GreenFacts
Facts on Health and the Environment

Scientific Facts on

Fisheries

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FAO (2004)

Summary & Details:
GreenFacts (2005)

Level 2 - Details on Fisheries

This Digest is a faithful summary of the leading scientific consensus report produced in 2004 by the Food & Agriculture Organization (FAO):
"The State of World Fisheries and Aquaculture"

The full Digest is available at: http://www.greenfacts.org/en/fisheries/

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- Each question is answered in Level 1 with a short summary.
- These answers are developed in more detail in Level 2.
- Level 3 consists of the Source document, the internationally recognised scientific consensus report which is faithfully summarised in Level 2 and further in Level 1.

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1. What is the overall fisheries production?

In 2002 the global production from fishing and aquaculture reached about 133 million tonnes. Capture fisheries are stagnating, but aquaculture production is expanding, and it accounted for close to 30% of overall production in 2002. Three quarters of this global production were used for human consumption, the rest mainly for animal feed.

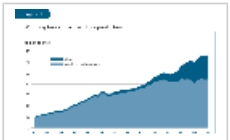


Figure 1:
[see Annex 14, p. 27]
Global production

Table 1: World Fisheries production and utilization *[see Annex 52, p. 49]*

1.1 How much is being fished?

Global fishery catches remained relatively stable from 1999 to 2002, which are the last four years for which complete statistics are available. In 2002, total capture fisheries production amounted to 93.2 million tonnes, with a first sale value of US$78 000 million. This represented about 70% of the total world fishery production in terms of quantity.

Table 1: World Fisheries production and utilization *[see Annex 52, p. 49]*

Table 2: Fisheries Production and utilization:excluding China *[see Annex 53, p. 50]*

The fluctuations in the total number of tonnes caught were partly explained by increases and drops in catches of Peruvian anchoveta and drops in catches of other reduction species in the Southeast Pacific that are used for making fish meal and oil.

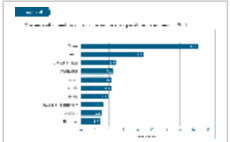


Figure 4:
[see Annex 32, p. 39]
Top ten countries

In terms of amounts caught, China and Peru were by far the top producers in 2002. The same ten countries have been in the top ten group from 1992 to 2002. At the end of this period, their cumulative catches represented 60% of the world total.

1.2 How much is being fished in the world's oceans and seas?

In 2002, over 90% of fishery catches came from oceans and seas. The average production from these marine capture fisheries over the past decade was 84 million tonnes, a slight increase over the preceding ten years (77 million tonnes). These figures include both species living on the continental shelf, such as anchoveta, and oceanic species, such as tuna.

It should be noted that the quantity of marine fish caught and discarded fell by several million tonnes during the last ten years. This was due to, among other things, improved selectivity of fishing gear and practices, as well as no-discard policies in some countries.

The most productive marine fishing areas are the Northwest and Southeast Pacific , although total catches in these areas decreased from 2000 to 2002. Catches also decreased substantially in the Eastern Central and Southwest Atlantic.

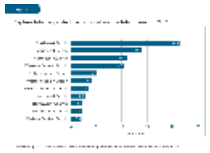


Figure 5:
[see Annex 33, p. 39]
Principal marine fishing areas

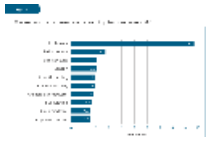


Figure 6:
[see Annex 34, p. 40]
Top ten species

By contrast, catches grew in other fishing areas, mostly those in the tropical regions of the Indian and Pacific Oceans. In these areas, catches of fish species living in the open sea (such as tuna) continued to increase. Other fishing areas showed smaller changes in catches.

Anchoveta is by far the most caught marine species. After a peak in 2000, catches of anchoveta decreased in 2001 and then partly recovered in 2002, with catches of 9.7 million tonnes.

Other major fish species related to the herring family, such as Atlantic herring, Japanese anchovy, and European sardine, are strongly influenced by the variability of local environmental conditions and have, therefore, not shown a common catch trend.

In 2002, overall catches reached their lowest levels since 1967 for high value fish like cod, hake, and haddock, which belong to the Gadiformes group.

Total catches of tuna and tuna-like species exceeded 6 million tonnes for the first time in 2002. These catches represented 11% of the total value of landings for consumption. Catches of oceanic species occurring principally in high sea waters continue to increase (see Next Question).

Catches of the group including sharks, rays, and chimaeras have been stable at about 800 000 tonnes since 1996. However, the recent improvement in reporting the species breakdown of catches may mask a possible reduction of shark catches. Total catches of both marine crustaceans and molluscs declined slightly from their 2000 peak over the following two years. Trends in the catches of the three major squid species have shown marked variation since the low catches recorded in 1998.

1.3 What is the trend in open ocean catches?

Species caught in oceans or seas are classified as either

- oceanic species, which include
  - species living or feeding on surface waters, referred to as epipelagic species, and
  - deep-water species, or
- species living on the continental shelf.

In 2002, the share of oceanic catches reached 11% of global marine catches.

The considerable rise in the number of deep-water species reported since 2000 is probably more a result of the growing awareness and monitoring of deep-water fishing activities than of a dramatic increase in deep-water catches.

Catches of **deep-water species** were the highest ever in 2001 but decreased slightly in 2002.

In the case of surface water species, oceanic tuna catches reached an all-time maximum in 2002 after having decreased in the two previous years. Catches of other **surface-water species**, which are mainly oceanic squids, have been increasing steeply after a drop in 1998, and also reached a peak in 2002.

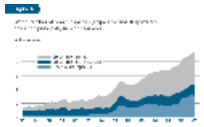


Figure A:
[see Annex 38, p. 42]
Oceanic catches

The marked increase in catches of oceanic species in recent decades was paralleled by a growth in their trade, especially in the form of tuna products. In 2002, the quantity of oceanic species traded reached about 3.6 million tonnes, which is a six-fold increase from the 1976 levels.

1.4 How much is being fished in inland waters?

In 2002, a little less than 10% of fishery catches came from inland waters. Total catches from inland waters have remained stable at around 8.7 million tonnes since 2000.

The bulk of the global catch from inland waters came from developing countries, with China alone accounting for 25% of the world total. Developed countries only contributed 6.1%.

When considering the relative contribution of different continents, the inland catches of Asia and Africa combined represent about 90% of the world total. From 2000 to 2002, inland catches increased the most in Africa and South America and decreased the most in Europe and North America.

Reporting of global inland catches continues to present a problem because of the lack of reliable information on catch quantities. In many countries, catches by rural communities – which are often the main users of the resource – are not reported in national statistics.

Table 3: Inland capture fisheries production [see Annex 54, p. 50]

Figure 7:
[see Annex 35, p. 40]
Inland fisheries by continent

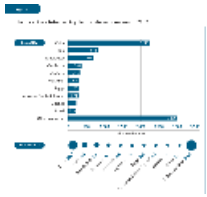


Figure 8:
[see Annex 36, p. 41]
Inland fisheries: top producers

Figure 9:
[see Annex 37, p. 41]
Inland fisheries: major species groups

Moreover, current reporting of inland catch remains poor in many countries and does not allow for a detailed analysis of trends in catch composition. In 2002, about half of the global inland water catches were reported under the general category "freshwater fishes not elsewhere included" for want of adequate identification. China accounted for around 90% of reported world catches of freshwater crustaceans and molluscs.

1.5 How much is produced by aquaculture?

The growth in aquaculture production has been much faster than that in capture fisheries or in any other animal-based sector of food production.

The contribution of aquaculture to global supplies of fish, crustaceans, and molluscs reached about 30% (39.8 million tonnes) in 2002 (see Table 1 [see Annex 52, p. 49]). The total world aquaculture production, including aquatic plants, amounted to 51.4 million tonnes, with a value US$60 000 million.

Thailand: Pens for rearing fish
Source: FAO photofile

Countries in Asia accounted for more than 90% of the quantity produced. China alone is reported to have contributed over 70%.

The rapid growth in production continued for the different major species groups, such as fish, molluscs, and aquatic plants. However, the growth was slightly slower than the extraordinary increase seen in the 1980s and 1990s.

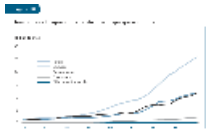


Figure 10:
[see Annex 7, p. 23]
Trends in aquaculture production

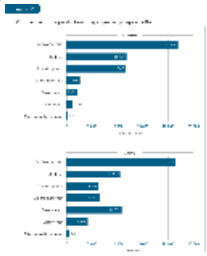


Figure 11:
[see Annex 8, p. 24]
Species Aquaculture

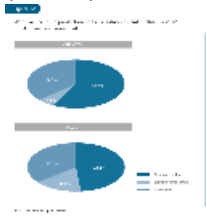


Figure 12:
[see Annex 9, p. 25]
Aquaculture by environment

Table 5: World aquaculture production [see Annex 55, p. 51]

Table 6: Top ten species groups in aquaculture production [see Annex 56, p. 51]

Production of carps and related fish far exceeded that of any other species group, accounting for 42% of the total aquaculture production. The largest relative increases in production are those of emerging activities, such as farming of Atlantic cod (Gadus morhua) and fattening of wild-caught tuna.

Depending on the salinity of the water environment, aquaculture is divided into freshwater culture, brackish-water culture, and mariculture. More than half of the aquaculture production of fish, crustaceans, and molluscs comes from freshwater environments. Mariculture contributes a little over one third of production.

Brackish-water production represented only 5.8 % in terms of quantity, but 15.9 % in terms of value, in 2002.This reflects the prominence of high-value crustaceans and fish.

Unlike terrestrial farming systems, where the bulk of global production is based on a more limited number of animal and plant species, over 220 different farmed aquatic animal and plant species were reported in 2002. Of these, the top ten species accounted for 69% of the total production, and the top 25 species for over 90%.

It is worth noting that the growth of aquaculture production has grown more in developing countries than in developed countries. In 1970, developing countries accounted for 59% of production, and this share rose to 91% by 2002.

2. What is the situation of fishers, fish farmers and the fishing fleet?

2.1 How many people are working as fishers and fish farmers?

2.1.1 In 2002, fishery and aquaculture production activities provided direct employment and revenue to an estimated 38 million people, 75% of which were involved in fishing and the remaining 25% in aquaculture.

Table 7: World Fishers and Fish Farmers by Continent [see Annex 57, p. 52]

Table 8: Number of fishers and fish farmers in selected countries [see Annex 58, p. 53]

Fishing is often a part-time occupation. The relative amount of time spent fishing depends, among other things, on seasonal resource availability, regulations that limit the year-round

activity, the number of commercial licences available, and the degree of access to other land, water, or forestry resources.

2.1.2 Generally, the worldwide share of employment in capture fisheries is stagnating and aquaculture opportunities are increasing. The number of Chinese fishers and fish farmers combined (12.3 million) represents nearly one-third of the world total.

In many industrialized countries employment in fishing and associated professions has been declining for several years. The fishing workforce is getting older, mainly because of the profession's decreasing attractiveness to younger generations. However, available statistics indicate an increase in the number of aquaculture workers of about 8% per year since 1990, though this increase seemed to level off in 2000.


Purse Seiner, France
Source: FAO

2.1.3 In countries where fishing and aquaculture are economically less prominent, detailed statistics are often not easily available. In many developing countries, the spouses and families of fishers are occupied in activities linked to coastal small-scale fishing. Reliable estimates of the number of people engaging in those activities are difficult to obtain. As a consequence, the socio-economic importance of these activities is difficult to measure and often underestimated, even if their contribution to production, income, and food security is substantial.

2.2 How are fishing communities affected by emergencies?

Natural hazards such as cyclones, floods, typhoons, sea surges, tidal waves, earthquakes, and landslides can have devastating effects on fishing communities through destroying fishing boats and equipment, or sweeping away homes. As a result, fishing communities may no longer be able to meet their basic survival needs. Developing countries, especially the poorest, suffer disproportionately from emergencies because they lack the means to prepare for them and to deal with their aftermath.

In emergency situations, support to the fishery sector may be critical. Because aquaculture requires both time and money, relief efforts should focus on restarting production where aquaculture operations had already been established and where the necessary skills are available. The capture of wild fish can provide immediate income and food as soon as the means of production are renewed.

Unlike livestock, fishing equipment such as nets and hooks are easy to transport and do not require high levels of skills to be developed. They can thus provide children and women, who are the most vulnerable people in an emergency, with proteins soon after the event. In spite of the significant role fisheries can and should play in relief and rehabilitation efforts, fisheries interventions do not always receive adequate attention in emergency operations.

2.3 What is the current status of the fishing fleet?

After years of expansion of the world fishing fleet up to the late 1980s and early 1990s, the number of decked vessels worldwide has remained fairly stable at around 1.3 million. In 2002, the total world fishing fleet also comprised about 2.8 million undecked vessels, of which only one third were motorized. Overall, three quarters of the total fishing fleet were operating in Asia.

The number of large marine vessels increased until 2001 and has remained relatively stable since. The total combined capacity of such large vessels reached a peak in 1992 but declined subsequently because of the adoption of capacity containment programmes.

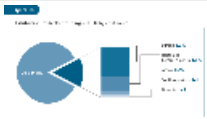


Figure 14:
[see Annex 10, p. 25]
Decked Fishing vessels by continent

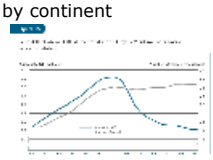


Figure 15:
[see Annex 11, p. 26]
Global Large Vessels Fleet

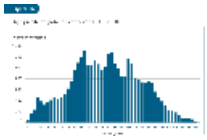


Figure 16:
[see Annex 12, p. 26]
Fleet Age

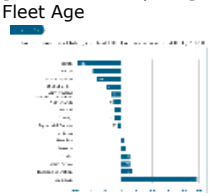


Figure 17:
[see Annex 13, p. 27]
Fleet Changes

The average age of these larger marine fishing vessels is increasing. This raises concerns over the safety of both vessels and crew, as well as for the standards of accommodations for the crew. International conventions on labour conditions in the fishing industry and safety for fishermen and fishing vessels are currently being revised. Capacity management plans may require reducing this fleet, but larger vessels will continue to be needed for applications such as fishing in distant waters. It is therefore expected that the construction of larger fishing vessels will increase over the next ten years.

In several major fishing nations, such as New Zealand, the fleet size has continued to decrease, but detailed trends in the fishing fleet on a global scale since 1998 are not available. Important advances have been made to improve the monitoring and control of fisheries on high seas stocks. As of mid-2004, 5 517 vessels were recorded in the High Seas Vessels Authorization Record [see http://www.fao.org/figis/hsvar/index.jsp] maintained by FAO. This figure is, however, incomplete since information is missing for many countries.

An analysis of the fishing vessels that changed their flag state in 2003 suggests continued high activity in "flag of convenience" countries, although there are indications that the number of such vessels are decreasing. In 2003, several of the major fishing nations appeared to be substantially reducing their numbers of large vessels with a capacity of 100 GT and above, as vessels are flagging out of the national registries. Many of those vessels do not register in another country, and thus fall in the "unknown" category. The Lloyd's Register [see http://www.lr.org/market_sector/marine/index.htm] records 1 213 "unknown flag" vessels over 100 GT in 2003 which are considered to remain in operation.

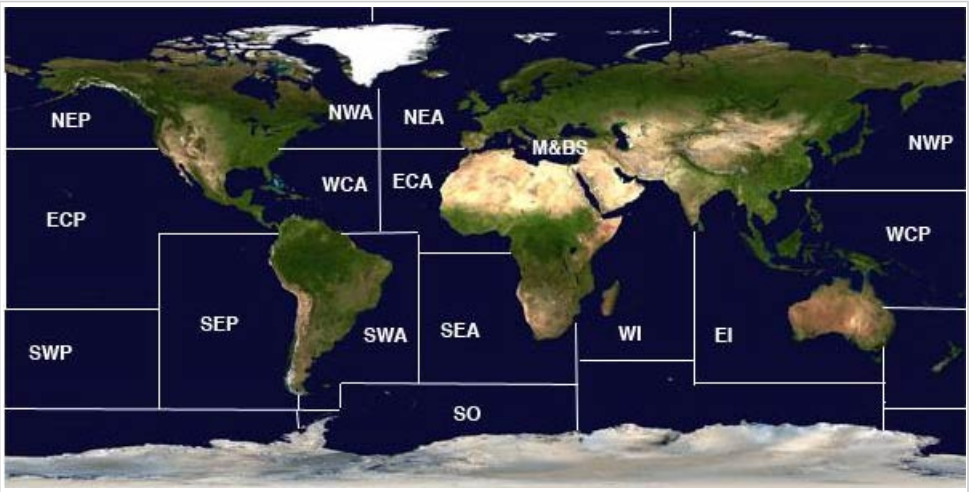
Table 9: Fishing Vessels of 100GT and above new building, flagging in and out of shipping registers and scrappings and losses [see Annex 59, p. 54]

3. What is the state of fishery resources?

3.1 What is the state of marine fisheries?

After increasing from around 79 million tonnes in 1998 to 87 million tonnes in 2000, world marine capture fisheries production decreased to around 84 million tonnes in 2001 and remained at that level in 2002. This decrease mostly took place in the Southeast Pacific and the Northwest Pacific.

For specific data on the trends in fisheries resources in different regions of the Pacific, Atlantic, and Indian Oceans, click on the map below:



Source of image: NASA Visible Earth [see http://visibleearth.nasa.gov/]

Monitoring the status of fisheries can be difficult in regions where statistics collection is poor. This leads to a relatively high proportion of catches being reported as "miscellaneous marine fishes". This is a significant problem for monitoring the status of fisheries in the Indian Ocean as well as in other areas such as the Southwest, Eastern and Western Central Atlantic, and the Northwest and Western Central Pacific.

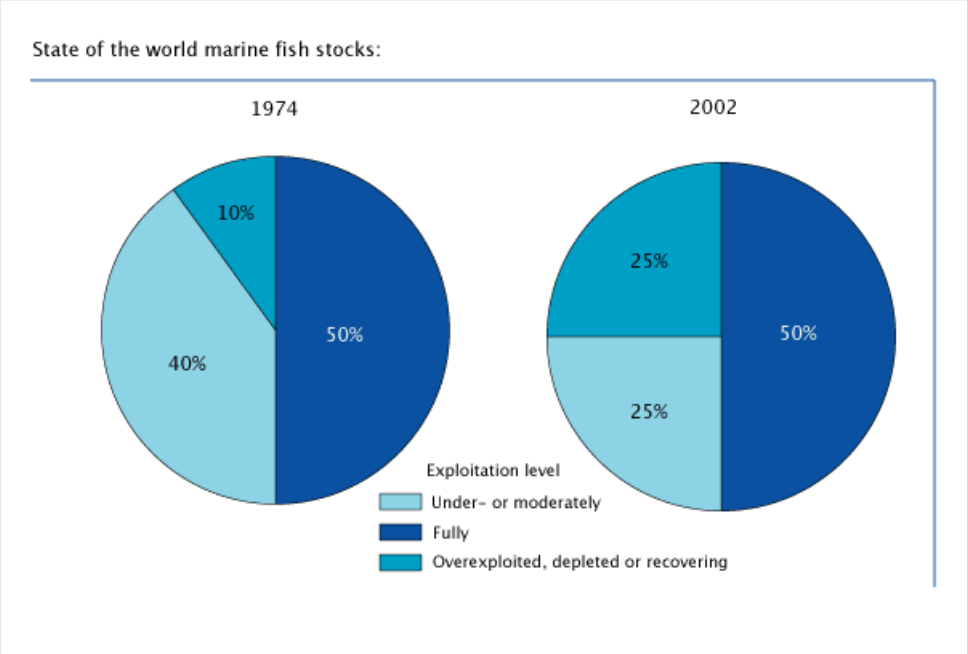
Fisheries production in the high seas is highest in the Pacific, followed by the Atlantic and the Indian Oceans. Tunas are the single most important resource exploited in the high seas.

3.2 How are fishery catches changing?

In some areas a proportion of the traditional marine fishery stocks have been depleted. As a consequence, other (less-valuable and previously less-exploited or non-exploited) species are being targeted. This has resulted in a long term change in catch composition. In the Northeast Atlantic, for instance, the continuous decline in cod catches since the late 1960s has been counterbalanced by increasing catches of formerly low-valued fish species such as blue whiting and sand eels.

The general trends in the levels of exploitation of world marine stocks observed in previous years are continuing. In 2003,

- about one-quarter of the stocks monitored were underexploited or moderately exploited,
- about half of the stocks were fully exploited and close to their maximum sustainable limits of exploitation, and
- about one-quarter of stocks were overexploited, depleted, or recovering from depletion, and needed rebuilding.



Of the top ten species in terms of quantity (Figure 6 [see Annex 34, p. 40]), seven correspond to stocks that are considered to be fully exploited or overexploited. Therefore, it cannot be expected that there would be major increases in catches of these species. Two of these species could probably support higher fishing pressure in some areas (skipjack tuna and chub mackerel) and the status of one species (largehead hairtail) is unknown.

In 12 of the 16 FAO statistical regions, at least 70% of stocks are already fully exploited or overexploited, suggesting that the maximum marine fishing potential has been reached and that more cautious and restrictive management measures are needed. All the information available tends to confirm FAO estimates that the global maximum potential for marine capture fisheries is about 100 million tonnes, of which probably only 80 million tonnes can realistically be achieved.

3.3 How may fisheries management affect sustainable development?

Fishery policies and management have usually focussed on single fishery stocks. In response to worldwide public concerns about ecosystems, there is an increasing demand for better understanding and monitoring of a wide range of processes that affect or are affected by fisheries.

Some of the most important management concerns today are:

- the effects of fisheries on habitats, marine communities, and ecological interactions,
- the effects of land-based activities and climatic changes on fisheries, and
- the lack of selectivity in many fisheries, resulting in bycatch and discards.

Variations in marine ecosystems and fish populations can be due to coastal developments, industrial activities, periodic climatic phenomena (such as El Niño), or longer-term natural climatic cycles.

The effect of climate on fisheries is exacerbated in a situation of overfishing. The assessment of the interactions between ecosystems and fisheries is still in its infancy. Much more needs

to be known about the effects of such interactions and about how they should be handled and adapted to.

The current state of marine fishery resources and ecosystems allows little room for further delay in taking management measures that should have been taken in the last three decades. Therefore, the precautionary approach to fisheries recommended by various UN bodies and the FAO Code of Conduct for Responsible Fisheries [see Annex 6, p. 22] needs to be put into practice.

3.4 What is the state of inland fisheries?

Inland fish stocks are less well defined, both in terms of species as well as geographical area, than the major marine fish stocks.

Because of the many different areas in which inland fish stocks live, such as individual lakes, rice fields, or rivers, it is costly to monitor their exploitation and status, and very few countries can afford to do so. The majority of countries report only a small fraction of their inland fishery catches by species, which makes it even more difficult to assess the overall status of these resources.

The trend of inland fishery resources being undervalued and under threat from unsustainable fishing activities as well as habitat alteration and degradation seems to continue.

In general, the availability of global information on river fisheries is poor. Over 50% of inland fish species live in rivers, as does a high proportion of organisms classified as endangered or threatened. Many river basins, especially in developing countries, support intensive fisheries, and in many cases catches are increasing. In some cases, such as in the Mekong River or in Lake Victoria, there is evidence of overfishing and a decline in catches. Sturgeon fisheries in the countries surrounding the Caspian Sea have also decreased drastically since 1988. Inland fishes are considered to be the most threatened group among all the vertebrates used by humans.

The status of certain inland fishery resources has nevertheless been enhanced in many areas through stocking programmes, the introduction of alien species, and habitat engineering and improvement. In many developing areas, especially in Asia, rice fields and irrigated areas are used to grow fish, which can improve the diet of rural households. Enhancement can make the resources more stable, easily harvested, and valuable.

4. How are fishery products used?

4.1 What are the general trends in processing and consumption?

Humans mainly consume fresh fish, but also processed fish products in frozen, canned, or cured form.

It is estimated that more than three-quarters of the fisheries production in the world in 2002 was used for human consumption. This amounted to over 100 million tonnes. The remaining portion was used mainly in the manufacturing of fishmeal and oil, but also as direct feed for animals (Figure 2 [see Annex 24, p. 34]).

Table 1: World Fisheries production and utilization [see Annex 52, p. 49]

Table 2: Fisheries Production and utilization:excluding China [see Annex 53, p. 50]

Processing fish does not tend to increase the price of the final product, and fresh fish is still the most widely accepted product on the market. Freezing is the main method of processing fish for food use, accounting for 53% of the total processed fish for human consumption in 2002, followed by canning (27%) and curing (20%).

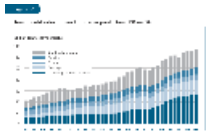


Figure 21:
[see Annex 15, p. 28]
Trends Utilization 1962-2002

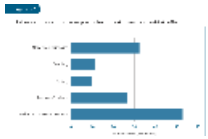


Figure 22:
[see Annex 16, p. 28]
Utilization 2002

There are marked geographical differences in the ways in which fish are used. For instance, the proportion of cured fish is higher in Africa and Asia. By contrast, Europeans and North Americans mostly consume frozen or canned fish.

In 2002, almost all non-food fish products came from natural stocks of small oceanic species such as anchoveta. Fishmeal and fish oil together represent 90% of non-food fish products (excluding those used or produced in China). The remaining 10% was largely direct feed for aquaculture and fur animals.

4.2 How much is consumed per person?

The consumption of fish and seafood, counted per person per year, is distributed unevenly around the globe. It ranges from less than 1 kg to more than 100 kg.

In 2002, per capita food supply of fish, crustaceans, and molluscs was estimated to be about 16.2 kg worldwide; this was 3.1 kg more than in 1992. However, excluding figures from China, the per capita supply was only 13.2 kg, which is almost the same as in 1992. The per capita fish supply in China in 2002 was about 27.7 kg, following a strong increase in the preceding decade.

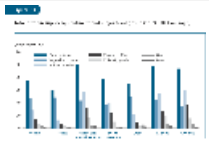


Figure 23:
[see Annex 17, p. 29]
Protein Supply by Food Group

Figure 24:
[see Annex 18, p. 29]
Fish Supply Per Person

Figure 25:
[see Annex 19, p. 30]
Fish Protein Supply

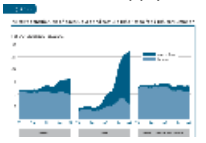


Figure 26:
[see Annex 20, p. 30]
Contribution of Aquaculture and Capture Fisheries

Fish represents a valuable part of the diet of many countries, providing micronutrients, minerals, essential fatty acids, and proteins. In a few countries (such as Iceland and Japan) fish may contribute as much as 180 kcal of energy per person per day, but more commonly this figure is about 20 to 30 kcal. Fish proteins provide at least 20% of the average intake of animal protein for more than 2.6 billion people. In some parts of Asia and Africa it is even more than 50% of the average intake.

In industrialized countries the average fish and seafood consumption per person per year rose slightly from 28.0 kg in 1992 to 28.6 kg in 2001.

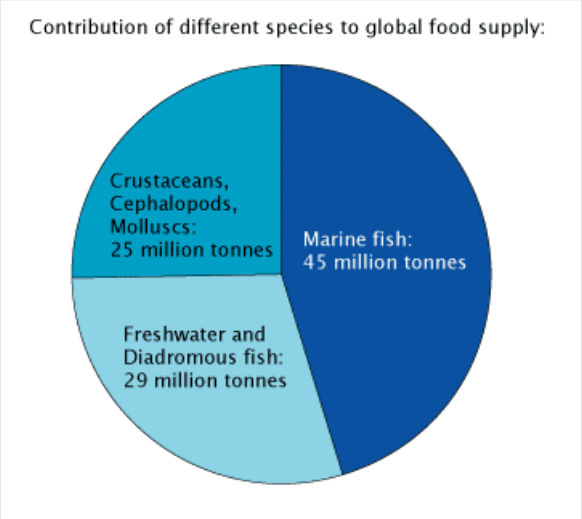
Table 10: Food fish supply by continent [see Annex 51, p. 48]

In poor countries which are net importers of food (LIFDCs), the average fish supply per person was 9.5 kg in 1992, increasing to 14.0 kg by 2001. However, excluding the contribution of China, the average supply was still relatively low in 2001 at an estimated 8.5 kg per person.

Two-thirds of the total fishery products available for consumption in 2001 were consumed in Asia (14.1 kg per person) with half of that in China alone (25.6 kg per person).

Dietary consumption patterns are influenced by several factors. Fish and fishery products are increasingly being marketed in fresh form as well as processed into ready-to-cook or ready-to-eat products, particularly in wealthy economies. The differences in consumption patterns per species are even more marked. For example, crustaceans are still high-priced commodities and are mostly consumed in wealthy economies.

In 2002, nearly two-thirds of the world fish and seafood supply for human consumption came from capture fisheries, with the rest being produced by aquaculture. The contribution of capture fisheries to the global per capita food supply declined slightly in the last decade, particularly after 1997.



4.3 What role can fisheries play in national development and poverty reduction?

The fisheries sector plays an important role in the alleviation of poverty and the achievement of food security in many parts of the world. Fisheries exports now generate more foreign exchange than the revenues earned from any other traded food commodity such as rice, cocoa, coffee, or tea. Worldwide, more than 38 million people are directly engaged in fishing and fish farming as a full-time or, more frequently, part-time occupation, and fishery products account for 15–16% of global animal protein intake.

Developing countries presently supply 70% of the fish for human consumption. In countries where the fisheries sector is particularly important it makes a significant contribution to both exports and domestic nutritional intake, although this is generally not reflected in the national policies of these countries.

Further efforts should therefore be made to ensure the effective integration of fisheries into key national policy documents relating to poverty reduction and rural development. Particular attention should be paid to gender issues and internationally recognized fishery development instruments such as the Code of Conduct for Responsible Fisheries [see Annex 6, p. 22] .

5. What is the amount of fishery products traded?

5.1 What are the general trends in trade?

World fish trade has grown considerably in terms of both value and quantity over the last decades.

Measured in terms of live weight, 38% of all fishery products in 2002 was traded internationally.

Many countries both import and export fish products. Trade tends to flow from less developed to more developed countries, but also between developed countries.

In terms of export value, the total world trade of fish and fish products reached US$58.2 billion in 2002. Compared to 1992, this represents a 45% increase in terms of value and a 41% increase in terms of quantity (Figure 27 [see Annex 21, p. 31]). Preliminary estimates for 2003 indicate a slight further increase in the value of worldwide fishery exports.

In 2002, **China** for the first time became the world's main exporter of fish and fish products, with exports valued at an estimated US$4.5 billion. Since the early 1990s, China has experienced remarkable increases in its fishery exports. These increases are linked to growths in production and in the fish-processing industry. **Thailand**, the main exporter of fish and fish products from 1993 to 2001, reported export values of US$3.7 billion in 2002. About half of global exports for human consumption and two-thirds of non-food products, come from developing countries.

In terms of import value, the total world trade of fish and fish products reached a new record of more than US$61 billion in 2002. Developed countries (particularly those in the EU, as well as Japan and the US) imported about 82% of this total. Japan was the single largest importer, accounting for 22% of all imports.

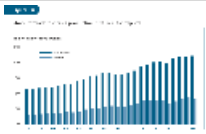


Figure 28:
[see Annex 22, p. 32]
Share of Fishery Exports

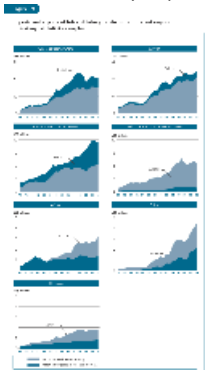


Figure 29:
[see Annex 23, p. 33]
Export and Imports by Region

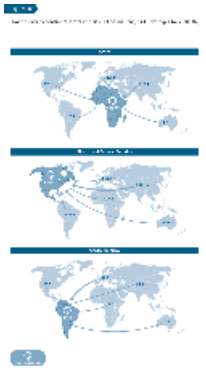


Figure 30:
[see Annex 25, p. 35]
Trade Flows

In terms of quantity, developed countries imported over 32 million tonnes in 2002, of which 68% was fish for human consumption. In comparison, developing countries imported 19 million tonnes, of which 47% consisted of fish for food.

5.2 In what form are fishery products traded?

Because fish is highly perishable, more than 90% of internationally traded products are processed (frozen, canned, or cured). However, a growing network of facilities for handling, transport, distribution, display, and holding of live fish has been developed to support the live fish trade. Exports of frozen fish have increased during the last decade, rising from a share of 28% of the total quantity of fish exports in 1992 to 35% in 2002.

Global exports of non-food fisheries products represented 36% of total 2002 exports in terms of quantity and originated mainly from Latin American countries.

In value terms, shrimp continues to be the main fish commodity traded, accounting for about 18% of the total value of internationally traded fish products in 2002. The share of products derived from aquaculture is estimated to be 22% of quantities exported.

5.3 How does this trade affect the economy of various countries?

Trade in fishery products represents a significant source of foreign currency earnings for many economies. The sector also plays an important role in income generation, employment, and food security.

In some countries, fishery exports are crucial for the national economy and represent more than half of the total value of exported commodities. Examples of such economies are the Faeroe Islands, the Federal States of Micronesia, Greenland, Iceland, the Maldives, as well as Saint Pierre and Miquelon.

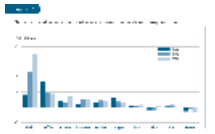


Figure 31:
[see Annex 26, p. 36]
Exports Agricultural Products

In developing countries, the net foreign exchange earnings derived from fish increased from US$11.6 billion in 1992 to US$17.4 billion in 2002. These earnings were significantly higher than those for other agricultural commodities such as rice, coffee, and tea. Low-Income Food-Deficit Countries (LIFDCs) accounted for more than 20% of the total value of fishery exports.

Fisheries exports from developing countries are gradually shifting from providing raw material for the processing industry in developed countries to selling high-value live fish or value-added processed products.

Major issues concerning international trade in fish products include:

- increased processing in developing countries,
- changes in quality and safety control measures in importing countries, as well as new labelling and traceability requirements,
- developing aquaculture sustainably and dealing with chemical residues in aquaculture products,
- overexploitation of certain fish stocks, and illegal, unreported, and unregulated fishing, and
- international trade agreements.

With the entry of China into the World Trade Organization in 2001, all major fishery countries, are now members of the organization (except for the Russian Federation and Viet Nam which have started membership negotiations). Parallel to the increase in the WTO's membership, a number of bilateral trade agreements with strong relevance to fish trade have been signed. The full impact and long-term effects of these agreements remain to be seen.

5.4 What are the markets for specific types of fish products?

5.4.1 Salmon: The year 2003 was positive for **salmon** producers and traders. Higher prices benefited producers in Ireland and the United Kingdom. Chile, however, was to some extent hurt by a weaker dollar in the United States, its major market.

5.4.2 Tuna: Japan is the world's top market for sashimi-grade **tuna**. In recent years, however, the demand has declined and shifted to cheaper species. The farming of bluefin tuna has lowered overall prices. EU import tariffs for canned tuna have been reduced.

Canned tuna consumption is rising in Europe and declining in the United States, where the market for pouch packs is increasing (Figure 32 [see Annex 27, p. 36]).

5.4.3 Other finfish: For **other finfish**, prices have decreased because of relatively strong supplies of certain species, resumed exports from China to EU markets, and stable consumer demand (Figure 33 [see Annex 28, p. 37]). Continuous low prices, problems related to antibiotics, and allegations of dumping all have negative impacts on groundfish exports from Asia. For certain groundfish products, prices started to rise during the first quarter of 2004 due to somewhat reduced Alaska pollock supplies as well as to strong demand in Russia and China.

5.4.4 Shrimp: During 2003, **shrimp** imports into several key markets such as the United States reached new highs. In contrast, imports of shrimp into Japan declined by 6% that year as a consequence of the country's difficult economic situation. In Europe, shrimp imports increased in 2003 as a result of the strong euro and competitive international prices. Certain countries are under investigation for dumping in the United States, which will affect their sales in the short term. Prices remained low during most of 2003, and there are no indications of a rise in 2004 (Figure 34 [see Annex 29, p. 37]).

5.4.5 **Squid and octopus**: Lower Illex squid catches were offset by higher production of Loligo squid in 2003 and 2004. Japan was the main market worldwide for cephalopods in 2003. However, the country's imports were affected by low arrivals of octopus from the Central East Atlantic where the resource is under stress, with no prospects for improvement in the short term. The European squid market is lead by Spain with imports of almost 160 000 tonnes and Italy with 85 000 tonnes. Prices for all cephalopod products rose in 2004 (Figure 35 [see Annex 30, p. 38]).

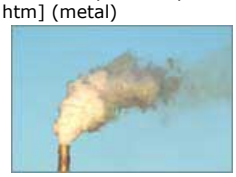
5.4.6 In 2003, **fishmeal** production in the five major exporting countries amounted to 4.5 million tonnes, which signifies a 12% decrease from 2002. Catches of fish for reduction were low in all major fishmeal-producing countries. In the first six months of 2004, however, fishmeal production increased by 40% and it is likely that total production will return to normal levels. Fishmeal prices, which rose strongly in 2003, are expected to fall somewhat, but the strong demand will keep them at attractive levels for the producing countries (Figure 36 [see Annex 31, p. 38]).

6. What contaminants are affecting fisheries?

6.1 What contaminants can find their way into fish and seafood?

See GreenFacts digest on Arsenic [see http://www.greenfacts.org/en/arsenic/index.htm] (metal)

See GreenFacts digest on Mercury [see http://www.greenfacts.org/en/mercury/mercury-1.htm] (metal)



See GreenFacts digest on Dioxins [see http://www.greenfacts.org/en/dioxins/index.htm] (POP)

Several organic and inorganic compounds can find their way into fish and seafood. These compounds can be divided into three major groups:

- **Metals and metal-like elements** such as arsenic, cadmium, lead, mercury, selenium, copper, zinc, and iron, in either organic or inorganic compounds.
- **Persistent organic pollutants** (**POPs**) such as polychlorinated biphenyls (PCBs), dioxins, and some insecticides. These substances tend to accumulate and persist in the environment.
- **Processing-related compounds** such as sulphites (used in shrimp processing), polyphosphates, nitrosamines, and residues of drugs used in aquaculture (e.g., antibiotics and hormones).

Many elements are essential for life at low concentrations but become toxic at high concentrations. Other elements such as mercury, cadmium, and lead are not essential for living organisms and are toxic even at low concentrations when ingested over a long period. Metals are released into the aquatic environment by both natural phenomena and human activities. In contrast, most organic pollutants that can affect fisheries are released by human activities.

Chemical substances may build up in body tissues over the life span of an individual (bioaccumulation). They can also build up along the food chain (biomagnification), leading to higher concentrations in predatory species. The presence of chemical contaminants in seafood is highly dependent on location, species, age, and feeding pattern, as well as the (lipid) solubility of the chemicals, and their persistence in the environment.

6.2 What are the risks associated with these contaminants?

Several studies indicate that in the open seas, which are still almost unaffected by pollution, most fish carry only the natural burden of metal-like inorganic substances.

In heavily polluted areas, however, contaminants can be found at higher concentrations. In fish intended for human consumption, levels of these chemicals are low and believed to be below levels likely to affect human health. Nevertheless, they can be of potential concern for people who consume larger amounts of fish and for especially sensitive groups, such as pregnant and nursing women and young children.

While scientists and other experts recognize that certain of these substances are present naturally in fish and seafood, some consumers regard their presence even at minimal levels as a hazard to health. Consequently, food scares can be easily started and further amplified if communication is mismanaged. A number of such scares concerning fish contaminants have recently led to significant negative impacts on fish trade flows.

- Example 1: Mercury in fish [see Annex 39, p. 42]
- Example 2: Organic pollutants in salmon [see Annex 40, p. 43]

6.3 How can fish safety be controlled?

Globalization and further liberalization of the world fish trade give rise to many benefits and opportunities but also to new safety and quality challenges.

In establishing maximum levels of pollutants in fish, regulators need to

- ensure the highest level of consumer health protection, but also
- take into account that fish are exposed to background contamination of the environment.

Setting levels that are too stringent could exclude too much fish from the market and thus endanger food supply. Strategies to reduce the background contamination of the environment must be adopted. In addition, consumer information and awareness programmes will be necessary in order to improve transparency and consumer education.

Progress in this area will require enhanced international cooperation in promoting mechanisms that are based on scientific principles, for instance through the WTO and the CAC.

7. How are fisheries regulated?

7.1 How is the role of regional fishery bodies changing?

7.1.1 International interaction and collaboration on fisheries matters relies on a large number of regional fishery bodies (RFBs). Their role has changed towards a more active role in decision-making over the past half century. Previously, regional bodies had mainly been a forum for international cooperation, vehicles for data collection and research, as well as advisors on fisheries management.

The 1982 United Nations Convention on the Law of the Sea called for additional activities for regional fishery bodies in protecting stocks, resolving disputes, and implementing standards and regulations.

7.1.2 The changes to the mandate of regional bodies suggested in the Law of the Sea only came into effect in the early 1990s as a result of the growing awareness of the scarcity of fishery resources. After the 1992 United Nations Conference on Environment and Development (UNCED), a number of fisheries instruments were adopted by the international community, such as the 1995 FAO Code of Conduct for Responsible Fisheries [see Annex 6, p. 22] . These strengthened the conservation and management roles of regional fishery bodies and required effective decision-making processes and authorities.

Generally, RFBs are taking many innovative and cooperative actions in an effort to rebuild the depleted stocks, prevent further decline, and to combat illegal, unreported, and unregulated fishing. Regrettably, assessments show that these actions have not always translated into more effective fisheries management. One constraint is that some member countries are reluctant to delegate sufficient decision-making power to regional fishery bodies and in some cases unable or reluctant to implement decisions taken by them.

An example of a regional fishery body:

Box 5: Antigua Convention & strengthening of the Inter-American Tropical Tuna Commission [see Annex 1, p. 20]

7.2 How is aquaculture development regulated?

7.2.1 A series of measures have been taken in response to the growing concerns about food quality and food safety as well as about the sustainability of aquaculture production. Major importing regions and countries have begun to set stringent standards and regulations on issues such as trade in endangered species, labelling for origin, traceability, the chain of custody, and veterinary drug residues. In 2002, fish and fishery products represented a quarter of all food safety and food quality alerts in the EU. Market strategies such as product certification, ecolabelling, ethical or fair trade, and organic production are increasingly being adopted.

Ongoing technological progress has helped addressing the sustainability problems of aquaculture. Improved management practices can, for example, limit the spread of disease from cultured stocks to wild stocks and reduce the use of veterinary drugs. Research is undergoing to seek to improve feed and feeding efficiency and to reduce the nutrient output of farms.

In many developing countries, progress towards responsible management is slowed by the lack of adequate resources, and priority is given to other (and sometimes conflicting) policy areas.

7.2.2 The aquaculture sector is growing more quickly than any other animal-producing sector. National development policies are increasingly considering aquaculture to be an engine for economic growth and for the achievement of diverse societal and environmental goals. Generally, aquaculture regulations require the acquisition of a permit in order to establish a farm. Many governments also provide incentives such as access to credit (see Box 6 [see Annex 2, p. 21] on microfinance), tax reductions, and an effective administrative framework.

International agreements in the frame of the FAO, the WTO, and specific conventions also have an impact on aquaculture at a national level, for instance through trade restrictions and quality and safety standards.

Annex

Annex 1:

Box 5: The 2003 Antigua Convention and the strengthening of the Inter-American Tropical Tuna Commission

"On 27 June 2003, at its 70th meeting, held in Antigua (Guatemala), the IATTC adopted the Convention for the Strengthening of the Inter-American Tropical Tuna Commission established by the 1949 Convention between the United States of America and the Republic of Costa Rica (“Antigua Convention”), bringing to a successful conclusion five years of negotiations. These negotiations were open, from the outset, not only to the parties to the 1949 Convention but also to all those that might become parties to or members of the Commission under the existing Convention or a revised one. Interested intergovernmental organizations and NGOs were also welcome to participate and contribute as observers.

Based on the “Chairman’s text” technique, the negotiating process was initially aimed at amending the 1949 Convention in order to bring it in harmony with the principles of international law as reflected in the 1982 UN Convention of the Law of the Sea and the provisions of other international instruments such as the 1992 Agenda 21, the 1993 FAO Compliance Agreement, the 1995 FAO Code of Conduct for Responsible Fisheries [see Annex 6, p. 22] and the 1995 UN Fish Stocks Agreement. However, the gap was so great between these instruments and the letter of the 1949 Convention that very little could be preserved from the original text.

The institutional continuity of the IATTC is stressed both in the title and the body of the Antigua Convention, but the new instrument has transformed the Commission into a true management organization, in addition to filling a number of gaps and uncertainties. Thus the area covered by the Antigua Convention in the Eastern Pacific is now defined precisely. It is also vast, since it is bounded, on the east, by the coastline from Canada to Chile between the 50 °N and 50 °S parallels and, on the west, by the 150 °W meridian, thus encompassing part of French Polynesia and reaching the waters of Kiribati and Hawaii, United States. The Commission has been institutionally strengthened with the establishment of a Committee for the Review of Implementation of Measures Adopted by the Commission and of a Scientific Advisory Committee. The functions of the Commission have been updated and expanded to enable it to perform its tasks and adopt conservation and management measures, “giving priority to tunas and tuna-like species”. These tasks and measures cover a broad range of areas, such as scientific research, data collection, allowable catch, fishing capacity or effort, new entrants, species belonging to the same ecosystem, waste and discards, gear, allocation, application of the precautionary approach, and implementation of the Code of Conduct for Responsible Fisheries [see Annex 6, p. 22] and its international plans of action. Its decisions, which must be adopted by consensus, are binding. In its decision-making processes and other activities, the Commission must promote transparency. Provisions have been included on the settlement of disputes. The rights and obligations of the Commission members concerning implementation, compliance and enforcement have been specified, as have the duties of those members in their character as flag states.

In the same spirit of openness that characterized the negotiating process, the condition of “Party” to the Antigua Convention, either through signature followed by ratification or through accession, may be acquired by the Parties to the 1949 Convention, by the coastal states of the region (states with a coastline bordering the Convention area) and by the states and regional economic integration organizations whose vessels fish for fish stocks covered by the Convention. Moreover, and most innovatively, the Antigua Convention makes full use of the concept of fishing entity introduced in the 1995 UN Fish Stocks Agreement to enable Taiwan Province of China to participate fully in the work of the IATTC. To this end, throughout the provisions of the Convention, a distinction is made between two categories: on the one hand, the “members” of the Commission and, on the other, the Parties to the Antigua Convention. The members of the Commission are defined as including the Parties and “any fishing entity” that has expressed its “firm commitment to abide by the terms of the Convention”.

This means that states and the regional economic organizations (e.g. the EU), are necessarily both Parties and members while the fishing entity can only be a member. The specific competences of each one of these two categories are also clearly and precisely stipulated (for instance, all members are entitled to take decisions under Article IX, except those decisions related to the adoption of amendments to the Convention, which are the exclusive competence of Parties).

The Antigua Convention was opened for signature in Washington on 14 November 2003. By the end of May 2004, 11 states had signed it and the fishing entity had also signed its respective instrument. The Antigua Convention will enter into force once seven of the Parties to the 1949 Convention have deposited their instrument of ratification, approval, acceptance or accession."

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, The changing role of regional bodies in decision-making [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1408_123714]

Annex 2:
Box 6: Microfinance in fisheries and aquaculture

"Microfinance can be defined as the provision of a broad range of financial services, including loans, savings and insurance, to segments of the population who may lack access to traditional financial services. Most microfinance programmes aim to promote and protect income and empower these population segments. More specifically, the development objectives of microfinance for poor fishing communities are to enable fishing households to increase their income, smooth consumption, develop microenterprises, manage risks better and enhance their earning capacities, thus reducing their economic and social vulnerability. Because women constitute a significant proportion of poor fishing households, microfinance can also serve as an effective tool to assist and empower women in fishing communities.

The demand for financial services in the fisheries sector is diverse and requires differential products and services. Microfinance is just one means in the continuum of financial services provision to cater to that demand. Characterized by small loans, microfinance has inherent limitations in terms of financing the capital investment needs of the fishing industry. It should therefore supplement, not replace, traditional lending products from mainstream financial institutions, as the latter are still required to finance medium- and large-scale investment needs and priorities necessary for the growth and development of fisheries.

Microfinance programmes can be a powerful tool also in poverty alleviation. In the case of fishing and fish-farming communities, the alleviation of poverty is an important precondition for their participation in efforts to rehabilitate and conserve the aquatic environment and fisheries resources.

The mechanics of microfinance operations basically involve three levels:

- the borrowers who take out loans that they invest in microbusinesses
- the loan delivery and recovery system;
- the institution or organization that manages the delivery system

The successful operation of these levels is premised on the twin principles of client discipline (where borrowers take responsibility for their decisions and agreements made with the lending institution) and institutional discipline (where the lending institution offers and provides products and services that are characterized by quality, efficiency and commitment).

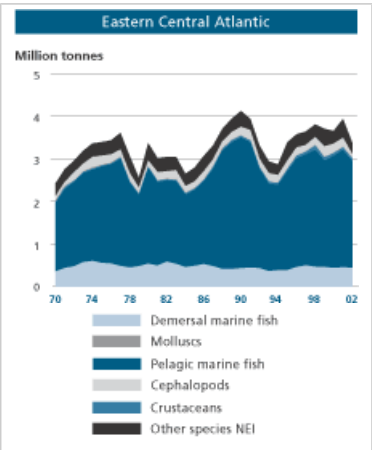
A core principle that has been proved by successful microfinance programmes is that the poor have the capacity to repay loans, pay the real cost of loans and generate savings."

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Aquaculture Development Policy And Governance [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1448_132721]

Annex 3:
Eastern Central Atlantic

Catches in this region have been fairly stable over the last decades, and are fluctuating between 3 and 4 million tonnes.

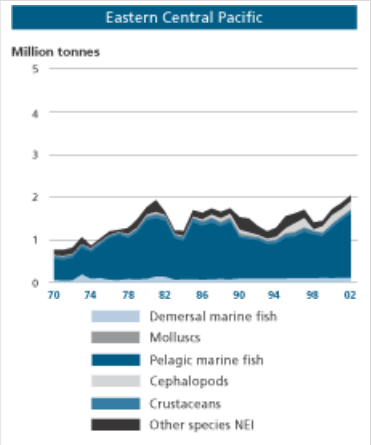
Trends in fisheries resources since 1970



Annex 4:
Eastern Central Pacific

Catches in this region have been fluctuating between 1.2 and 1.8 million tonnes since 1981. The California pilchard was the main caught species in 2000-2002, with the highest recorded catches since 1950.

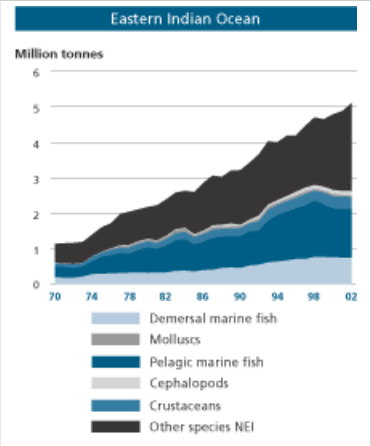
Trends in fisheries resources since 1970



Annex 5:
Eastern Indian Ocean

The large portion of "Other Species" caught reflects the poor species breakdown of catches in this region.

Trends in fisheries resources since 1970



Annex 6:

FAO Code of Conduct for Responsible Fisheries

The Code of Conduct for Responsible Fisheries was adopted by the FAO in 1995.

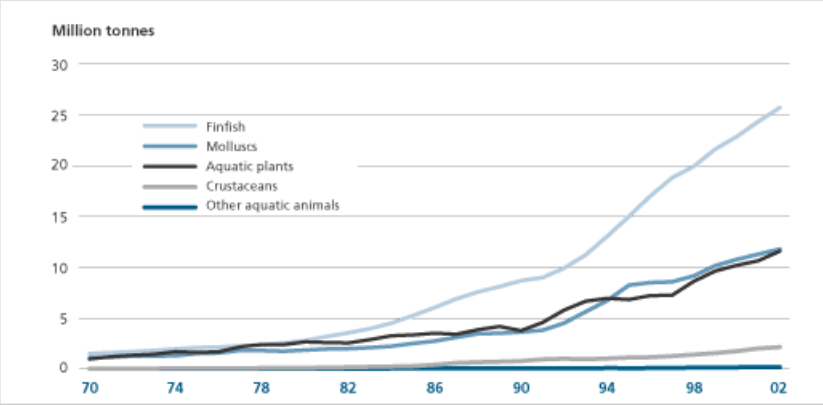
The Code sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity.

The Code is voluntary in nature and does not create legally binding obligations upon States.

Source & © GreenFacts, based on FAO
Introduction to the Code [see http://www.fao.org/fi/agreem/codecond/codecon.asp]

Annex 7:

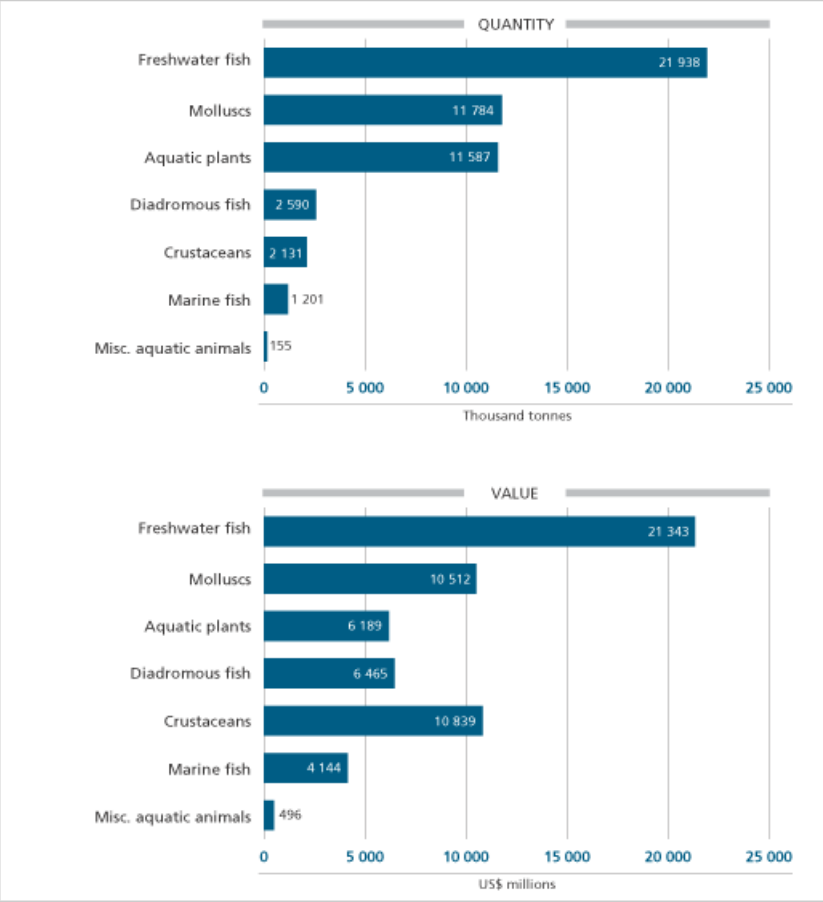
Figure 10: Trends in world aquaculture production: major species groups



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Aquaculture production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P383_23073]

Annex 8:

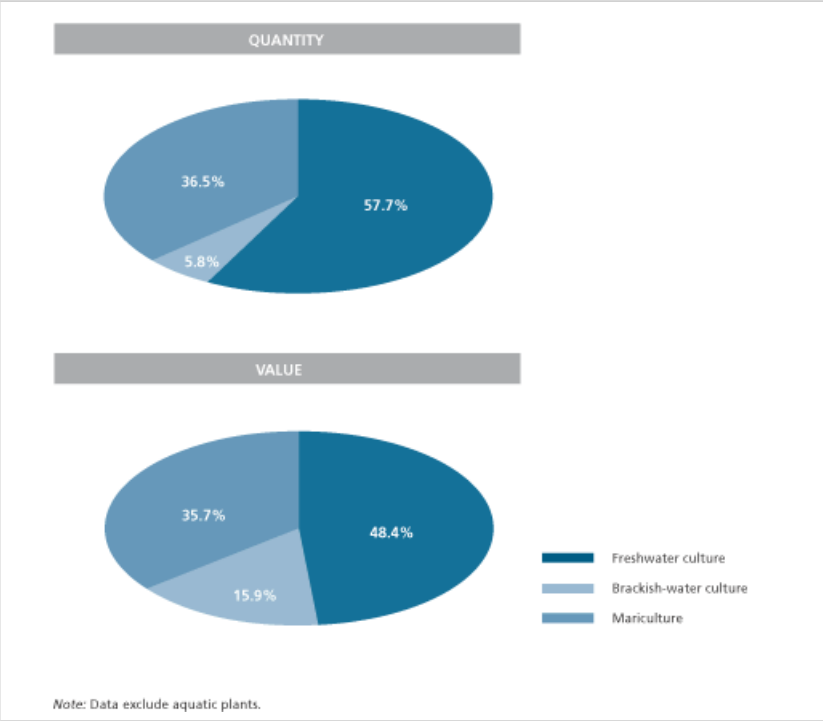
Figure 11: World aquaculture production: major species groups in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Aquaculture production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P383_23073]

Annex 9:

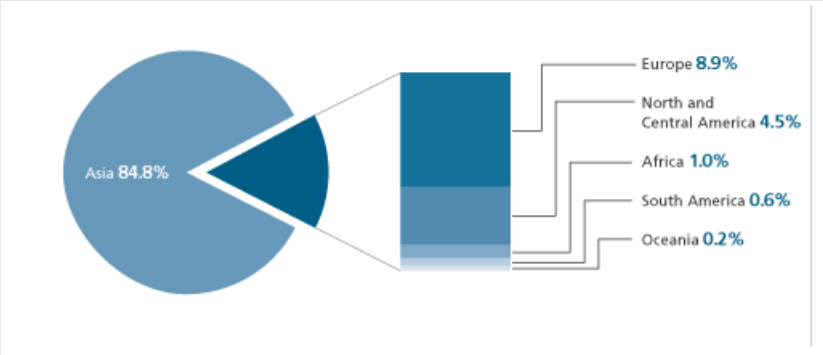
Figure 12: World aquaculture production of fish, crustaceans and molluscs in 2002: breakdown by environment



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Aquaculture production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P383_23073]

Annex 10:

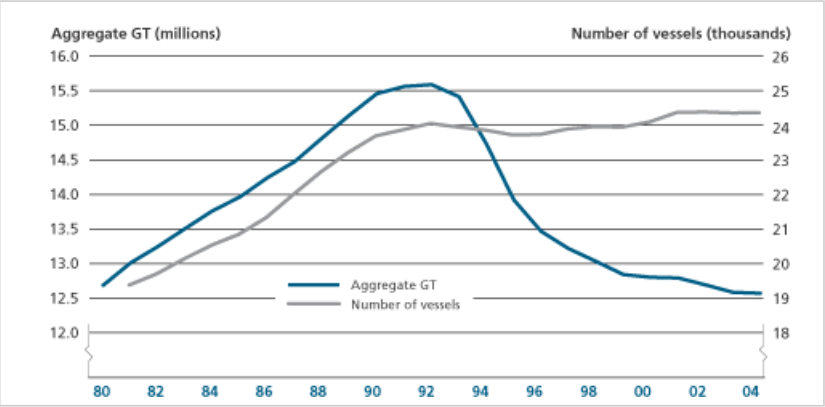
Figure 14: Decked Fishing vessels by continent



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, The status of the fishing fleet [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1094_46148]

Annex 11:

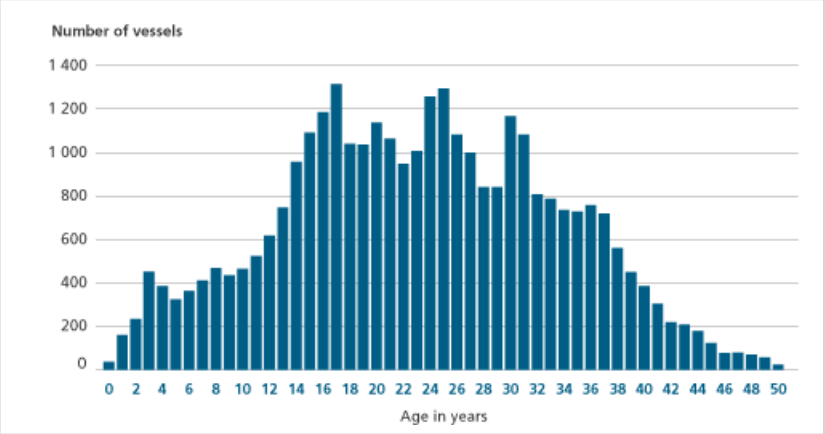
Figure 15: Global fleet above 100 GT recorded in the Lloyd's Maritime Information Services database



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, The status of the fishing fleet [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1094_46148]

Annex 12:

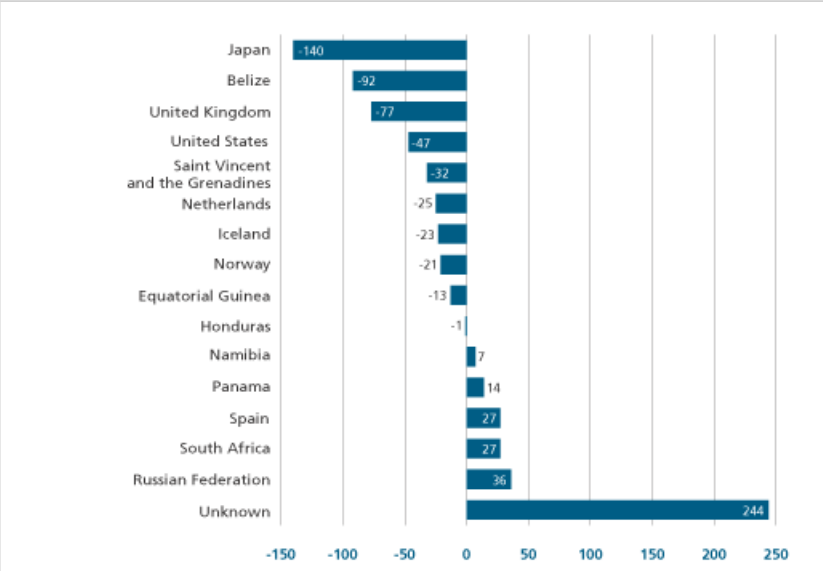
Figure 16: Age profile of global fleet above 100 GT in 2003



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, The status of the fishing fleet [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1094_46148]

Annex 13:

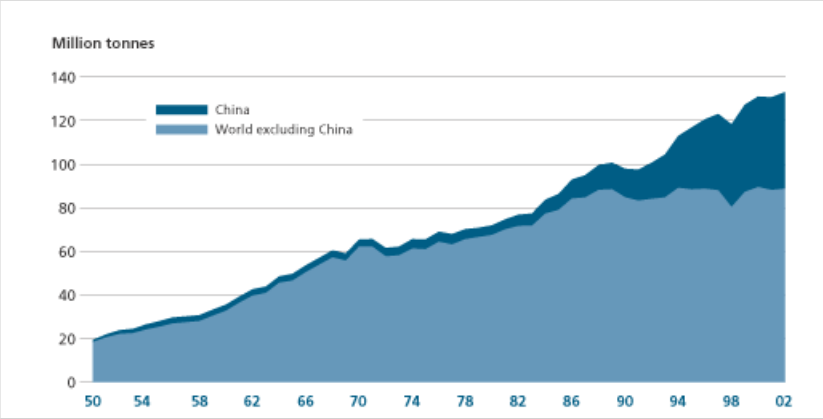
Figure 17: Change in numbers of fishing vessels of 100 GT and above in selected fleets, 2002-03



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, The status of the fishing fleet [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1094_46148]

Annex 14:

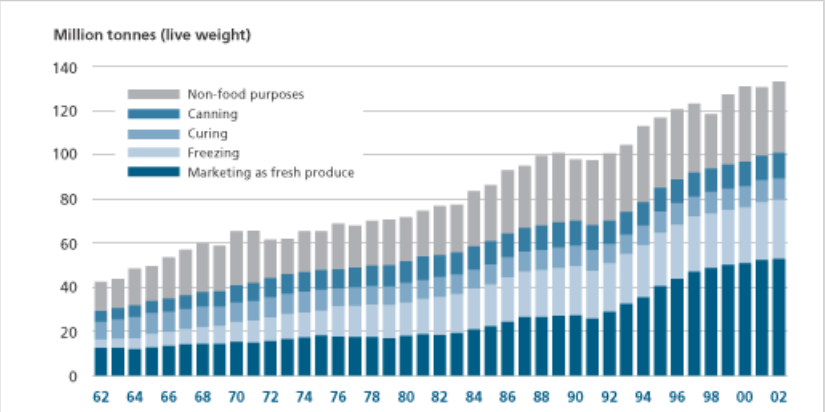
Figure 1: World capture and aquaculture production



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Overview [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#p_1]

Annex 15:

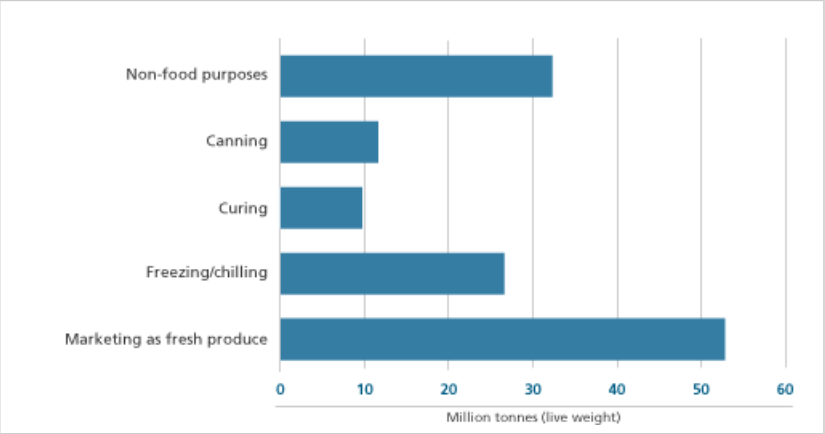
Figure 21: Trends in utilization of world fisheries production, 1962-2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 16:

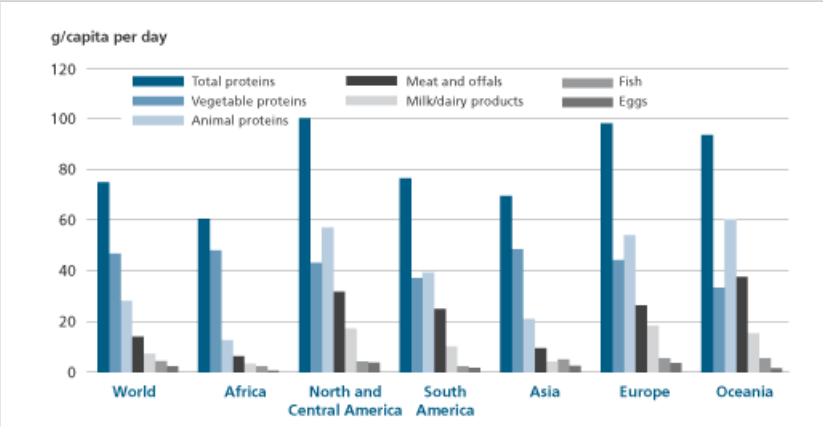
Figure 22: Utilization of world fisheries production (breakdown by quantity), 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 17:

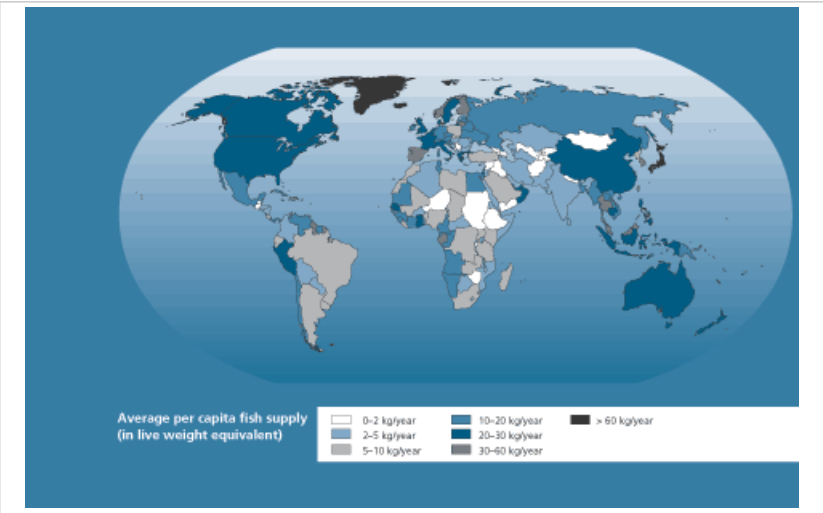
Figure 23: Total protein supply by continent and major food group (1999-2001 average)



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 18:

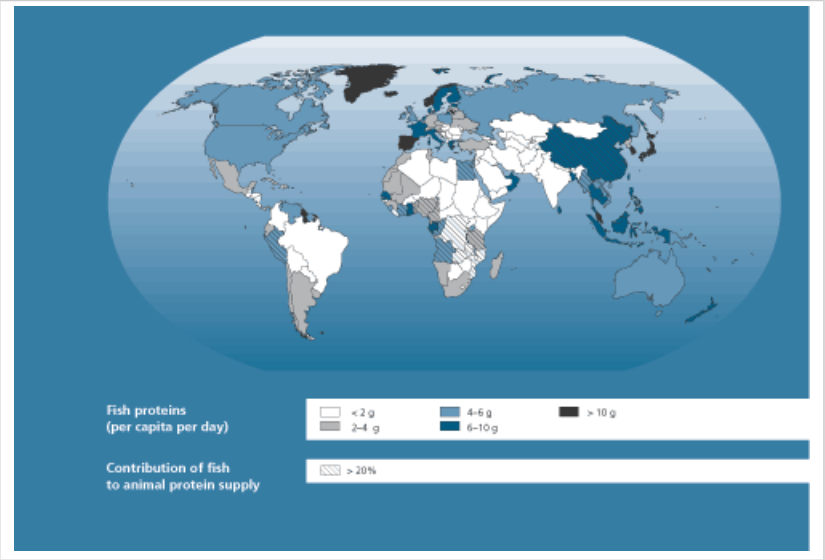
Figure 24: Fish as food per capita supply (1999-2001 average)



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 19:

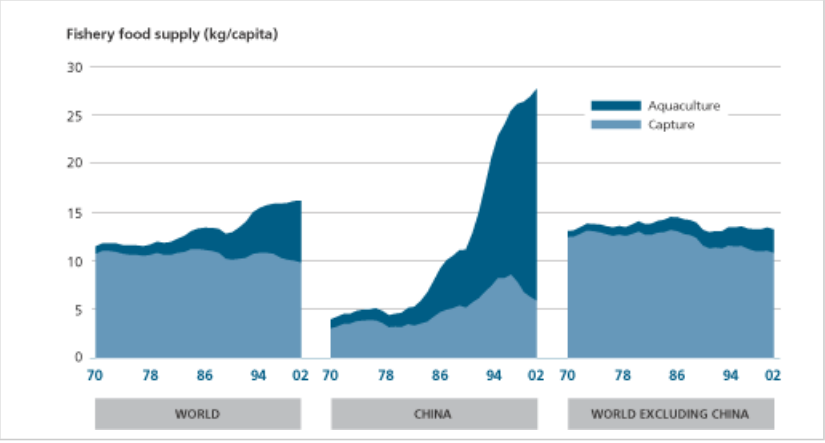
Figure 25: Contribution of fish to animal protein supply (1999-2001 average)



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 20:

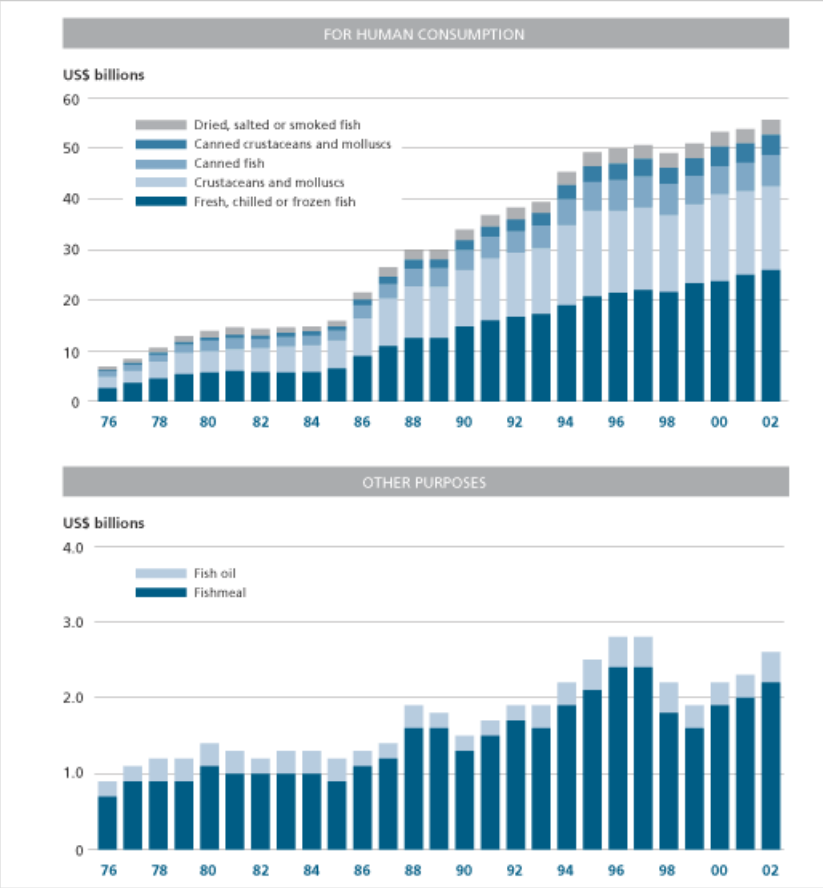
Figure 26: Relative contribution of acquaculture and capture fisheries to food fish consumption



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 21:

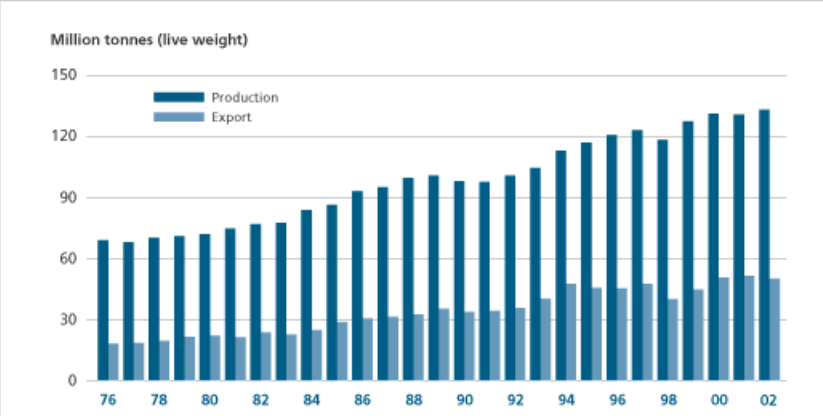
Figure 27: World fishery exports by major commodity groups



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 22:

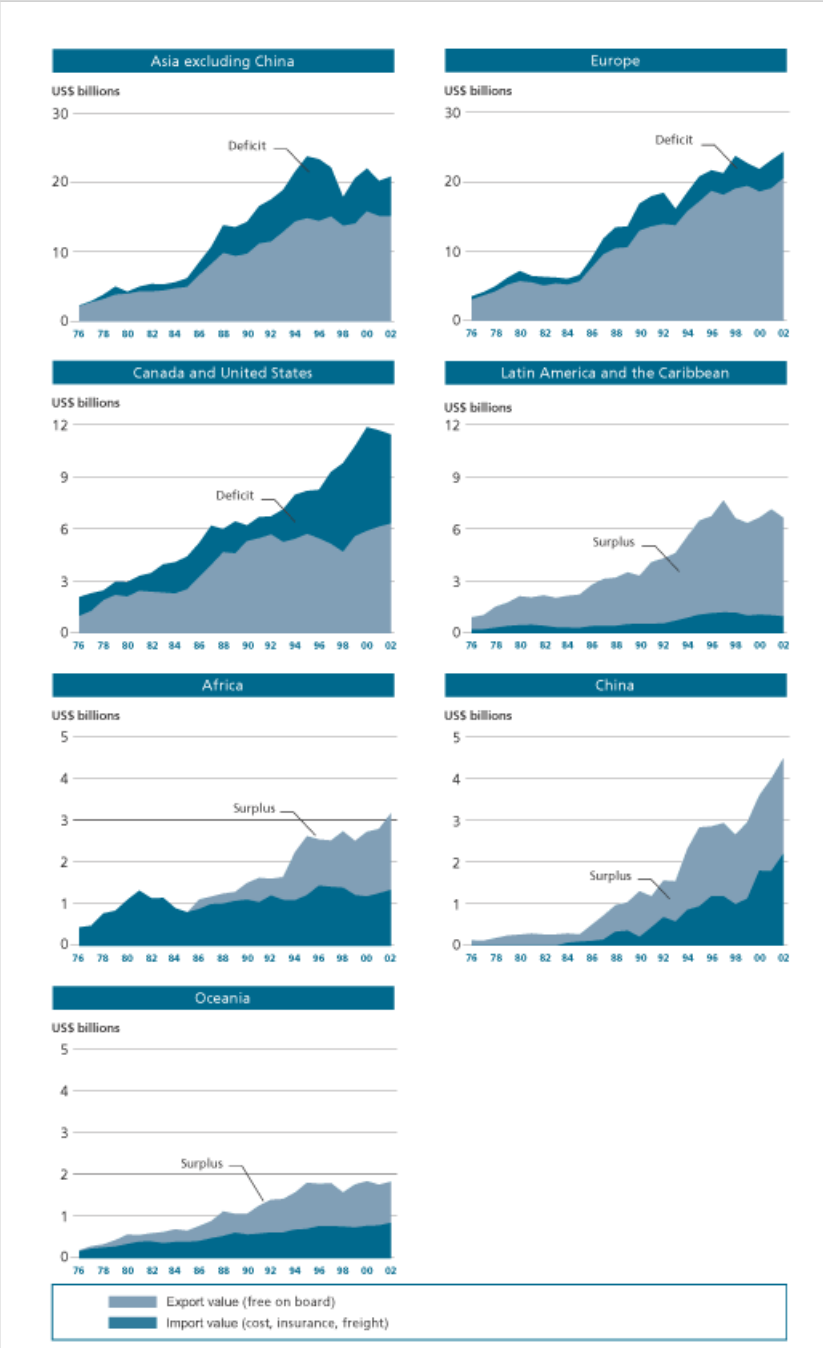
Figure 28: Share of world fisheries production destined for exports



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 23:

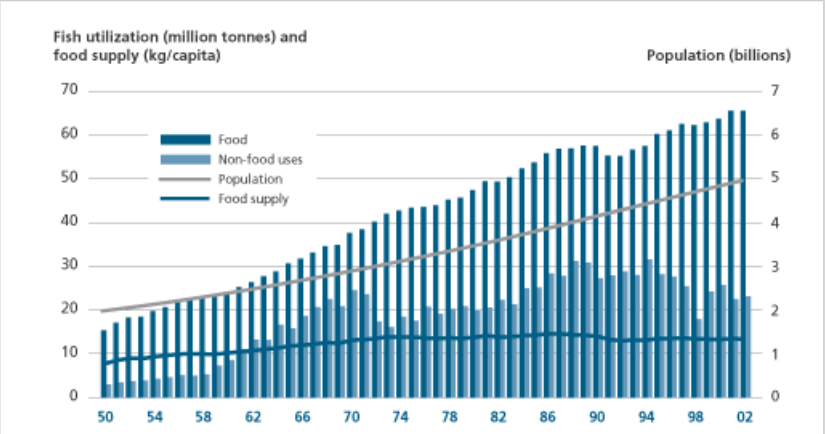
Figure 29: Imports and exports of fish and fishery products for different regions, indicating net deficit or surplus



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 24:

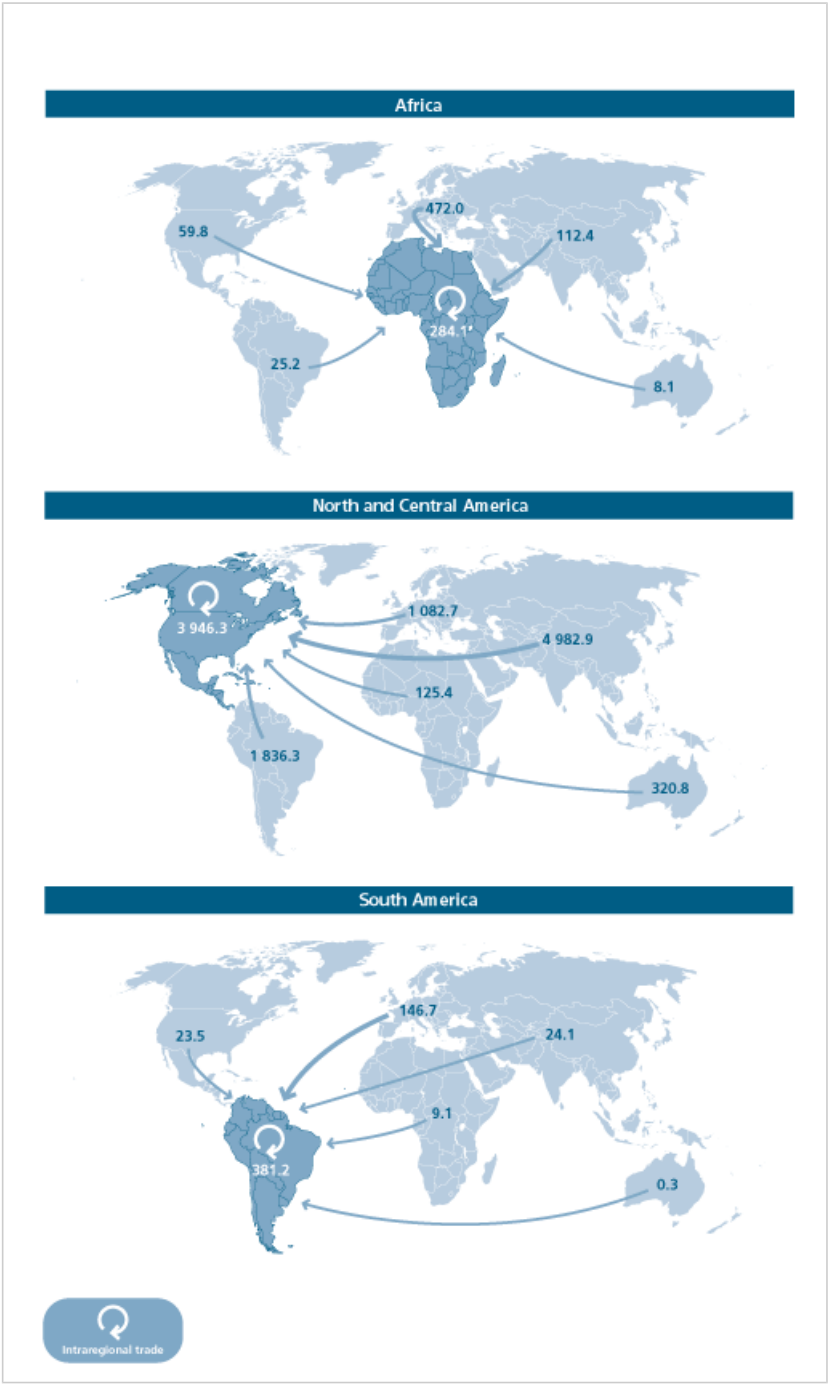
Figure 2: World fish utilization and supply, excluding China



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Overview [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#p_1]

Annex 25:

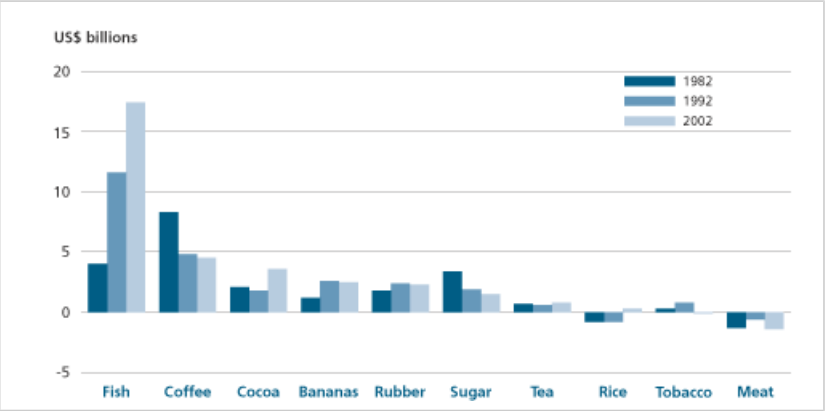
Figure 30: Trade Flows by continent (total imports in US$ millions, c.i.f.; averages for 2000-02)



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 26:

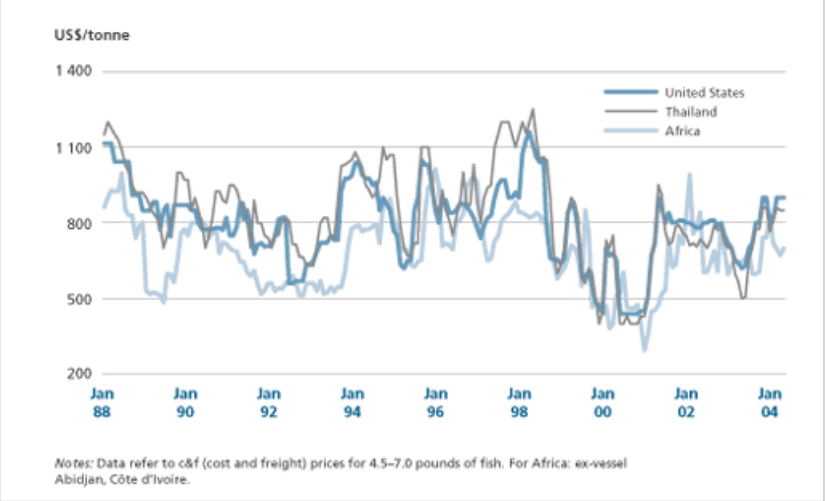
Figure 31: Net exports of selected agricultural commodities in developing countries



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 27:

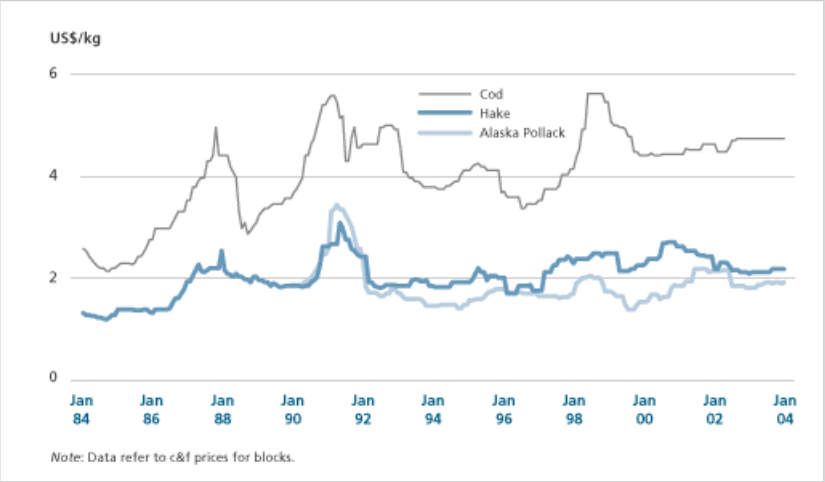
Figure 32: Skipjack tuna prices in Africa, Thailand and the United States



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 28:

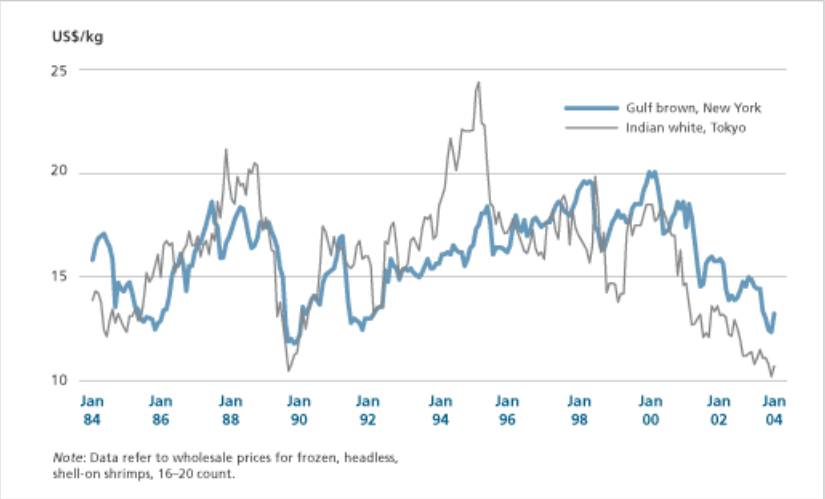
Figure 33: Groundfish prices in the United States



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 29:

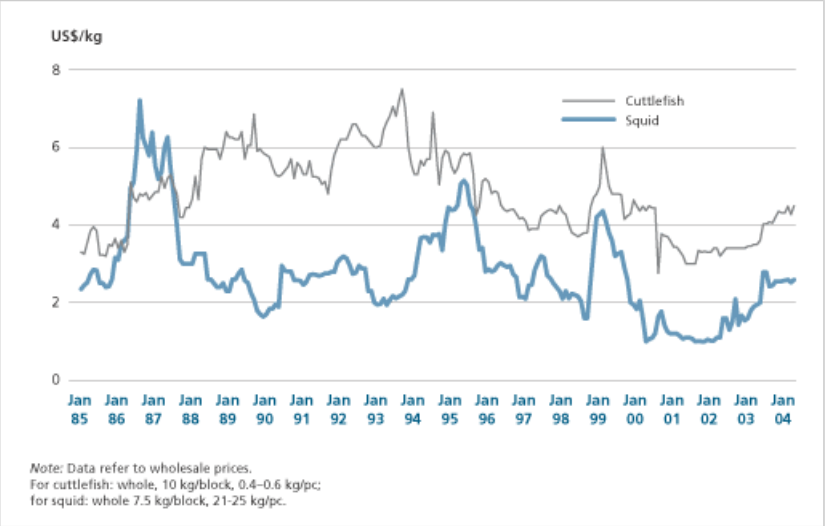
Figure 34: Shrimp prices in Japan and the United States



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 30:

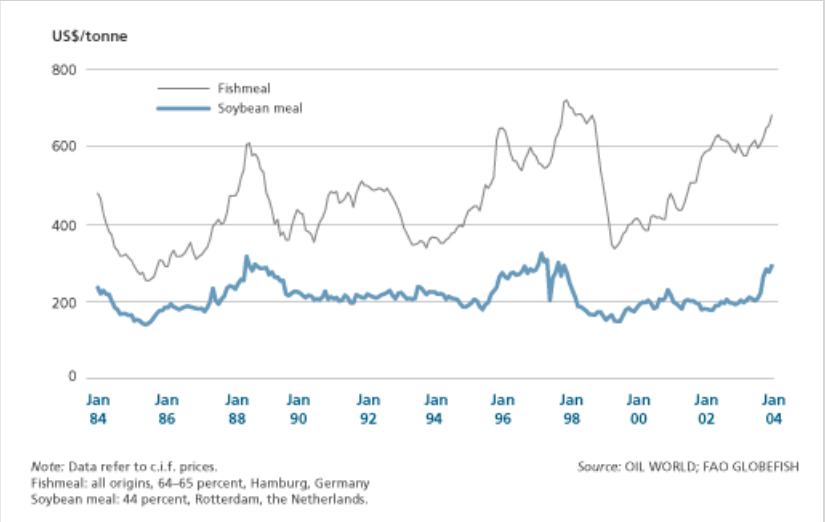
Figure 35: Cephalopods prices in Japan



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 31:

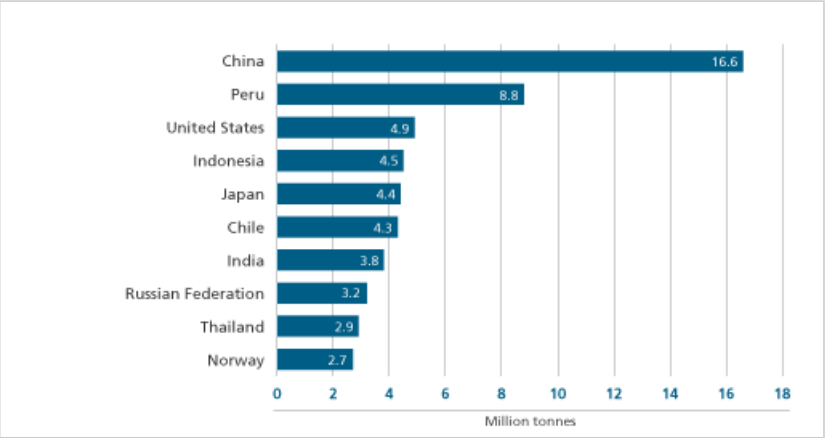
Figure 36: Fishmeal and soybean meal prices in Germany and the Netherlands



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

Annex 32:

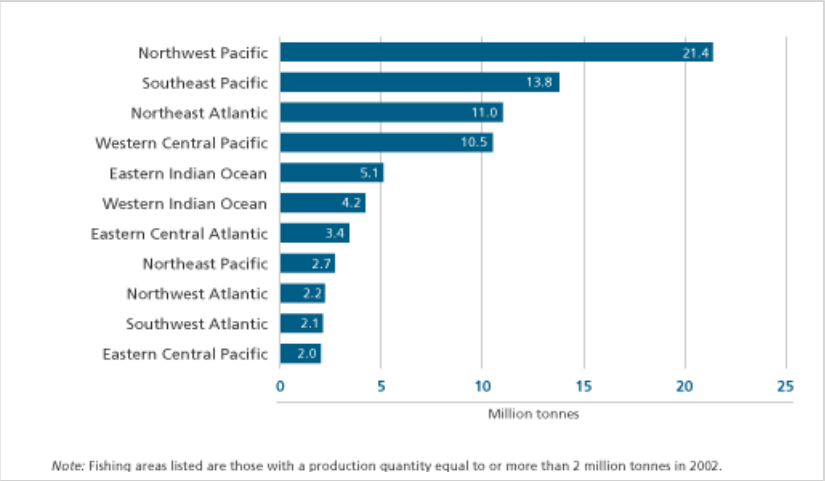
Figure 4: Marine and inland capture fisheries: top ten producer countries in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 33:

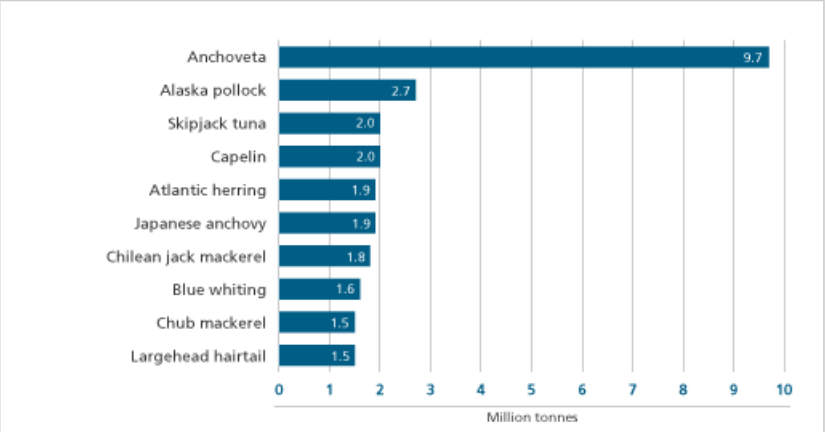
Figure 5: Capture fisheries production: principal marine fishing areas in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 34:

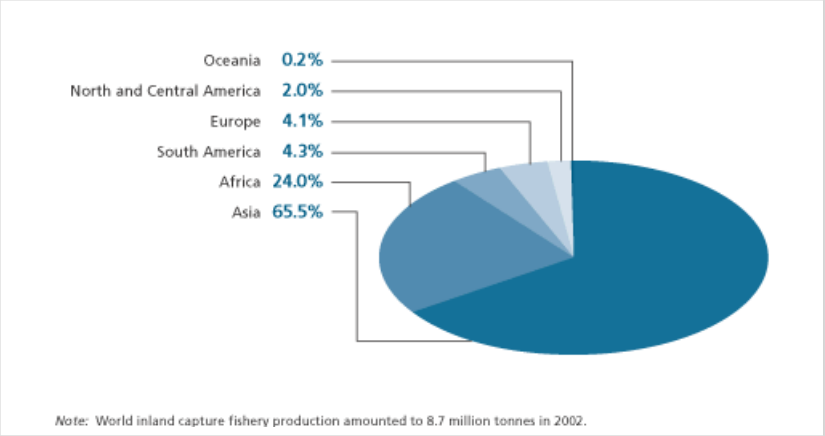
Figure 6: Marine capture fisheries production: top ten species in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 35:

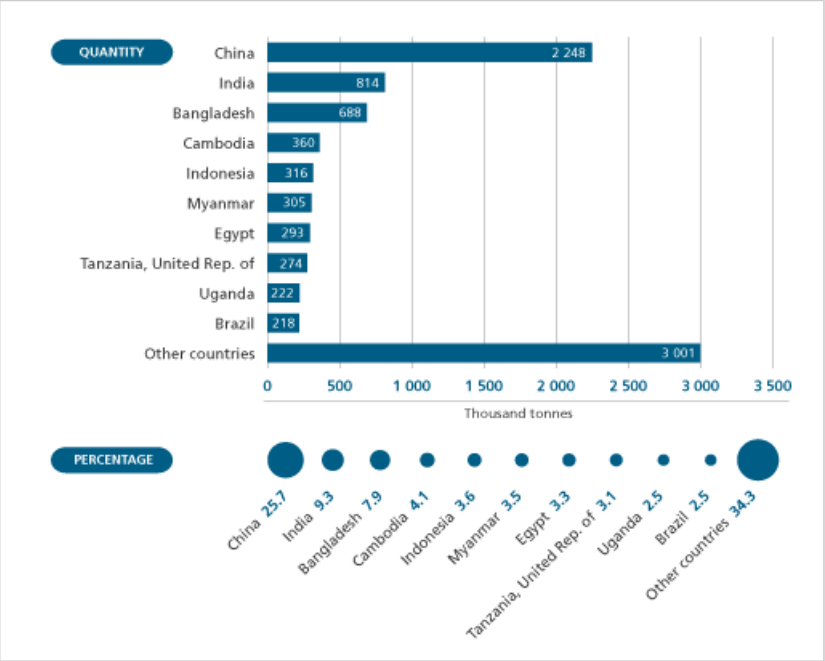
Figure 7: Inland capture fisheries by continent in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 36:

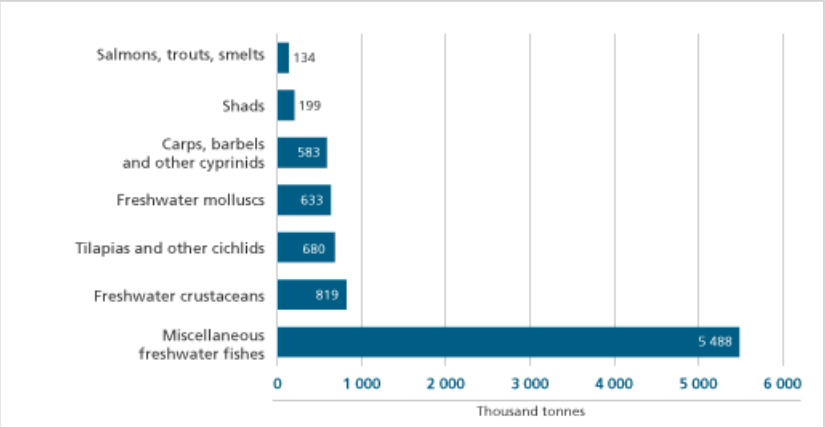
Figure 8: Inland capture fisheries: top ten producer countries in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 37:

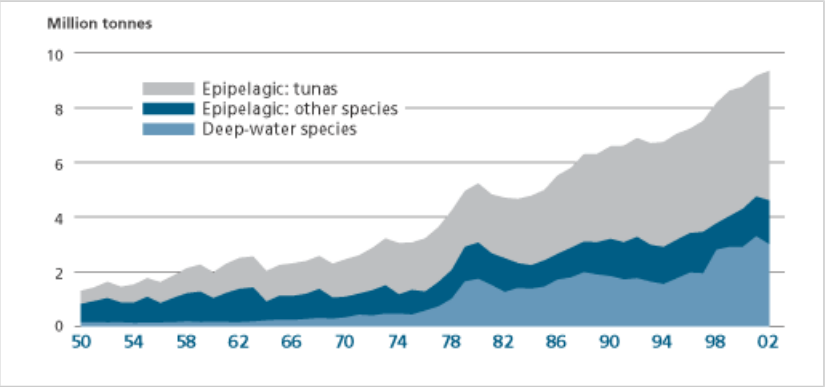
Figure 9: Inland capture fisheries: major species groups in 2002



Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 38:

Figure A: World catches of oceanic species (epipelagic and deep-water) occuring principally in high seas areas



Source: FAO"The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 39:

Fish contaminants - Example 1: Mercury in fish

"In 2003, the Codex Joint Expert Committee on Food Additives (JECFA), administered by FAO and the World Health Organization (WHO), revised the guideline for mercury in fish to 1.6 micrograms of methyl mercury intake per day per kilogram of body weight, nearly half the original guideline of 3.3 micrograms.1 At the same time, the JECFA review emphasized that people should continue to eat a normal diet of fish, pointing out its many health benefits. Included in its considerations was the recently released Seychelles Islands study, which analyzed mother and child pairs and fish consumption for almost ten years. That study determined that high levels of fish consumption led to no adverse effect to a foetus or child's neurodevelopment.

In order to translate the recommended weekly intake of mercury into national maximum mercury levels in fish it is necessary to take into account consumption patterns, other sources of mercury intake and other relevant information. However, public pressure often leads to consumer confusion between the maximal allowable levels necessary to protect human health and the limits recommended to protect the environment. The latter require that appropriate actions be taken consistently and for a significant period of time in order to reduce the environmental burden of the contaminant. In the case of mercury, for example, proper energy policies would be required to reduce reliance on coal-fired power stations and the reduction of waste incineration; these two factors combined account for 70 percent of new, human-made mercury emissions to the atmosphere.

Unfortunately, a number of media articles and public health warnings exacerbated the pre-existing consumer confusion and sent out conflicting messages regarding the health benefits of fish and seafood and the mercury risks from fish to the point that local authorities in California, the United States, instructed grocery retailers to display signs cautioning consumers about the dangers of mercury in fish and threatened to sue those that did not abide.

Since then, the Food and Drug Administration (FDA) and Environmental Protection Agency (US EPA) in the United States have released a consumer advisory document along the lines of the recent JECFA guidelines but stressing that fish and shellfish are an important part of a healthy diet. Despite this measure, the tuna industry considers that the damage already inflicted will be difficult to repair."

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade. Box 4 [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1337_92005]

For further information on the health effects of Mercury: read the GreenFacts summary [see http://www.greenfacts.org/en/mercury/mercury-1.htm] of the UNEP "Global Mercury Assessment"

Annex 40:
Fish contaminants - Example 2: Organic pollutants in salmon

"A recent study published in the magazine Science reported on 'Global assessment of organic contaminants in farmed salmon'. Concentrations of 14 chlororganic compounds in farmed and wild salmon were examined. Each of these compounds is thought to cause cancer. The study revealed that all the substances tested were present in higher concentrations in farmed salmon than wild salmon. This applied in particular to fish produced on European farms. Although the levels found were consistent with results from earlier surveys and official controls, the researchers concluded hastily that consumers should tightly limit their consumption of farmed salmon and suggested that anyone who does not want to additionally increase the risk of getting cancer should restrict consumption of one portion of farmed salmon to a maximum of once every two months.

On the basis of the identified concentrations of toxic substances, the authors of the study then calculated the portion sizes for wild and farmed salmon that could be consumed without increasing the risk of cancer. The recommended quantities fluctuate strongly depending on the salmon's origins. Whereas, for example, eight portions (227 g) of salmon from Kodiak (Alaska) could be consumed per month, consumers should not eat more than one portion of Chilean farmed salmon per month, no more than one portion of Norwegian farmed salmon every two months, or one portion of farmed salmon from Scotland or the Faeroe Islands no more than every four to five months.

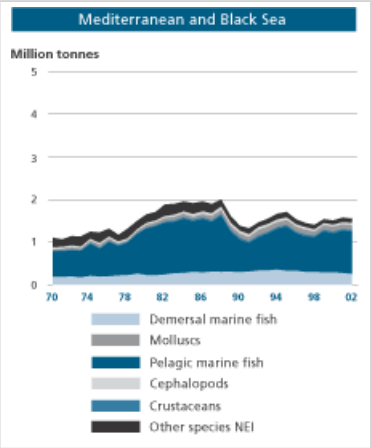
It is these calculations that caused a big stir. The model used for the calculations is highly disputed among scientists and is not specifically intended for calculations on commercially produced fish; it had been developed by the US EPA to estimate how much of their catches could be eaten by anglers who regularly fished in contaminated inland waters. By contrast, commercial products should be evaluated according to the FDA criteria. To refute the model, researchers calculated that on the basis of the PCB contamination levels cited in the study, after 70 years of regular consumption of 200 g of salmon per week the risk of developing cancer for the high-risk group (pregnant women, children, nursing mothers) would be one-hundred-thousandth higher – equal to a rise in risk of 0.0001 percent. By comparison, the risk of dying of a cardiovascular disease by eliminating fish completely from the diet can be as high as 30 percent!

It is therefore understandable that the recommendations made by the authors of the Science study to limit salmon consumption met with strong objections in Europe, the United States and elsewhere. Food control and health authorities reacted by announcing that its findings did not raise new food safety issues as the levels were consistent with results from other surveys and official controls. They encouraged consumers to continue eating salmon and other fish, the health benefits of which had been proven beyond all doubt in over 5 000 scientific studies. Unfortunately, the study had already alarmed the consuming public, and retail orders of farmed fish fell by 20–30 percent in countries such as Ireland, Norway and Scotland. A great deal of time and effort were required to restore consumer confidence."

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish trade. Box 4 [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm]

Annex 41:
Mediterranean and Black Sea

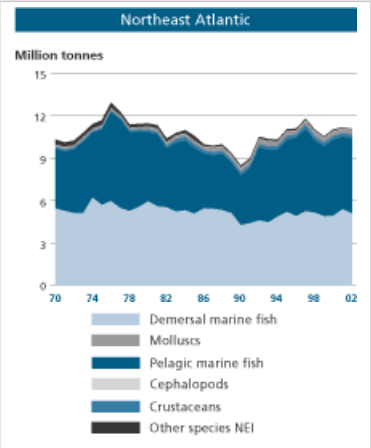
Trends in fisheries resources since 1970



Annex 42:

Northeast Atlantic

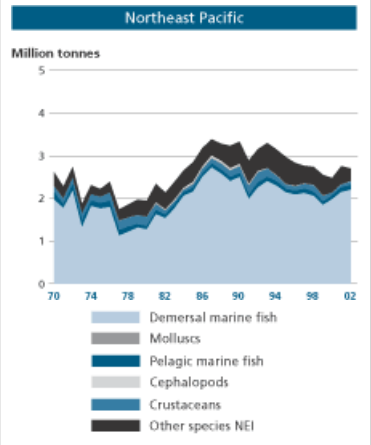
Trends in fisheries resources since 1970



Annex 43:
Northeast Pacific

The Alaskan pollock is the main caught species in this region

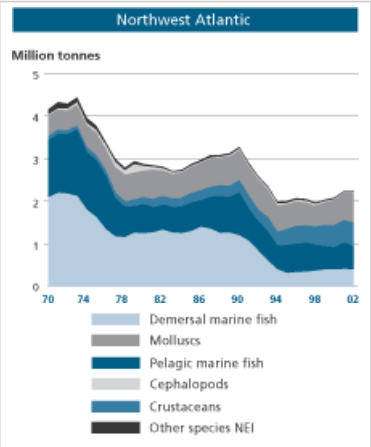
Trends in fisheries resources since 1970



Annex 44:
Northwest Atlantic

Catches in this region have been at their lowest level in 1994 and again in 1998. There was a slight increase in the following years, with catches of 2.26 million tonnes in 2002. Catches are now increasing slowly.

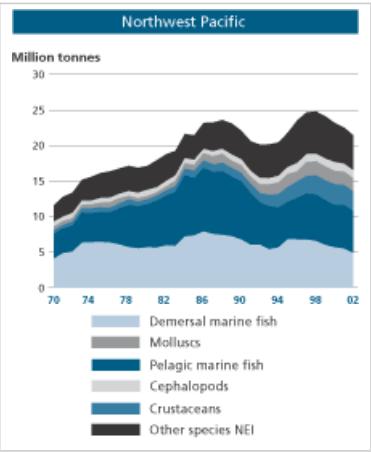
Trends in fisheries resources since 1970



Annex 45:
Northwest Pacific

Catches in this region have been around 20 to 24 million tonnes per year for the last 20 years. Major caught species include the Japanese pilchard and the Alaskan pollock.

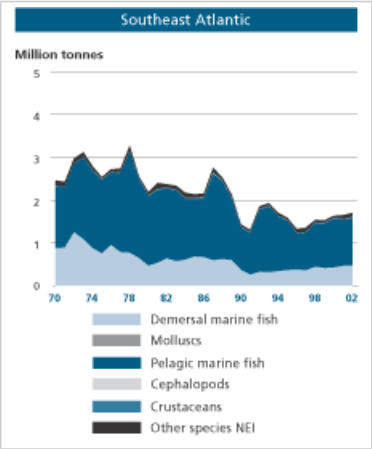
Trends in fisheries resources since 1970



Annex 46:
Southeast Atlantic

Catches from this region were 1.7 million tonnes in 2002, and the most important group caught being small pelagic fish.

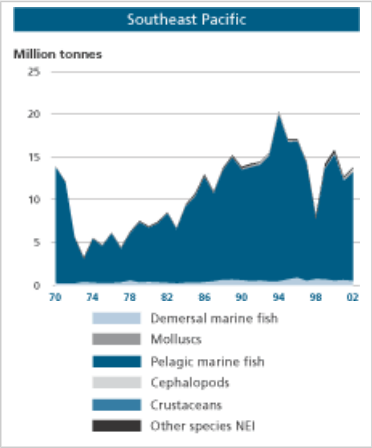
Trends in fisheries resources since 1970



Annex 47:
Southeast Pacific

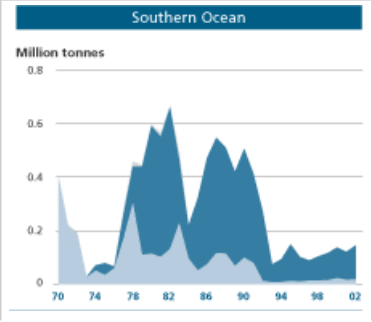
Major caught species in this region include the Peruvian anchoveta, the Chilean jack mackerel and the South American pilchard.

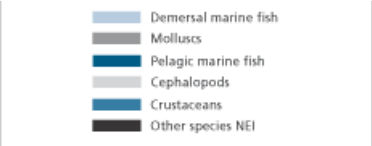
Trends in fisheries resources since 1970



Annex 48:
Southern Ocean

Trends in fisheries resources since 1970

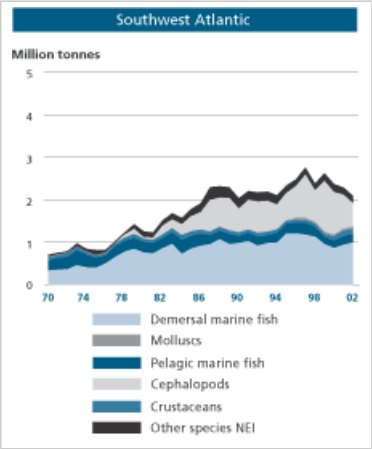




Annex 49:
Southwest Atlantic

Major caught species from this region include the Argentine shortfin squid.

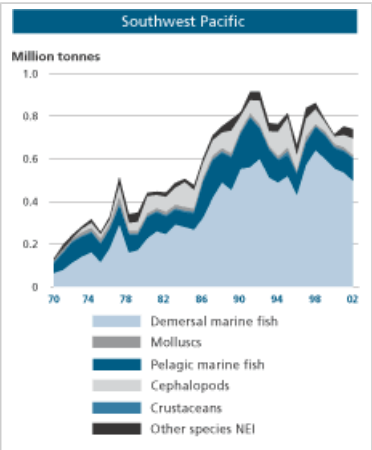
Trends in fisheries resources since 1970



Annex 50:
Southwest Pacific

The highest recorded catches in this region were in 1992, at 917 000 tonnes, with a gradual decline since, but a slight increase since 2000.

Trends in fisheries resources since 1970



Annex 51:

TABLE 10: Total and per capita food fish supply by continent and economic grouping in 2001

	Total food supply	Per capita food supply
	(million tonnes live weight equivalente)	*(kg/year)*
World	**100.2**	**16.3**
World excluding China	**67.9**	**13.9**
Africa	6.3	7.8
North and Central America	8.5	17.3
South America	3.1	8.8
China	32.3	25.6
Asia (excluding China)	34.8	14.1
Europe	14.4	19.8
Oceania	0.7	23.0
Industrialized countries	26.0	28.6
Economies in transition	4.7	11.4
LIFDCs (excluding China)	22.5	8.5
Developing countries excluding LIFDCs	14.9	14.8
Note: Based on data available to FAO in December 2003. Some discrepancy may occur with other sections that quote data made available to FAO more recently.		

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fish utilization [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1257_75403]

Annex 52:

TABLE 1: World fisheries production and utilization

	1998	1999	2000	2001	2002	2003[1]
	(million tonnes)					
PRODUCTION						
INLAND						
Capture	8.1	8.5	8.7	8.7	8.7	9.0
Aquaculture	18.5	20.2	21.3	22.5	23.9	25.2
Total inland	**26.6**	**28.7**	**30.0**	**31.2**	**32.6**	**34.2**
MARINE						
Capture	79.6	85.2	86.8	84.2	84.5	81.3
Aquaculture	12.0	13.3	14.2	15.2	15.9	16.7
Total marine	**91.6**	**98.5**	**101.0**	**99.4**	**100.4**	**98.0**
Total capture	87.7	93.8	95.5	92.9	93.2	90.3
Total aquaculture	30.6	33.4	35.5	37.8	39.8	41.9
Total world fisheries	**118.2**	**127.2**	**131.0**	**130.7**	**133.0**	**132.2**
UTILIZATION						
Human consumption	93.6	95.4	96.8	99.5	100.7	103.0
Non-food uses	24.6	31.8	34.2	31.1	32.2	29.2
Population *(billions)*	5.9	6.0	6.1	6.1	6.2	6.3
Per capita food fish supply *(kg)*	15.8	15.9	15.9	16.2	16.2	16.3

Note: Excluding aquatic plants.
[1] Preliminary estimate.

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Overview [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#p_1]

Annex 53:

TABLE 2: Fisheries production and utilization: world excluding China

	1998	1999	2000	2001	2002	2003[1]
	(million tonnes)					
PRODUCTION						
INLAND						
Capture	5.8	6.2	6.5	6.5	6.5	6.5
Aquaculture	5.3	6.0	6.1	6.6	6.9	7.5
Total inland	**11.1**	**12.2**	**12.6**	**13.1**	**13.4**	**14.0**
MARINE						
Capture	64.7	70.3	72.0	69.8	70.1	67.0
Aquaculture	4.4	4.7	4.8	5.1	5.1	5.5
Total marine	**69.1**	**75.0**	**76.8**	**74.9**	**75.2**	**72.5**
Total capture	70.4	76.5	78.5	76.3	76.6	73.5
Total aquaculture	9.8	10.7	10.9	11.7	12.0	13.0
Total world fisheries	**80.2**	**87.2**	**89.4**	**88.1**	**88.7**	**86.5**
UTILIZATION						
Human consumption	62.3	62.9	63.7	65.5	65.5	66.8
Non-food uses	17.9	24.3	25.7	22.5	23.2	19.7
Population *(billions)*	4.7	4.7	4.8	4.9	5.0	5.0
Per capita food fish supply *(kg)*	13.3	13.2	13.2	13.4	13.2	13.3
Note: Excluding aquatic plants. [1] Preliminary estimate.						

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Overview [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#p_1]

Annex 54:

TABLE 3: Inland capture fisheries production by economic class

Economic class	Production in 2002 *(million tonnes)*	Percentage of world production
China	2.25	25.7
Other developing countries or areas	5.95	68.1
Economies in transition	0.32	3.6
Industrialized countries	0.22	2.5
Total	**8.74**	

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Capture fisheries production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P328_10295]

Annex 55:

TABLE 5: World aquaculture production: average annual rate of growth for different species groups

	Crustaceans	Molluscs	Freshwater fish	Diadromous fish	Marine fish	Overall
Time period	*(percent)*					
1970-2002	**18.1**	**7.8**	**9.6**	**7.4**	**10.5**	**8.9**
1970-1980	23.9	5.6	6.0	6.5	14.1	6.3
1980-1990	24.1	7.0	13.1	9.4	5.3	10.8
1990-2000	9.9	5.3	7.8	7.9	12.3	10.5
2000-2002	**11.0**	**4.6**	**5.8**	**6.7**	**9.5**	**5.9**

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Aquaculture production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P383_23073]

Annex 56:

TABLE 6: Top ten species groups in aquaculture production: quantity and growth

	2000	2002	Share of 2002 total	APR
Species group	*(tonnes)*		*(percent)*	
Top ten species groups in terms of quantity				
Carps and other cyprinids	15 451 646	16 692 147	41.9	3.9
Oysters	3 997 394	4 317 380	10.8	3.9
Miscellaneous marine molluscs	2 864 199	3 739 702	9.4	14.3
Clams, cockles, arkshells	2 633 441	3 430 820	8.6	14.1
Salmons, trouts, smelts	1 545 149	1 799 383	4.5	7.9
Tilapias and other cichlids	1 274 389	1 505 804	3.8	8.7
Mussels	1 370 953	1 444 734	3.6	2.7
Miscellaneous marine molluscs	1 591 813	1 348 327	3.4	-0.8
Shrimps, prawns	1 143 774	1 292 476	3.2	6.3
Scallops, pectens	1 154 470	1 226 568	3.1	3.1
Top ten species groups in terms of growth				
Cods, hakes, haddocks	169	1 445		192.4
Misc. demersal fishes	8 701	15 302		32.6
Misc. marine crustaceans	34 202	52 377		23.7
Flounders, halibuts, soles	26 309	38 909		21.6
Tunas, bonitos, billfishes	6 447	9 445		21.0
Freshwater crustaceans	411 458	591 983		19.9
Crabs, sea-spiders	140 235	194 131		17.7
Freshwater molluscs	10 220	13 414		14.6
Misc. freshwater fishes	2 864 199	3 739 702		14.3
Clams, cockles, arkshells	2 633 441	3 430 820		14.1
Note: Data exclude aquatic plants. APR refers to the average annual percentage growth rate for 2000–2002.				

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Aquaculture production [see http://www.fao.org/docrep/007/y5600e/y5600e04.htm#P383_23073]

Annex 57:

TABLE 7: World fishers and fish farmers by continent

	1990	1995	2000	2001	2002
	(thousands)				
Total					
Africa	1 917	2 238	2 585	2 640	2 615
North and Central America	767	770	751	765	762
South America	769	814	784	760	770
Asia	23 654	28 552	30 770	31 493	32 821
Europe	654	864	821	796	746
Oceania	74	76	86	80	81
World	**27 835**	**33 314**	**35 797**	**36 534**	**37 795**
Of which fish farmers[1]					
Africa	...	105	112	115	111
North and Central America	53	74	74	69	65
South America	16	88	92	92	93
Asia	3 698	6 003	8 503	8 720	9 502
Europe	11	36	37	39	39
Oceania	neg.	1	5	5	5
World	**3 778**	**6 307**	**8 823**	**9 040**	**9 815**

[1] Data for 1990 and 1995 were reported by only a limited number of countries and therefore are not comparable with those for the following years. neg. = negligible; ... = data not available.

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fishers and fish farmers [see http://www.fao.org/DOCREP/007/y5600e/y5600e04.htm#P693_32231]

Annex 58:

TABLE 8: Number of fishers and fish farmers in selected countries

Country	Fishery		1990	1995	2000	2001	2002
WORLD	FI + AQ	(number)	**27 835 441**	**33 314 345**	**35 796 679**	**36 534 194**	**37 795 203**
		(index)	***78***	***93***	***100***	***102***	***106***
	FI	(number)	…	…	26 974	27 494	27 980
		(index)	…	…	100	102	104
	AQ	(number)	…	…	8 823	9 040	9 815
		(index)	…	…	100	102	111
China	FI + AQ	(number)	9 092 926	11 428 655	12 233 128	12 944 046	12 337 732
		(index)	74	93	100	106	101
	FI	(number)	7 352 827	8 759 162	8 510 779	9 097 276	8 377 036
		(index)	86	103	100	107	98
	AQ	(number)	1 740 099	2 669 493	3 722 349	3 846 770	3 960 696
		(index)	47	72	00	103	106
Indonesia	FI + AQ	(number)	3 617 586	4 568 059	5 247 620	5 477 420	5 662 944
		(index)	69	87	100	104	108
	FI	(number)	1 995 290	2 463 237	3 104 861	3 286 500	3 392 780
		(index)	64	79	100	106	109
	AQ	(number)	1 622 296	2 104 822	2 142 759	2 190 920	2 270 164
		(index)	76	98	100	102	106
Japan	FI + AQ	(number)	370 600	301 440	260 200	252 320	243 320
		(index)	142	116	100	97	94
Peru[1]	FI + AQ	(number)	43 750	62 930	66 361	66 382	66 502
		(index)	66	95	100	100	100
Norway	FI + AQ	(number)	27 518	28 269	23 729	22 637	22 105
		(index)	116	119	100	95	93
	FI	(number)	27 518	23 653	20 098	18 955	18 648
		(index)	137	118	100	94	93
	AQ	(number)	…	4 616	3 631	3 682	3 457
		(index)	…	127	100	101	95
Iceland	FI	(number)	6 951	7 000	6 100	6 000	6 000
		(index)	114	115	100	98	98

Note: FI = fishing, AQ = aquaculture; index: 2000 = 100; … = data not available.
[1] Data for Peru exclude inland fishers and fish farmers.

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, Fishers and fish farmers [see http://www.fao.org/DOCREP/007/y5600e/y5600e04.htm#P693_32231]

Annex 59:

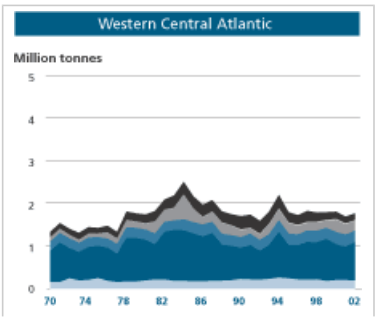
TABLE 9: Fishing vessels of 100 GT and above: new building, flagging in and out of shipping registers and scrappings and losses in 2003

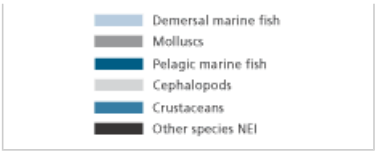
	New building	Flagging out	Flagging in	Scrappings and losses	Change
Selected country register					
Belize	5	178	81	0	-92
Equatorial Guinea	0	17	4	0	-13
Honduras	0	16	15	0	-1
Iceland	1	33	11	2	-23
Japan	0	138	1	3	-140
Namibia	1	10	16	0	7
Netherlands	9	22	1	13	-25
Norway	28	19	11	31	-21
Panama	2	21	33	0	14
Russian Federation	7	50	82	3	36
Saint Vincent and the Grenadines	0	38	7	1	-32
South Africa	2	3	29	1	27
Spain	64	13	1	25	27
United Kingdom	18	38	8	65	-77
United States	21	59	3	12	-47
Unknown	2	0	242	0	244
Subtotal	**160**	**665**	**545**	**156**	**-116**
All country registers	**384**	**916**	**916**	**347**	**37**
Note: Changes to the database of Lloyd's Maritime Information Services (for fishing vessels).					

Source: FAO "The State of World Fisheries and Aquaculture, 2004"
Part 1: World review of fisheries and aquaculture, The status of the fishing fleet [see http://www.fao.org/DOCREP/007/y5600e/y5600e05.htm#P1094_46148]

Annex 60:
Western Central Atlantic

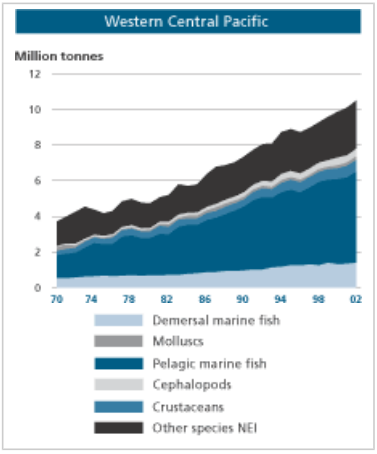
Trends in fisheries resources since 1970





Annex 61:
Western Central Pacific

Trends in fisheries resources since 1970



Annex 62:
Western Indian Ocean

The large portion of "Other Species" caught reflects the poor species breakdown of catches in this region.

Trends in fisheries resources since 1970