

# Seafood markets and trade: A global perspective and an overview of EU Mediterranean countries

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**SUMMARY** – World production and supply of fish and fisheries products reached an estimated 143 million tons in 2007, up slightly from 2006 (141 million t). Capture fisheries were stable at 91 million tons whereas aquaculture continues to grow, albeit at a declining rate, reaching 52 million tons in 2007. As a percentage of supplies to human consumption (excluding fish meal), the share of aquaculture has now reached 45%. Trade continues to grow, up 8.1% in 2007 to an estimated US\$ 93 billion (export value). Developing countries represent around 50% of exports whereas the US, Japan and the EU take almost 3/4 of all imports. China is the largest producer as well as the largest exporter. One of the major obstacles to increased international trade in fish and fisheries products (beyond physical availability of product) are the quality and safety related import requirements in developed countries, including those related to labelling, certification and traceability. The Mediterranean countries are mainly responsible for the enormous deficit in the trade balance of the European Union for fishery and aquaculture products, Italy holding first place with a deficit reaching almost 2.5 billion euros, followed by France and Spain, each with a deficit of 2 billion euros. The five largest Mediterranean countries of the European Union (France, Greece, Italy, Portugal and Spain) account for 38% of the total population of Europe, but make up approximately 53% of the consumption. The Mediterranean countries are therefore top consumers and deficitary producers of fishery and aquaculture products. These high figures refer particularly to shellfish and crustacean consumption since the five Mediterranean countries account for 72% of the total European consumption of these species, in comparison to 47% for finfish. There is however a wide disparity in the levels of consumption per caput, with almost 55 kilos in Portugal and nearly 50 kilos in Spain, followed by 35 kilos in France, 27 kilos in Italy and 21 kilos in Greece. With the exception of Portugal, the share of aquaculture in the market for fish and fishery products is just as strong in the Mediterranean countries as in the other countries of the European Union. However, this high share of aquaculture is mostly contributed by crustaceans and shellfish.

**Keywords:** Mediterranean sea, fisheries, aquaculture, consumption.

**RESUME** – "Le marché des produits de la pêche et de l'aquaculture : Une perspective globale et une vue d'ensemble des pays méditerranéens de l'Union Européenne". La production ainsi que les livraisons mondiales de poisson et produits de la pêche ont été estimés à 143 millions de tonnes en 2007, légèrement en hausse par rapport à 2006 (141 millions t). Les pêcheries de capture se sont stabilisées à 91 millions de tonnes tandis que l'aquaculture poursuit son expansion, à un rythme moindre toutefois, ayant atteint 52 millions de tonnes en 2007. En pourcentage des livraisons pour la consommation humaine (hors farine de poisson), la part de l'aquaculture a atteint présentement 45%. Le commerce poursuit sa croissance, avec une hausse de 8,1% en 2007, ayant été estimé à US\$ 93 milliards (valeur à l'exportation). Les pays en voie de développement représentent environ 50% des exportations tandis que les Etats-Unis, le Japon et l'UE représentent presque les 3/4 de toutes les importations. La Chine est le plus grand producteur ainsi que le plus grand exportateur. Un des principaux obstacles à un plus grand commerce international en matière de poisson et produits de la pêche (au-delà de la disponibilité physique de produit) sont les exigences de qualité et de sécurité pour l'importation dans les pays développés, y compris les normes d'étiquetage, certification et traçabilité. Les pays méditerranéens sont les principaux responsables de l'énorme déficit de la balance commerciale de l'Union Européenne en matière de produits de la pêche et de l'aquaculture, avec en premier lieu l'Italie dont le déficit atteint près de 2,5 milliards d'euros, devant la France et l'Espagne avec 2 milliards d'euros chacune. Les cinq plus grands pays méditerranéens de l'Union Européenne (Espagne, France, Grèce, Italie, Portugal) rassemblent 38% de la population totale européenne, mais contribuent à hauteur de 53% de la consommation. Les pays méditerranéens sont donc sur-consommateurs de produits de la pêche et de l'aquaculture. Cette forte consommation s'applique tout particulièrement aux coquillages et crustacés puisque les 5 pays méditerranéens assurent 72% de la consommation européenne totale de ces espèces, contre 47% pour les poissons. Il existe cependant une grande disparité dans les niveaux de consommation par habitant, avec près de 55 kilos au Portugal et près de 50 kilos en Espagne, contre 35 kilos en France, 27 kilos en Italie et 21 kilos en Grèce. Hormis au Portugal, la part de l'aquaculture dans le marché des produits aquatiques est également plus forte dans les pays méditerranéens que dans les autres pays de l'Union Européenne. Cependant, cette importance de l'aquaculture est principalement due aux crustacés et coquillages.

**Mots-clés :** Méditerranée, pêche, aquaculture, consommation.

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## A Global perspective

### Production and supply

#### *Aquaculture set to overtake capture fisheries as the major source of fish supply*

World fish production is characterized by ever increasing aquaculture production, albeit at declining growth rates, while captures fisheries have fallen back, a tendency which prevailed also in 2007. The contraction in captures fisheries reflects generalized over-fishing and reduced fish stocks, especially of groundfish resources, but also reduced anchoveta catches in Peru in 2006 and 2007. In addition, high fuel prices are influencing negatively the high sea fisheries, such as tuna fisheries. Shrimp trawling, which is a particularly fuel intensive fishing activity, was also negatively affected by the surge of oil prices in 2007.

On the other hand, the rise in aquaculture production continued in 2007, including for all major species produced for international trade, such as salmon, shrimp, catfish, tilapia, the production of which recorded two digits increases. Very soon, aquaculture will overtake capture fisheries as the main source of food fish supply (fish for human consumption). At the moment, its share is about 45 percent. However, the steady increase in aquaculture production of about 2 million tons per year is not sufficient in the long run to meet expected increases in demand. In fact, the growth rate of aquaculture production is declining and new sources of growth are necessary in order to meet new demand and guarantee food security in fish consuming countries. This is a major challenge in the years ahead as the alternative is a situation with unmet demand and rising prices.

In the immediate future, the overall trend of rising aquaculture production, on the one hand, and weaker capture fisheries, on the other, is more than likely to proceed, although limited availability of fishmeal and fish oil, an essential ingredient in feed for carnivorous species, may act as a constraint on the increasing aquaculture production. Indeed, most of the fishmeal/oil comes from capture fisheries of small pelagic fish, which declined in 2006 and 2007. To overcome the problem, the industry in all main aquaculture feed producing countries is looking for new feed formulations based on non-fish protein that still develops omega-3 in the cultured fish.

China continues to be the major producer of fish and fisheries products, being the largest supplier in both capture fisheries and in aquaculture. In capture fisheries China (17 million tons) is followed by Peru (9.4 million t), the USA (4.9 million t), Indonesia (4.4 mill t), Chile (4.3 mill t), Japan, (4.1 mill t.), India (3.5 mill t), Russia (3.2 mill t), Thailand (2.6 mill t) and Norway (2.4 mill t) (FAO stats for 2005).

In aquaculture production (excluding aquatic plants), China (32.4 million t) is followed at a distance by India (2.8), Viet Nam (1.4), Indonesia (1.2), Thailand (1.1), Bangladesh (0.9), Japan (0.7), Chile (0.7), Norway (0.7) and the Philippines (0.6) (FAO stats for 2005).

### Trade

#### *World fish trade scheduled soon to top US\$ 100 billion, for the first time*

With 79 percent of the world production of fish and fishery products (capture plus aquaculture) taking place in developing countries, it is only natural that these play a major role in international trade. In fact, half of world fish exports of US\$ 86 billion (2006) now originate in developing countries. Net export revenues continue to be of vital importance to the economy of many fish exporting developing countries, amounting to more than US\$ 22 billion per year. Imports are mostly by developed countries, which are responsible for about 80 percent of the total import value of US\$ 90 billion (2006) (Fig. 1).

The most traded species in value is shrimp (18%) followed by groundfish (10%), tuna (9%), salmon (9%), molluscs (5%), cephalopods (4%) and various small pelagic species (4%). The fast-growing freshwater-sector mostly relying on farmed production has risen to 3%.

International trade in fish and fishery products continues to grow strongly, reflecting rising consumption not only in the EU and the United States but in all other regions, including Asia with the notable exception of Japan. Rising trade volumes (except for fish meal) and values also testify to the increasing globalization of the fisheries value chain, in which processing is being outsourced to Asia

(e.g. China, Vietnam and Thailand) and, to a lesser degree, Central and Eastern Europe (e.g. Poland and Baltic countries) and North Africa (Morocco). It is noteworthy that, many species, such as salmon, tuna and tilapia, are increasingly traded in the processed form (fillets or loins).

China<sup>1</sup> is the largest fish exporter at US\$ 8.9 billion (2006) but its imports are also growing, reaching US\$ 4.2 billion (2006). The increase in China's imports is partly a result of outsourcing, as Chinese processors now import raw material from all major regions, including South and North America and Europe, for re-processing and export, but it also reflects China's growing domestic consumption of species not available from local sources. China's trade in 2007 (six months) show strong growth in both exports and imports (see Table 1). On the present trend, China will soon overtake Spain as the world's third largest importing country<sup>2</sup> after Japan and the United States.

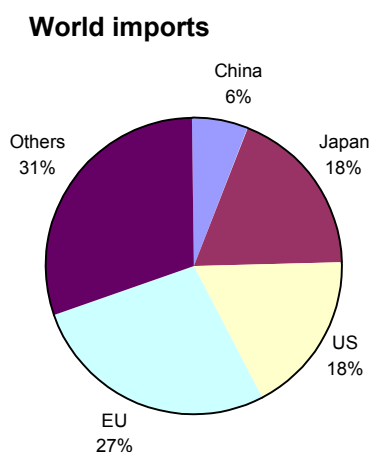


Fig. 1. Share of world imports values in 2006 excluding intra-EU trade (source: FAO).

Table 1. Imports and exports of fish and fishery products in China (Jan – June 2007 – 6 months)

	Volume (1000 tonnes)	±Increase to last year (%)	Value (US\$ million)	±Increase to last year (%)
Exports	1,477	11.5	4,680	14.9
Imports	1,717	7.3	2,300	20.57
Total	3,194		6,970	

Source: Chinese Customs (INFOYU).

The EU is by far the largest single market for imported fish and fishery products. This reflects both its growing domestic consumption but also the fact that the EU itself has enlarged to include 27 member countries. 2006 imports (EU25) reached US\$ 38 billion, up 16 percent from 2005, or 42 percent of total world imports. However, official statistics also include trade among EU partners. If we exclude this intra-regional trade, the EU imported US\$ 20.5 billion worth of fish and fishery products from non-EU suppliers, an increase of 16 percent from 2005. This still makes the EU the largest market in the world with about 27 percent of world imports. Partial figures for 2007 confirm the present upward trend of EU imports, with a 3 percent increase in values recorded in the January-July period.

<sup>1</sup> Excluding Hong Kong SAR and Taiwan Province of China.

<sup>2</sup> Including Hong Kong SAR and Taiwan Province of China makes China already the third largest importer.

Japan is the largest single country market for fish, but import volumes have been declining in recent years, due to weaker domestic demand associated with a long-term shift towards reduced fish consumption. In 2006, imports, which are dominated by shrimp, tuna and salmon showed a 3.5 percent decline from 2005 to below US\$14 billion, and a 5.6 percent reduction in volume to 3.2 million tonnes. Figures in 2007 confirm the downward trend, with a further 5.5 percent drop in import value.

The United States is the second largest single country import market after Japan. With a growing population and a long-term positive trend in seafood consumption, imports reached US\$13.3 billion in 2006, 1.5 percent more than in 2005. In 2007, they were set to overtake those of Japan, converting the United States into the largest single country market. Imported quantities of edible fish products reached 2.5 million tons in 2006. 2007 figures (8 months) show a small increase in volume of 0.7 percent, whereas import values increased more strongly, by 5.6 percent.

The largest US import item in value is shrimp followed by salmon, crab and tuna. Of note is the strong increase in tilapia imports in 2007 (volume +17 percent, value +21 percent) and crab (volume +12 percent, value +22 percent).

## Utilization

World per caput consumption of fish and fishery products has risen steadily over the last decades from an average for the decade of 11.5 kg (live weight) during the 1970s, 12.8 kg in the 1980s to 14.8 kg in the 1990s. It has continued to grow in the 2000s, to an average of 16.4 kg per caput in 2001-2003. Figures at the world level, however, are strongly influenced by China's dominance. In fact, China's domestic consumption of fish and fishery products per caput has risen from less than 5 kg in the 1970s to the present 26 kg, which given the size of the Chinese population, have contributed to much of the increase in the world average consumption. Excluding China, per caput consumption averaged 13.5 kg in the 1970s, 14.3 kg in the 1980s, falling in the 1990s to 13.2 kg per caput. The average for the 2001-2003 period points to a new increase to 14.0 kg per caput.

Based on FAO's estimates for the most recent years, per caput food fish consumption is set to rise further and average 17.2 kg in 2006 and 17.4 kg in 2007. However, there are wide differences in fish consumption per caput across regions, with below-average and stable levels in South America and Africa. In many ways, it is the region of Africa which gives major causes for concern given the low absolute levels of consumption and the strong growth in projected population. On the other hand, Africa has a significant potential in aquaculture which at present is hardly exploited at all, except for Egypt which has shown rapid growth in production of mullet, carp and tilapia over the last decade.

### *Fish, the WTO and the role of standards*

Contrary to other food or agricultural products, fish is not covered by the WTO Agreement on Agriculture. For this reason, in the current Doha negotiations on trade liberalization, fish and fishery products are discussed under the Non-Agricultural Market Access (NAMA).

In the world fish trade today, three large markets (i.e. Japan, the United States and the EU) represent two thirds of all imports. Together with other developed countries, this group of countries count for almost 80 percent of total imports. With stagnant domestic supplies and growing consumption, they are forced to rely on imports to cover a growing share of domestic demand. This is the principal reason why import tariffs in developed countries are so low and, albeit with a few exceptions such as for many value-added products, do not represent any significant barrier to trade. As a result, developing countries have been able to gain increased access to developed country markets without being hampered by prohibitive custom duties. In fact, today's most important barrier to increased exports, beyond the physical availability of product, is the lack of ability to adhere to quality- and safety-related import requirements, rather than import tariffs. The WTO agreements most important for fish trade, in addition to the member country's individual commitments on import tariffs, are the ones concerning subsidies, anti-dumping, technical barriers to trade, sanitary and phytosanitary measures and resolution of disputes.

Exports from developing countries, that together account for close to 50 percent of total trade in fish and fishery products, are not only hindered by importing countries' official technical barriers or

sanitary and phyto-sanitary measures but also by growing requirements on environmental and social issues. The emerging dominance of large retail and restaurant chains in seafood distribution and sales is not only shifting negotiating power towards the final stages in the value chain, but retailers are increasingly also imposing private- or market-based standards and labels on developing country exports, making it harder for small-scale fish producers to enter international markets and distribution channels.

The importance of a positive outcome of the ongoing WTO negotiations in the Doha Round is therefore of significance also to the fisheries sector. Although import-tariffs in developed countries on fish imports are generally quite low, further liberalization of tariffs could lead to improved market opportunities for exporting developing countries, in particular if trade liberalization is extended to cover regional trade among developing countries since this today is hampered by generally very high levels of import protection. This issue however is not particular to the fish trade but includes frequently imports of goods and service in general, not for protectionist purposes but to raise fiscal revenue for the importing countries. Over time, reform in revenue collection in developing countries with less use of import tariffs and more indirect taxes generally should have a beneficial effect on regional fish trade as well.

The second major issue in the Doha negotiations with a specific relevance to the fisheries sector is the negotiations on new rules for fisheries subsidies. The aim is to reduce those subsidies that lead to overcapacity and overfishing and therefore to arrive at more sustainable fisheries practices and improved management in world fisheries.

As has been seen above, fish is a widely traded commodity with significant importance to developing countries as a provider of foreign exchange as well as a generator of economic activity and employment, and as a contributor to domestic food security in both production and importing countries. International trade continues to flow from developing countries to developed countries with benefits generated to both producers and exporters in exporting countries as well as to consumers in the importing countries. For this situation to continue, predictable and stable rules in the international trade environments is a necessary prerequisite, mainly as a result of the multilateral trade negotiations in the WTO but also as a complementary outcome of bilateral and regional free trade agreements.

## **Mediterranean countries within the European seafood markets**

### **Highly deficitary countries in fish and fishery products**

Concerning fish and fishery products, Europe is the geographic zone of the world with the biggest deficit, at more than 6 billion euros in 2006, followed by Asia and North America (FAO data 2005).

The Mediterranean countries are mainly responsible for this deficit, with Italy in first place with a deficit in its trade balance for fish and fishery products of almost 2.5 billion euros, followed by France and Spain, each with a deficit of 2 billion euros.

### **Consumption of capture fisheries and aquaculture products in the Mediterranean countries of the European Union: the supply balance method estimation**

Based on FAO production data and Eurostat foreign trade data, it has been possible to determine the supply balance of the European Union for fish and fishery products. Just as the supply balances are calculated for meat products in "carcass equivalents", the supply balances for fish and fishery products are calculated in "live weight equivalents".

Therefore conversion coefficients are used in order to convert the weights of all products traded into live weight equivalents, whether they be preserved products, fresh fillets, deep-frozen fillets or other forms of preparation or whether they come from capture fisheries or aquaculture. These coefficients have been defined within the framework of the concerted action Masmanap (1999-2001) financed by the DG Fisheries of the European Commission (CIHEAM, 2002).

The supply balance (or "apparent consumption") for fish and fishery products in the EU25 can be estimated for the year 2006 at 13 million tons in live weight equivalent, or 26 kg per caput per year (Table 2).

Table 2. Fish and fishery product supply balance of the EU25 in 2006 in tons of live weight for human consumption

	Production	Imports non-member countries	Exports non-member countries	Balance
Finfish	4,256,667	6,903,075	1,543,778	9,674,210
Shellfish	1,371,048	2,054,736	227,095	3,198,689
Total	5,627,715	8,957,811	1,770,873	12,872,899
Import/balance ratio				
Finfish	71%			
Shellfish	64%			
Total	70%			

Source : OFIMER from FAO and Eurostat.

This balance can be broken down into finfish, with 10 million tons or 20 kg per caput, or shellfish (crustaceans, bivalves, cephalopods), with 3 million tons or 7 kg per caput per year.

70% of the fish and fishery products consumed in the European Union are imported (71% finfish and 64% shellfish).

The five large Mediterranean countries of the European Union constitute 38% of the total European population, but make up approximately 53% of the consumption (Table 3). The Mediterranean countries are top consumers and deficitary producers of fishery and aquaculture products. The same calculation method can be applied to other Mediterranean countries (Cyprus, Malta, Slovenia), without changing the result, given the small size of their populations.

Table 3. Fish and fishery product supply balance of Mediterranean countries of the European Union in 2006 (in tons of live weight)

	France	Spain	Italy	Portugal	Greece	10 other countries EU15	10 new countries EU25	EU 25
Aquaculture+ Fisheries	2,177,239	2,103,060	1,648,896	602,045	243,540	5,407,374	690,745	12,872,899
Finfish	1,444,364	1,281,057	1,049,174	496,220	187,458	4,567,037	648,901	9,674,210
Shellfish	732,875	822,004	599,722	105,825	56,082	840,337	41,844	3,198,689

Source : OFIMER from FAO and Eurostat

This large consumption refers particularly to bivalves and crustaceans as the 5 Mediterranean countries make up 72% of the total European consumption of these species, compared with 47% for finfish.

The two most important markets are France and Spain, with more than 2 million tons, followed by Italy with 1.7 million tons, Portugal with 600,000 tons and Greece with 250,000 tons.

With an average of 37 kg per year in live weight equivalent, the consumption of fish and fishery products per caput is much greater in the Mediterranean countries than in the other European countries. In the remaining ten countries of EU15, this consumption per caput is under 27 kg and

hardly surpasses 6 kg in the ten new countries of EU25. On average throughout the European Union, the consumption of fish and fishery products is about 26 kg per year and per inhabitant (Table 4).

Table 4. Consumption per caput of fish and fishery products in the Mediterranean countries of the European Union in 2006 (in tons of live weight)

	France	Spain	Italy	Portugal	Greece	10 other countries EU15	10 new countries EU25	EU 25
Consumption (tons)	2,177,239	2,103,060	1,648,896	602,045	243,540	5,407,374	690,745	12,872,899
Population (thousand)	62,000	43,000	60,000	11,000	11,500	202,500	110,000	500,000
Consumption per caput (kg)	35.12	48.91	27.48	54.73	21.18	26.70	6.28	25.75

There is great disparity the consumption levels per caput between the Mediterranean countries of Europe, with almost 55 kg consumed in Portugal and 50 kg in Spain, in comparison to 35 kg in France, 27 kg in Italy and 21 kg in Greece.

### Proportion of aquaculture products in the seafood consumption

The contribution of aquaculture can be estimated by identifying, per country, per line of nomenclature, per provenance in the case of imports and per destination in the case of exports, based on expert knowledge, as the customs statistics do not differentiate capture fisheries from aquaculture.

In 2006 the European Union imported almost 800,000 tons of farmed fish (in live weight equivalent) from non-member countries. These figures refer mainly to:

(i) Salmon, with 600,000 tons (from Norway, Chile and United States), mainly fresh.

(ii) Pangasius, tilapia and other freshwater fish with 200,000 tons (from Asia, Africa or Latin America), particularly deep-frozen.

(iii) Fresh seabass and seabream (Turkey, Maghreb), fresh cod (Norway) and other fresh or frozen marine fish (Asia) with 20,000 tons.

The European Union has likewise imported from non-member countries slightly over 600,000 tons of farmed crustaceans and molluscs (in live weight equivalent). These figures refer mainly to:

(i) Frozen and canned mussels (Chile, New Zealand) with 150,000 tons.

(ii) Frozen clams, scallops and other bivalves (North Africa, Asia, South America) with 200,000 tons.

(iii) Frozen tropical prawns (Asia, South America) with 280,000 tons.

The exports of farmed fish from the European Union to non-member countries reach only 50,000 tons, mainly consisting of fresh or smoked salmon, and some farmed crustaceans and molluscs with about 40,000 tons (mainly bivalves).

Based on these calculation hypotheses, the contribution of aquaculture to the consumption of fish products in the European Union could be estimated in 2006 in live weight (Table 5): (i) 14% for finfish; and (ii) 41% for shellfish.

This data includes all forms of presentation (fresh, chilled, deep-frozen or canned) and all places where consumption takes place (at home, in restaurants or while travelling).

With the exception of Portugal, the contribution of aquaculture to the fish product market is stronger in the Mediterranean countries than in the other countries of the European Union. However, this importance of aquaculture refers mainly to crustaceans and bivalves.

Regarding finfish, the importance of aquaculture lies in the European mean. Meanwhile a real convergence is observed between the consumption of farmed fish when expressed in kg per caput and per year as the values range between 2.2 and 3 kg in most European countries, whereas the fish consumption levels in general are very different. Even though the farmed fish consumption level is practically the same throughout Europe, the species consumed differ, with a high proportion of salmon in Germany and the United Kingdom and a high proportion of seabass and seabream in Italy, Spain and Portugal. As often occurs in lifestyle and consumption patterns, France holds an intermediate position between the Northern and Southern countries.

Table 5. Contribution of aquaculture to the market of seafood products in the European Union in 2006 (% of tons of live weight)

	France	Spain	Italy	Portugal	Greece	10 other countries UE15	10 new countries UE25	UE 25
All seafood products	26%	24%	22%	16%	26%	19%	2%	20%
Fish	12%	9%	13%	12%	19%	17%	1%	14%
Shellfish	52%	48%	38%	36%	49%	26%	19%	41%

Source : OFIMER from FAO and Eurostat

There is likewise a large difference in the ways in which fish is consumed, with variations from one country to another in the presentation (whole, in fillets, in pre-cooked dishes) and in the form of preservation (fresh, chilled, deep-frozen, canned).

Whilst the lifestyles tend to become uniform within the European Union, particularly as regards the purchases of cars, clothes and furniture, there are still real specificities in food, even for new products.

This is the case of surimi, which appeared at least twenty years ago, and which is consumed very differently in France (chilled sticks or grated and chilled), in Spain (deep-frozen sticks or in the shape of glass eel) and in Italy (prawn-shape deep-frozen). Likewise, smoked salmon has maintained a position in the top range in Italy whereas it is a daily consumption product like ham in Germany. The situation is intermediate in France and in the United Kingdom.

## **Presentation of the main seafood markets of the Mediterranean countries of the European Union: France, Greece, Italy, Portugal and Spain**

### **The French seafood market**

The production of metropolitan France, including fisheries and aquaculture, is of 850,000 tons (not including algae). This volume is broken down into 43% fresh fish, 28% frozen fish, 22% bivalve production and 6% fish farming.

The fishing zones are very large, stretching not only along the French coasts but also around Scotland and Ireland, between Iceland and Greenland and off Spain. Tropical tuna fishing is practised in the Southern Atlantic Ocean, along the African coasts and in the Indian Ocean and more recently in the Pacific Ocean. Toothfish are caught in the austral waters.

Fresh fish is landed at numerous points, but is sold in 42 authorised auctions situated along the whole of the French coast. Given the extent of the fishing zones, less than two thirds of the production is landed on the coast of metropolitan France. Not only the tropical tuna is delivered directly to the country where it is to be canned, but also several French fishing vessels land their catches in Scotland, where they are repatriated by road. Other vessels land their catches directly in the Spanish auctions or in the Basque Country.

Bivalve production, which provided 119,000 tons of oysters and 67,000 tons of mussels in 2006, is the first aquaculture activity in France. However French fish farming also produced 35,000 tons of



trout in 2006, as well as 8000 tons of freshwater farmed carp and 7000 tons of seabass, seabream and turbot in marine units.

The purchase at the auctions, classification, conditioning and distribution of fishery products is carried out by almost 400 wholesalers, whose turnover rises to 2 billion euros. The processing sector, that supplies deep-frozen, preserved or chilled prepared products, is made up of 300 firms with a turnover of 3 billion euros.

Taking all species together, the consumption of fishery and aquaculture products is of the order of 2.2 million tons in live weight equivalent, which corresponds to more than double the national production. The volume of imports is also important. Imports rise to about 1 million tons per year in net weight, or 1,900,000 tons in live weight equivalent. Half of these imports, with a total turnover of 4 billion euros in 2006, come from the European countries (including Norway and Iceland) and the other half from the rest of the world. The main countries that supply France are the United Kingdom (salmon, prawn, scallop, white fish fillets), Norway (salmon and mackerel), Spain (canned tuna, hake, cephalopods), the Netherlands (shrimp, sole, mussel, white fish fillets) and Denmark (cod, white fish fillets).

France is also an exporting country. The French exports of fish and fishery products destined for human consumption reach 500,000 tons per year in live weight equivalent, for a value of 1.4 billion euros in 2006. These exports, that are destined mainly to three quarters of the European Union, go mainly to Italy and Spain, and can be divided in four main categories:

(i) Exports of products not widely consumed in France, such as horse mackerel, anchovy, megrim and eel.

(ii) Exports of products destined for processing abroad to be subsequently re-imported to France, such as canned tropical tuna or cuttlefish.

(iii) Re-exports of products that have only been transported over French soil (fresh salmon, frozen shrimps, frozen scallops).

(iv) Exports of products processed from imported products, such as smoked salmon or cooked shrimps.

Considering all the products together, retail distribution is still the most important distribution channel for fish and fishery products taking 60% of the volume, followed by catering with 30% and the fishmongers and markets that do not surpass 10%.

Over the last fifteen years, the amount of seafood consumed per inhabitant increased in France by an average 2% per year. This is a moderate but regular growth, whilst meat consumption has remained stable over the same period. This rise in the consumption of seafood in France is mainly due to household purchases of fresh or chilled ready-to-consume products and to catering.

Concerning home consumption, the most sought-after products are fresh, pre-packed fish and chilled prepared products such as cooked shrimps, smoked salmon and pre-cooked fish steaks. On the other hand, the household purchases of whole fresh fish are decreasing rapidly (-10% per year), whilst the deep-frozen purchases or canned fish products remain stable. This development of chilled prepared products has been made possible by attracting new consumers, whereas it is mainly the loss of consumers that is causing the decline in consumption of fresh products.

## The Greek seafood market

The situation of the Greek market for fish and fishery products has been marked by the spectacular development of marine aquaculture over the last fifteen years. Aquaculture, that used to represent only 3% of the total fishery resource production of Greece in the eighties, represented more than 50% in 2005 (source FAO). At the same time as this increase in volume of the farmed seabass, seabream and mussel production, capture fishery production has declined regularly with the continued reduction of the fishing fleet.

Capture fisheries produced less than 100,000 tons in 2005, focusing on the small pelagics.

The largest part of the aquaculture production is exported (more than 70%), mainly to Italy, Spain and Germany.

The Greek market for fish and fishery products is supplied mainly by imports, in more than 50% of cases from countries outside the European Union. Imports consist mostly of frozen cephalopods (Morocco, India), whole fresh fish (Senegal, Turkey), frozen fillets of cod or hake (Netherlands, Norway), frozen fillets of Nile perch, canned or dried fish.

Given the relative lack of precision of the national statistics due to the relevance of the informal circuits, apparent consumption is difficult to calculate accurately. However it can be estimated at slightly over 21 kg per caput and per year, which is below the European mean. In particular, the consumption of fish and fishery products in Greece is lower than observed in the other Mediterranean European countries such as Spain, France or Italy.

The distribution channels are still traditional, wholesalers playing a very important role by making the first purchase at the auctions or by buying the imports. However, direct sales to restaurants or to traditional retailers are still very important, particularly in the islands.

The consumption patterns of fish and fishery products in Greece are evolving rapidly under the influence of the growth in supply of aquaculture fish and the development of the supermarket chains.

## The Italian seafood market

The Italian sector for seafood products is mainly deficitary. In spite of the 8000 km of Italian coastline, the Italian fish supply is in constant decline.

Among the main landing sites are Sicily, Marche, Veneto, the southern Tyrrhenian coast and Apulia. The fishery sector is strongly fragmented and fishing equipment is not being modernised.

The decline in landings has various possible explanations, but is principally due to the reduction in marine resources. In order to mitigate this reduction, the Italian legislation contemplates a halt in fishing activities during the month of August.

Specialising in small pelagics, Italian fishing activity no longer respond to the demand from the national consumers. In 2003, as in previous years, the highest landings were approximately 54,000 tons of anchovies and 25,000 tons of sardines.

In order to respond to the problem of diminishing supply and increasing consumption, the Italian seafood sector seeks to make up for this deficit with aquaculture. Italy has become a major player in finfish farming (essentially trout but also seabass and seabream), and bivalve farming (mussels and clams). The mussel and clam farms enjoy a dynamic demand, driven by the domestic and foreign markets.

On the other hand, aquaculture is quite a concentrated sector in comparison to capture fisheries: there is a smaller number of operators and they are located in certain areas. These operators sell to the wholesale markets only on rare occasions.

However, this sector has become weaker due to very strong competition from other countries such as Greece, Turkey and Malta.

A small part of the produce landed in Italy is processed; mainly small pelagics and clams. In this case, the processors generally buy from wholesalers and on rare occasions from fishermen. The processing sector relies mainly on imports.

As for the number of species consumed, this is highly diverse. The main species consumed are mussel, anchovy, trout, seabream, seabass, clam, squid, octopus, cod, cuttlefish, salmon, swordfish, sole, prawn, Nile perch, mackerel and red mullet.

Consumption is based mainly on fresh, whole or prepared products.

Italy still presents special features in its distribution channels. There is still very little concentration of the trade flows for food products in general and seafood in particular. This dispersal of trade circuits is likewise due to the a recent development in the modern distribution systems and to an extreme atomisation of the sector devoted to consumption out of the home.

The main distribution circuits are wholesalers – importers working on a regional scale, local wholesale traders and the distribution platforms of the hypermarkets and superstores (most of these import directly and complement supplies through wholesalers and importers).

## The Portuguese seafood market

Portugal is one of the countries in the world where the consumption of fish products is the highest per caput, just behind Japan and Iceland. Gross consumption is estimated at almost 55 kg/caput/year, that is 10% less than in 1996.

On the other hand, with 220,000 tons per year, the landings of the Portuguese fishing fleet are insufficient and the country has to import almost 80% of its requirements.

The main species captured by the Portuguese fleet are the small pelagics (sardine, mackerel, horse mackerel), cod, tuna, skate, monkfish, hake and octopus.

Aquaculture production is modest, with less than 7000 tons per year. The main farmed species are seabass and seabream (3000 tons) and clam (1500 tons).

The processing sector consists of approximately a hundred establishments whose total turnover rises to 900 MEUR per year, distributed among 39% for frozen products, 35% salted and dried products and 25% canned products.

Fish and fishery products represent 20% of the Portuguese agro-food imports. In 2006, Portugal imported more than 400,000 tons of fish and fishery products for a total of 1.2 billion euros and exported 120,000 tons for a total of 400 million euros.

Cod is by far the first imported species, either deep-frozen or salted, with almost 50% of the value of imports. The first species of imported fresh is horse mackerel, with almost 20,000 tons per year, ahead of sardine, farmed seabass and farmed seabream. Portugal also imports many cephalopods and shrimps.

More than two thirds of the fish and fishery products imported by Portugal come from the European Union, a vast majority from Spain, however Russia is the second supplier of Portugal.

Seafood makes up 17% of the expenditure on food in the Portuguese households.

The fish and fishery products are mostly distributed through supermarkets and hypermarkets (57% of sales volume).

Deep-frozen products remain dominant, and only farmed fish are frequently sold fresh (salmon, seabass, seabream).

## The Spanish seafood market

Spain is one of the countries in the world with the highest consumption of seafood per inhabitant, with more than 50 kg/year in live weight equivalent. The Spanish market is the first European market for fish products, at more or less the same level as the French market, with a consumption of more than 2 million tons per year in live weight equivalent.

Despite being the 2<sup>nd</sup> most important fishing country of the European Union (behind Denmark),

catches are falling: 820,000 tons (live weight) were landed fresh and deep-frozen in 2005, that is 30% less than 10 years ago. Furthermore, Spain is the first aquaculture producer of the European Union, with almost 300,000 tons in 2005. Spain is likewise the first European producer of elaborated products (canned, semi-preserved and deep-frozen products).

The Spanish consumption of fish products relies increasingly on imports. In 2005, the Spanish deficit in fishery and aquaculture products reached 2.5 billion euros. The weight of cultural tradition in the regions is important, and regions vary from one to the other with their own particular culinary traditions.

Hake is still the fish species most consumed by the Spanish households, followed by sardine, anchovy, sole, salmon (decreasing over the last few years), seabass, cod, monkfish and trout. The shellfish market is very developed, together with squid, mussel, clam and prawn.

Consumption mainly centres on whole, fresh or thawed products. The market for canned products is very diversified but dominated by tuna. Besides cooked shrimp and salted cod, the market for pre-cooked products is still limited in Spain, but new products are appearing lately to respond to a new demand for convenience and quick preparation: surimi, pre-cooked fish fillets, cooked and packed crustaceans.

The evolution of the distribution channels is marked by the development of the retail distribution establishments and the restaurant chains, with centralised purchasing and high-performing logistics.

At present, there is still a strong atomisation of the network of wholesale distributors at a regional level with complicates the channelling of products towards smaller urban centres. The wholesale markets are gradually losing their influence and focus on the supply of the independent restaurant sector.

## Note

In this paper "seafood" is used as a synonym of fish and fishery products, this including capture fisheries and aquaculture products, and also freshwater productions.

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## Annex. Fish and fishery products statistics†

	Capture fisheries production††		Aquaculture fisheries production††		Exports†††			Imports†††		
	2004	2005	2004	2005	2004	2005	2006 ( <i>estim.</i> )	2004	2005	2006 ( <i>estim.</i> )
ASIA	46.1	45.8	40.9	43.2	24.0	26.0	28.7	26.3	27.6	28.1
China††††	18.0	18.2	30.9	32.7	8.9	9.6	10.5	5.5	6.4	6.7
of which: Hong Kong SAR	0.2	0.2	-	-	0.4	0.4	0.4	1.9	1.9	2.0
Taiwan Prov.	1.0	1.0	0.3	0.3	1.8	1.7	1.2	0.5	0.5	0.5
India	3.4	3.5	2.8	2.8	1.4	1.6	1.7	-	0.1	0.1
Indonesia	4.6	4.4	1.0	1.2	1.7	1.8	2.0	0.1	0.1	0.1
Japan	4.3	4.1	0.8	0.7	1.1	1.3	1.4	14.6	14.4	13.9
Korea, Rep. of	1.6	1.6	0.4	0.4	1.1	1.0	0.9	2.2	2.4	2.7
Philippines	2.2	2.2	0.5	0.6	0.4	0.3	0.4	0.1	0.1	0.1
Thailand	2.8	2.6	1.3	1.1	4.0	4.5	5.2	1.2	1.4	1.5
Viet Nam	1.9	1.9	1.2	1.4	2.4	2.7	3.4	0.2	0.3	0.3
AFRICA	7.3	7.4	0.6	0.6	3.3	3.7	4.1	1.5	1.8	2.0
Ghana	0.4	0.4	-	-	0.1	0.1	0.1	0.1	0.2	0.1
Morocco	0.9	0.9	-	-	0.8	1.1	1.2	-	-	0.1
Namibia	0.6	0.6	-	-	0.4	0.4	0.5	-	-	-
Nigeria	0.5	0.5	-	0.1	-	0.1	0.1	0.4	0.4	0.4
Senegal	0.4	0.4	-	-	0.3	0.3	0.2	-	-	-
South Africa	0.9	0.8	-	-	0.4	0.4	0.4	0.1	0.1	0.2
CENTRAL AMERICA	1.7	1.8	0.2	0.2	1.8	1.8	1.7	0.7	0.8	0.9
Mexico	1.3	1.3	0.1	0.1	0.6	0.6	0.7	0.3	0.4	0.4
Panama	0.2	0.2	-	-	0.4	0.4	0.4	-	-	-
SOUTH AMERICA	17.5	16.7	1.1	1.1	6.5	7.6	9.0	0.7	0.7	1.0
Argentina	0.9	0.9	-	-	0.8	0.8	1.3	-	0.1	0.1
Brazil	0.7	0.8	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.5
Chile	4.9	4.3	0.7	0.7	2.5	3.0	3.6	0.1	0.1	0.2
Ecuador	0.3	0.4	0.1	0.1	0.8	1.0	1.3	-	-	-
Peru	9.6	9.4	-	-	1.4	1.6	1.8	-	-	-
NORTH AMERICA	6.4	6.2	0.8	0.6	7.8	8.3	8.3	13.5	13.7	15.1
Canada	1.2	1.1	0.1	0.2	3.5	3.6	3.7	1.5	1.7	1.8
United States of America	5.0	4.9	0.6	0.5	3.9	4.2	4.1	12.0	12.0	13.3
EUROPE	13.9	13.8	2.2	2.1	26.2	28.8	32.1	32.0	35.9	41.9
European Union††††	5.8	5.7	1.3	1.3	18.0	19.4	21.8	29.4	32.7	38.0
Iceland	1.7	1.7	-	-	1.8	1.8	1.8	0.1	0.1	0.1
Norway	2.5	2.4	0.6	0.7	4.1	4.9	5.5	0.7	0.7	0.8
Russian Federation	2.9	3.2	0.1	0.1	1.5	2.0	2.1	0.8	1.1	1.4
OCEANIA	1.3	1.4	0.1	0.2	2.1	2.2	2.2	0.9	1.0	1.1
Australia	0.2	0.2	-	-	0.9	0.9	0.9	0.7	0.8	0.9
New Zealand	0.5	0.5	0.1	0.1	0.8	0.9	0.9	0.1	0.1	0.1
WORLD†††††	94.4	93.3	45.9	48.1	71.6	78.4	86.0	75.4	81.5	90.0
Developing countries	68.1	67.6	42.0	44.5	34.8	38.2	42.5	14.3	16.3	17.6
Developed countries	26.1	25.5	3.9	3.7	36.8	40.3	43.6	61.1	65.3	72.3
LIFDCs*	36.2	36.5	36.8	39.0	14.5	16.1	18.4	5.0	6.1	6.4
LDCs**	6.6	7.1	1.4	1.5	2.0	2.2	2.3	0.2	0.2	0.3
NFIDCs***	13.2	12.8	0.7	0.7	3.6	4.3	4.6	0.9	1.1	1.3

†Production and trade data exclude whales, seals, other aquatic mammals and aquatic plants. Trade data include fish meal and fish oil.

††Million tonnes /live weight equivalent).

†††US\$ billion.

††††Including intra-trade.

†††††For capture fisheries production, the aggregate includes also 151 851 tonnes in 2004 and 139 851 tonnes in 2005 of not identified countries, data not included in any other aggregates.

\*LIFDCs: Low-Income Food-Deficit Countries.

\*\*LDCs: Least Developed Countries.

\*\*\*NFIDCs: Net Food-Importing Developing Countries.