Opportunities and challenges for the future role of seafood in global food security

The post-harvest issues
**FAO food balance sheet of fish and fishery products in live weight**

**Evolution of World supply of seafood**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total food supply (tonnes)</th>
<th>Population (thousands)</th>
<th><em>per capita</em> supply (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>27 792 626</td>
<td>3 093 907</td>
<td>9.0</td>
</tr>
<tr>
<td>2010</td>
<td>130 094 268</td>
<td>6 895 888</td>
<td>18.9</td>
</tr>
</tbody>
</table>

The World population was multiplied by 2.2 in 50 years
The total seafood supply was multiplied by 4.7 in 50 years

**Source:**
FAO Food Balance Sheets
Fisheries and Aquaculture Statistics 2011
Evolution of seafood supply by continent 1961 - 2010

FAO estimation of total available seafood for human consumption in 2013: 139.9 million MT

Source: INFOPESCA, based on FAO Food Balance Sheets Fisheries and Aquaculture Statistics 2011
World Population

1900 1 650 000 000 inhabitants
2000 6 127 700 000 inhabitants
2100 (medium estimation) 10 853 849 000 inhabitants

World map: Projected population growth, 2010–2100

An explosive population growth is foreseen to occur in Africa.

Another vision of the expected population growth

Source: UN, WPP-2012
Growing tendency of urbanization of the world population

<table>
<thead>
<tr>
<th>Major area</th>
<th>1950</th>
<th>1970</th>
<th>2011</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>14.4</td>
<td>23.5</td>
<td>39.6</td>
<td>47.7</td>
<td>57.7</td>
</tr>
<tr>
<td>Asia</td>
<td>17.5</td>
<td>23.7</td>
<td>45.0</td>
<td>55.5</td>
<td>64.4</td>
</tr>
<tr>
<td>Europe</td>
<td>51.3</td>
<td>62.8</td>
<td>72.9</td>
<td>77.4</td>
<td>82.2</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>41.4</td>
<td>57.1</td>
<td>79.1</td>
<td>83.4</td>
<td>86.6</td>
</tr>
<tr>
<td>Northern America</td>
<td>63.9</td>
<td>73.8</td>
<td>82.2</td>
<td>85.8</td>
<td>88.6</td>
</tr>
<tr>
<td>Oceania</td>
<td>62.4</td>
<td>71.2</td>
<td>70.7</td>
<td>71.4</td>
<td>73.0</td>
</tr>
</tbody>
</table>

Source: UN World Urbanization Prospects: The 2011 Revision
Evolution of yearly *per capita* supply of seafood by continent: 1961 - 2010

2 continents with still low (less than 10 kg/year) per capita supply: Africa and Latin America & Caribbean

4 continents with per capita supply already over 20 kg/year: Oceania, Europe, North America and Asia

Source: INFOPESCA, based on FAO Food Balance Sheets Fisheries and Aquaculture Statistics 2011
Eating fish twice a week = intake of 150 g X 2 times = 300g /week
Intake of 300 g /week = supply of 30 kg/year of equivalent live weight

**US recommendations for the consumption of seafood**
Mean intake of seafood in the United States is approximately 3 ½ ounces per week, and increased intake is recommended. Seafood contributes a range of nutrients, notably the omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Moderate evidence shows that consumption of about 8 ounces per week of a variety of seafood, which provide an average consumption of 250 mg per day of EPA and DHA, is associated with reduced cardiac deaths among individuals with and without pre-existing cardiovascular disease.

Thus, this recommendation contributes to the prevention of heart disease. The recommendation is to consume seafood for the total package of benefits that seafood provides, including its EPA and DHA content.

Source: *Dietary Guidelines for Americans – 2010
US Department of Agriculture
US Department of Health and Human Services*

Intake of 3 ½ ounces per week is equivalent to the supply of 21,7 kg /year of equivalent live weight*
Intake of 8 ounces per week would then be equivalent to a supply of 49,6 kg /year of equivalent live weight

* Reported by FAO as being the US per capita seafood supply in 2010
Potential seafood demand by continent
Based on the UN world population prospects, and on 2 hypotheses of per capita consumption:

Maintaining current level of per capita consumption

Source: INFOPESCA, based on FAO Food Balance Sheets Fisheries and Aquaculture Statistics 2011
Potential seafood demand by continent
Based on the UN world population prospects, and on 2 hypotheses of per capita consumption:

Maintaining current level of per capita consumption

Current per capita consumption in 2015 and 30Kg /per capita/year in 2050 and 2100

Important increase of supply needs in Latin America & the Caribbean

Source: INFOPESCA, based on FAO Food Balance Sheets Fisheries and Aquaculture Statistics 2011
Potential seafood demand by continent
Based on the UN world population prospects,
and on 2 hypotheses of per capita consumption:

Maintaining current level of per capita consumption

Current per capita consumption in 2015 and
30Kg/year in 2050 and 2100

Source: INFOPECA, based on
FAO Food Balance Sheets
Fisheries and Aquaculture Statistics 2011
Potential world seafood demand
Based on the UN world population prospects, and on 2 hypotheses of per capita supply:

Maintaining current per capita supply
Current per capita supply in 2015 and 30Kg /per capita/year in 2050 and 2100

Supply growth equal to population growth
Average 0.76% per year between 2015 and 2050
Average 0.26% per year between 2050 and 2100

Supply growth to reach 30 kg per capita in 2050
Average 1.94% per year between 2015 and 2050
Average 0.26% per year between 2050 and 2100

Pour Mémoire:
World seafood production average growth in the last 35 years (1976 – 2011): 2.36% per year
Opportunities for the future role of seafood in global food security

**Great variety of products and of presentations**
There are hundreds of commercial species and dozens of different product presentations

**Increased diversification of aquaculture species and aquaculture production with still high growing potential**

It is a challenge for researchers, for fish farmers and for suppliers of equipments and feed, but aquaculture actually can produce what the market needs, be it fresh water or marine fishes, crustaceans or mollusks
Future availability and supply stability of seafood: Aquaculture

Aquaculture production worldwide should meet the world seafood demand of at least 168.7 million tonnes and preferably of 284.5 million tonnes in 2050.

Current yearly production (FAO estimation for 2013): 160 million tonnes
90 million tonnes from captures (of which 20 million tonnes go for feed or other uses)
and 70 million tonnes from aquaculture

Need for aquaculture to produce at least 98.7 million tonnes/year (average yearly growth of 1.54%) until 2050
and preferably 214.5 million tonnes/year more (average yearly growth of 3.25%) until 2050

*Pour Mémoire:*
World aquaculture average growth in the last 35 years (1976 -2011): 8,40% per year
Where is it urgent to expand aquaculture production?

The nearest possible to the rapidly expanding markets mainly:

Africa

Latin America
The African Seafood Market today:

9.9 million tonnes supplied in 2010
Includes imports of 3 838 749 tonnes (FAO 2010)

X

Average retail price of USD 5.00 /kg
≈ round

USD 50 billion per year

Average market growth of 4.7% per year during the last 10 years

The African seafood market should be supplied with 23.2 million tonnes in 2050
in order to keep the current per capita supply of 9.7 kg
(market value: USD 116 billion)

The African seafood market should be supplied with 71.8 million tonnes in 2050
in order to reach a per capita supply of 30 kg
(market value: USD 359 billion)
The Latin American & Caribbean Seafood Market today:

- 5.7 million tonnes supplied in 2010

\[ X \]

- Average retail price of USD 6.00/kg
  \[ \approx \text{round} \]
  USD 34 billion per year

Average market growth of 2.8% per year during the last 10 years

The Latin American & Caribbean seafood market should be supplied with

- 7.6 million tonnes in 2050 in order to keep the current per capita supply of 9.7 kg
  (market value: USD 46 billion)

The Latin American & Caribbean seafood market should be supplied with

- 23.4 million tonnes in 2050 in order to reach a per capita supply of 30 kg
  (market value: USD 140 billion)
Another opportunity for the future role of seafood in global food security:

The development and strengthening of Regional Economic Communities, stimulating intraregional and international trade
Challenges for the future role of seafood in global food security

- Need to reduce seafood distribution and marketing costs through shorter and more efficient distribution and marketing networks

- Need to assure better quality control to growing volumes of seafood along the distribution chain from production to consumers

- Need to expand and to upgrade the seafood distribution and marketing structure, according to the rapidly changing market needs
Fish Market in Dar Es Salam
(pictures 2013 – INFOPECSA)

Already overcrowded
The challenge: a tremendous need of professional training

At retail level

Additional 61.9 million tonnes in African yearly seafood supply by 2050?

Average growth of 5.82% per year

It means to develop a business of additional USD 309.5 billion per year

A medium size fish store selling 300 Kg/day sells around 100 tonnes per year
This fish stores works with 3 to 5 employees.

There is thus a need to establish some 619.000 new fish stores (or equivalent) in Africa during the next 35 years, in order to reach the consumers.

And to train 1.857.000 to 3.095.000 new seafood retailers – just in Africa.

...And to build an adequate distribution system (wholesalers, coldstorages, trucks, etc.) to reach these new retailers

...And to train the sanitary / public health inspectors to supervise the whole marketing network

The opportunity: creating jobs
Still a big gap between the few well established stores and the many improvised stores
Still a big gap between the few well established stores and the many improvised stores
Conclusions

Seafood will have a growing role in global food security in the future. However, a special effort to adapt the seafood post harvest issues (processing, quality assurance, distribution and marketing) to the population changes (growth and geographical location) is needed to guarantee its optimal utilization, its effective availability and access to consumers as well as the stability of supplies.
¡Muchas Gracias!