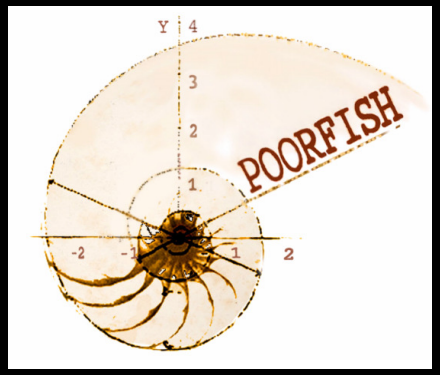
Poorfish Workshop
1st announcement, March 2008

Data poor modelling towards ecosystem fisheries management

Poorfish

International Workshop



www.poorfish.eu

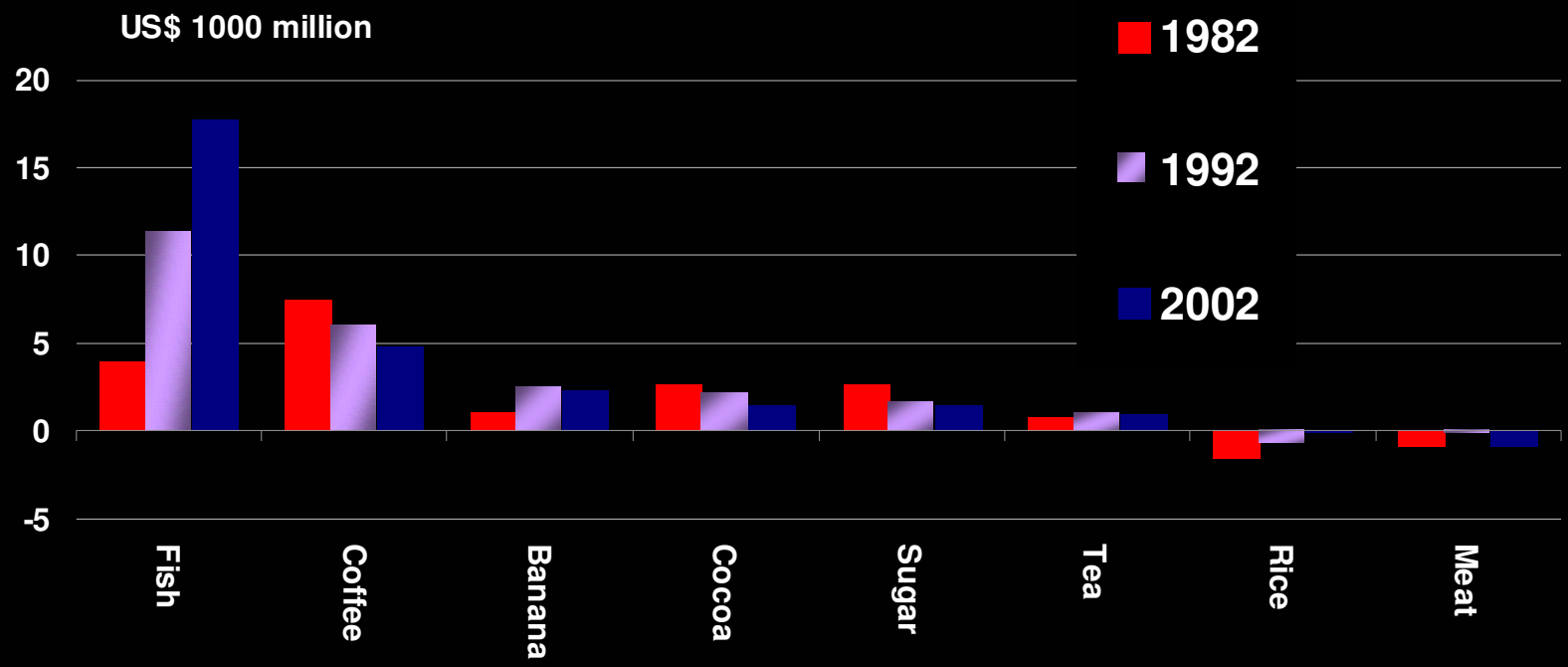
8-9 September 2008
IMEDEA, Esporles,
Majorca Island Spain

Climate Variability, Global Trade And Regional Food Security: The Case Of Small Pelagic Fish In West Africa

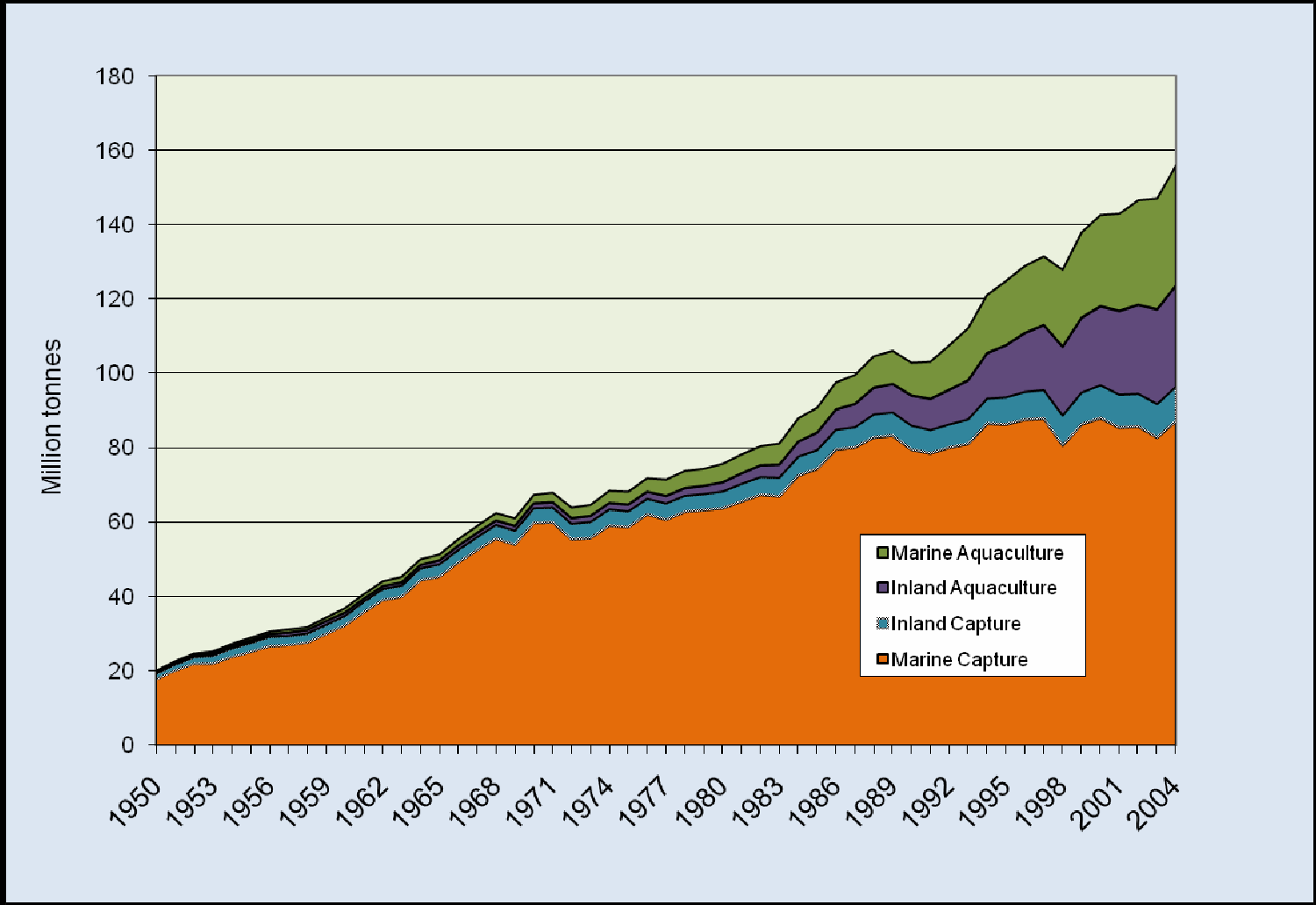
Science and the challenge of managing small pelagic fisheries of shared stocks in northwest Africa
Casablanca, Maroc, 11-14 mars 2008

Current and future Context

Fish and trade of developing countries

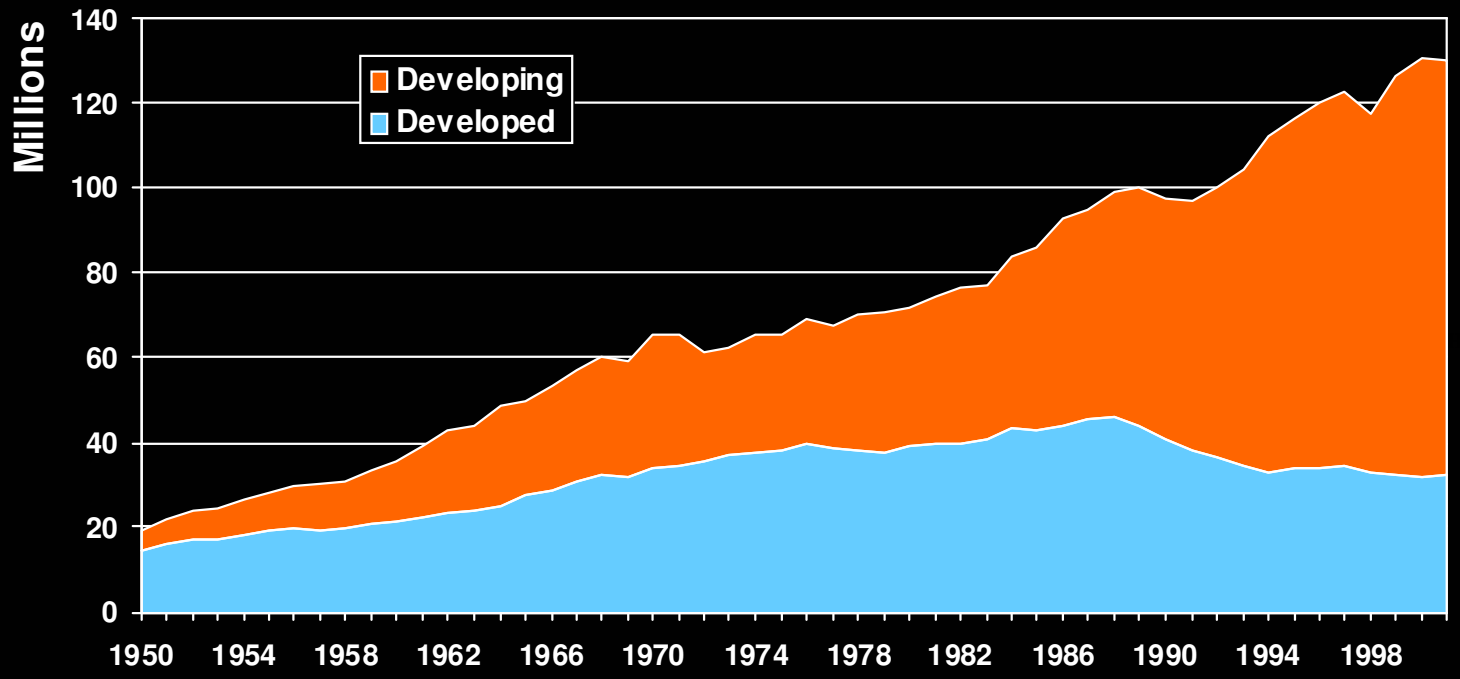


World production of fish

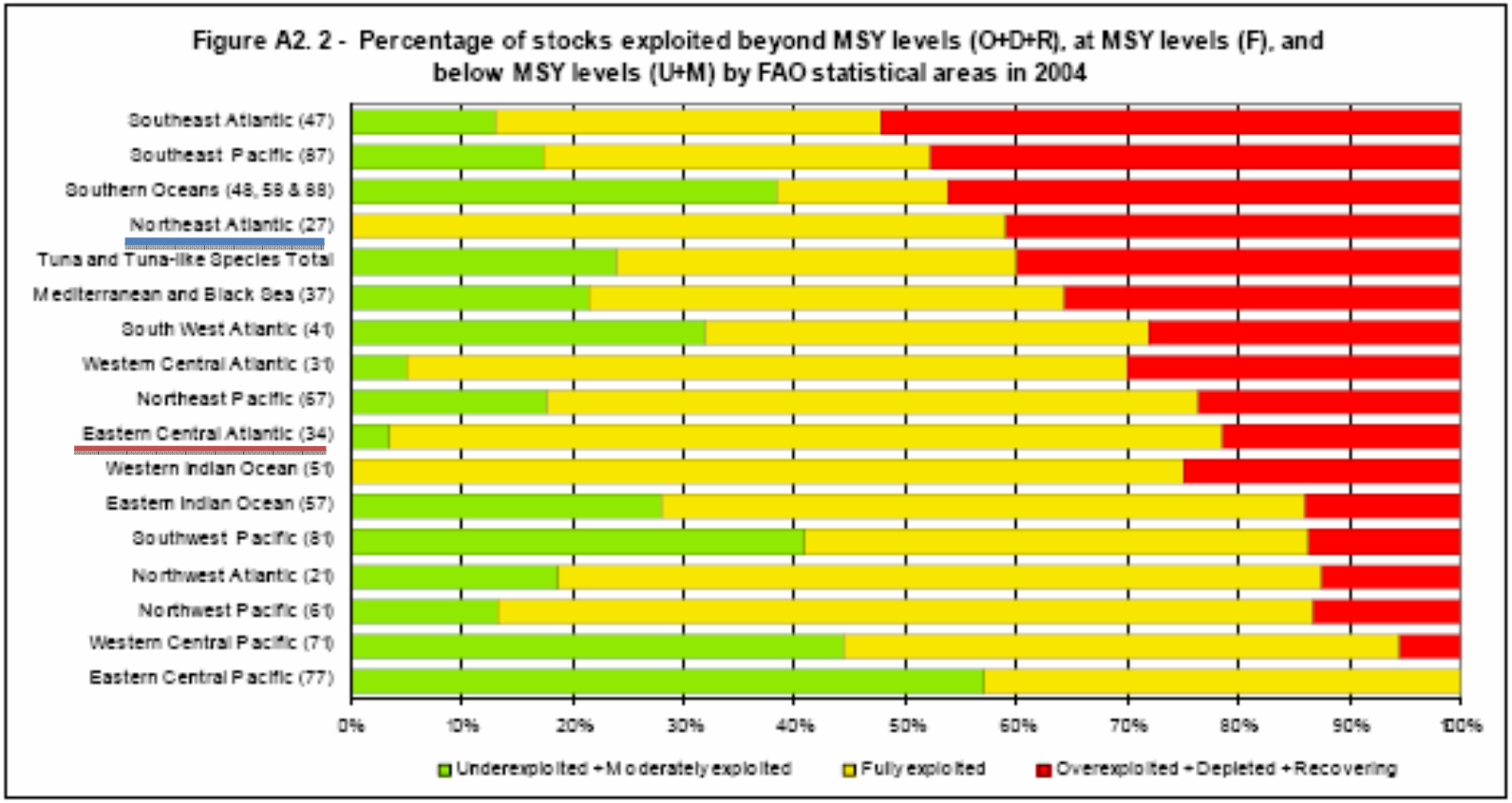


Fao, Fishstat 2006

Fish production:
Developed versus developing countries

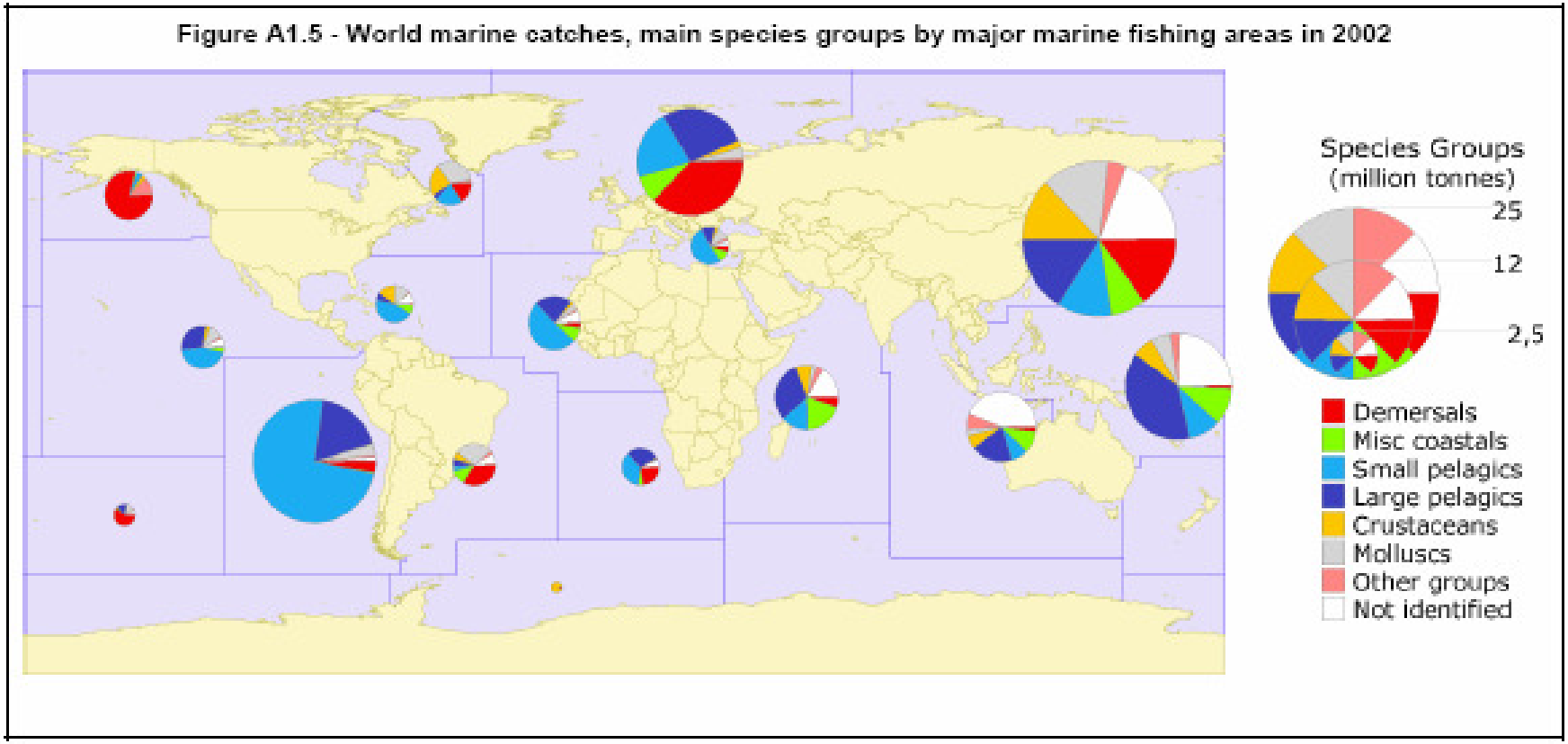


Level of exploitation

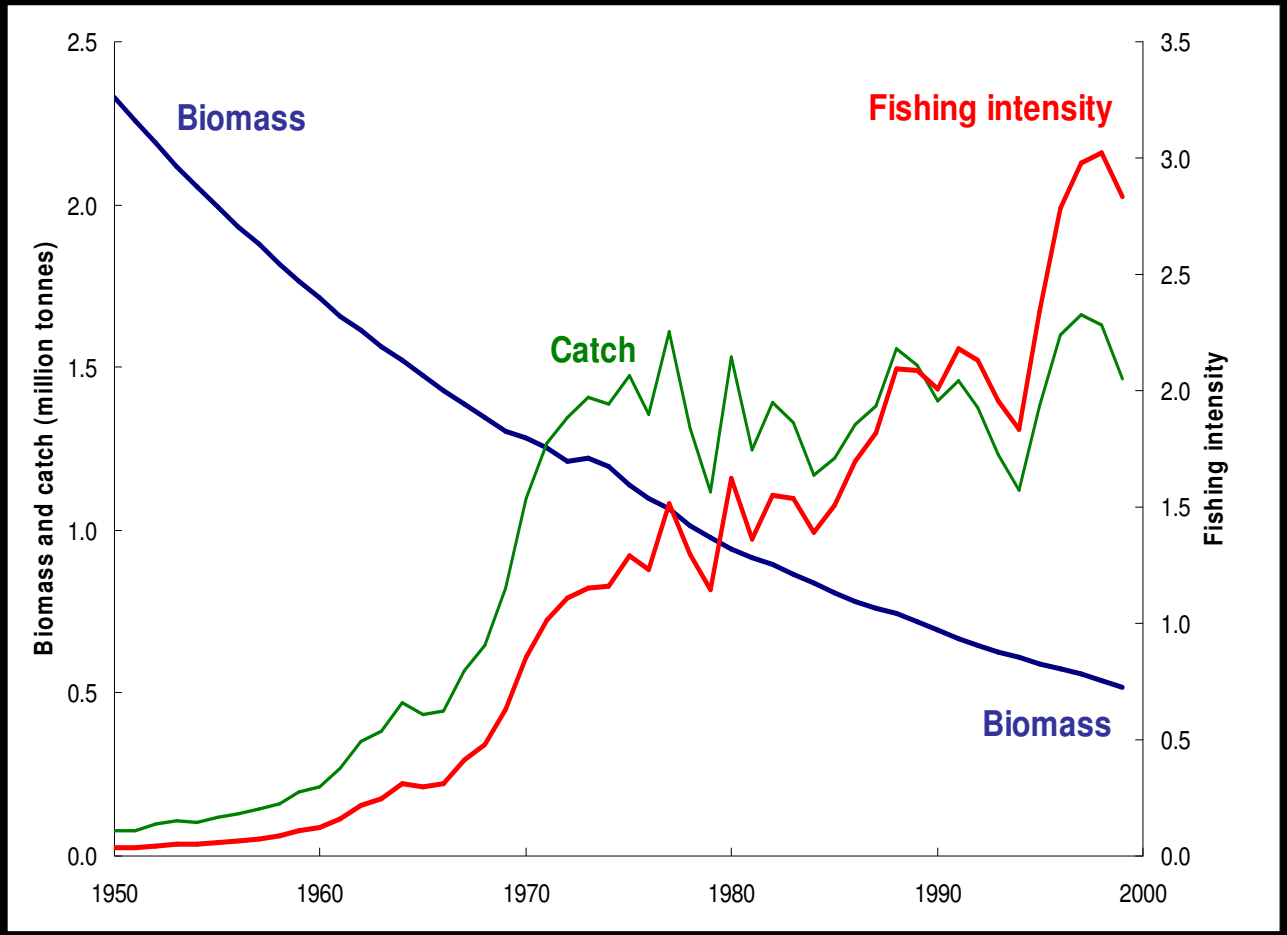


…But: all demersal are fully exploited or overexploited!

West Africa: 3 Mt of 80 Mt
6 SRFC countries: 1.1 Mt

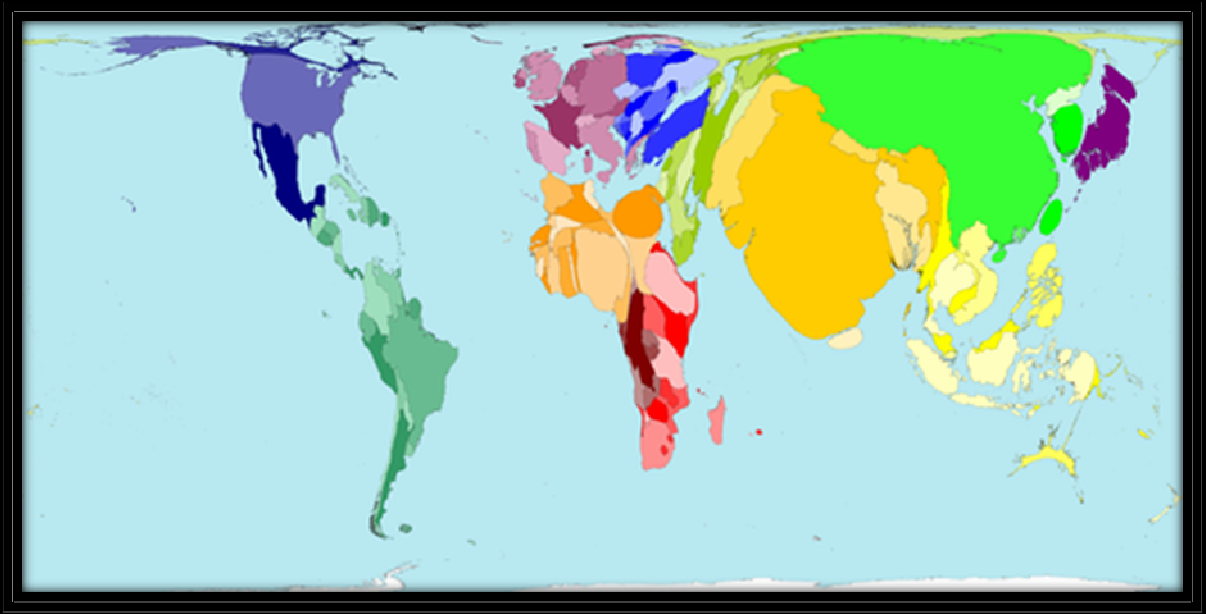


Declining resource availability in a context of trade liberalisation

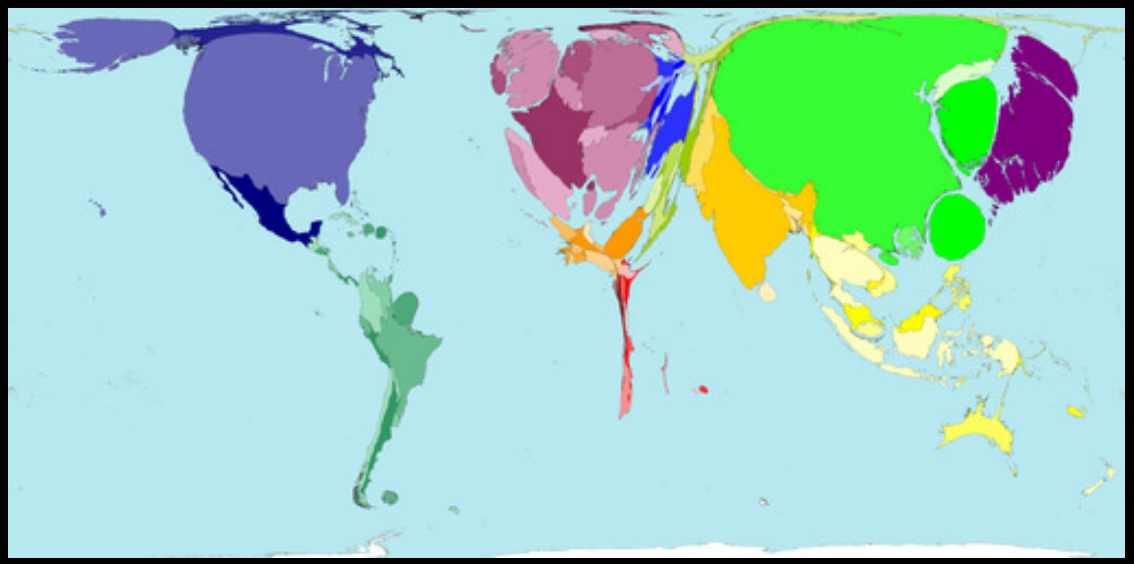


Biomass, catch and fishing intensity in West Africa 1950-2000 (from Waston, 2002)

2015 Population versus wealth



Population in 2015



GDP in 2015

2015-2030 Projections

Summary results: projected world supply, demand, trade and price for fish and fisheries products

		Production	Demand	Net trade	Prices
		million tonnes, live weight equivalent			% changes
Base period	1995/97	119.7	120.3	-0.6	-
Projections at constant prices	2015	165.2	179.9	-14.8	-
	2030	190.5	223.9	-33.5	-
Projections at equilibrium prices	2015	175.2	175.2	-	+ 4.63
	2030	210.2	210.2	-	+ 8.64

Fish demand forecasts per continent

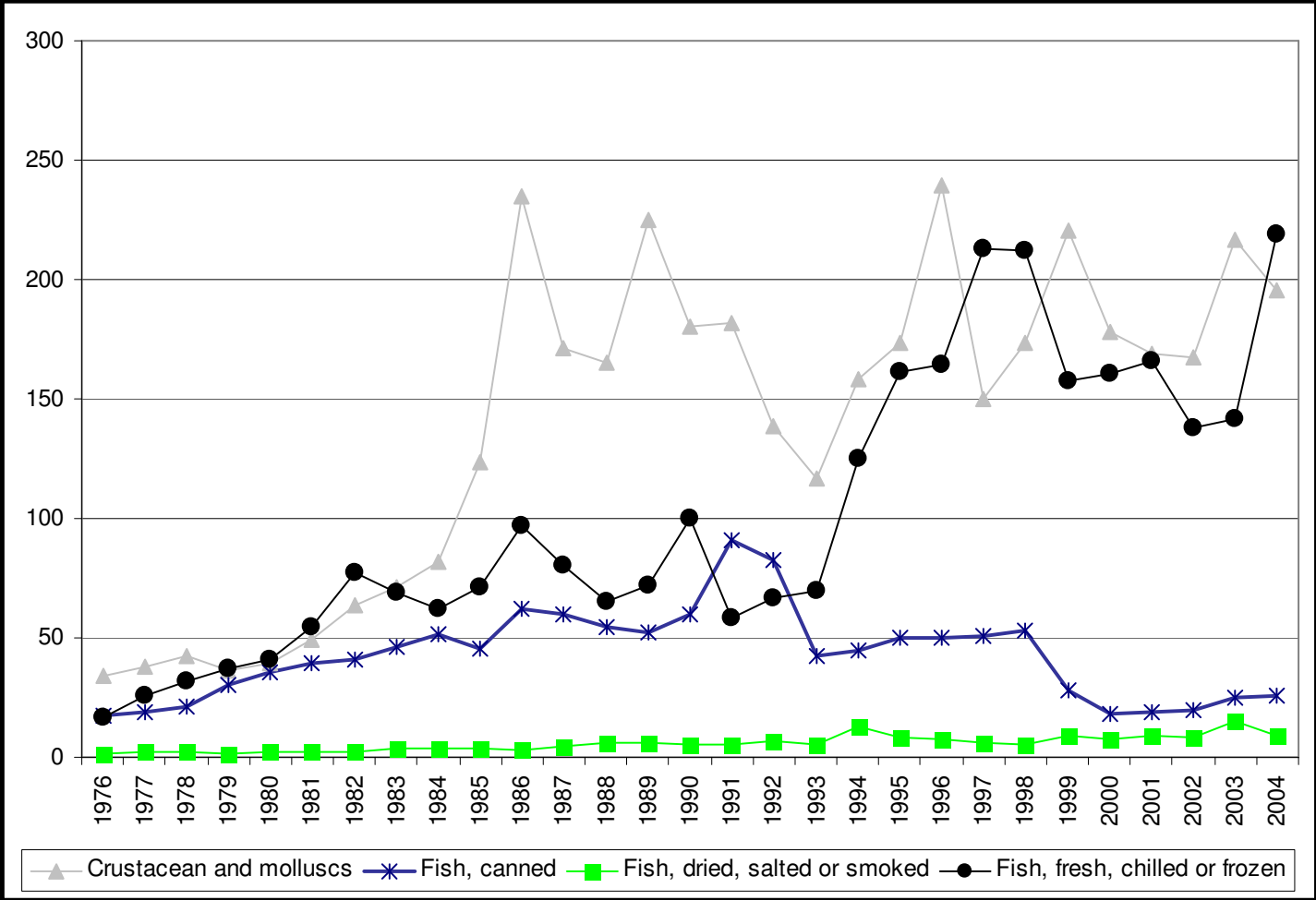
	1965/67	1995/97	2,015	2,030	Growth rates 1965/67 to 1995/97	1995/97 to 2015	2015 to 2030
	000 tonnes, live weight				percent per year		
TOTAL DEMAND							
Developing countries	17,796	77,420	130,010	169,287	5.0	2.8	1.8
Africa	1,873	5,296	8,971	13,989	3.5	2.8	3.0
Latin America	4,273	6,959	10,921	15,353	1.6	2.4	2.3
Asia	11,583	64,971	109,848	139,564	5.9	2.8	1.6
Oceania	66	194	270	381	3.6	1.8	2.3
Developed countries	34,644	43,811	49,913	54,659	0.8	0.7	0.6
North America	5,713	7,611	9,106	10,716	1.0	0.9	1.1
Western Europe	14,727	15,345	18,967	21,446	0.1	1.1	0.8
Oceania	266	619	908	1,141	2.8	2.0	1.5
Others	7,201	14,084	14,820	14,894	2.3	0.3	0.0
E.Europe + Former USSR	6,737	6,153	6,111	6,462	-0.3	0.0	0.4
Statistical discrepancy	480	-950	-	-	-	-	-
World	52,920	120,281	179,923	223,946	2.8	2.1	1.5

Summary

- Increasing population and fish demand from Asia (until 2030)
- Fish trade is a major source of income and foreign currencies
- Increasing trade opportunities

Fish trade patterns in West Africa

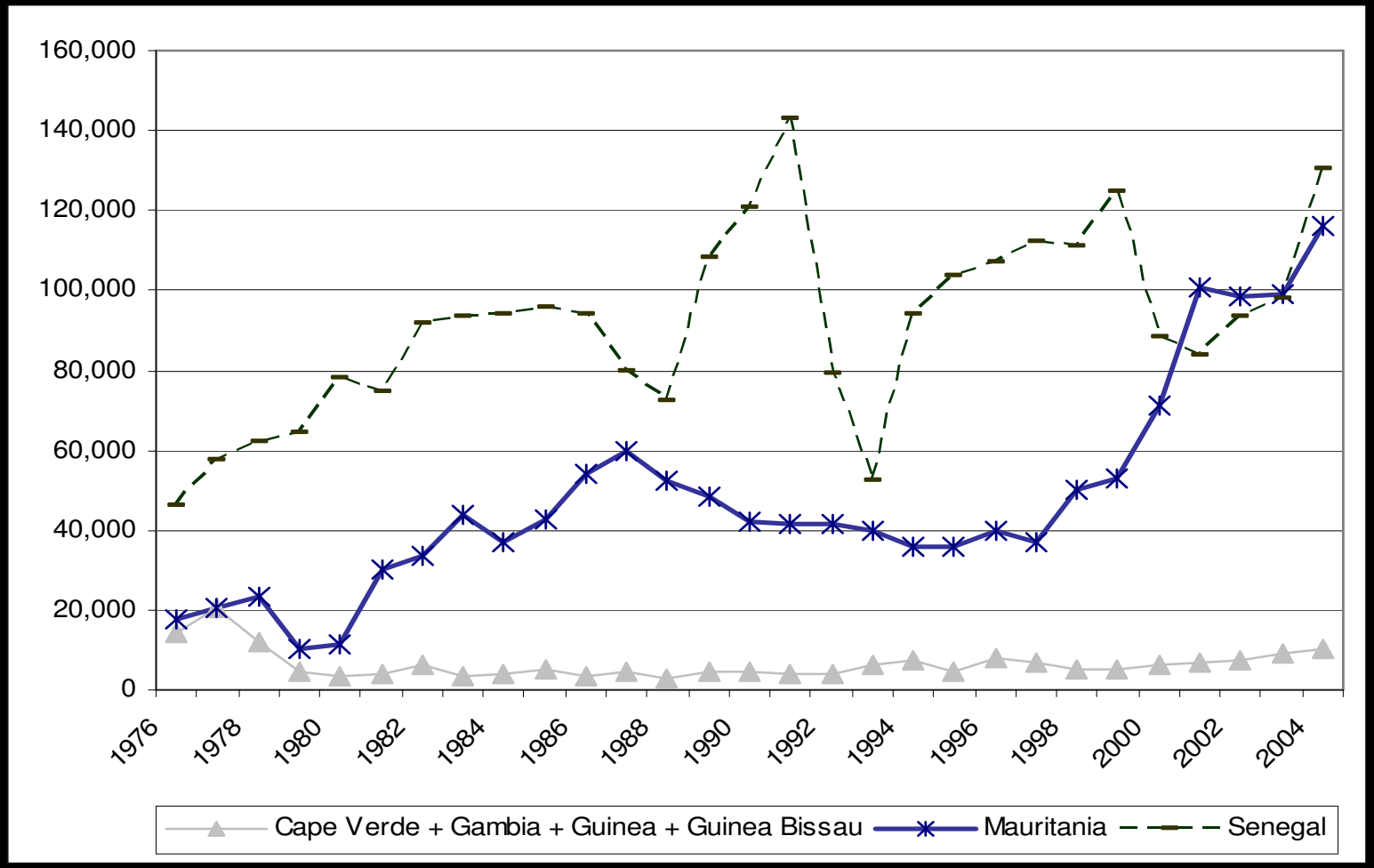
Trend of fish exports



450 M US $ in 2004

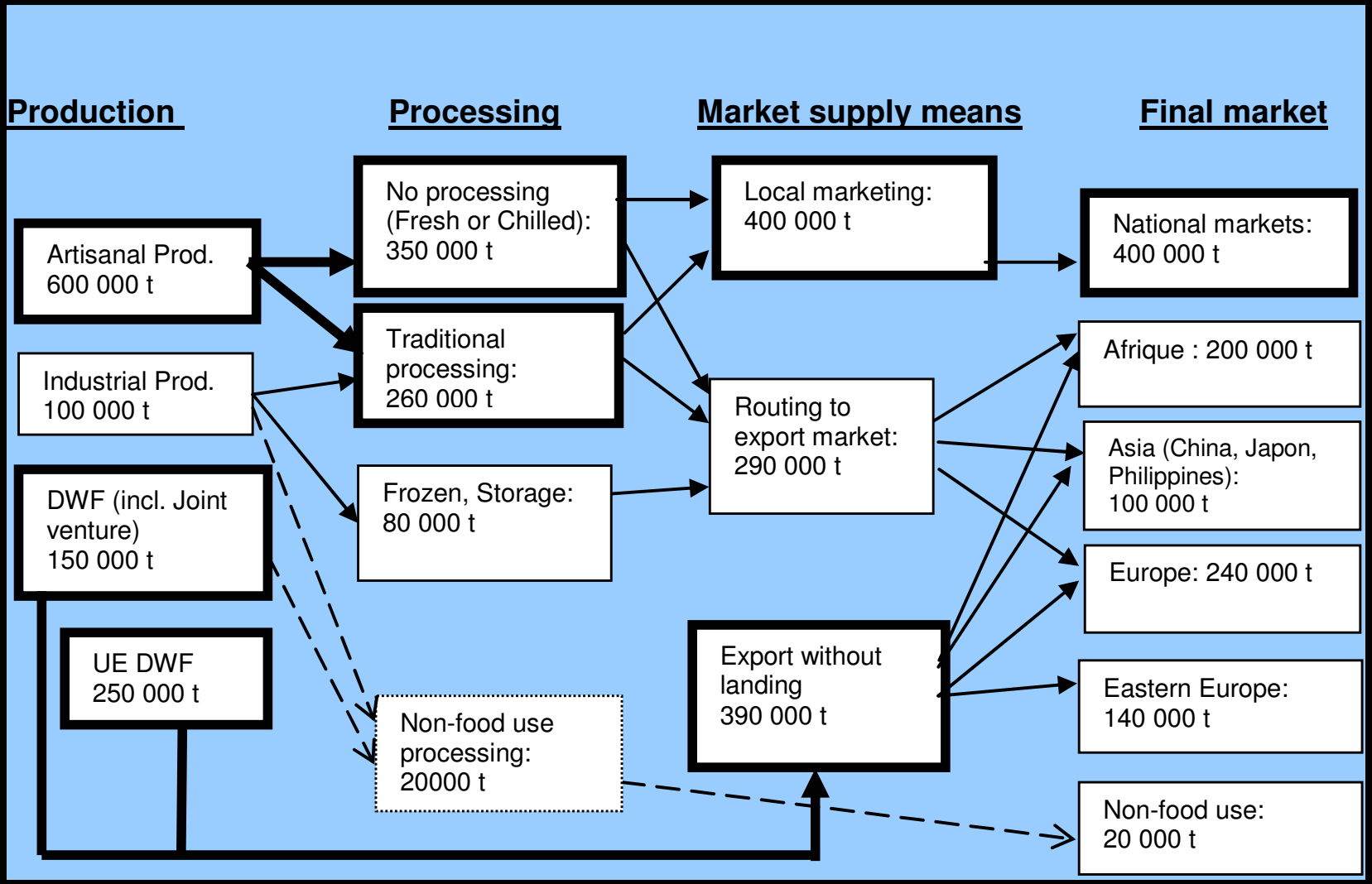
Value of fish exports from the 6 countries of SRFC (Million US $) (source: FAO Fishstat, 2006)

Countries' trends



Volume of fish exports from the 6 countries of SRFC (tonne) (source: FAO Fishstat, 2006)

West Africa fish chain for small pelagics

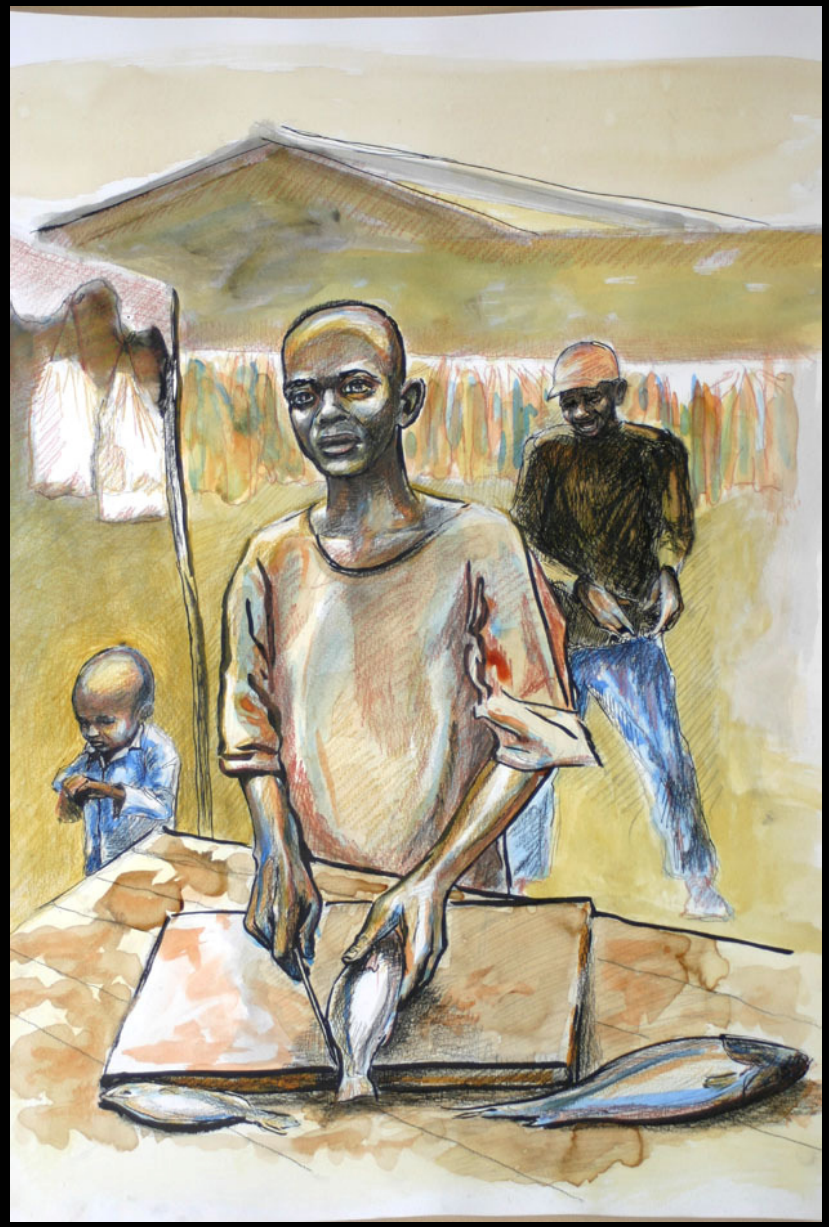


Average yearly (2000-2004) (note: DWF:`Distant water fleets; all figures are in live weight equivalent)

Summary of impacts of fish trade

	Mauritania	Cape Verde	Senegal	Gambia	Guinea Bissau	Guinea Conakry
National value added	-	+	+	+	-	-
Public receipts	+++	++	+++	+	+++	+++
Exports	+++	+	+++	+	-	+
Employment	+++	++	+++	++	++	++
National market supply	--	-	---	-	--	-
Coastal demersal resources	---	0	---	--	--	---
Deep water Demersal species	---	0	---	0	---	--
Small pelagics	--	0	-	-	---	-
Big pelagics and sharsks	---	-	---	--	---	---
Marine Ecosystems	---	-	---	-	---	--

Consumption issues



Fish consumption patterns

Fish consumption in Mauritania, Guinea Bissau and Senegal (average 1990-2003)

	Mauritanie	Guinea Bissau	Sénégal
Consumption per inhabitant (kg/inhab./year)	13	22	31
Proteins (Grams per day)	4	7	9
Fish proteins /Total proteins of total population	5%	9%	13%
Fish proteins /Total proteins of coastal population	**30%**	**70%**	**80%**

Consumption patterns (1)

- 1-a decrease in the availability of fish on the national markets = rise in prices and a decrease in the purchasing power of West African households
- 2- Traditionally consumed species are being replaced by species that were either not consumed, or rarely so, a decade ago.

Consumption patterns (2)

- 3-Fish consumption is more and more concentrated on coastal and urban areas (difficulties to supply landlocked areas)
- 4-The substitution of poultry for fish occurs because of lower prices for white meat than for fish (poultry which is to some extent imported from Europe thanks to export subsidies).

Nutritional consequences (1)

Nutritional values of some fish species and chicken

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

Source: Platt B.S., 1962. Tables of Representative values of foods commonly used in tropical countries; USDA Table of nutrient www.nal.usda.gov/fnic/cgi-bin/; FAO and US Department of Health, Education and Welfare, 1968. Food Composition Table for use in Africa; "McCance and Widdowson's, 1992. The Composition of Foods. The Royal Society of Chemistry, Cambridge; CNRST and University of Oslo, 1995. The Composition of Malian Foods.

Nutritional consequences (2)

- Demersal → Pelagic = Improvement of energetic and nutritional values
- Fish → Chicken (increase of Omega 6, decrease of Omega 3)…
- Cultural losses
- Others ???

New stakes link to biofuel production

- Significant increase of biofuel production
- Price of wheat, corn, rice, all oleaginous, etc. for food production will continue to go up

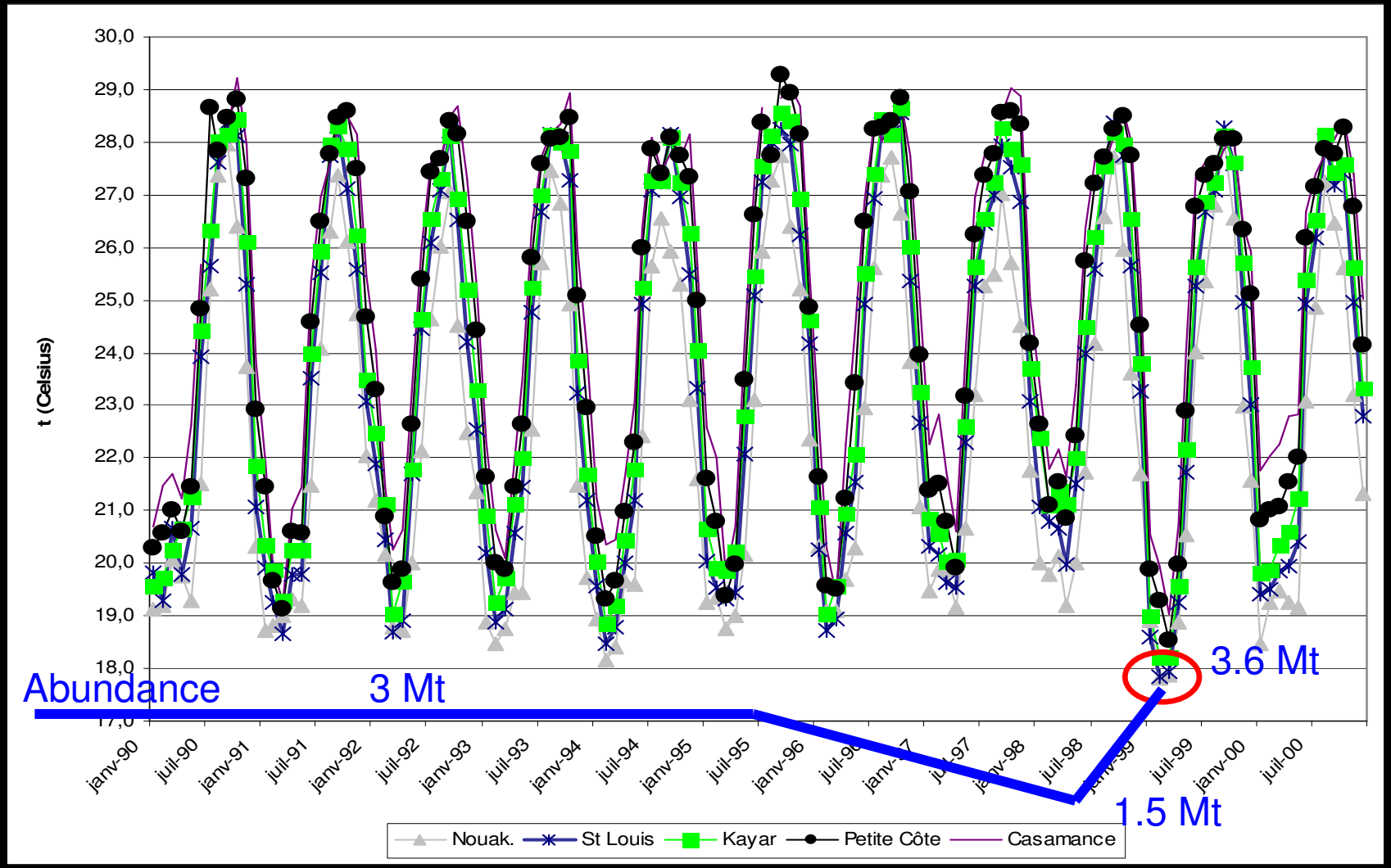
  ➔ Price of imported chicken (fish substitute for African population) will increase

  ➔ Price of local cereals going up also

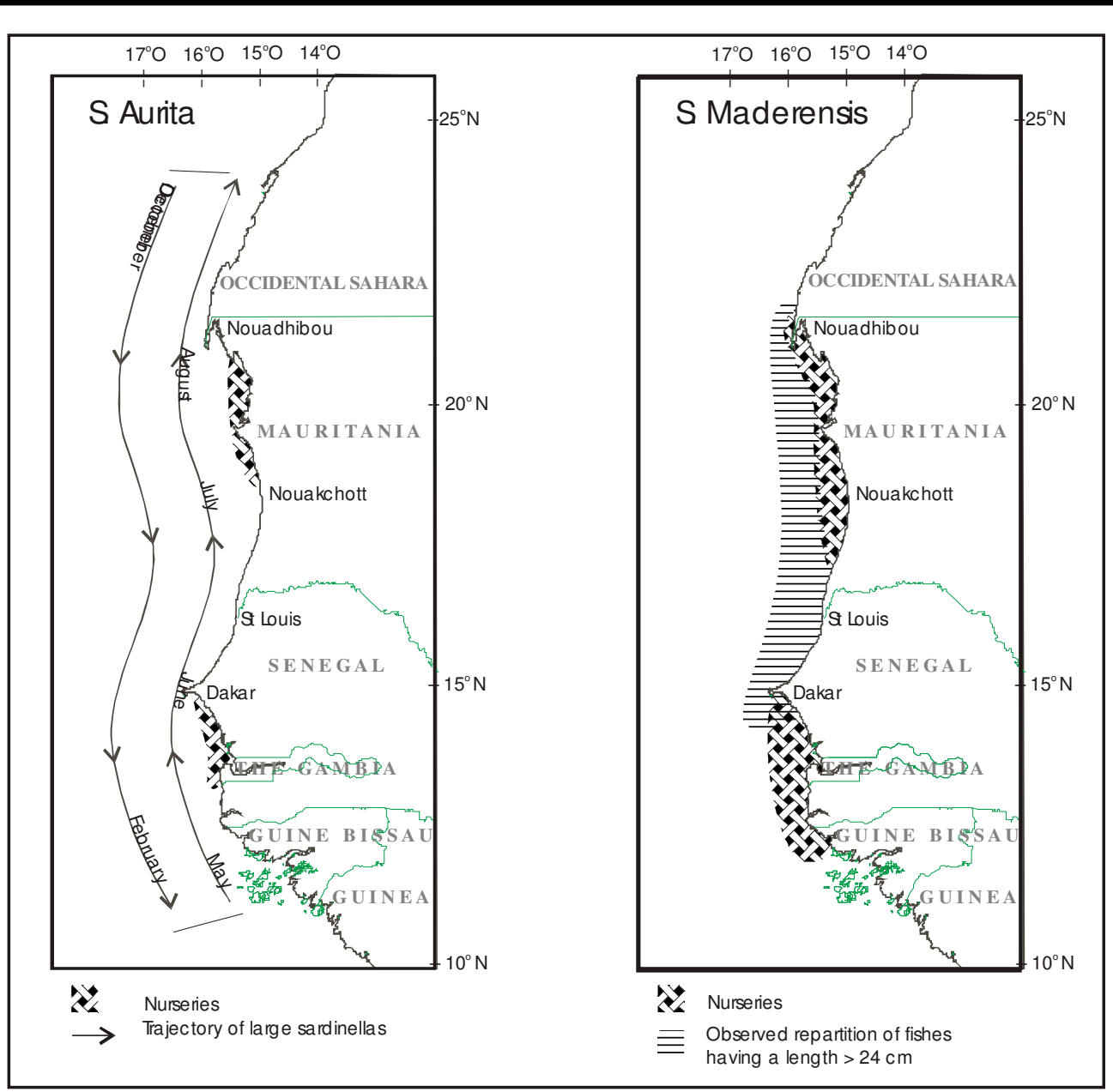
  = less and less substitution fish/chicken possible and less and less rice for the traditional dish !!!

Climate variability

Sea Surface temperature/sardinellas abundance

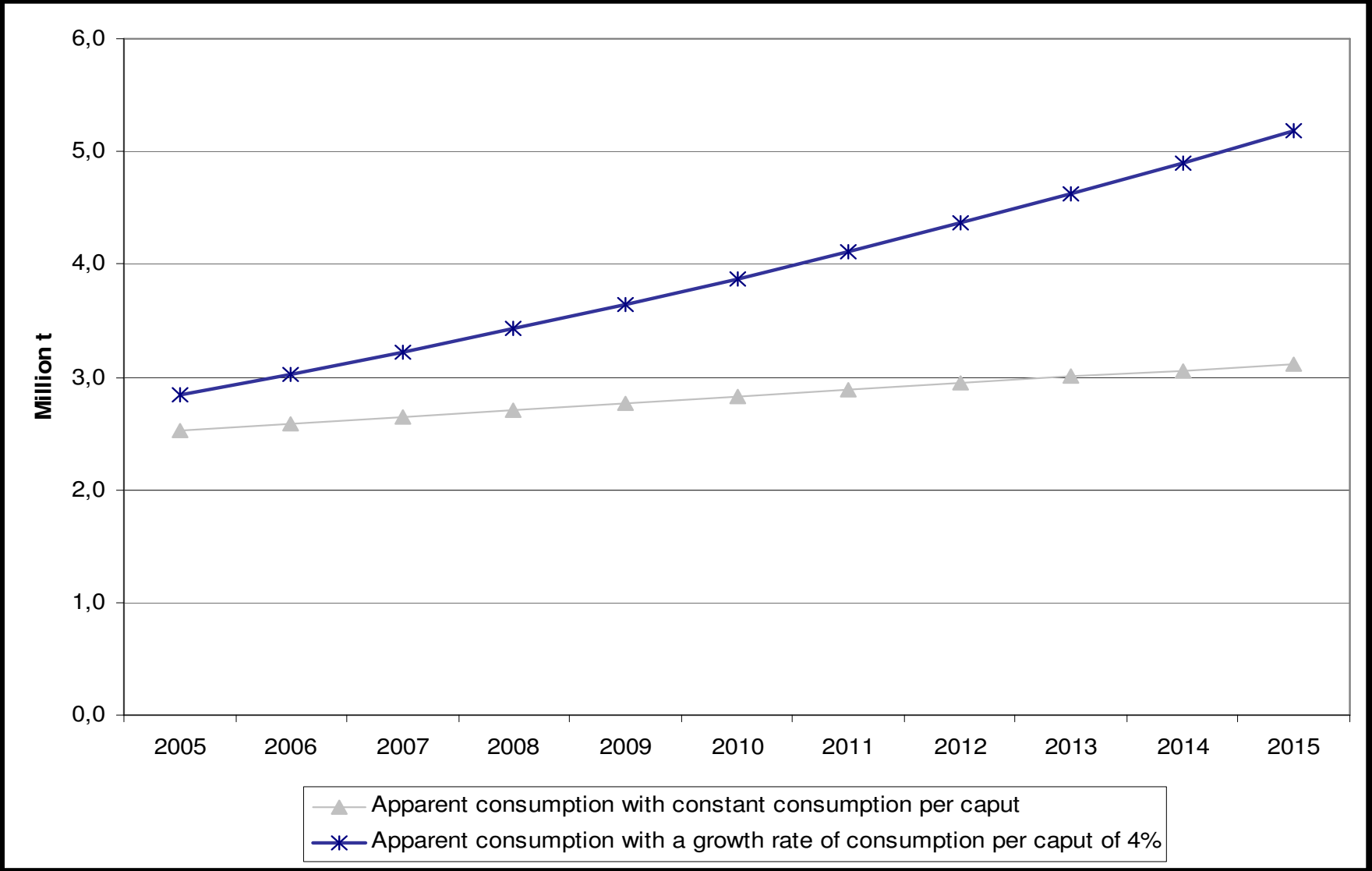


Link upwellings biomass for sardinellas



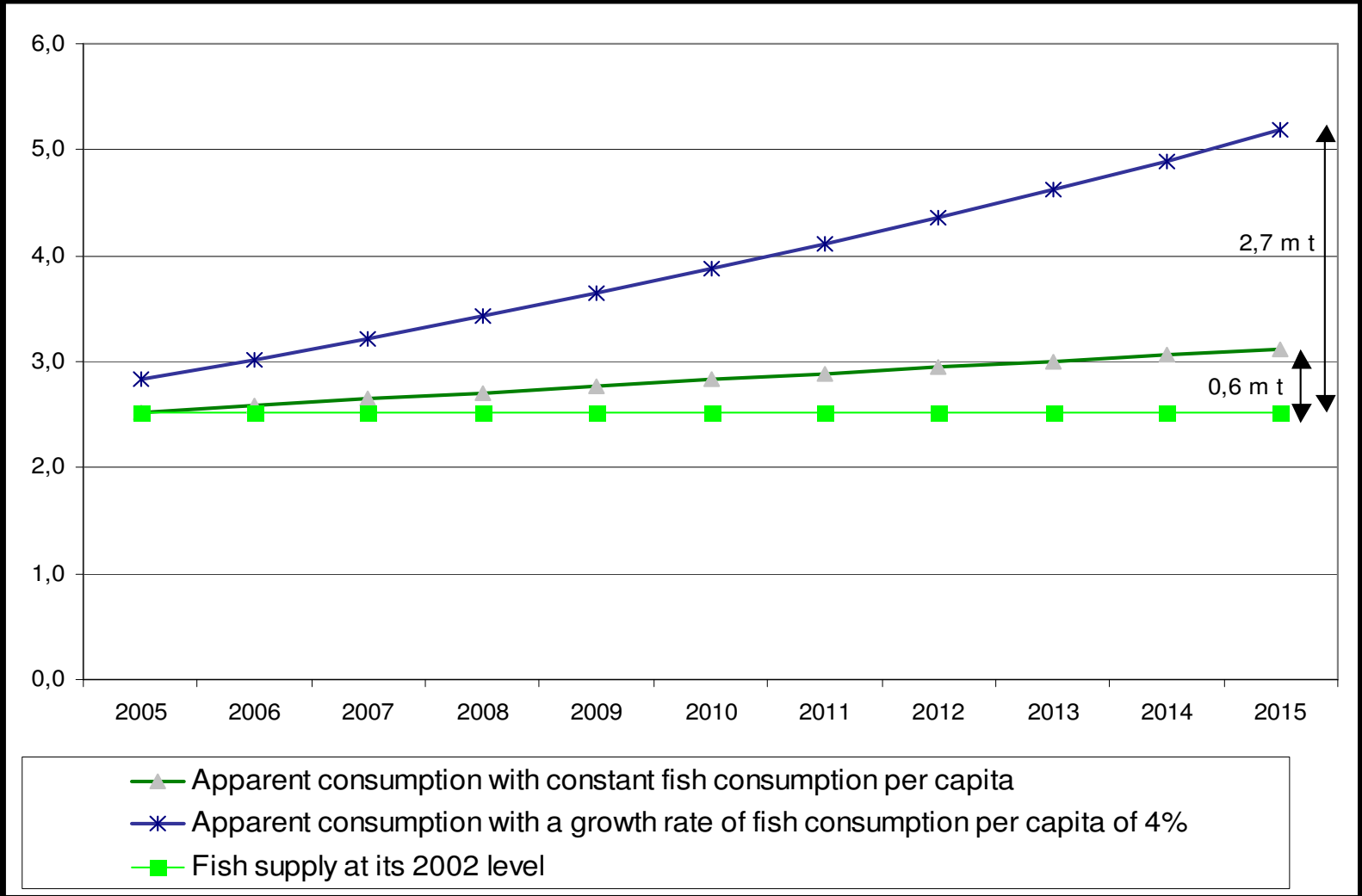
Forecasts 2015

Food security issues

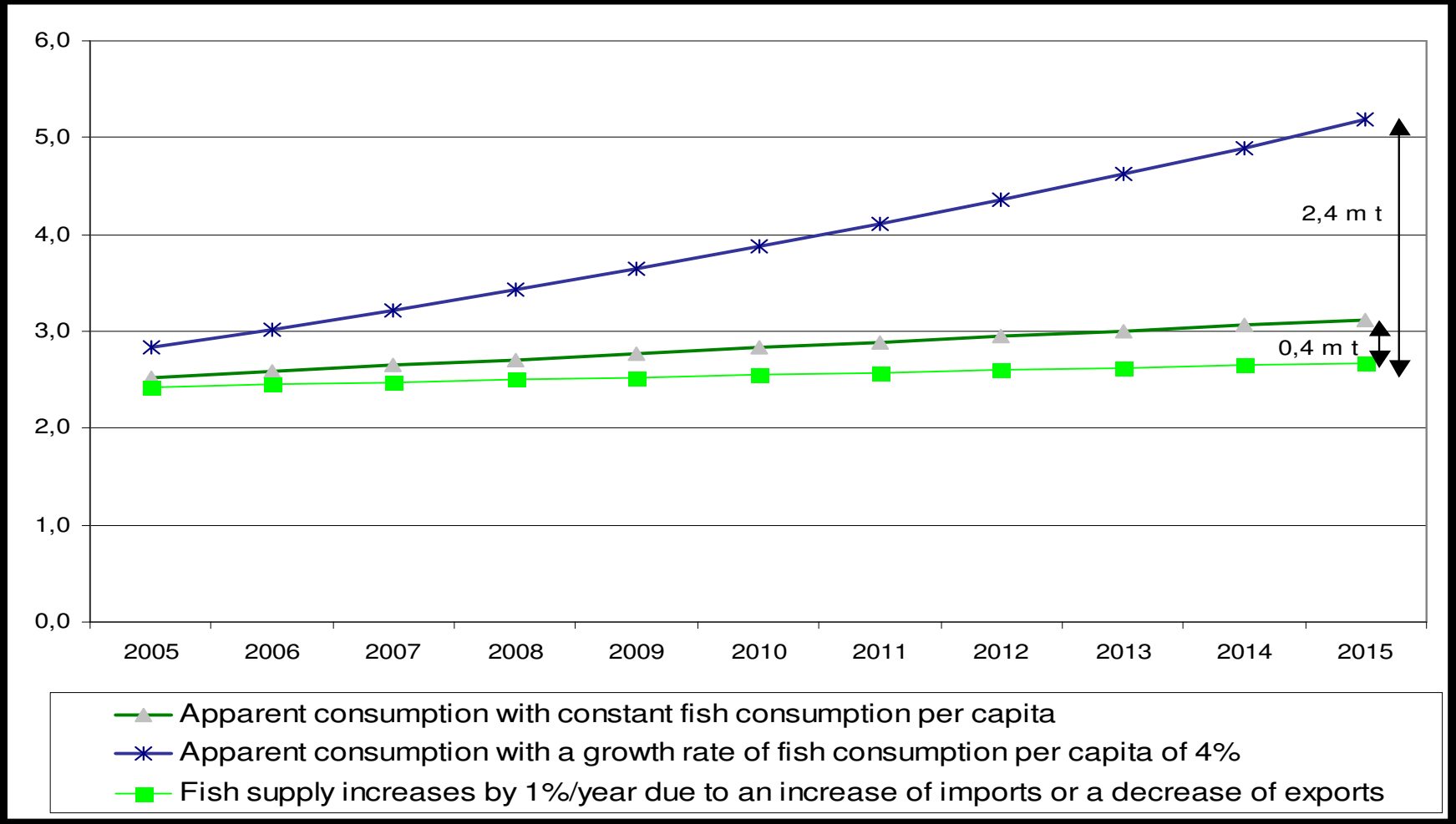


Apparent consumption of fish in West Africa (2005-2015; 2002 as a starting point for forecasts)

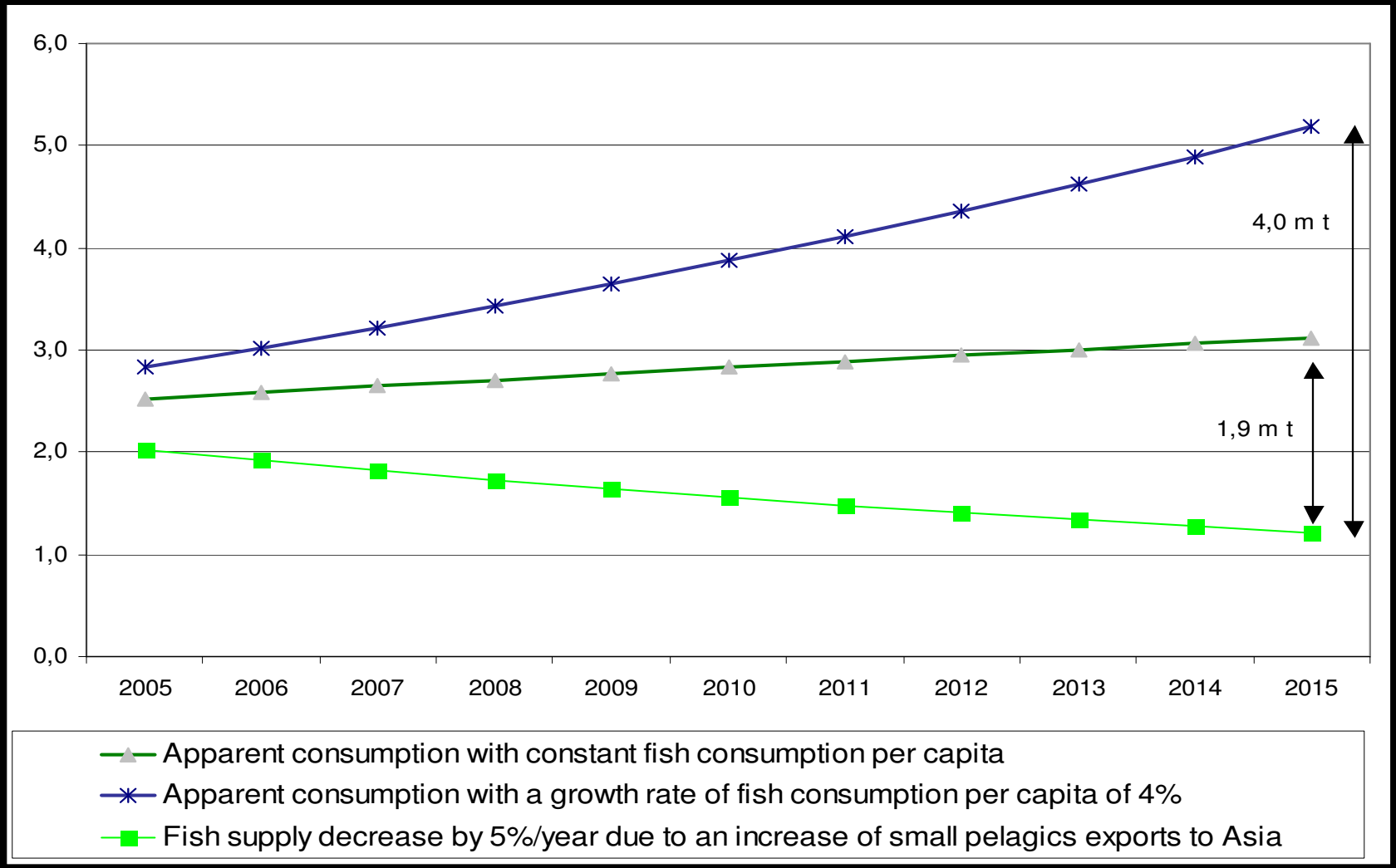
Scenario 1: maintenance of the fish availability at its 2002 level for the period 2005-2015.



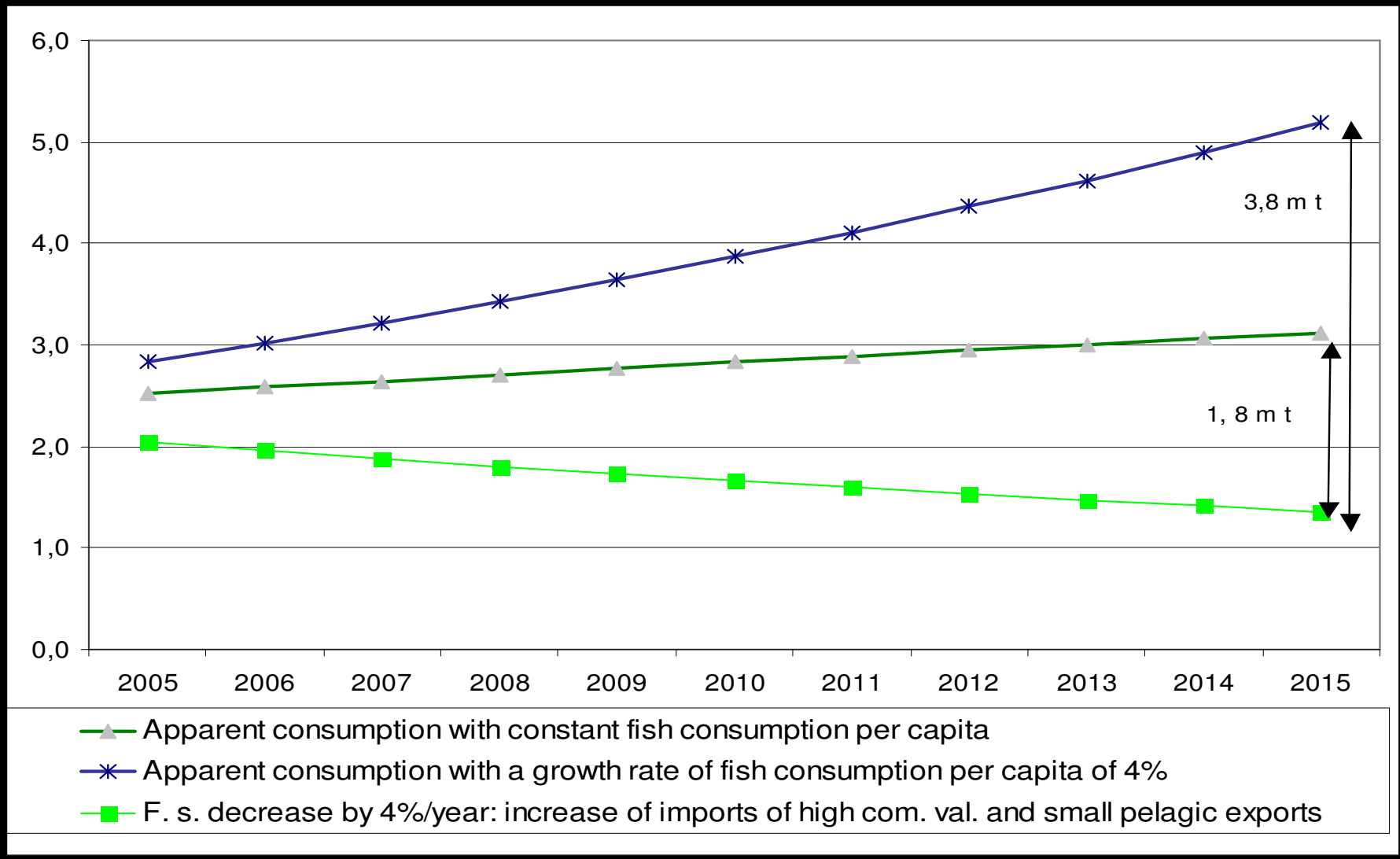
Scenario 2: increase of imports to satisfy the growing demand of fish consumption in cities



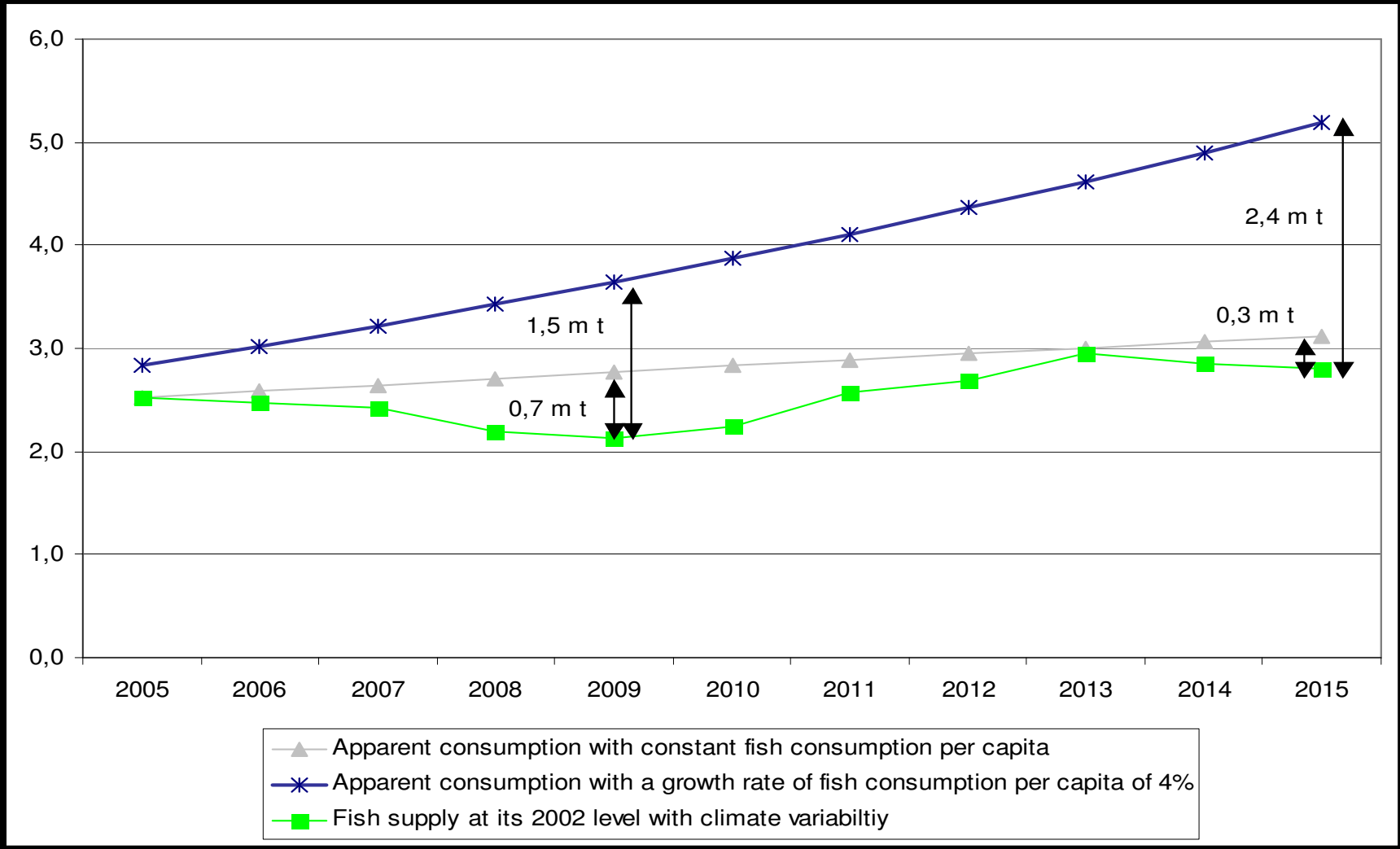
Scenario 3: assumption that the export of small pelagics to Asia will increase leading to a reduction of the fish supply by 5% annually



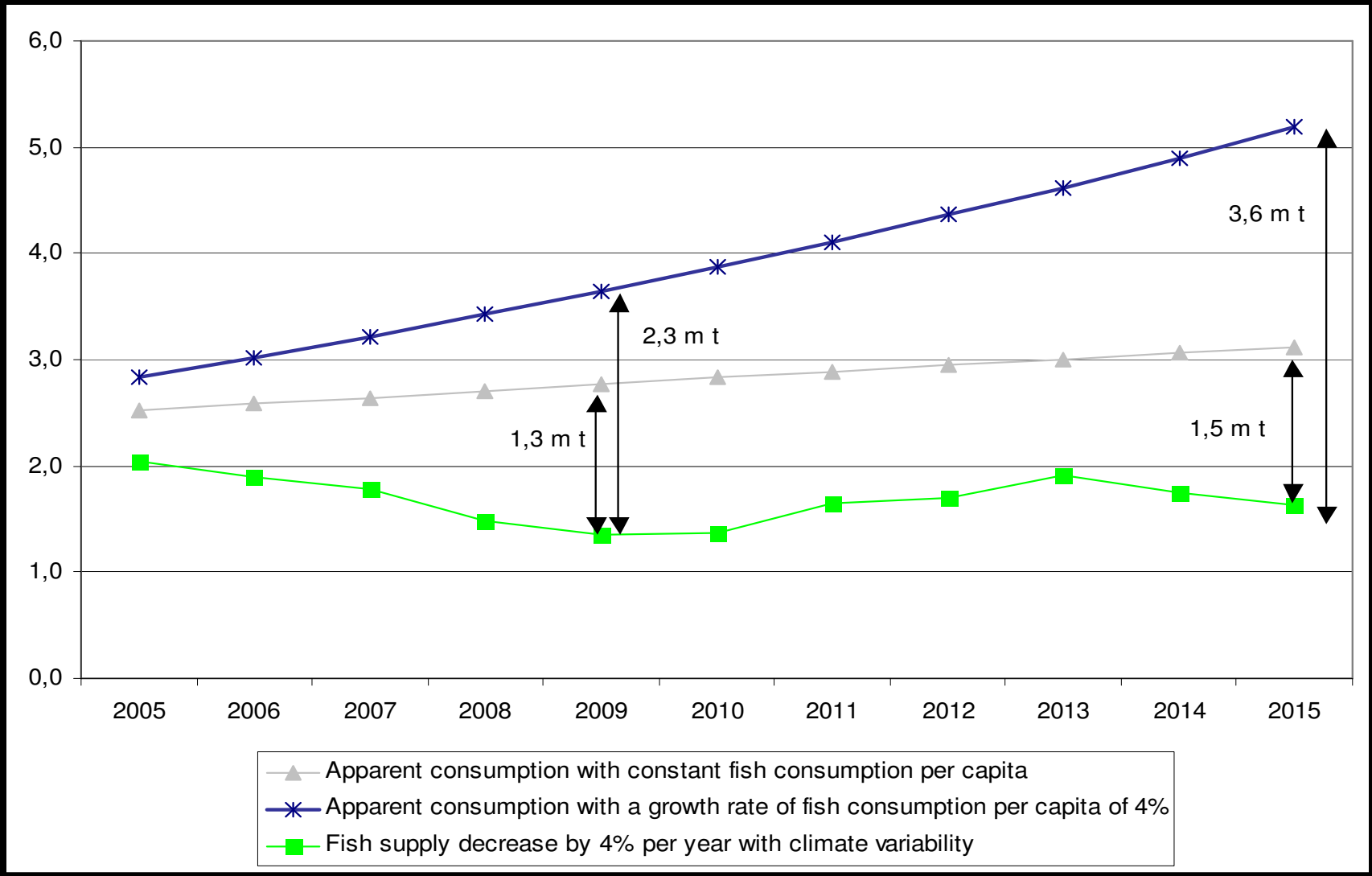
Scenario 4: increase of fish supply due to the increasing demand from the middle class and the increasing exports of small pelagics



Climate variability: optimistic scenario



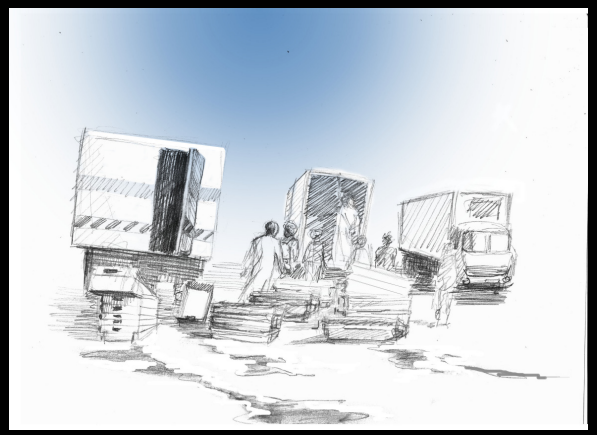
Climate variability: pessimistic scenario



Conclusion: research and policies issues

Research issues

- ***Definition of dependency levels of small pelagic abundances*** (main species) on climate variability; mainly for fish stocks that are affected by the Canary, Guinean and Benguela currents.



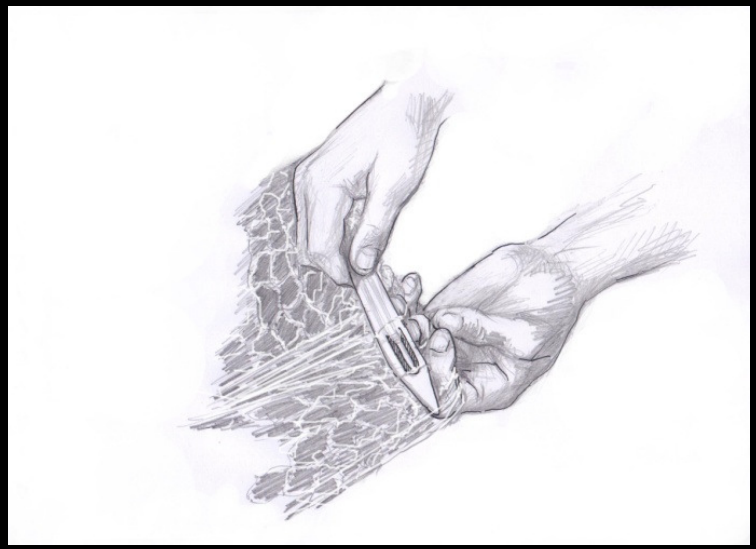
- ***Description of consumption patterns, consumption trends and changes in African countries***, among fish species and between meat and fish.

- ***Analysis the changes of the supply chain of fish***, both in Africa and foreign markets such as the Asian market.

- ***Realisation of forecasts*** (abundance, catches, supply, consumption) to better address the issue of food security (from animal proteins).

Policy issues

- Coherent African policy framework



- Incentive policy instruments

Coherent African policy framework

- 1- ***The development and improvement of the relationship between fishing and trade***.
- 2- ***The definition and the development of a common position regarding fishing agreements and trade issues***
- 3- ***The design and sitting up of a coherent policy framework.***

Incentive policy instruments

- ***1-Incentives to improve fishing:*** quality
- ***2-Incentives to improve selling***: value added
- 3-***Incentives to improve trading:*** connections to markets (locals, national, regional and international)

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