistic and reductionism approaches, centralised processes, non participatory approach despite some attempts, science based management and at last reactive approach. On the opposite, the governance approach is based on some institutional and decisional processes that allow the whole system to meet the objectives of the sustainable development (i.e. Economic growth, social equity and environment protection). The governance can thus be evaluated.

The coherence analysis is based on this move from management to governance with the basic idea of fishery is not a stand alone sector but is integrated into a more broader picture and contribute (as well as other economic sectors) to the process of national development through the creation of value added, exports, taxes, job creation, food security, poverty reduction, etc. At the fishery level, the objective of this approach is to evaluate the level of coherence of Fishery policies and management measures (for instance the coherence of the different objectives/achievement of the fishery policy: market supply, employment, exports, maximisation of the value of fish stocks). At the national level, the coherence approach consists of the analysis of the consistency of all policies that affect the fishery sector: poverty reduction and growth facility policy (structural adjustment program), food security, economic growth, etc. At the international level, the coherence approach looks at the international policies Coherence (WTO, Cotonou agreement, JPol and...whale for instance for the Caribbean countries).
Caribbean fishery considerations — A brief overview of the Caribbean fish production and export/imports main trends reveals that fish production seems to have reached its maximum production level in 2000 with 200,000 t (as shown in the figure 3 below) and since there shown a declining tend. In terms of tonnage, the main players in 2004 are Guyana, with nearly 60,000 t and far below The Bahamas, Jamaica, Trinidad and Tobago, St Vincent and the Grenadines and Haiti.
The import and export structure reveal the propensity of the CRFM countries to exports high values species and imports low value ones. The figure below shows the price multiply factor of export price (per tonne) over the export price (figures 4 and 5). It indicates that exports of all all CRFM countries are more valuable than imports. For some countries that are exporting red lobster for instance and importing low value fish from South America for instance, the multiply factor can be up to 110. A deeper analysis can be done, using the fish chain analysis (both for imports and exports) to present the main driving forces of the fish trade in each country and define public policies options and governance proposal.

Figure 4: Price multiply factor (export price per tonne over import price per tonne)

**Current workshop working steps** — The main steps of the current workshop are:

1- Define what countries want and need knowing the fact that some data are already available in some countries (BWI, Guyana, Nevis, St Lucia, St Vincent, T&T) and economic and trade analysis already done (2004 survey on Economics data (T&T, Dominica, etc.).

2- Make an overview of Economic and social aspects of fishery sector in each country:

   a) Characterize the fishery sector in each country (production, processing, marketing, consumption). Flows of quantities and values of products; Key factors affecting each component of the fishery sector (exports, imports, DWF, etc.)

   b) Determine the main economics and social driving forces (how much the market (internal and external) is driving the fishing effort, for instance).

   c) Define issues for the consideration of economic and social aspects into fishery management (coherence, trade, etc.) and main aspects to be covered at both national and regional levels.
3- Propose agenda for some Economics and Social work with countries and CRFM

2 Workshop findings and recommendations

The purpose of the discussion with CRFM country representatives was mainly to discuss economic and social aspects of their fisheries and try to find key points to work on further on.

Current situation — In many CRFM countries the current context can be summarised as:

- High dependency on sea and its living resources
- Similarity of production sector profiles
- Heterogeneity of fishery chain profiles
- Consumption from 10 to 45 kg/y/c (contribution to food proteins from 4% to 20%) with some self-sufficient, exports, imports countries

Fish chain — Discussion on the fish chain has been done in order to define its major components:

- From production to consumption (and trend)
- Key players identification
- Key problems along the claim
- Define problems in economics terms
- See how much market can solve them instead (or with) technical measures

As representative from countries were biologists or ecologists, discussions have been limited to the production and management options using market incentives instead of state control. Further investigations need to be done in order to draw a consistent presentation of the fish chain.

Contribution of fishery — The assessment of the contribution of fisheries has been done with representative, focusing mainly on the following aspects:

- Food security
- Poverty alleviation
- Tourism
- Local economy, development and well-being
- Culture and identity of the country

All five aspects have been ranked as main economic and social concerns outside of the fishery sector itself. If the lack of data on the relationship between the fishery sector and the rest of the economy has limited the discussion to a qualitative assessment, it clearly shows the lack of knowledge on the economic and social importance of the fishery sector and somehow the under-estimation of its role in the national economy.

Next steps — Further investigation on the economic and social considerations have to be done through the CRFM, based on the willingness of countries to have a knowledge and understanding of economic and social aspects of their fisheries that can lead to a governance process.