



**15th Meeting of the United Nations Open-ended Informal Consultative Process
on Oceans and the Law of the Sea**
New York, 27th – 30th May 2014

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

The post-harvest issues

Roland Wiefels



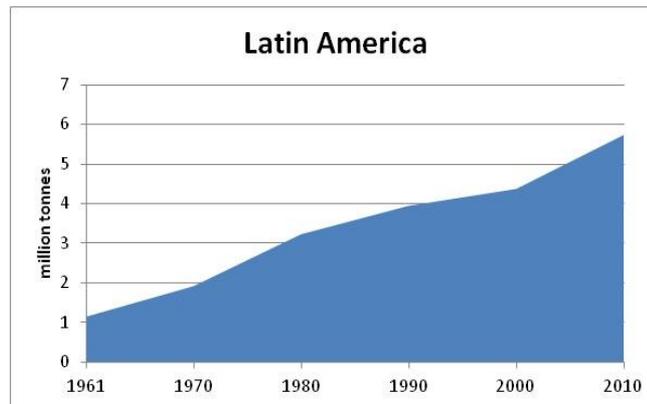
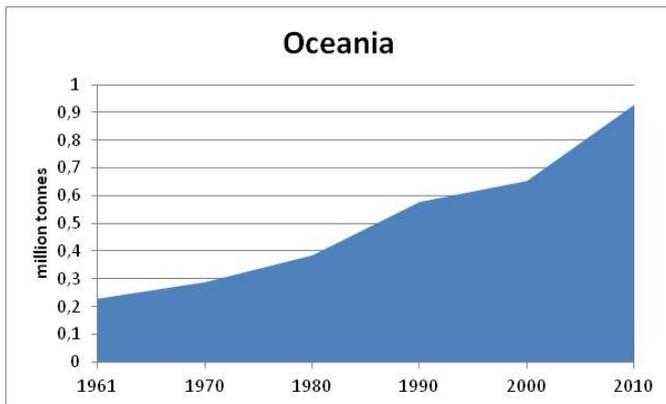
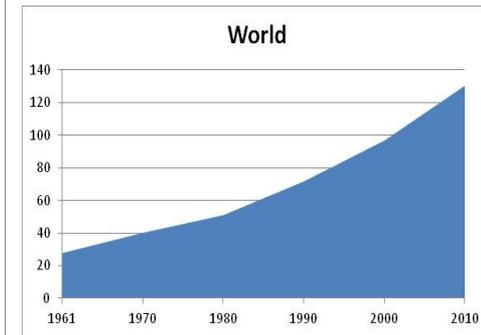
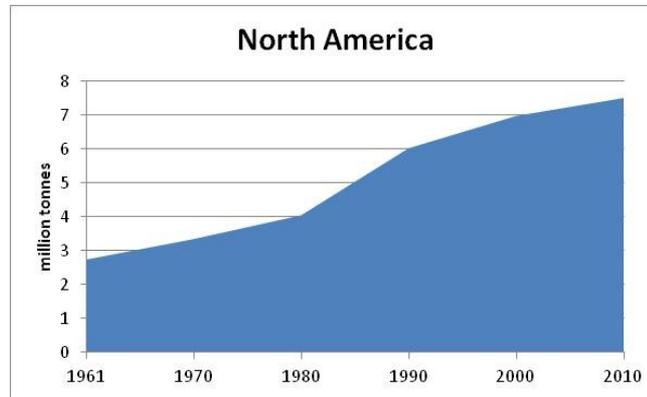
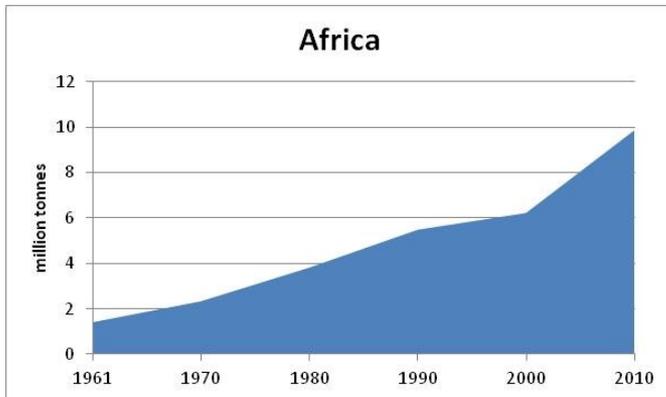
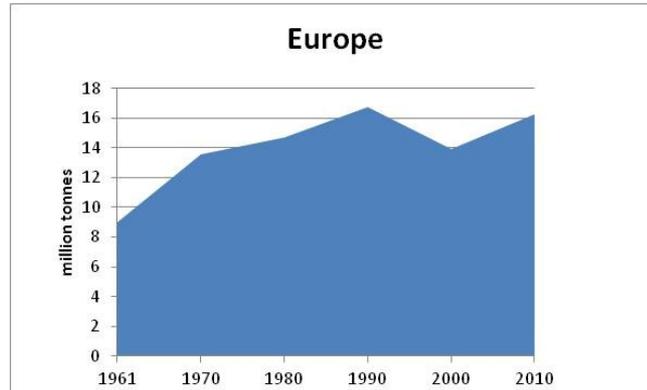
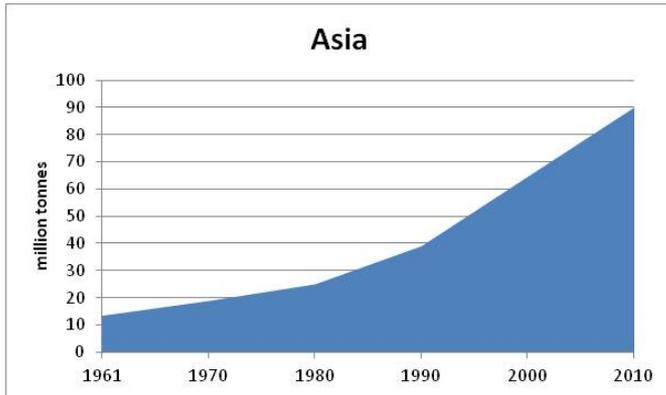
FAO food balance sheet of fish and fishery products in live weight Evolution of World supply of seafood

Year	Total food supply (tonnes)	Population (thousands)	<i>per capita</i> supply (kg)
1961	27 792 626	3 093 907	9.0
2010	130 094 268	6 895 888	18.9

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



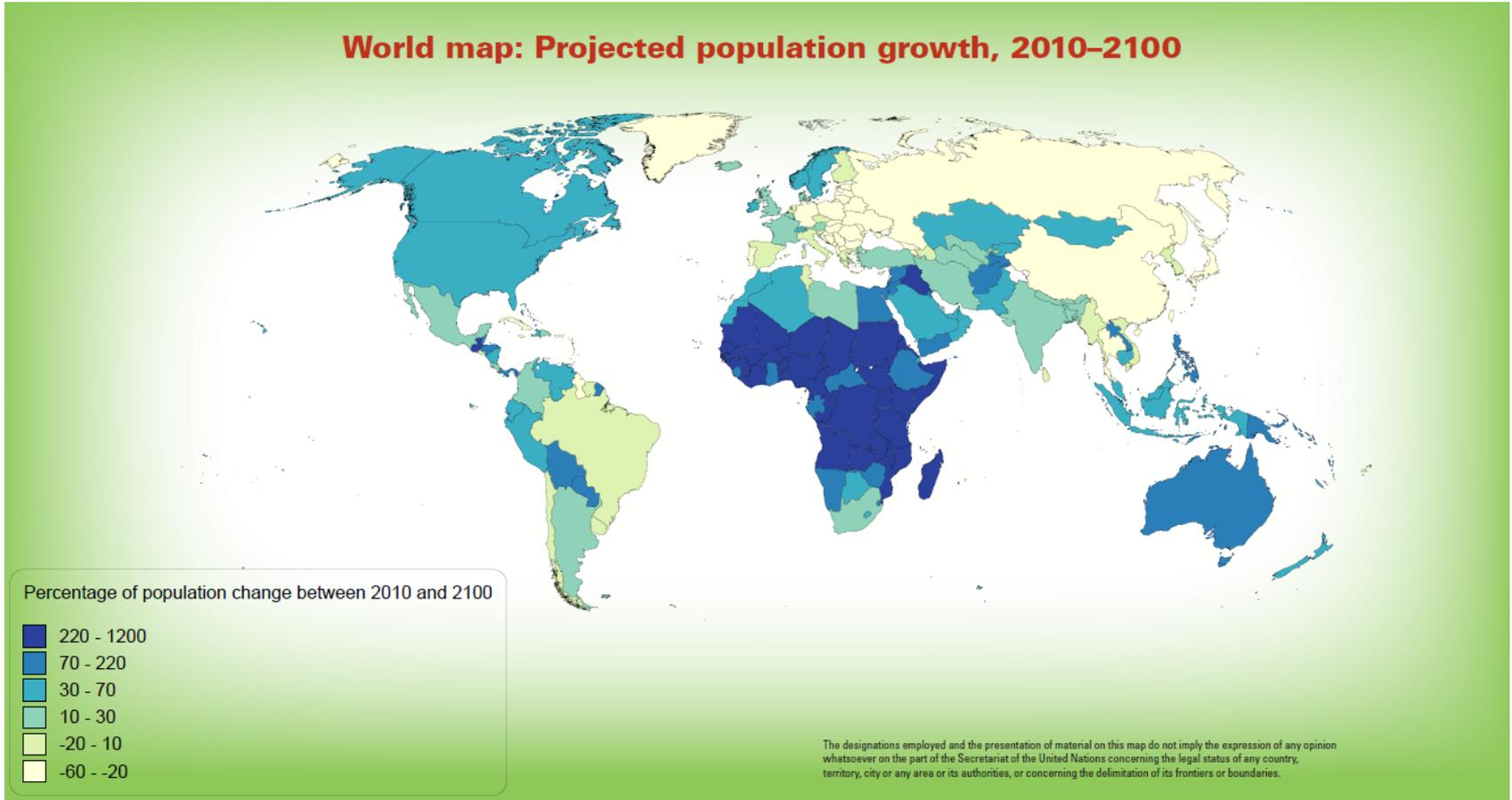
FAO estimation of total available seafood for human consumption in 2013: 139,9 million MT

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

World Population

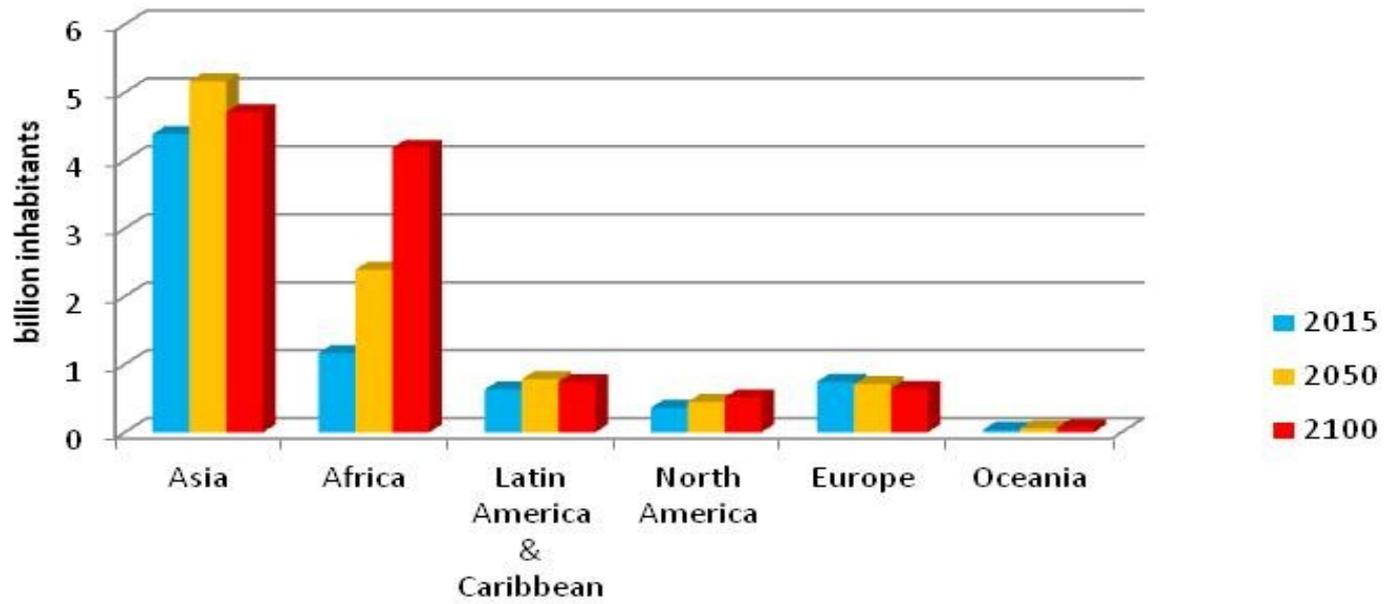
1900	1 650 000 000 inhabitants
2000	6 127 700 000 inhabitants
2100 (medium estimation)	10 853 849 000 inhabitants

World map: Projected population growth, 2010–2100



Source: United Nations, Department of Economics and Social Affairs: World Population Prospects: 2012 Revision, June 2013

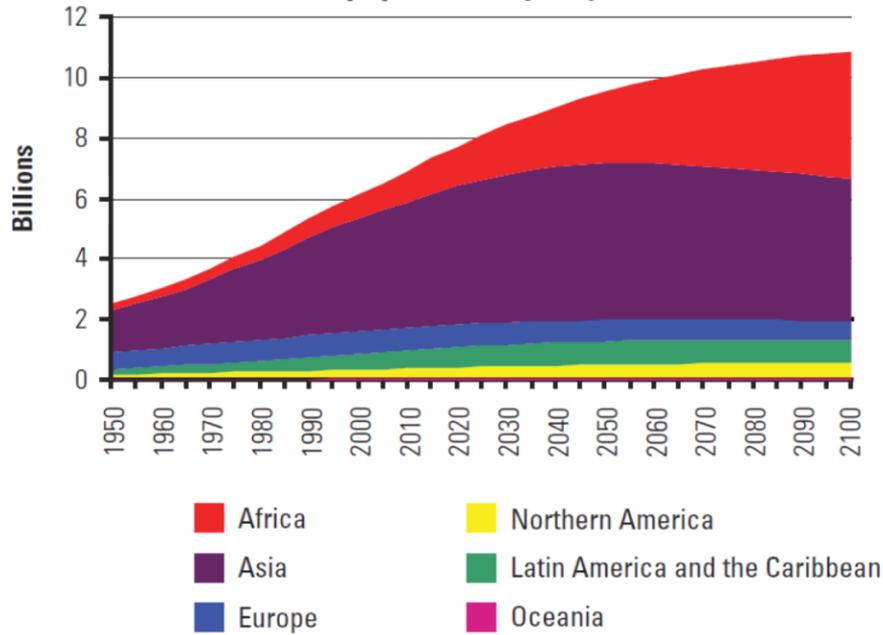
Projected population by continent: 2015, 2050 and 2100 (medium variant)



Source: United Nations, Department of Economics and Social Affairs: World Population Prospects: 2012 Revision, June 2013

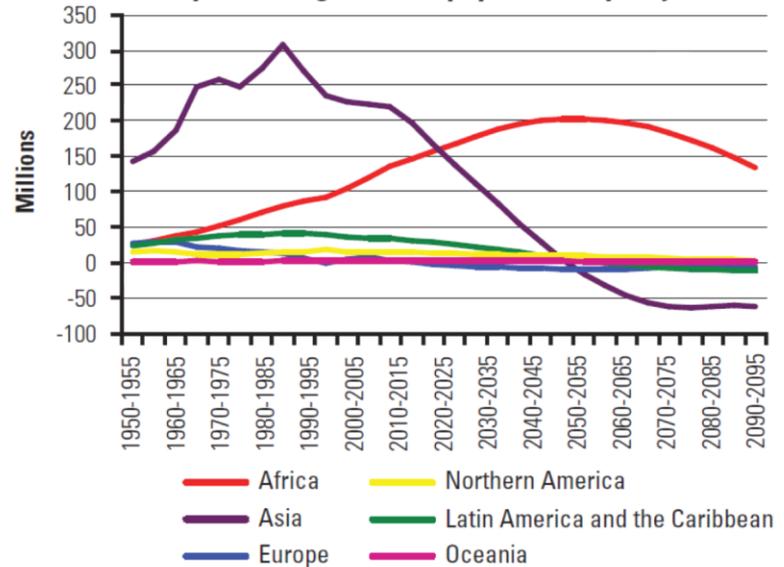
An explosive population growth is foreseen to occur in Africa

Total population by major area



Another vision of the expected population growth

Five-year change of total population by major area



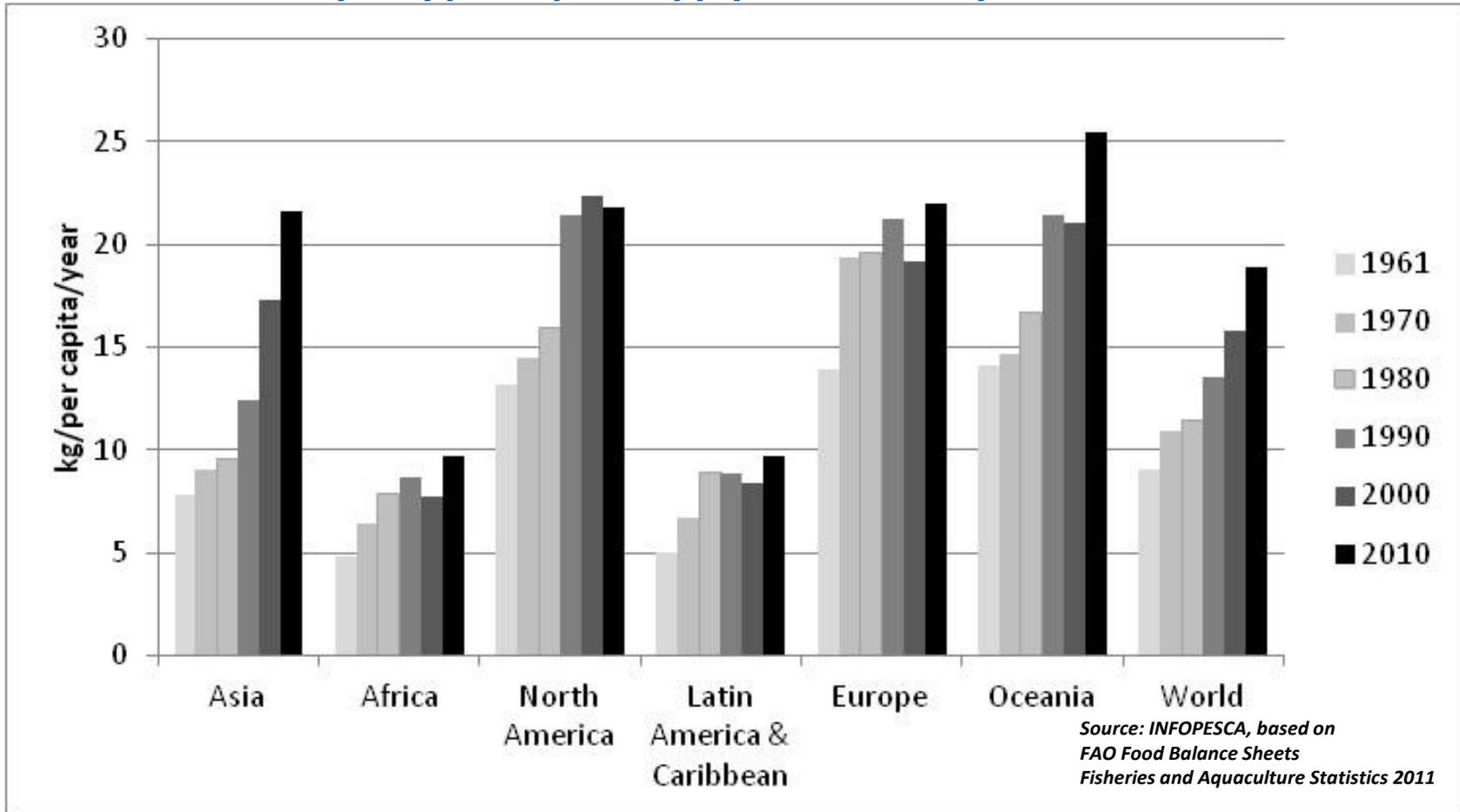
Source: UN, WPP-2012

Growing tendency of urbanization of the world population

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

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**

Utilization and nutritional value of seafood



Eating fish twice a week \approx intake of 150 g X 2 times = 300g /week
Intake of 300 g /week \approx 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*

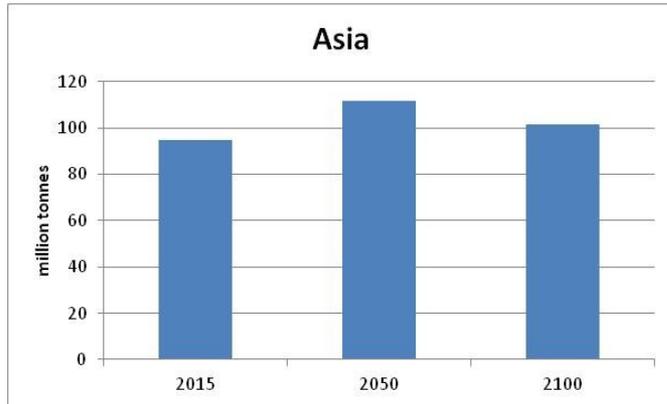
Intake of 8 ounces per week would then be equivalent to a supply of 49,6 kg /year of equivalent live weight

* Reported by FAO as being the US per capita seafood supply in 2010

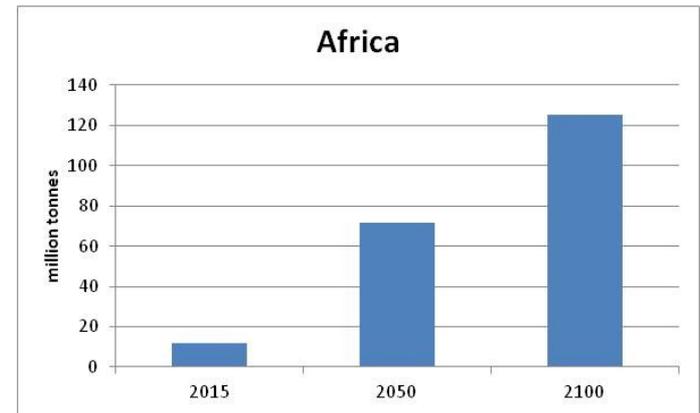
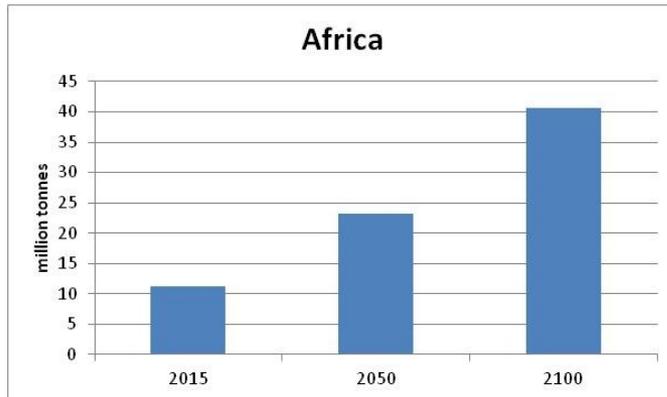
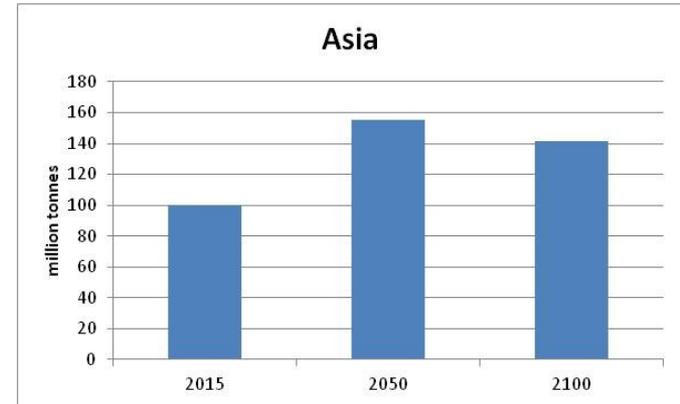
Potential seafood demand by continent

Based on the UN world population prospects,
and on 2 hypotheses of per capita consumption:

Maintaining current level of per capita consumption



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



Huge increase of supply needs in Africa

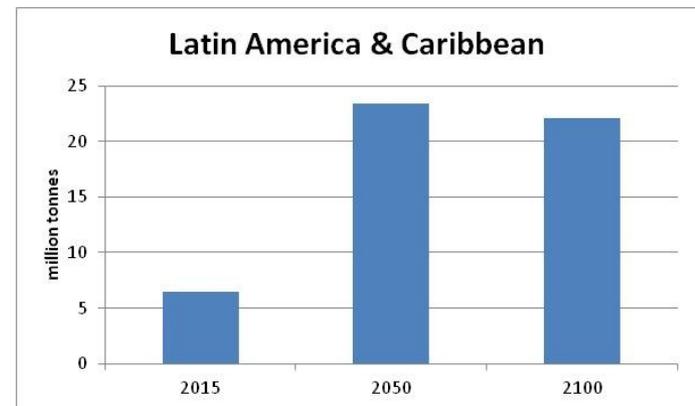
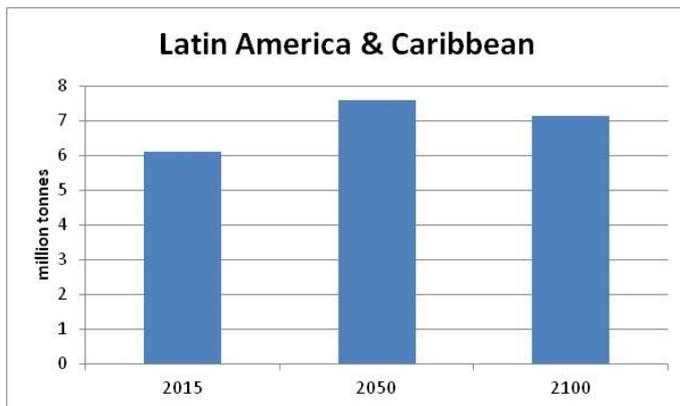
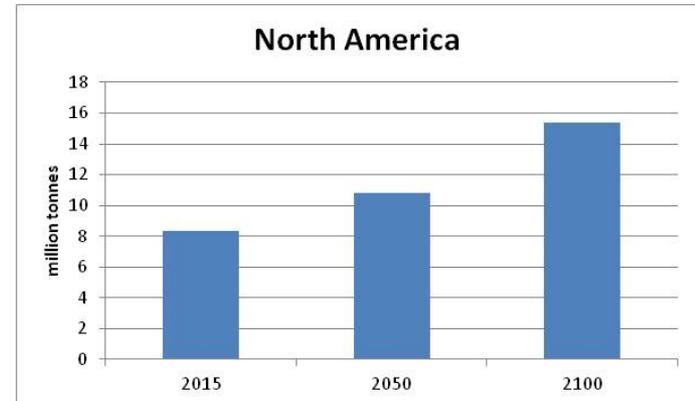
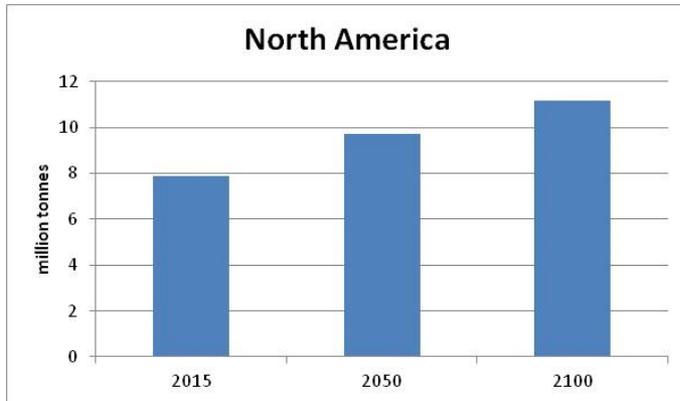
Source: INFOPESCA, based on
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Important increase of supply needs in Latin America & the Caribbean

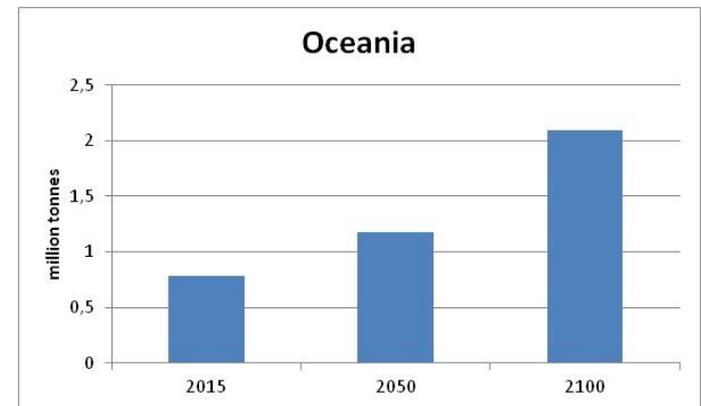
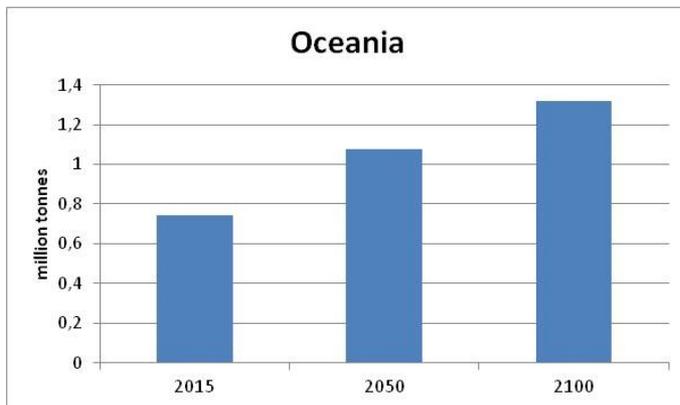
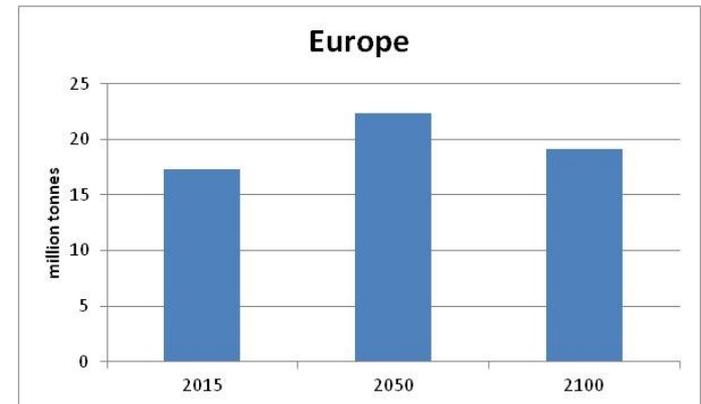
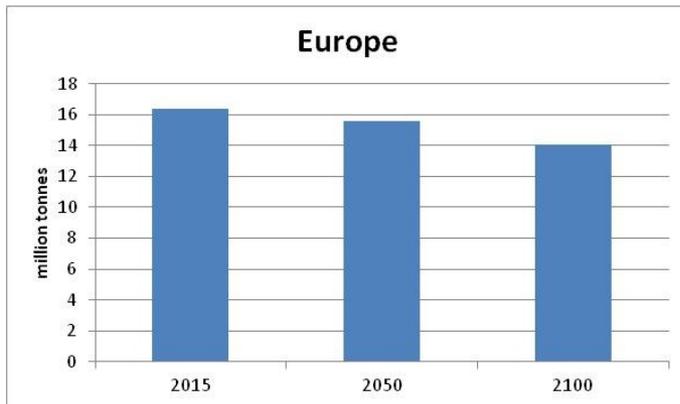
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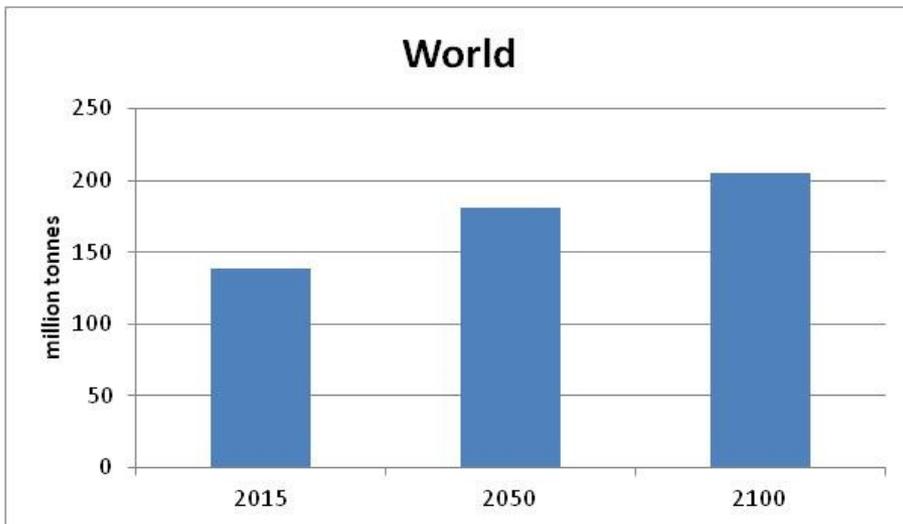


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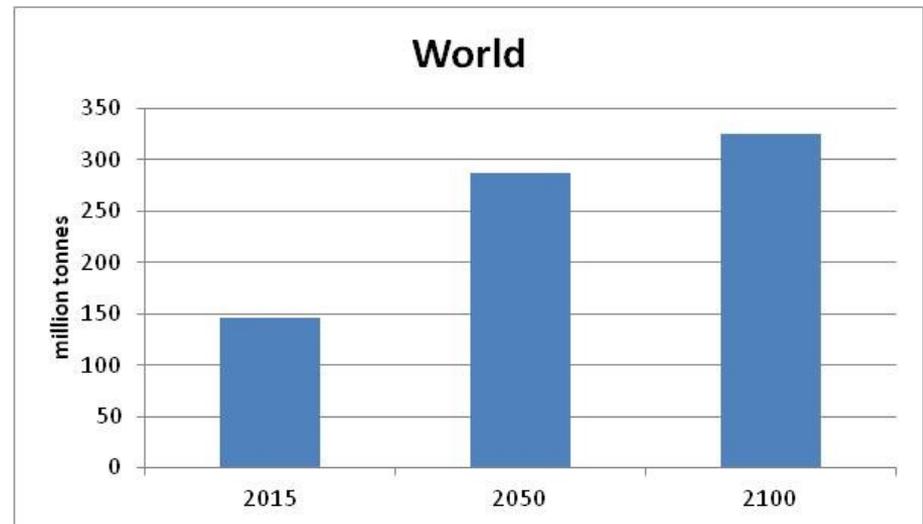
Potential world seafood demand

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



Morocco



Ghana



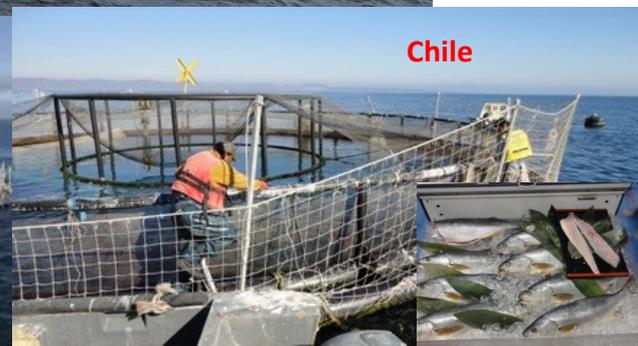
Brazil



Mexico



Australia



Chile

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

≈ round

USD 34 billion per year

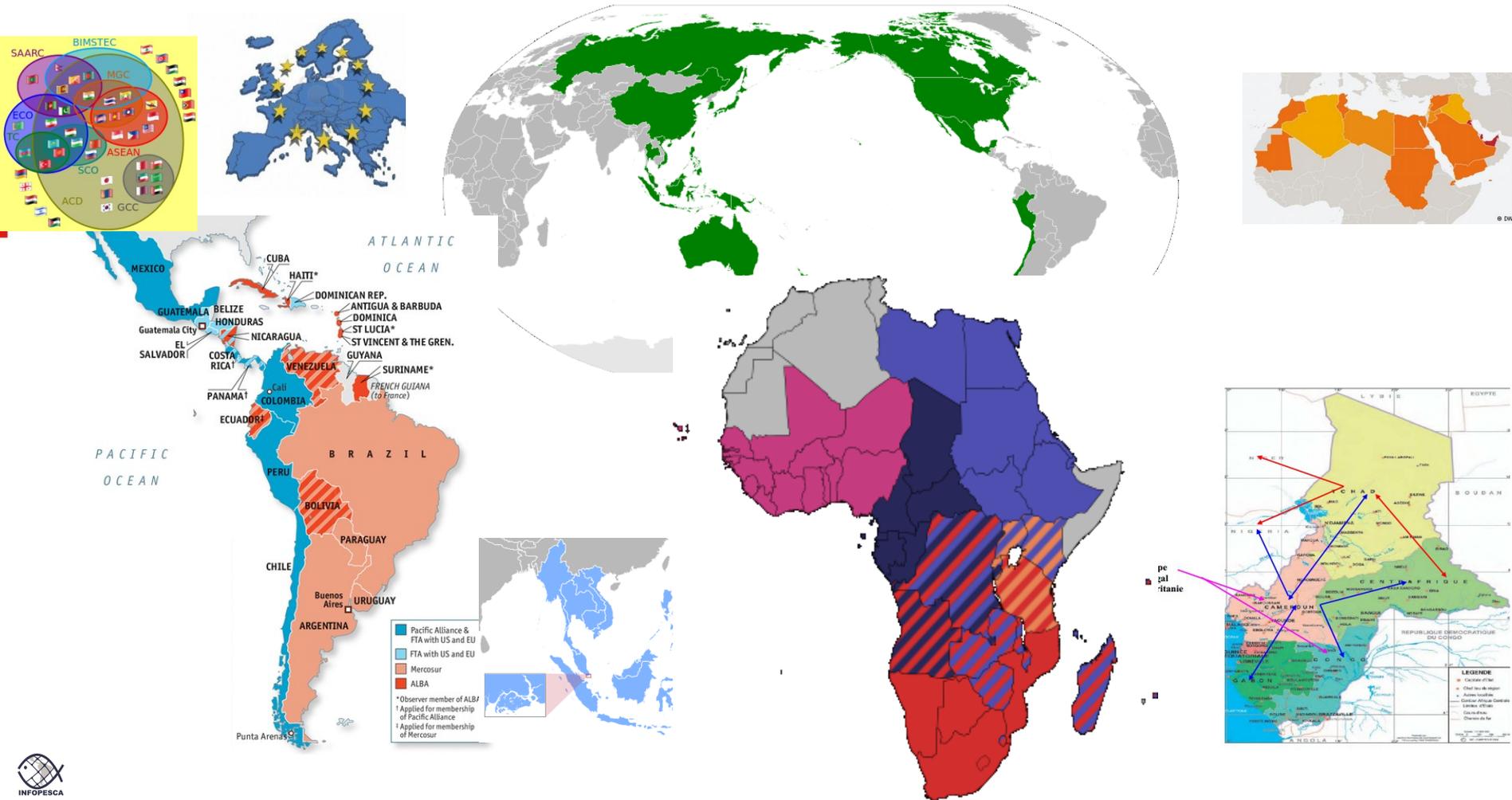
Average market growth of 2.8% per year during the last 10 years

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 – INFOPECA)

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

African seafood retail



Still a big gap between
the few well established stores
and the many improvised stores



Latin America seafood retail



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



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¡Muchas Gracias!