

Global Fisheries and Aquaculture: Opportunities and Challenges

10th World Seafood Congress

Saint John's, Canada

29 September – 3 October 2013

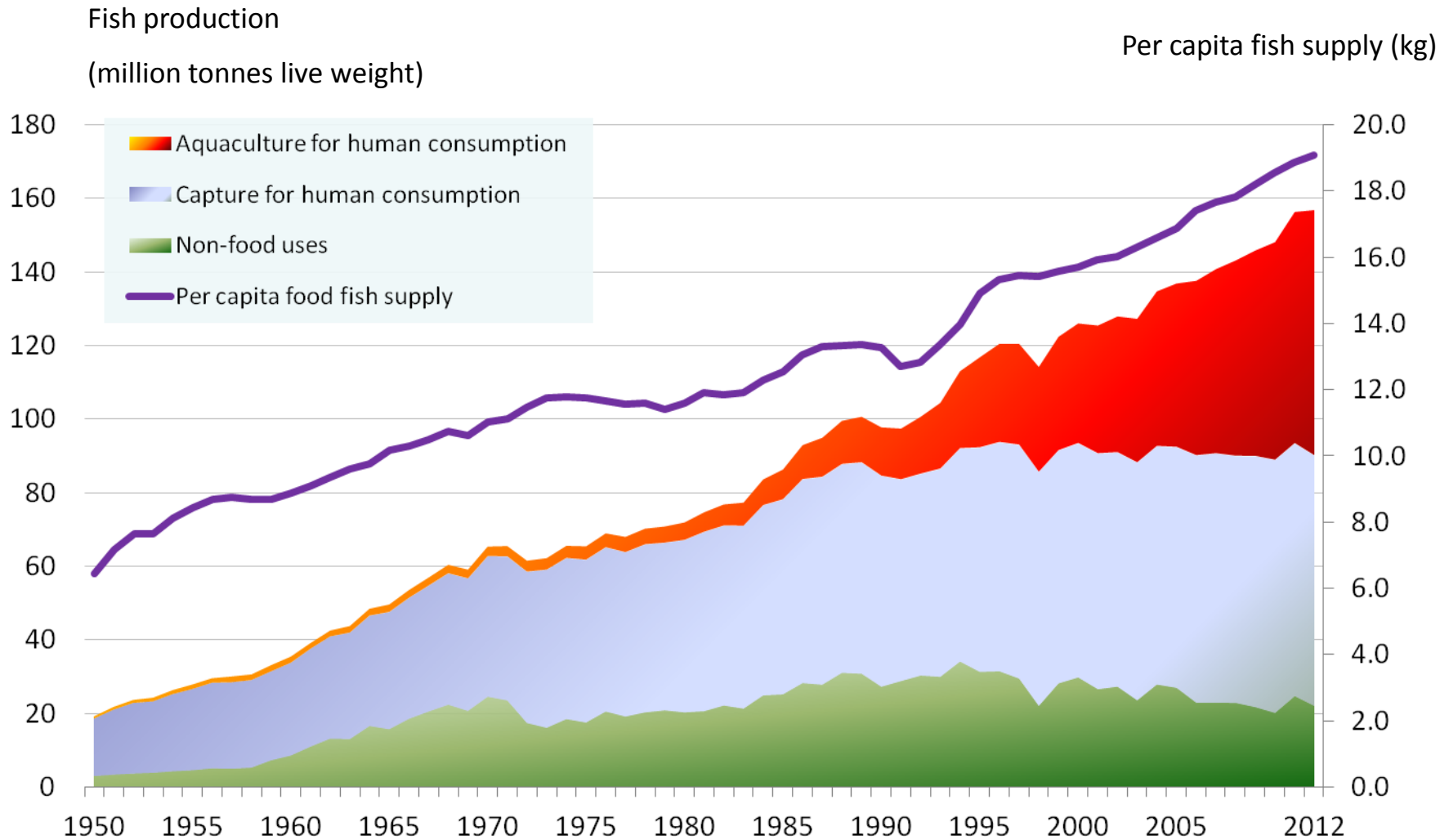
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**Food and Agriculture Organization of the United
Nations. Rome, Italy**

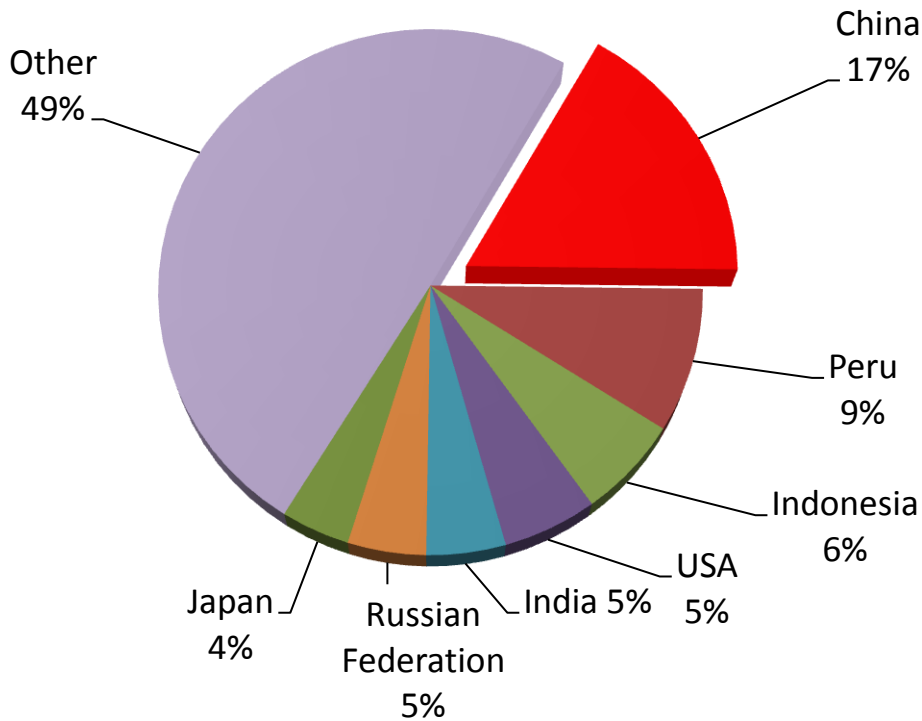
Global Contribution of Fisheries and Aquaculture to Food Security

Fishery production and utilization

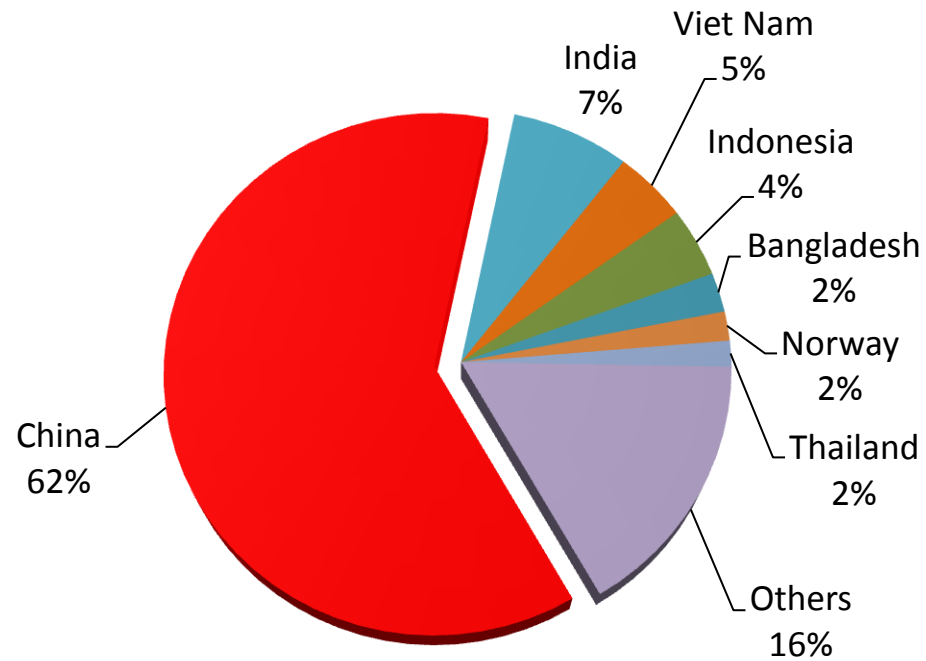


Fishery production 2011

Capture



Aquaculture



Top 10 aquaculture producing countries

Country	Production	World rank
China	35,074,560	1
India	3,791,920	2
Viet Nam	2,556,200	3
Indonesia	1,749,291	4
Thailand	1,396,020	5
Bangladesh	1,064,285	6
Norway	961,840	7
Chile	792,891	8
Myanmar	778,096	9
Philippines	737,397	10

Aquaculture in Asia Pacific Region

- Asia Pacific Region produced about 50 million tonnes of fish by aquaculture
- Five SE Asian countries in global top ten: – 7.7 million tonnes, – 13.7 billion dollars,
- SE Asia production: – 16 % of global total, – 13 % of total value
- Southeast Asia highest growth in aquaculture of the Asian sub-regions in recent years: – 45% increase over last decade
- FAO study of aquaculture policies in Southeast Asia– reveals that well-planned government interventions built on comparative advantages and fostering an enabling incentive environment can lead to economic growth, food security and better living standards.

Aquaculture in Asia Pacific Region

- Backyard aquaculture contributes to livelihoods
- Major contribution to local economies and fish supply
- significant contribution to household and local food/nutritional security
- Effective integration of aquaculture with other livelihood activities
- More effective utilization to limited resources available to small farm holder
- Empowerment of wome
- Increased resilience of livelihood of smallscale farmer

A complete nutrient package

- Major source of animal proteins and micronutrients for many coastal populations
- Unique source of poly-unsaturated fatty acids (DHA, EPA) for optimal brain development and the prevention of coronary heart disease
- Unique & complete source of micronutrients (calcium, iodine, zinc, iron, selenium,...)
- Source of vitamins (A, D, B group)*generally scarce in rural diets*

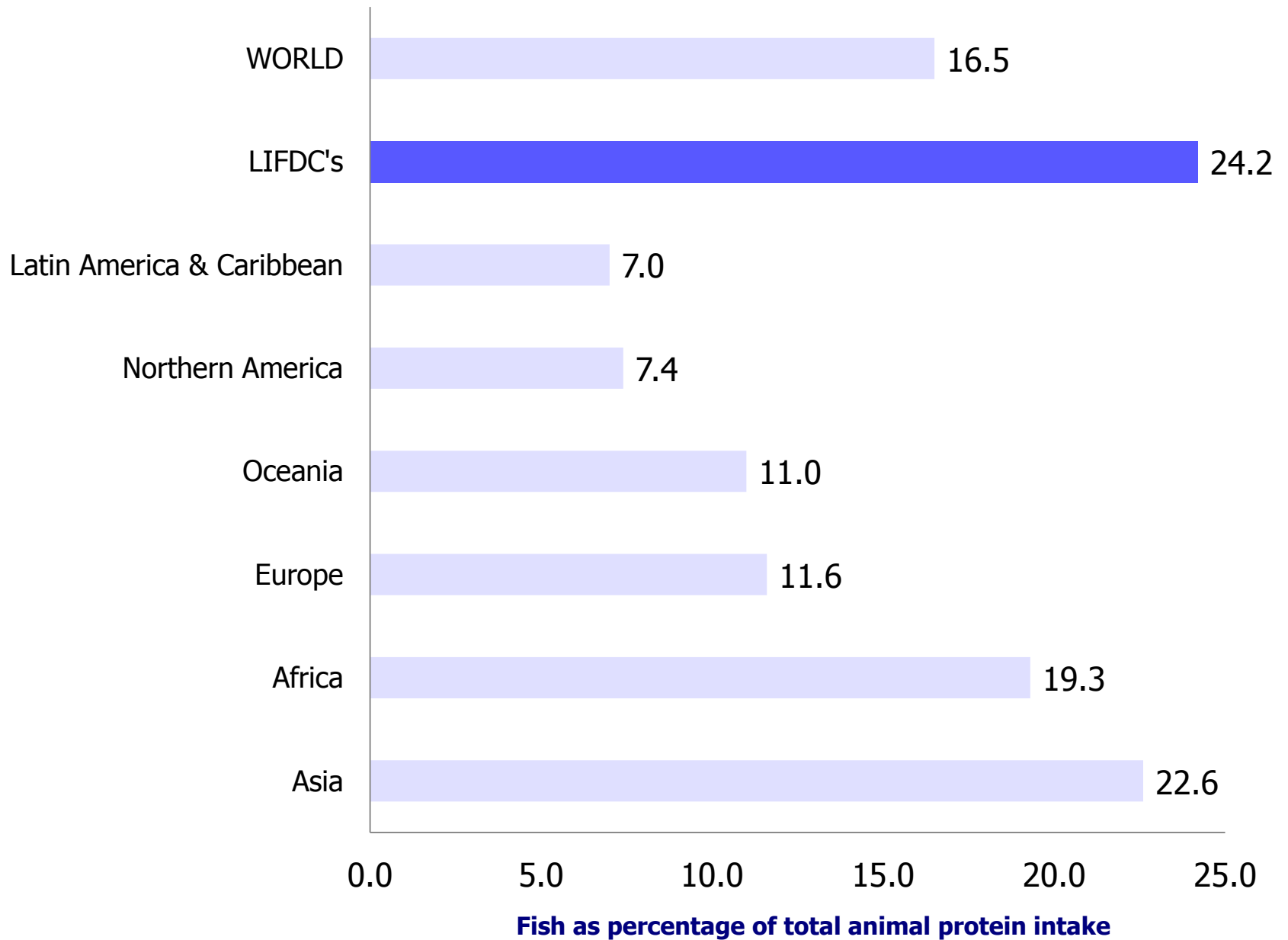
Comparison of Omega-3 levels in fish and other meats

		Salmon, farmed	Salmon, wild	Carp, common	Tilapia	Chicken	Beef
Protein	g/100g	20	20	18	20	19	21
Lipids	g/100g	13	6.3	5.6	1.7	15	12
Water	g/100g	65	69	76	78	66	65
Ash	g/100g	1.1	2.5	1.5	0.9	0.8	1.0
DHA + EPA (ω-3)	mg/100g	1966	1436	350	91	40	3

Examples of the importance of micronutrients

Micronutrient deficiency	Level of micronutrient in 100 g edible part	Recommended daily intake for children:
250 million preschool children are vitamin A deficient	Small sized fish eaten whole, good source; > 2 500 µg RAE in 100 g Mola (<i>Amblypharyngodon mola</i>)	500 µg RAE
54 countries are still iodine-deficient	Seafood nearly the only natural food source of iodine; 250 µg iodine in 100 g Cod (<i>Gadhus morhua</i>)	120 µg
Iron deficiency affects about 2 billion people	Small sized fish eaten whole, good source; 45 mg iron in 100 g Chanwa pileng (<i>Esomus longimanus</i>)	8.9 mg
800 000 child deaths per year are attributable to zinc deficiency	Small sized fish eaten whole, good source; 20 mg zinc in 100 g Chanwa pileng (<i>Esomus longimanus</i>)	3.7 mg

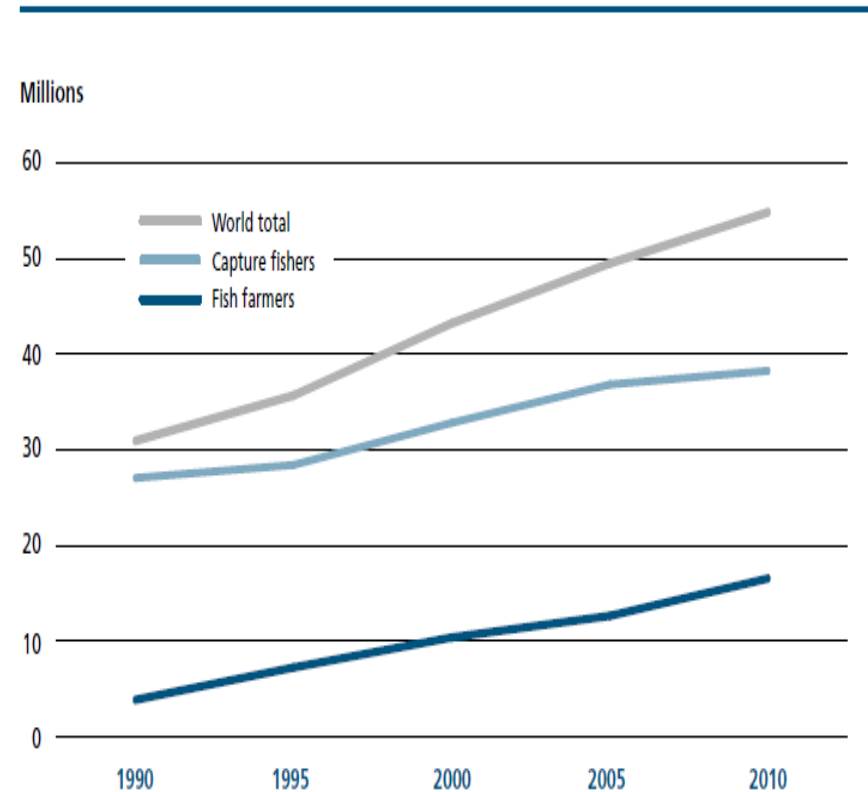
Contribution of fish to human diet (2009)



Global Contribution of Fisheries and Aquaculture to Social and Economic Development

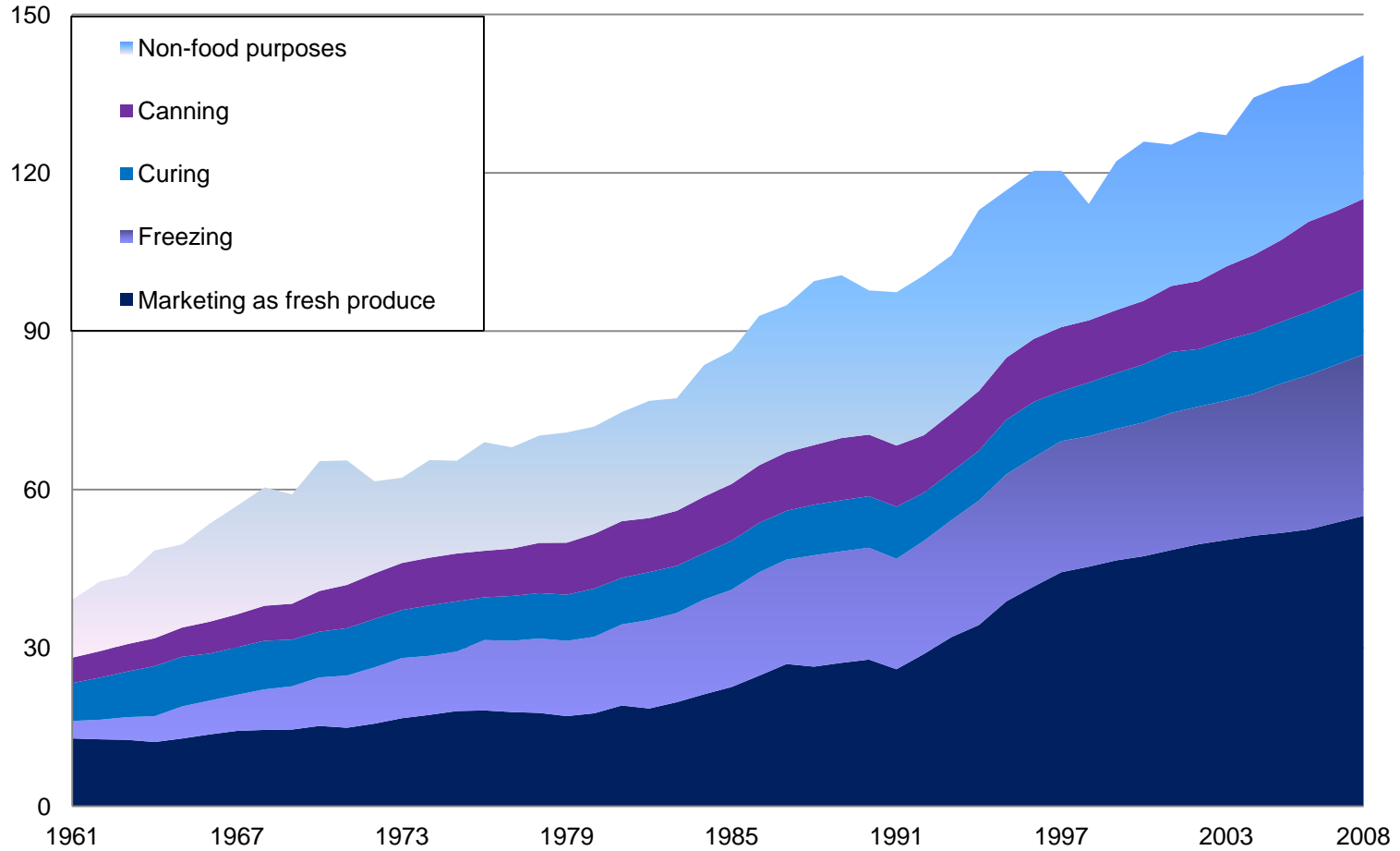
Employment & Livelihoods

- 54.8 million total employment (2010)
 - 90% small scale
 - 38.2 million capture
 - 16.6 million aquaculture



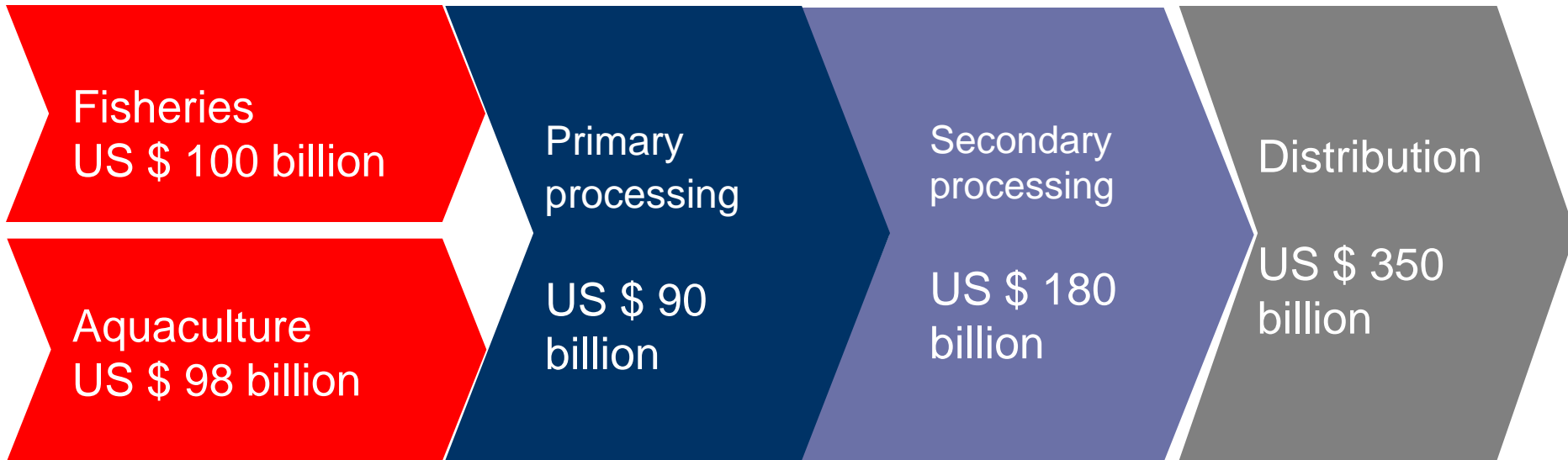
Fish and seafood utilization (in volume)

Million tonnes (live weight)



Socio-Economic importance of the fish and seafood value chain

Estimated Total Value 818 US \$ billion in 2008

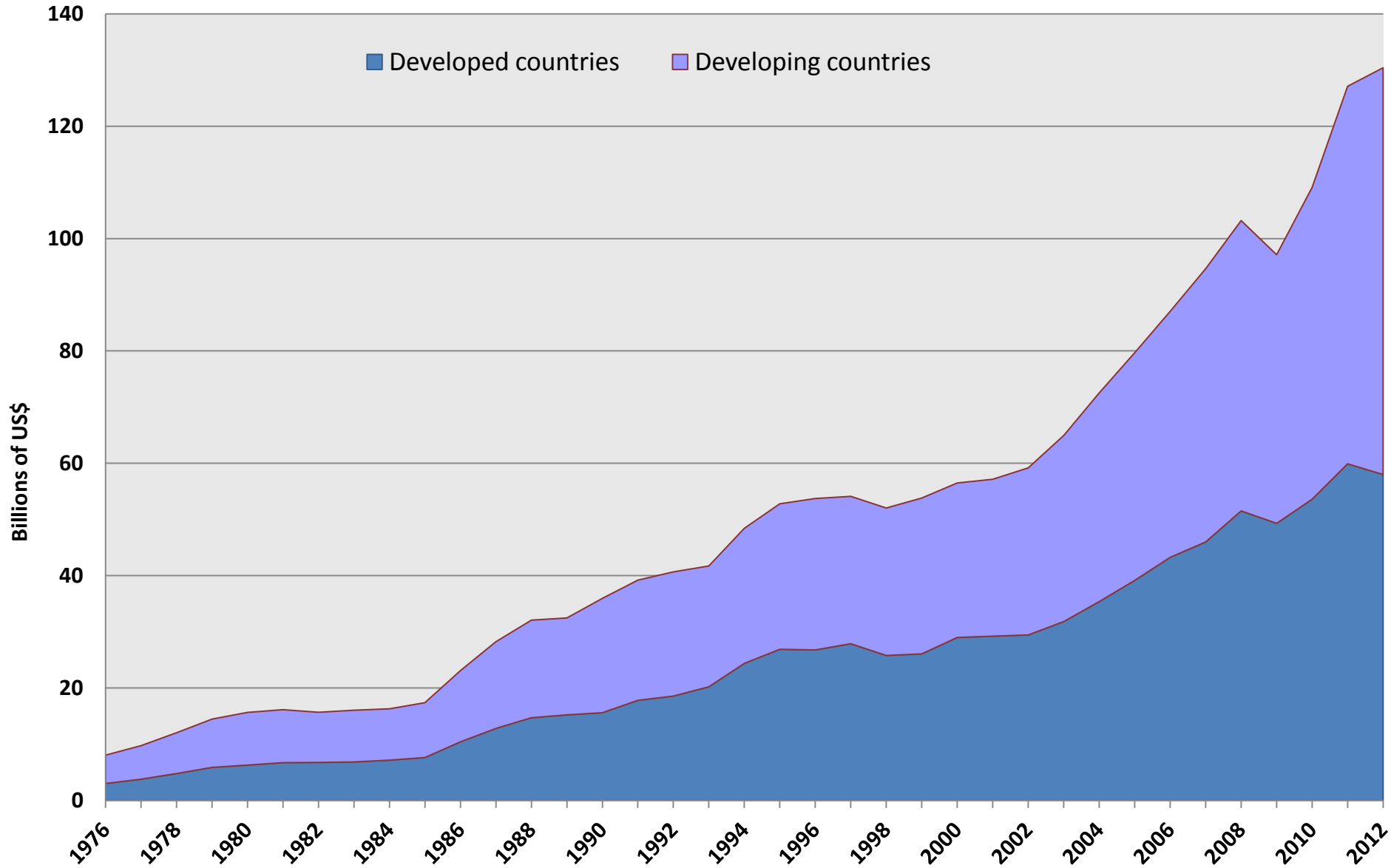


Employment in fisheries and aquaculture:

- 52 million persons in fisheries and aquaculture 2008
- 195 million along the value chain-
- 660 - 880 million persons (12%) depend on the sector for their - livelihoods

Enabling Trade and Wealth Extraction

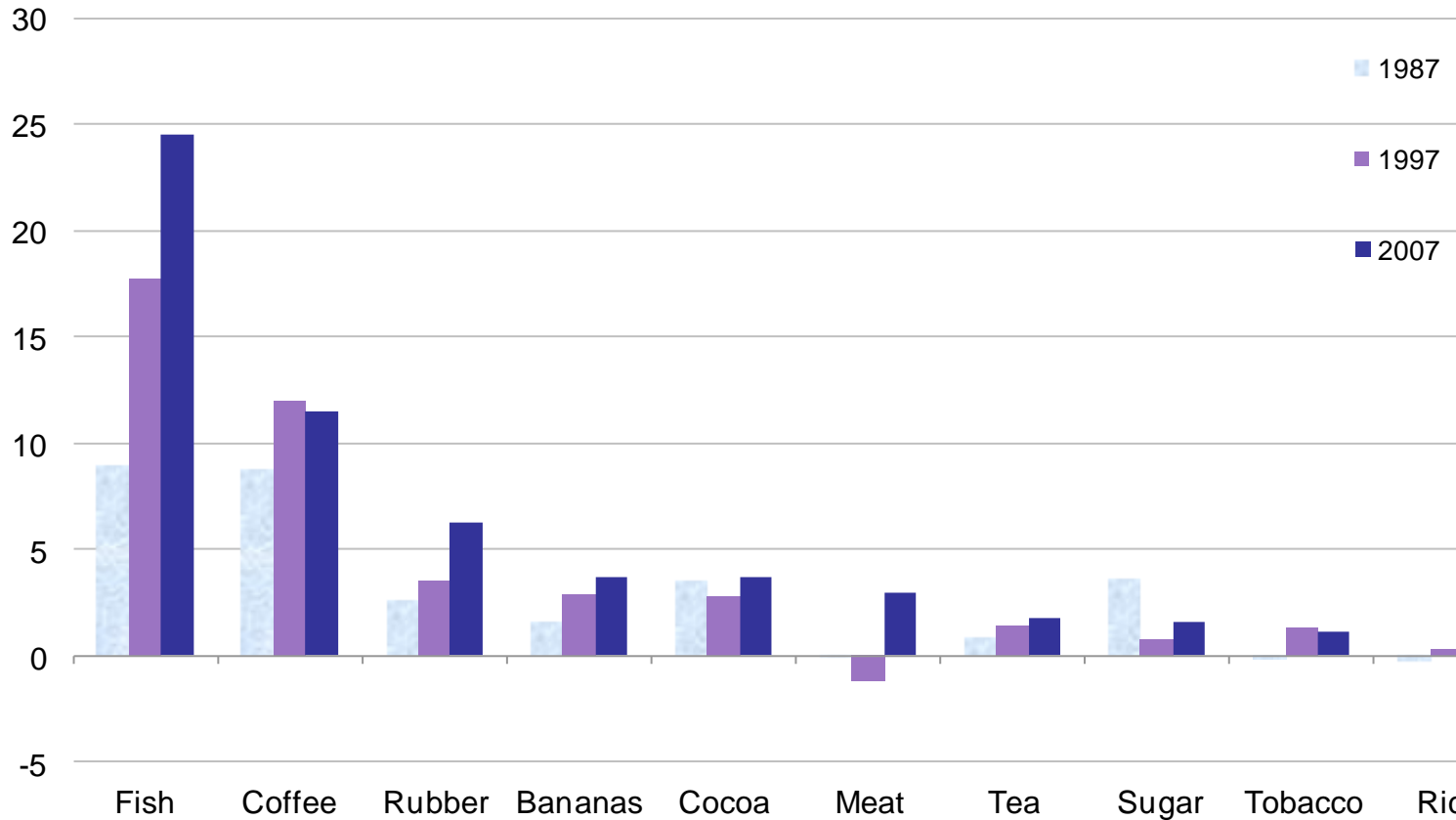
Export of fish and seafood: 1976 – 2012 (US \$ billion)



Source: GTIS © (2012)

Net trade income of developing countries from various agricultural commodities

US\$ billions



Main aquaculture species in international trade (2008)

	Production 2008 (1000 t)
Shrimp	3,450
Tilapia	2,500
Salmon	1,540
Pangasius	1,375
Channel catfish	350
Trout	320
Seabream	160
Seabass	150
Other flatfish	125
Barramundi	45
Cobia	40
Atlantic cod	23
Oysters	4,320
Clams, cockles, arkshells	1,62
Mussels	1,620

Challenges

Challenges

Decreasing resource base:

1. Overexploited fish stocks
2. IUU fishing
3. Overcapacity in fishing fleets
4. Degraded environment and ecosystems
5. Climate Changes
6. Post harvest losses

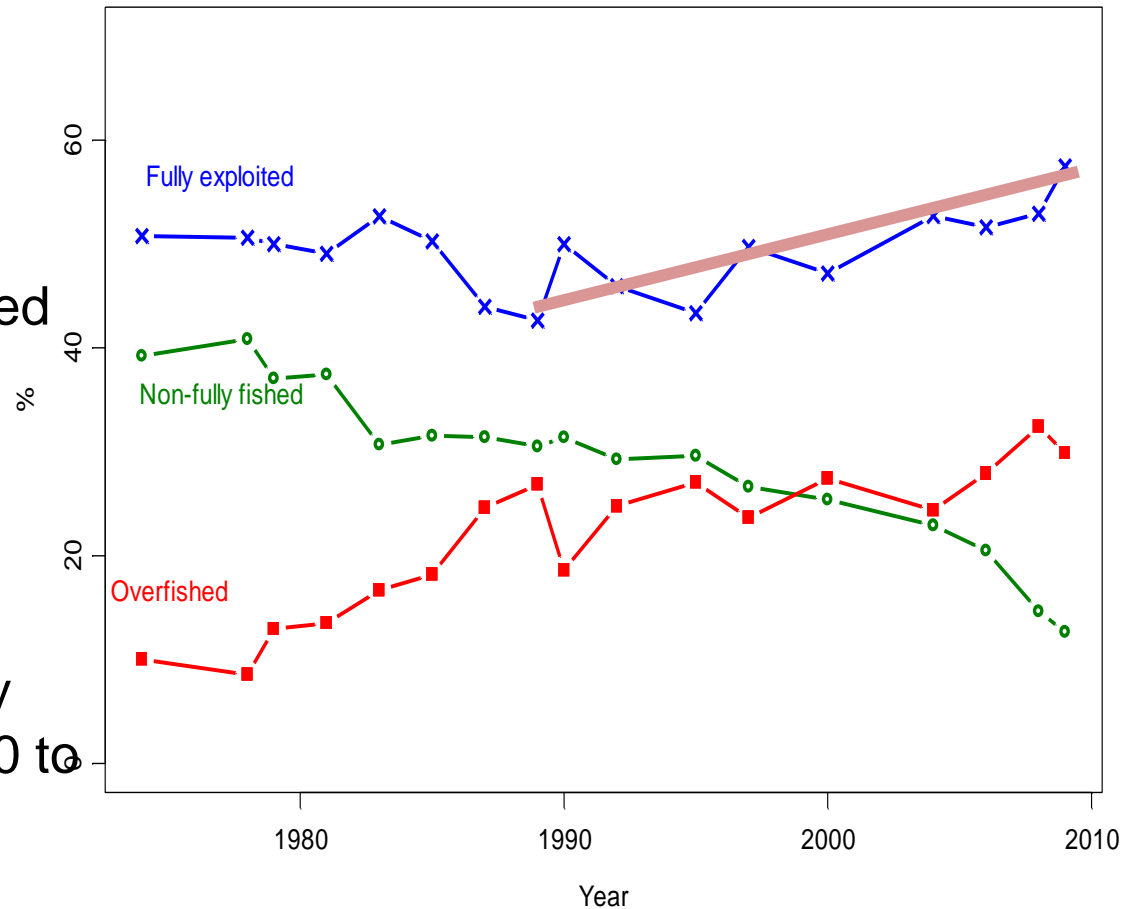
Increasing demand:

1. Population increase
2. Economic development
3. Increased consumption

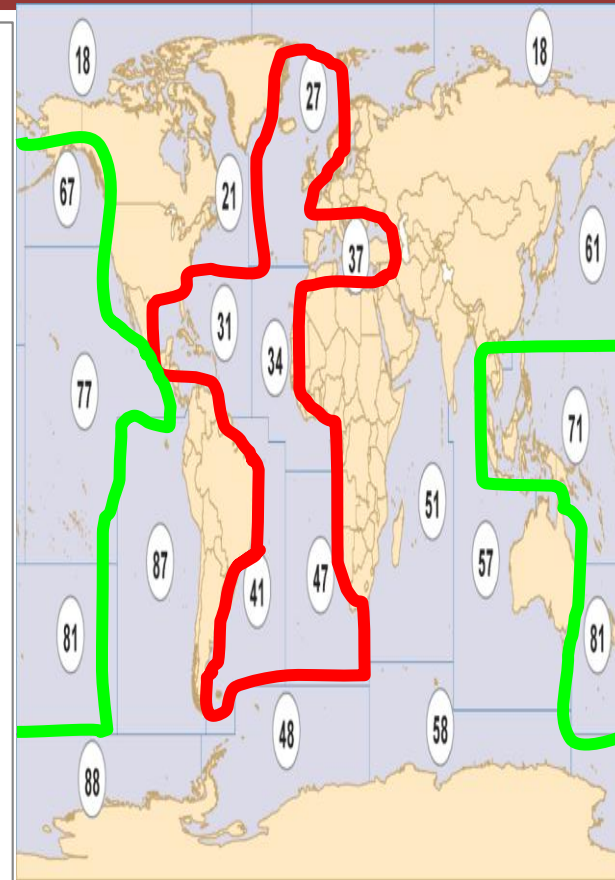
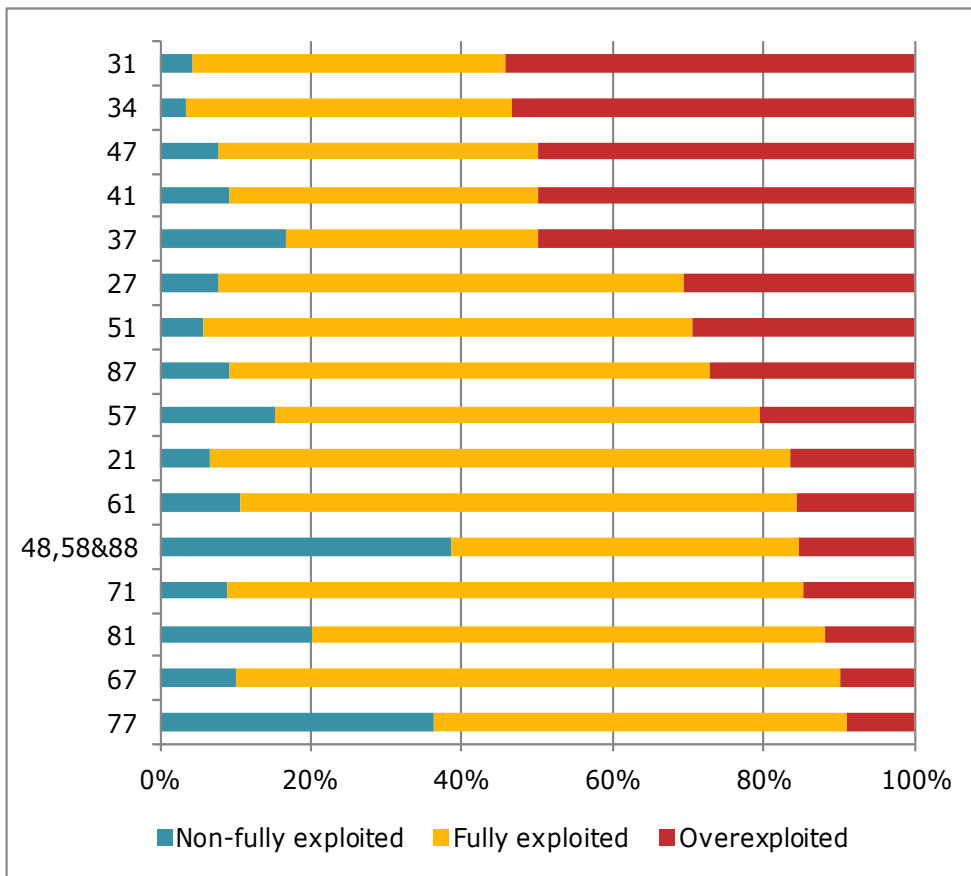


Stock Status of Marine Fishery Resources

- % of non-fully exploited stocks continuously decreased
- 30% of stocks overexploited in 2009
- Fully exploited stocks at around 50%
- An increasing trend in fully exploited stocks from 1990 to present



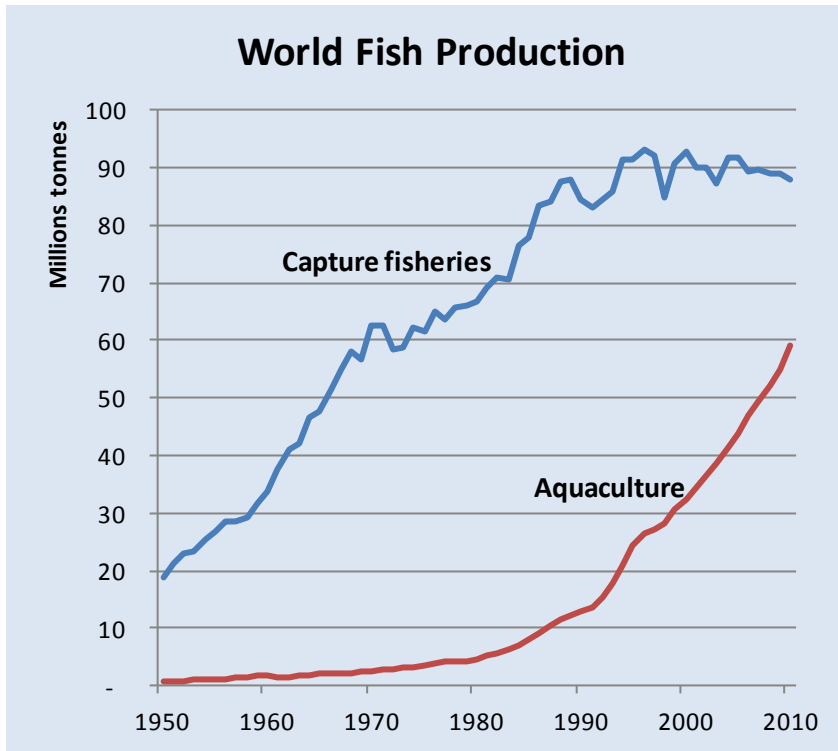
Fish Stock Status by Region



- 18 Arctic Sea
- 21 Atlantic, Northwest
- 27 Atlantic, Northeast
- 31 Atlantic, Western Central
- 34 Atlantic, Eastern Central
- 37 Mediterranean and Black Sea
- 41 Atlantic, Southwest
- 47 Atlantic, Southeast
- 48 Atlantic, Antarctic
- 51 Indian Ocean, Western
- 57 Indian Ocean, Eastern
- 58 Indian Ocean, Antarctic
- 61 Pacific, Northwest
- 67 Pacific, Northeast
- 71 Pacific, Western Central
- 77 Pacific, Eastern Central
- 81 Pacific, Southwest
- 87 Pacific, Southeast
- 88 Pacific, Antarctic



Perspectives of fish supply

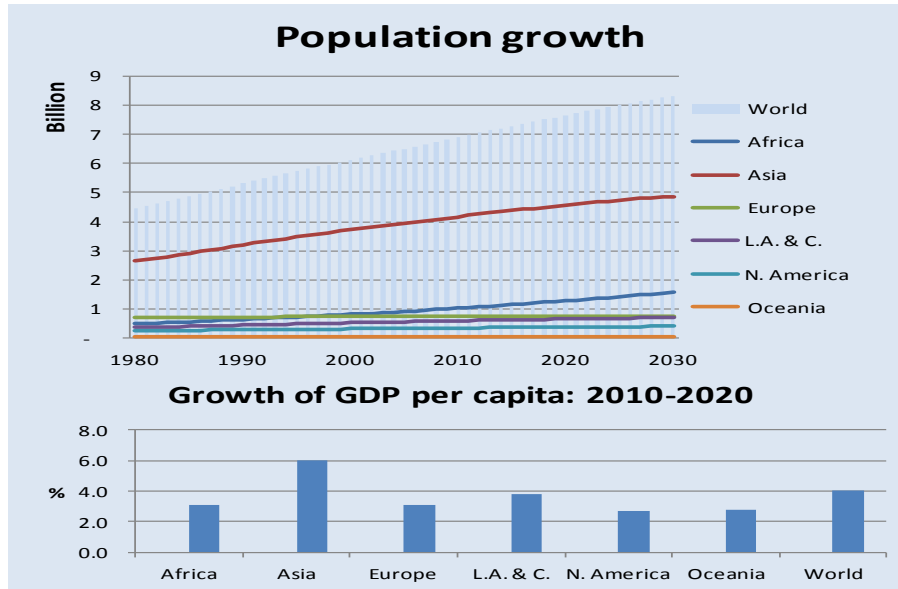


Source: FAO FISHSTAT

Fish supply (mt)	2010 (baseline)	2020/2030 projection
Aquaculture	59	95/123
Capture fisheries	88	88/88
Total supply	147	168/211
% of aquaculture:	40 (48 for human consumption)	57/58 (65/65 for human consumption)
Source: Estimation of FI Department		

Fish demand

driven by population and income growth



Fish Demand (mt)	2007 (baseline)	2030 (projection)
Africa	9.0	18.7
Asia	86.4	186.3
Europe	19.4	23.4
L.A. & C.	15.2	18.3
Northern A.	9.1	12.9
Oceania	1.1	1.8
World	140.3	261.2

Source: Estimation of FI Department



Fish supply-demand gaps

S-D gap (mt)	Supply 2030	Demand 2030	S-D gap 2030
Africa	11.7	18.7	-7.0
Asia	156.5	186.3	-29.8
Europe	18.6	23.4	-4.8
L.A. & C.	16.2	18.3	-2.1
Northern A.	6.2	12.9	-6.6
Oceania	1.5	1.8	-0.3
World	210.7	261.2	-50.6

Source: Estimation of FI Department

Per capita fish demand in 2020 estimated based on assumptions:

- GDP per capita projection by IMF
- Prices unchanged
- Preference unchanged

Total fish demand in 2030 estimated based on:

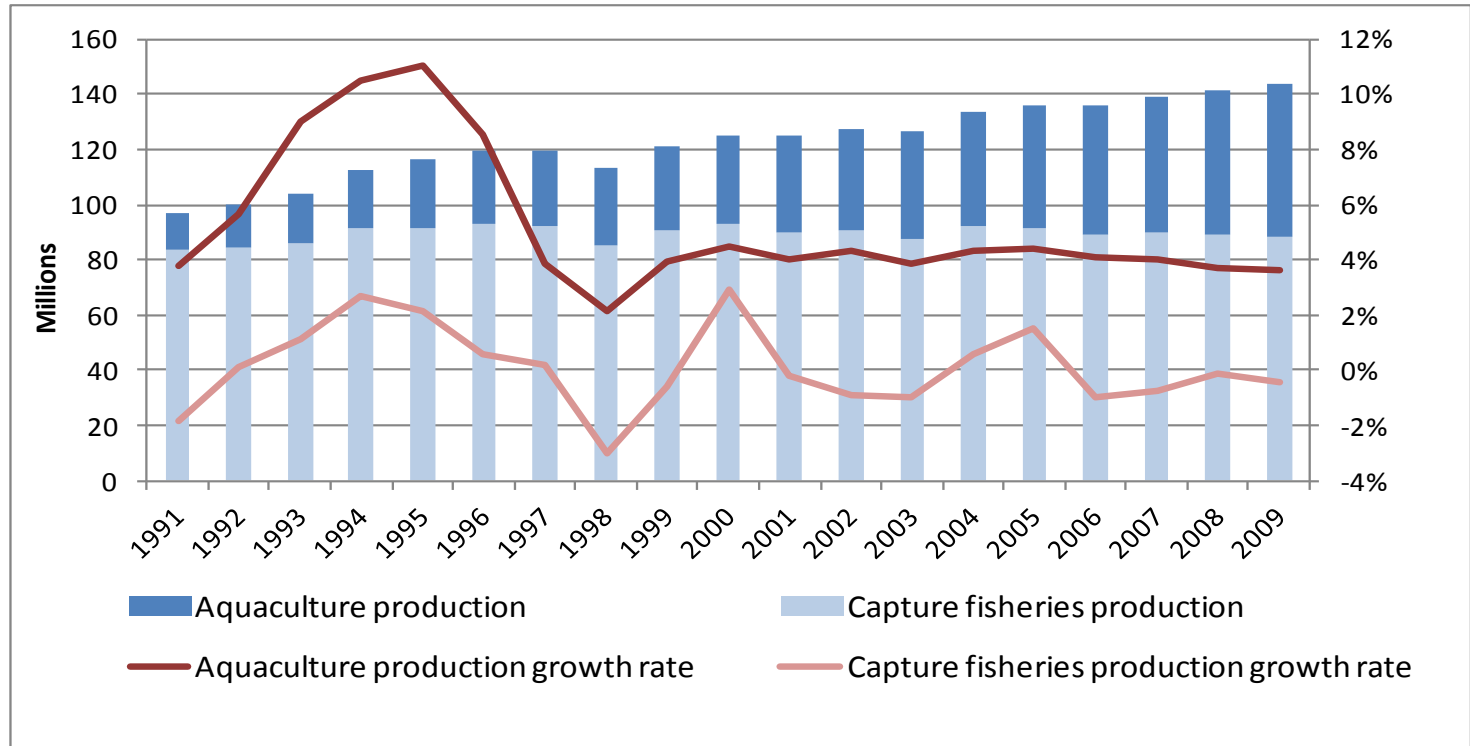
- Estimated per capita demand in 2020.
- UN population projection in 2030.
- Non-food fish demand unchanged

Results:

- Supply < Demand
- **51 mt shortage**
- S-D gaps decline in all regions
- Largest insufficiency in Asia

Aquaculture

Aquaculture growth rate is declining!





Bridging the supply-demand gaps

Aquaculture growth rate during 2007-2030	Expected APR (%)	Required APR (%)
World	4.0	5.6
Africa	7.2	11.5
Asia	4.0	5.3
Europe	3.1	4.0
L.A. & C.	4.4	7.6
Northern A.	0.4	9.0
Oceania	2.6	7.9

Source: Estimation of FI Department

- If countries aquaculture production follow the recent trend, expected aquaculture growth rate:
 - 4.0 percent annually.
- Improved capture fisheries 10-20 mill. t.
- To feed growing and wealthier world population, required aquaculture growth rate:
 - 5.0/ 5.5 percent annually.

➔ **Insufficiency**

International regulatory framework for fisheries Governance

1982 UN Convention on the Law of the Sea

1995 UNFSA

1992 UNCED:
Rio Declaration
+
Agenda 21

Ecosystem approach
to fisheries:
Reykjavík 2001

2002 WSSD
Johannesburg
Plan of Implementation

Rio + 20
U. N Conference on
Sustainable Development

1995
Code of Conduct
for
Responsible Fisheries

1993 Compliance
Agreement

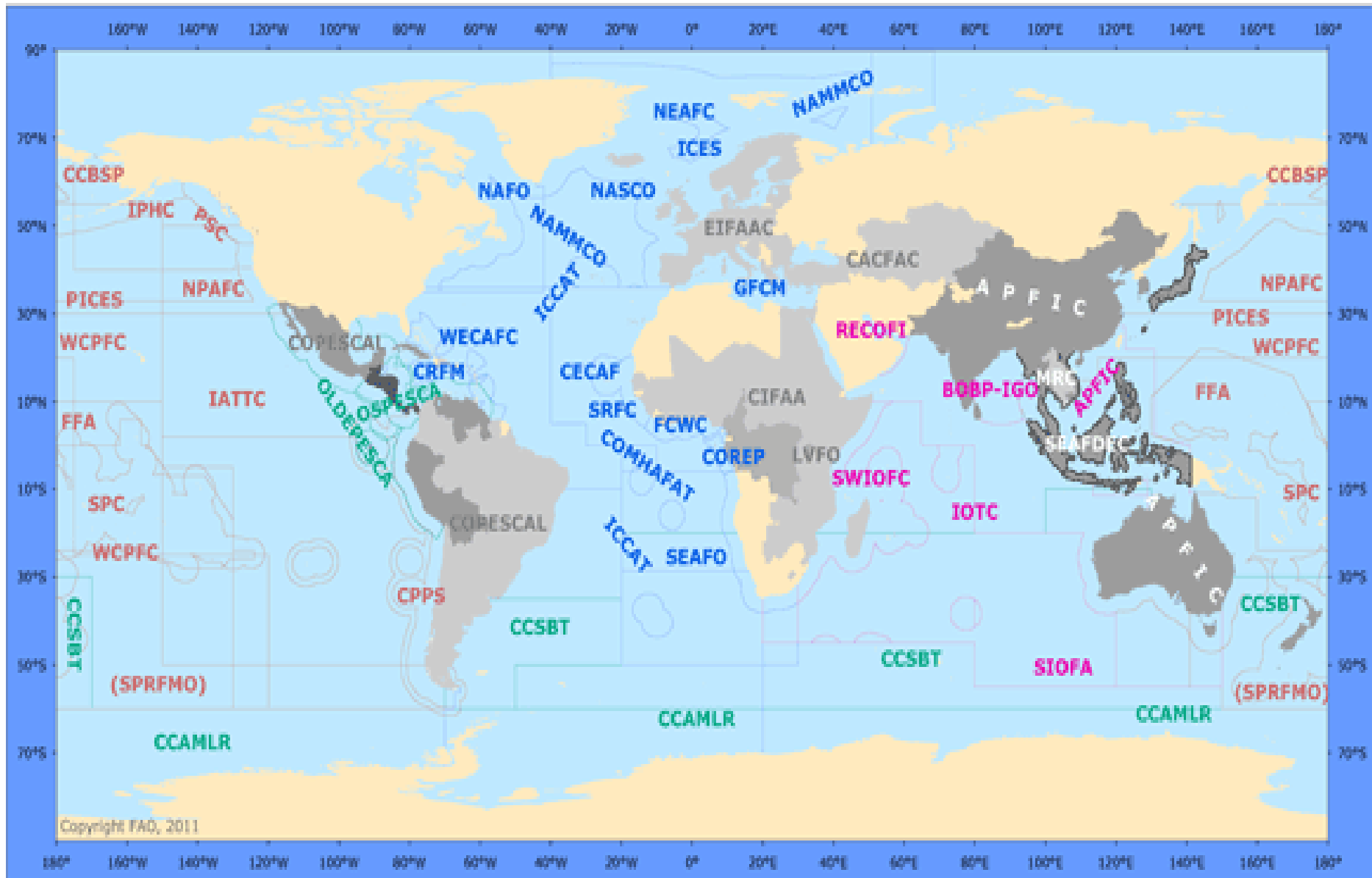
IPOAs
• Seabirds 1999
• Sharks 1999
• Capacity 1999
• IUU 2001
• [Kyoto POA '95]

Port State
Measures:
Model Scheme
2005 + 2009
Agreement
Flag State
Performance

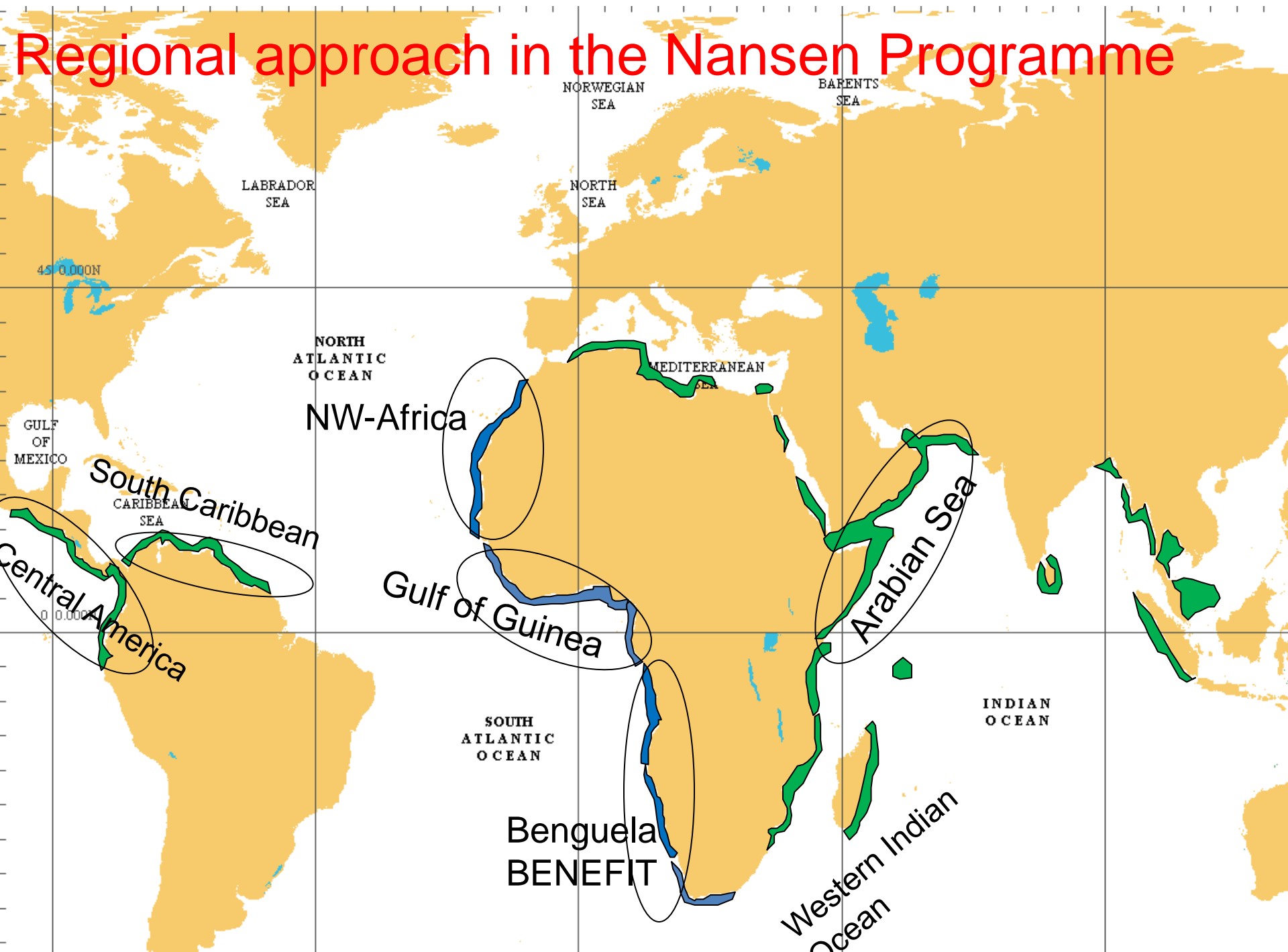
Strategies:
• Status & Trends on
Capture Fisheries
2003
• Status & Trends on
Aquaculture 2007

International
Guidelines:
• Sea-Turtles 2009
• Ecolabelling 2009
• Deep sea fisheries 2009
• By-catch management &
discards reduction 2010

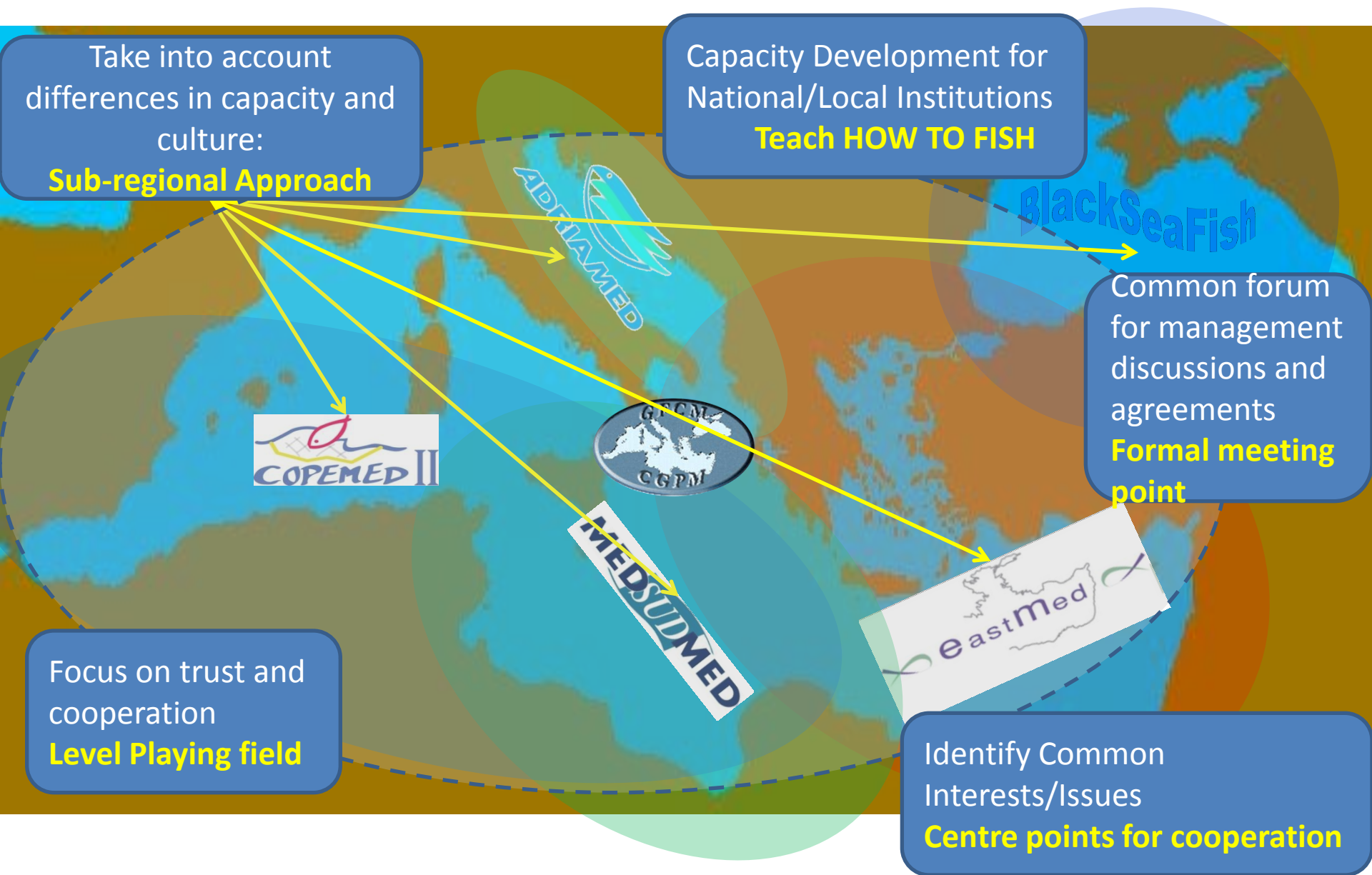
Regional Fisheries Bodies



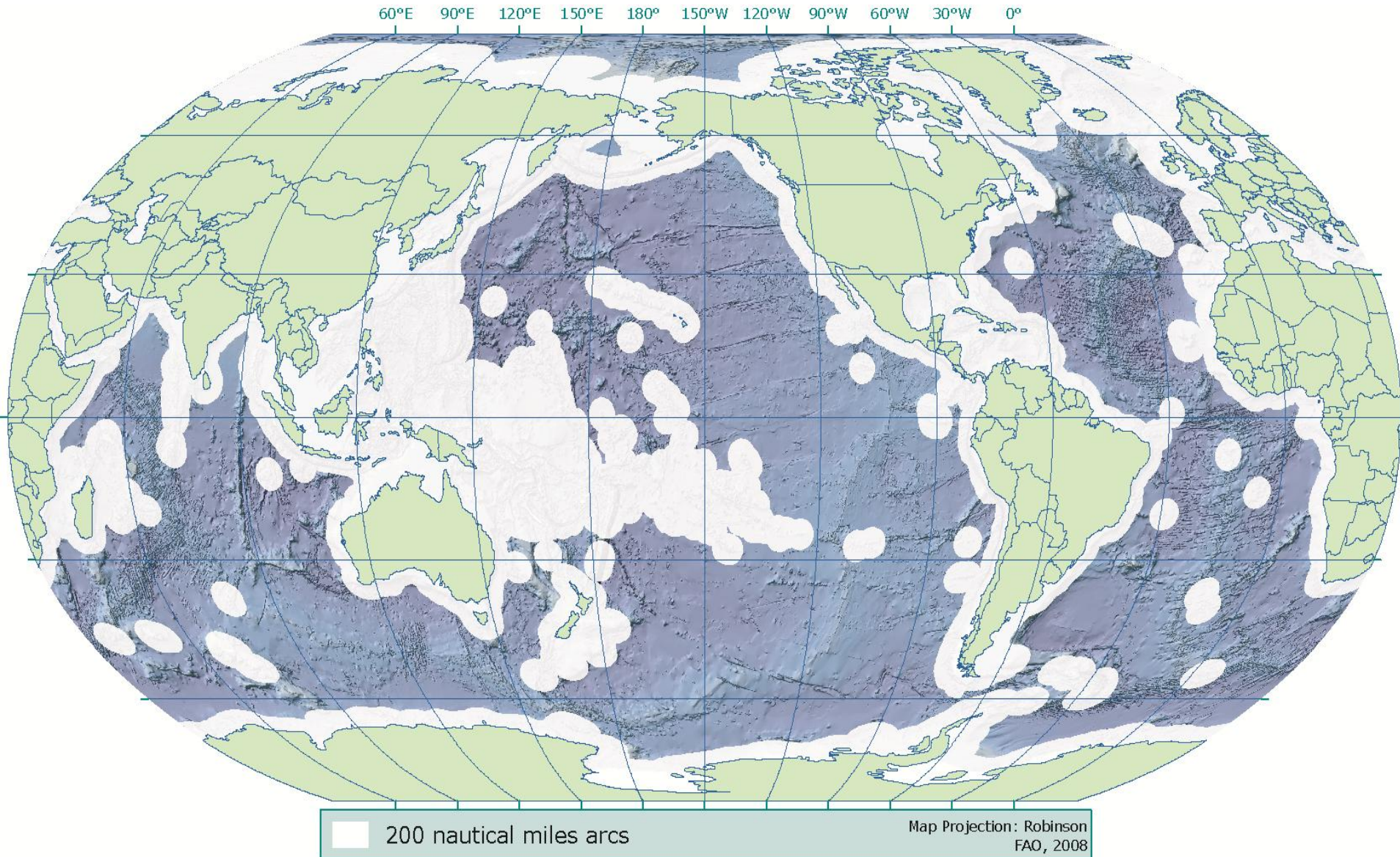
Regional approach in the Nansen Programme



FAO Approach: Focus



The Areas Beyond National Jurisdiction

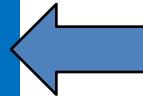


Market based measures

- Food scares: Mad cow disease, Dioxin, Avian flu, SARS,...
- Loss of confidence in public control authorities
- Concern over the sustainability of natural resources, the marine fauna (dolphins, whales, turtles,...) and environment
- Increasing influence of civil society and consumer advocacy groups



- Globalization of production, processing and trade
- Vertical integration and Consolidation
- “Supermarketization”, including in developing countries
- Increasing role of retailers as the last link between suppliers and consumers
- The use of B2B standards to protect reputations
- Emergence of coalitions (GFSI, BRC)



Market Response

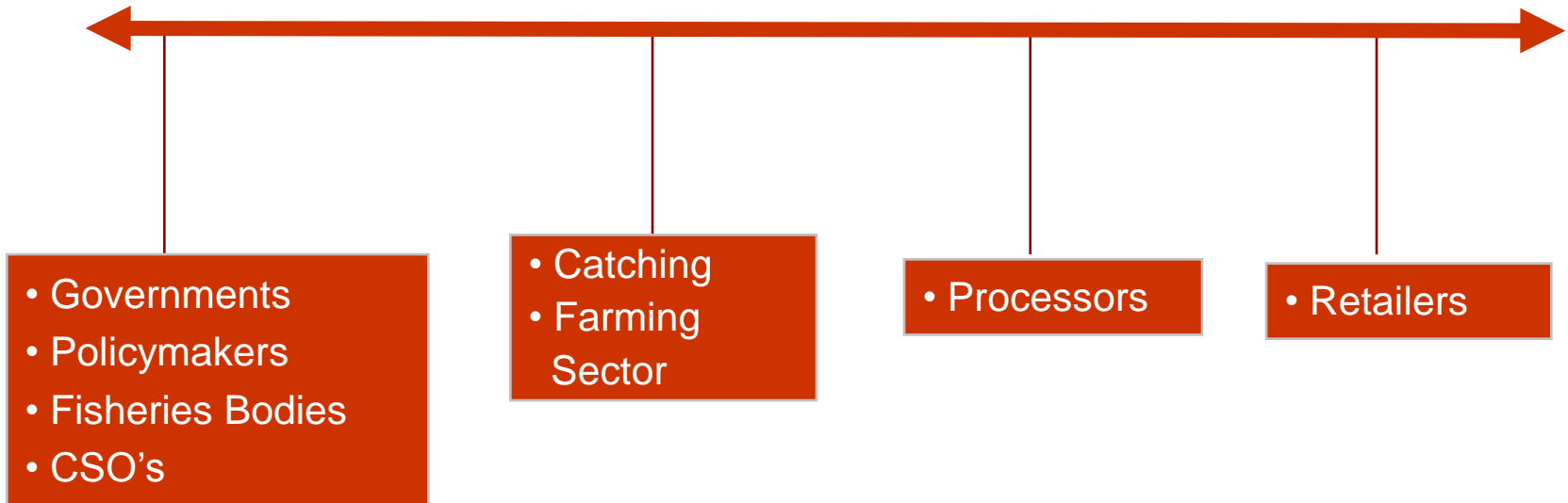


If you think your seafood is sustainable, it's time to prove it.



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Do we not ALL have shared responsibility?



Fisheries sustainability is too important to be left to International Organizations, Governments, Industry, RFBs, CSOs or markets alone. All share the responsibility

!

!

Thank you!

Merci!

Gracias!

Спасибо!