OCEANIC DEVELOPPEMENT

POSEIDON Aquatic Resource Management Ltd

MEGAPESCA

Project Fish / 2003 / 02

THE EUROPEAN TUNA SECTOR
ECONOMIC SITUATION, PROSPECTS AND ANALYSIS OF THE IMPACT OF THE LIBERALISATION OF TRADE

SPECIFIC CONVENTION SC 12

Final Report

NOVEMBER 2005

Oceanic Développement, Poseidon Aquatic Resource Management Ltd and MegaPesca Lda (2005). « Study on The European tuna sector»

INTERNAL DOCUMENT: DISTRIBUTION RIGHTS RESERVED FOR THE E.C.

Authors' contact:

OCEANIC DEVELOPPEMENT
Z.I. du Moros, 29900 Concarneau, France
Tel: +33 2 98 50 89 99
Fax: +33 2 98 50 78 98
Email: info@oceanic-dev.com
URL: http://www.oceanic-dev.com

Version : Final Report	Report ref.: FPA 12 / TUN / 05	Date of publication: 05/02/2006

ORIGINAL VERSION : FR

Executive Summary

1. There are seven species of tuna that are of international economic importance: albacore (*Thunnus alalunga*), bigeye tuna (*Thunnus obesus*), Atlantic bluefin tuna (*Thunnus thynnus*), Pacific bluefin tuna (*Thunnus orientalis*), southern bluefin tuna (*Thunnus maccoyii*), yellowfin tuna (*Thunnus albacares*) and skipjack tuna (*Katsuwonus pelamis*). These "major" tuna species are highly migratory and are found in all three non-polar oceans, except for the Atlantic and Pacific bluefin species.

2. Almost four million tonnes of the major tuna species are caught each year: 65% in the Pacific Ocean, 21% in the Indian Ocean and 14% in the Atlantic Ocean. Skipjack accounts for half the world's tuna catches, and is the main species caught in each ocean. The state of this species' stocks does not give rise to any particular worries. In contrast, the world stocks of yellowfin tuna (30% of catches) and bigeye tuna (10%) are considered to be fully exploited, meaning that the situation is such that catches must not be increased, and even need to be reduced. As for the stocks of albacore –which are found in six locations – they are fully exploited or overexploited, but the current volume of catches seems compatible with recovery of the stock. Lastly, the stocks of bluefin tuna are being overexploited: reduced catches have become imperative.

3. Tuna seiners catch about 60% of the tuna worldwide, and this is the type of fleet that predominates in all the oceans. The number of tuna seiners is estimated at 570, with a total capacity of 600,000 tonnes of tuna. The seiners controlled by European (French and Spanish) companies account for approximately 20% of the world fleet. Those controlled by Spanish shipowners – half of which fly non-European flags – fish in all three oceans, while the French seiners operate in the Atlantic and Indian oceans. On the other hand, there are less data available on the other fleet types that catch tuna: longliners, pole-and-line vessels and trollers. It is important that the Regional Fishing Organisations work together in collecting and recording these data. At the same time, tuna fishing attracts a lot of activity from IUU ships, which constitute a threat to both management of the stocks and survival in business of the shipowners.

4. Japan is the leading country in terms of tuna catches, with 18% of the world total. The European Union – with Spain, France, Italy and Portugal way out in front – constitutes the second-largest world group, accounting for 13% of catches. The other major players are Taiwan (11%), Indonesia (9%), South Korea (6%) and the Philippines (5%). About 90% of catches by the EU fleet are made by French or Spanish ships, and relate primarily to skipjack and yellowfin tuna.

5. Fish farming of tuna involves fattening, with the fish caught being kept in individual cages. It applies to bluefin tuna, and developed spectacularly in the Mediterranean when people became aware of the overexploitation affecting this species. World production is estimated at 25,000 tonnes/year, with Australia's 9,000 tonnes making that country the largest producer.

6. The Regional Fishing Organisations that result from international agreements allow co-operation in managing shared stocks. There is the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), the Inter-America Tropical Tuna Convention (IATTC) for the western Pacific, the Western and Central Pacific Tuna Commission (WCPTC), and the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) for the management of that species. The Regional Fishing Organisations' role has expanded in recent years. Measures have been taken to combat the IUU ships and limit the "laundering" of illicit catches. In 2002, public lists of ships authorised to fish were instituted, followed by catches through statistical documents. These measures produced results in the Atlantic Ocean, but further efforts are needed in the Indian Ocean. At the same time, technical initiatives have been taken to limit the impact of fishing on tuna stocks: minimum sizes for the fish caught, limitations on fishing efforts and moratoria, etc.

7. Imports of tuna are subject to tariffs, which depend on the degree of processing: zero tariffs for raw material that is going to be processed, and higher tariffs for tuna loins and preserved tuna. There are, nevertheless, a number of exemptions under the heading of preferential regimes: unilateral systems such as the Generalised System of Preferences (GSP) and the Cotonou agreement for the ACP

(African, Caribbean and Pacific) countries, and reciprocal preferential agreements. The ACP countries, those less developed benefiting from GSP+ or GSP "everything but arms" are favoured by zero rates of duty for their exports of fresh, frozen and processed tuna to the European Union. Apart from these preferential systems, a 22% tariff applies to EU imports of tuna intended for direct consumption, 15% for fresh tuna fillets, 18% for frozen fillets and 24% for tuna loins and canned tuna.

8. Tuna is a foodstuff subject to technical and health standards. Firstly, there are statutory requirements for the way it is labelled (including the product name), to facilitate tracing and to avoid misleading the consumers. In addition, "ecological" labelling (such as "Dolphin Safe" and "MSC") provides an assurance that the product satisfies environmental standards. Secondly, the firms that sell fishery products must have been granted health approval by the European Union based on the recognition of control authorities and the existence of a HACCP (Hazard Analysis and Critical Control Point) scheme in place, identifying the risks at each stage of production. These risks, in the case of canned tuna, relate mainly to the presence of histamine, heavy metals and botulinum toxins.

9. International trade in tuna products results from the way the world economy has developed since the 1950s. In the beginning, business activity related to tuna centred on three major consuming areas: Japan, the United States and Europe. Tuna was caught by those countries' fleets and, in some cases, was processed in factories based in those countries. Increases in demand led to fleets operating further south in the 1950s and 1960s. The geographical expansion of fishing areas was accompanied in turn by each country spreading out to new areas because of new arrivals, growing exploitation of tropical tuna species, a geographical spread of processing facilities and an increased number of countries engaged in canning tuna. During the 1970s, there were three major events that helped the world tuna business move further in this direction: adoption of an exclusive economic zone with a limit at 200 miles, GATT's dismantling of tariff barriers and signature of the Lomé conventions between the ACP countries and the EEC.

10. The world distribution of tuna production was drastically changed by the geographical diversification in tuna catches and canning. The new foci for tuna catches are south-east Asia (Taiwan, Indonesia, the Philippines and South Korea) and South America (Ecuador, Mexico and Venezuela). The new canning centres are in south-east Asia (Thailand, the Philippines and Indonesia), South America, Africa (Côte d'Ivoire, Senegal and Ghana) and the western part of the Indian Ocean (the Seychelles, Mauritius and Madagascar). This development has reduced the domination of the United States and Japan, whereas the European Union has maintained steady expansion, with the result that its volume of activity puts the Community among the largest producers.

11. Tuna catches for direct consumption increased by 70% between 1980 and 2002, reaching over a million tonnes annually. The species caught are bigeye and yellowfin tuna (caught by longliners), and Atlantic, southern and Pacific bluefin species. Tuna is eaten fresh, especially in Japan (as sashimi), where the market is estimated at 250,000 tonnes annually. In Europe (especially Spain and Italy), tuna is consumed as steaks. The market is apparently around 40,000 tonnes per year, of which 50% is covered by EU production. Lastly, in the United States, the proliferation of Japanese restaurants has increased the direct consumption market, amounting to 35,000 tonnes annually.

12. Worldwide, over 70% of the tuna caught is canned or otherwise preserved, and the production mainly uses the "raw material". The tuna species canned are skipjack, yellowfin tuna and albacore, with skipjack the species most used, often for staple consumer products. The yellowfin tuna caught by seiners is of higher quality and commands a higher price than skipjack. Albacore is more expensive and has niche markets in the United States, France and Spain. The main countries producing caning tuna are Thailand, Spain and the United States. The industry is dominated by five multinational groups: Bolton, Bumble Bee, John West/Heinz, Starkist and Thai Union.

13. In the European union, the main countries producing canned tuna are Spain (251,000 tonnes in 2002), Italy (72,000 tonnes) and France (43,000 tonnes). Spain also produces a significant proportion of the canned tuna using whole frozen "raw material". However, the trend is for growing use of tuna loins, and these come from Ecuador, Venezuela and Costa Rica. This serves to reduce the factories'

operating costs. The Spanish companies producing canned tuna operate in both Spain (Galicia) and South America. The industry mainly uses tuna loins from Ecuador, Colombia, Kenya and Thailand, the trade being dominated by Rio Mare. Tuna production in France (by Saupiquet, in the Bolton group, and Paul Paulet, in the Heinz group) is dominated by salad products made from tuna loins that have come from Thailand, Italy or Ecuador, whereas the more traditional products are made in Africa and islands in the Indian Ocean. In these cases, the tuna is caught by boats from the EU fleet, and processed by canneries in the Seychelles (by Indian Ocean Tuna), Côte d'Ivoire (by SCODI, PFCI or Castelli), Mauritius (by Mauritius Tuna Fishing Canning Enterprise) and Madagascar (by PFOI).

14. In the Americas, the main producers of canned tuna are the United States (248,100 tonnes in 2002) and Mexico (71,800 tonnes). The canneries in American Samoa a (territory of the USA) account for nearly all the production of canned tuna in the United States (60% by Starkist and 40% by Chicken of the Sea). To counter competition form Asian countries, these canneries increasingly use precooked or frozen tuna loins from Fiji, Trinidad and Tobago, Thailand or Ecuador. In addition, American tuna-canning companies have established facilities abroad, in countries with low labour costs: notably Thailand and Ecuador.

15. In Asia, the production of canned tuna is concentrated in Thailand (which, at 269,400 tonnes/year, is the world's largest producer), Japan (falling back under the impact of Thailand: 62,100 tonnes/year), the Philippines (est. 80,000 tonnes/year), Iran (42,500 tonnes/year) and Indonesia (38,000 tonnes/year). Thailand's canned-tuna industry has developed in only 10 years, and is primarily geared to exporting (to the United States, the Middle East and the European Union). It uses "raw material" imported from Taiwan and Japan. The canneries are generally SMEs, the exceptions being those of the Thai Union group which, among others, owns Chicken of the Sea.

16. World consumption of canneed tuna was 0.48 kg/head in 2002 (0.26 kg/head in 1990). Tuna is overwhelmingly bought in supermarkets and consumed at home. The main consuming countries are those in the European Union (accounting for 35% of the world total), the United States, Canada, Japan, Mexico and Iran. Spain is the country where consumption is highest (2.22 kg/person/year), and is almost self-sufficient. In addition to the United States' own production, that country imports tuna, especially canned from south-east Asia and Ecuador. Canada is not itself a producer, and has to meet demand through recourse to imports from Thailand and the Philippines. Japan constitutes Asia's main market for canned tuna, with Thailand being the main supplier.

17. The price of tuna varies very considerably, due to the seasonal pattern of catches, speculative activity on the part of the processors and exchange rate effects (between the euro and the dollar). Until 1998, the price of whole skipjack was relatively high, as a result of high demand from canners. Starting then, however, excess supply and increases in caches caused the prices to plummet. Measures taken by the WTPO to reduce fishing efforts brought prices in 2004 up to levels comparable to those in 1998. The price of yellowfin tuna has held up better, but the price variations have been comparable to those for skipjack.

18. Changes in the world tuna industry have resulted in increased international trade. The proportion of output being traded has increased over the past 20 years.

19. The world's main exporters of tuna as a raw material are Taiwan, Spain and France. For the past 10 years or so, the European Union (almost solely France and Spain) have accounted for 20-25% of total exports. The trend in these exports has been upwards since 1999. They go mainly to the processing facilities outsourced to Africa (with 80% of French exports going to Madagascar, Mauritius and the Seychelles), South America and canneries belonging to European partners.

20. Apart from Thailand (the world's largest producer of canned tuna) and Japan (the world's largest consumer of tuna products), the main importers of tuna as a raw material are Spain, the Seychelles, Côte d'Ivoire, the Philippines, United States and Italy. European imports of frozen tuna are marked by a strong growth in demand from Spain (which takes 86% of Europe's imports). These imports come from the Netherlands Antilles and Panama (flags-of-convenience countries) and the GSP countries

(notably Venezuela and Guatemala). Intra-Community imports to Spain and Italy come almost exclusively from France, while those into Portugal and France come almost exclusively from Spain.

21. European processing facilities are supplied to an increasing extent, currently above 40%, with tuna "raw material" in the form of loins. Europe's imports of tuna loins go to the countries that produce preserved tuna, namely Italy, Spain, France and Portugal. They have doubled in 10 years, and they account for an increasing proportion of imported tuna "raw material". The loins come from GSP countries in South America, Thailand and Kenya, and the increased usage of tuna loins in European factories is a major trend.

22. After Thailand, the main countries worldwide that export canned tuna and tuna-based products are Ecuador, Spain, the Philippines, Indonesia, Côte d'Ivoire, the Seychelles, Ghana and Mauritius. The importers are the United States, France, Italy, Germany and Spain. The European market is becoming established as the world's largest (taking 40% of supplies, or 330,000 tonnes in 2004). All the European importing markets are showing an upward trend, except for France. Some 56% of canned tuna comes from the ACP countries (represented in Africa by Côte d'Ivoire and the Seychelles), with 29% coming from south-east Asia (Thailand and the Philippines) and 12% from the GSP countries (notably Ecuador). Intra-Community trade has grown fourfold in 10 years. This trade is marked by Spanish sales to Italy, France, the United Kingdom and Portugal.

23. The European frozen tuna market is very open, with the proportion of exports being between 0.54 and 0.71, and market penetration being between 0.52 and 0.69 over the past three years. The degree of penetration in the European canned tuna market has been above 0.44 over the past 10 years, whereas the export proportion has been low (below 0.05). From a competitiveness point of view, the suppliers of canned tuna to the European market – the Seychelles, Ecuador and Spain – are in a good position, because of the diversification in their outlets, unlike Thailand, Côte d'Ivoire and the Philippines. The latter countries are maintaining a high level of exports but do not seem likely to gain market share from those of their competitors that benefit from preferential tariffs.

24. Economic analysis measures the socio-economic effects of various scenarios by calculating differences between the socio-economic values of a reference situation and those resulting from the application of new tariff conditions. Measurement of the effects is based on a predefined set of Community interests both for the major lines of trading in tropical tuna and for 100% tuna-based products. The economic analysis presented does not quantify socio-economic effects that can apply to parties engaged in both extra- and intra-Community trading, to mixed products undergoing their second or third stage of processing, or to other patterns of trade in tuna species (temperate tunas) that fall outside the Community's interests. The analysis also ignores the question of the final destinations of frozen tuna imported into Europe. It is therefore a minimum assessment, probably 20-25% below the true values. This does not constitute a distortion to the method used, to the extent that the aim of the analysis is to identify deviations rather than absolute values.

25. Carrying out that economic analysis requires, in addition to gathering a considerable amount of data, the adoption of various working hypotheses. A reference situation was established based on weighted average statistics for the years 2000-2002, in order to maintain consistency with the structural accounts collected for the same period. The various economic parameters were established by multiplying the trade figures (in volume and value terms) by the weighted average figures for the various activities (fishing and processing), taking into account the processing costs applicable to each specific processing area. The economic parameters relevant to the various scenarios were calculated along the same lines, but including changes in values and volumes that result from new tariff conditions, these changes being analysed for the whole chain of economic agents going all the way back from the final consumer to the fishing operation. This analysis of changes, particularly those in the European market, was carried out in close collaboration with a number of parties active in trading and distribution.

26. The socio-economic effects measured with each scenario relate to losses in value of sales, in wealth

creation in the relevant area (reductions in primary added value[1]) and in employment – both direct and resulting from tuna-related activities.

27. Results from the economic analysis show that all the scenarios – apart from the one maintaining the current situation – have negative socio-economic effects on the European tuna sector. Applying (without progression over time):
    i) a scenario of complete liberalisation for trade in all tuna-based products, or
    ii) a scenario of complete liberalisation for trade in tuna loins and a reduction in the rate of duty to 15% on canned products

    has significant overall socio-economic effects on Europe's tuna sector. The effects would be difficult for any food-processing activities to overcome: losses of 20-25% in wealth creation and of 30-40% in employment. The first scenario naturally has a greater impact than the second. These percentages need to be seen in relation to rounded figures for the economic parameters for the reference situation in the European tuna sector of interest (based in Europe and associated ACP and GSP countries of Central and South America): a sales value of around 2 billion euros and primary added value of around 800 million euros, with employment (directly or indirectly) of 80,000 to 100,000 people.

28. The effects clearly differ between the scenarios. In the scenario of complete liberalisation for trade in all tuna-based products, the effects on European activities (tuna-fishing fleets and Europe-based processing industry) are just as great as those on the part of the ACP countries' processing industry that exports to Europe. The effects in the second scenario are not nearly as high in absolute value as those in the first, and are mainly concentrated in Europe's processing industry; the processing industry in the ACP countries is somewhat less affected than in the first scenario. The part of the processing industry in the GSP countries of Central and South America that serves Europe would be the area least affected, whatever the scenario. In the second scenario, the effects are even positive in terms of sales value, wealth creation and employment creation. Whatever scenario is applied (without progression), Spain – which accounts for 65% of Europe's tuna-based activity – would be the country most affected in terms of the socio-economic effects measured.

29. Progressive application of the scenarios naturally makes it possible to distribute the disadvantageous effects described above. The various calculations made show that, with either scenario, a period of 10 years with a non-linear distribution of the cuts in customs duties would apparently be most appropriate (back load with a coefficient of 2), as that would put off most of the effects to the end of the application period. However, what in particular enables the impact of these socio-economic effects to be reduced is that the parties concerned benefit from a significant delay – five years – with moderate annual reductions in the customs duties, and during that time Europe's tuna-based activities of interest will be able to benefit from changes in a number of factors. These are:
    - strong growth in the 15-member EU market over the period in which the scenarios apply;
    - significant additional demand from the countries of central and eastern Europe;
    - positive changes in certain variables that are critical in the various scenarios and in the economic situation of certain countries: producing, processing and/or consuming countries[2].

30. In contrast, there are other factors that may have a negative impact and increase the problems for Europe's tuna-based activities during that period:
    - increased energy costs;
    - a levelling off of consumer prices (with associated problems in managing the resource), and an increase in the world demand for finished products (with the limit of potential exploitation almost reached and tensions over access to the resource).

---

[1] *Direct added value + indirect added value from the first iteration.*

[2] *These changes are a rise in the euro-dollar exchange rate (a weak dollar relative to the euro penalising the tuna fleet's business and the European-controlled processing industry based in ACP countries); changes in the prices of tuna in the various markets, to the benefit of Europe's tuna sector; and a stronger role for the Regional Fishing Organisations in tracing catches, aimed at limiting the proportion of juvenile fish in the catches.*

31. If the scenarios envisaged were applied progressively, it can probably be hoped that the factors affecting the fishing resource would occur in a somewhat more distant future than the benefits from positive factors; this would allow Europe's tuna-related activities to get to grips one at a time with each of the problems thrown up by these scenarios. Eventually, however, the problem of the resource being limited is one that cannot be avoided, and it will be all the more pressing if the tariff aspects of the relevant scenario(s) have increased the potential for competition between producing countries in the end-product markets.

ABBREVIATIONS AND ACRONYMS

ACP	African Countries from the Caribbean and the Pacific
AIDCP	Agreement on International Dolphin Conservation Programme
ALB	Albacore
BET	Bigeye tuna
BFT	Atlantic bluefin tuna
C&S	Central and South American Countries
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CEEC	Central and Eastern European Countries
CFP	Common Fisheries Policy
CIF	Cost, Insurance, Freight
COFI	FAO Unite Nations Food & Agriculture Organisation Fisheries Committee
CPUE	Catch Per Unit of Effort
DAV	Direct added value
DSTO	Statistical Document on Bigeye Tuna
DSTR	Statistic Document on Bluefin Tuna
DWFN	Distant Water Fishing Nations
EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency
EU	European Union
FAD	Fish Aggregating Device
FAD	Fish Aggregating Devices
FAO	United Nations Food and Agriculture Organisation
FDA	Food and Drug Administration
FFA	South Pacific Ocean Forum Fisheries Agency
FFC	Forum Fisheries Committee
FFV	Foreign Fishing Vessel
GATT	General Agreement on Tariffs and Trade
GMS	Hypermarkets and Supermarkets
GSP	Generalised System of Preferences
IATTC	Inter-America Tropical Tuna Convention
IAV	Included added value
IC	Intermediate consumption
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICT	Compensatory Tuna Allowance

IEO	Spanish Institute of Oceanography
IOT	Indian Ocean Tuna
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
IRD	Institute of Research and Development
IUU	Illegal; Unreported; Unregulated
MBY	Maximum Balanced Yield
OB	Own Brand
OPRT	Organisation for the promotion of responsible tuna fisheries
PAV	Primary added value
PBF	Pacific bluefin tuna
PFC	Pioneer Food Company
PFCI	Pêche et Froid de Côte d'Ivoire
PIN	Pacific Island Nations
RFO	Regional Fisheries Organisation
SBF	Southern bluefin tuna
SCODI	Société des Conserves de Côte d'Ivoire
SFA	Seychelles Fishing Authority
SKJ	Skipjack tuna
SPC	Secretariat of the Pacific Community
SWO	Swordfish
TAC	Total Admissible Catch
TIS	Trade Information Scheme
UNCED	United Nations Conference on the Environment and Development
WCPFC	Western and Central Pacific Commission
WTO	World Trade Organisation
WTPO	World Tuna Purse Seiner Organisation
YFT	Yellowfin tuna

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

SECTION 1: TUNA RESOURCES

World catches of tuna have increased rapidly and constantly since 1950 (500,000 tonnes) reaching 4,000,000 tonnes in 1999. Catches in the Pacific have always dominated, and even exceeded 2.5 million tonnes in 1998. The level of catches from the Atlantic Ocean has increased more slowly, and has stabilised since 1991. Catches from the Indian Ocean have increased strongly since 1981, and since 1987 have exceeded catches from the Atlantic.

Catches mainly concern skipjack tuna and yellowfin tuna. Skipjack tuna catches are reaching levels in the region of 2,000,000 tonnes (50% of the total) whereas albacore is reaching approximately 1.2 million tonnes (25% of the total). Catches made by purse seiners have increased greatly over the last 50 years and are situated at approximately 2.2 million tonnes, whereas long line and pole and line catches have stabilised at around 500,000 tonnes each.

In the 1970s, Japan and the United States were the two major nations in terms of catches, but since the 1980s other countries (Chinese Taipei, Spain, Indonesia, Philippines, Korea, France, Mexico, Venezuela) have very rapidly increased their catches.

The Scombrinae sub-family includes tunas, bonitos, mackerels and billfish (marlins and swordfish). The taxon Thunnini includes the species *Thunnus*, *Euthynnus*, *Katsuwonas*, and *Auxis*. Seven species are listed as major tunas because of their global economic importance and the intensity of their international trade for the canning and sashimi markets.

These principal species of major tunas are indicated in the table below.

Table 1: Principal species of major tunas

Scientific Name	French	English	Spanish	International Code
Thunnus alalunga	Germon	Albacore	Atún blanco	ALB
Thunnus obesus	Patudo	Bigeye	Patudo	BET
Thunnus thynnus	Thon rouge de l'Atlantique	Atlantic Bluefin	Atún	BFT
Thunnus orientalis	Thon rouge du Pacifique	Pacific Bluefin	Atún común	PBF
Thunnus maccoti	Thon rouge du sud	Southern Bluefin	Atún del sur	SBF
Thunnus albacares	Albacore	Yellowfin	Rabil	YFT
Katsuwonus pelamis	Listao	Skipjack	Listado	SKJ

The data used in this chapter have been taken from the *Global Capture Production* database maintained and distributed by the FAO[3]. The data taken from this base come from declarations made by the various States using approved formulae, and is partly adjusted in the case of tuna and similar species by data held by the regional organisations in charge of managing these migratory stocks. The database used provides the breakdown of catches per species per country and per major FAO zone, but does not provide any information about the fishing gear used (purse seine, long line, etc. in the case of tunas).

CHAPTER 1 - STOCKS OF MAJOR TUNAS

In this section a more specific analysis will be produced of the stocks which are of strategic importance for the EU fleet, differentiating between stocks of major tropical tunas (skipjack, albacore and bigeye tuna) fished by European fleet which specialises in this type of resource and operates in tropical international waters and in the EEZs of third countries, and stocks of tunas referred to as temperate (Atlantic bluefin tuna, albacore) which the European fleet fishes in community waters or in adjacent zones (international waters, third countries in the temperate zone). Stocks of less importance will be analysed more briefly. The detailed information provided in the following paragraphs has been taken from the latest scientific reports of the ad hoc commissions of the regional organisations with responsibility for this (ICCAT, IOTC,

[3] http://www.fao.org/figis/servlet/static?dom=root&xml=tseries/index.xml

IATTC) and published at the end of 2004. With regard to the Central and Western Pacific Ocean, information comes from the Secretariat of the South Pacific Commission (SPC) which has a consultative role on the subject.

1 Major tropical tunas

1.1 Skipjack tuna (SKJ)

There are probably two stocks in the Atlantic, one to the east of meridian 30°W, the other to the west of this line. This separation was adopted when skipjack fisheries were essentially inshore fisheries. The extension of the Western Atlantic to the west of meridian 30°W suggests that there is, at the very least, a mixture between the two populations. In the Indian Ocean, the working hypothesis which has been adopted to date is that of a single stock. In the Pacific, stock evaluations are carried out on the basis of the existence of two distinct entities separated by the meridian 150°W.

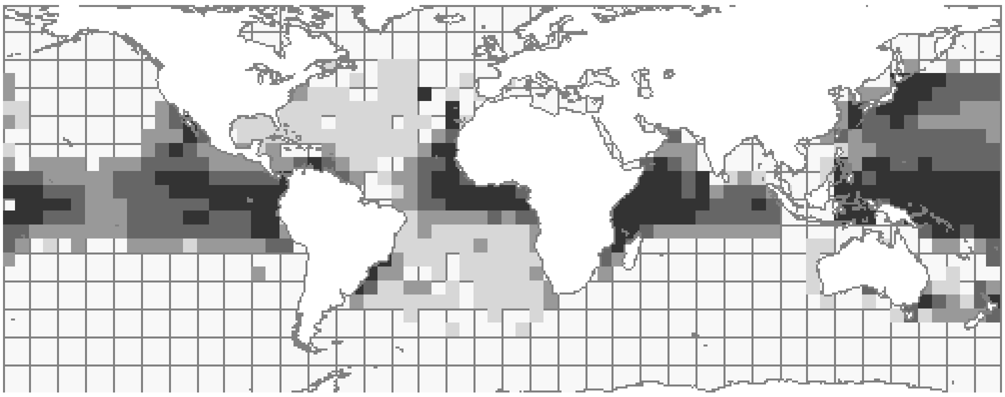


Figure 1 : World cartography of skipjack catches (1991-2001). Source: FAO

Skipjack tuna is a species fished exclusively by surface boats (seine, rod, artificial lure). It is often associated with natural floating objects or artificial fish aggregating devices (FADs). The species is often caught at the same time as yellowfin tuna or juvenile bigeye tuna. Catches made using FADs are generally composed of approximately 63% skipjack, 20% small yellowfin tuna and 17% juvenile bigeye tuna and other minor tunas.

The latest evaluations for the **Atlantic Ocean** were carried out in 1999. As far as the Eastern Atlantic is concerned, skipjack tuna fishing underwent profound changes at the start of the 1990s following the introduction of artificial floating objects (FADs), the expansion of seiner fishing to the west (30°W) and in the latitudes close to the Equator following the drift of the FADs, the introduction of these FADs in seiner fisheries and live bait in Ghana (1992) and the development of fishing methods essentially aimed at bigeye tuna, in which the long liner takes the place of a floating object and is used to target and fish a school (consisting of bigeye tuna, yellowfin and skipjack) throughout the fishing season, in the waters of Senegal, Mauritania and the Canary Islands (1992). All these changes increased the exploitable biomass of the stock of skipjack (because of the expansion of the fishing zone) and its catchability. Today, the principal fisheries are those of the purse seiners, particularly from the European community, Ghana and the Netherlands Antilles, followed by pole and line fisheries in Ghana, and the European community. Catches made in 2003, in the Eastern Atlantic, rose to 123,400 tonnes, namely an increase of 33% in comparison with 2002.

In the Western Atlantic, the main fishery is that of the pole and line vessels of Brazil. With regard to the seiner fisheries, whose catches are much smaller than those of the pole and line fisheries, the only fleet which has caught this species is that of Venezuela. Catches for 2003 in the Western Atlantic reached 24,000 tonnes, i.e. 12% more than in 2002 (21,400 Tonnes).

As a result of the numerous uncertainties relating to the biology of the skipjack tuna, the ICCAT Scientific Committee is not able to reach any conclusions about the state of the stock of Western and Eastern skipjack. It has not been possible to publish any estimate of the MSY (maximum sustainable yield) or of fishing mortality. However the results suggest that there may be local overexploitation of fishing under FADs, even if we do not know if this situation applies to the entire stock. It has not been possible to make any management recommendations.

In the Indian Ocean, from the beginning of the 1980s with the arrival of the purse seiners, catches increased regularly in a significant way; and since 1999 skipjack tuna has become the principal species of tuna caught in the Indian Ocean, with catches exceeding 400,000 tonnes per annum. Currently, catches of skipjack come, overall, half from the industrial purse seiners and half from various traditional fisheries. The majority of catches however took place in the Western Indian Ocean. In 2002, 482,000 tonnes of skipjack were caught, taking all fisheries into account.

The increase in catches of skipjack by purse seiners is associated with the development of fishing based on FADs; and currently 80% of catches of this species are made using FADs. The level of catches by purse seiners is showing an upward trend, probably due to an increase in fishing power and the number of FADs, as well as to improvements in the technology associated with these. We should also emphasise that, since fishing using the seine is multi-specific, large numbers of juvenile bigeye tuna and yellowfin are caught in the course of seining using FADs, which target skipjack.

In 2003, the IOTC "Working Party on Tropical Tunas" analysed four fishery indicators: development of catches; development of CPUEs (catch per unit of effort); average weight of fish caught; development of a number of one degree side, frequented by the purse seiners and where catches of skipjack were made. This analysis produced the conclusion that, currently, the state of the stock of skipjack does not give rise for concern. Two additional facts support this conclusion: 1) the increase in catches of skipjack follows that of fishing effort; whereas, generally, in the situation of full exploitation of stock (or in principle overexploitation) any increase in fishing effort results in a fall in catches. 2) catches mainly consist of sexually mature fishes.

All these facts led the IOTC Scientific Committee not to make any particular recommendation regarding the management of stock of skipjack tuna.

In the Central and Western Pacific Ocean, catches of skipjack increased regularly up to a record of 1,300,000 tonnes in 2002. 73% of catches were made by industrial boats fishing using seines.

The indicators available show that, although the biomass of the stock of skipjack shows a considerable inter-annual natural variation, fishing only has a low measurable effect on these stocks. Although fishing mortality has increased significantly over recent years, recent global estimates of fishing mortality according to age are much lower than natural mortality. The percentage reduction of stock biomass attributable to fishing was between 20 and 25% over recent years. Current levels of stock biomass are high and the levels of catches achieved recently can easily be maintained under current conditions of stock productivity.

In the Eastern Pacific Ocean strong inter-annual variability of biomass is also noted. Fishing mortality remains at levels lower than natural mortality, and it is estimated that catches could increase significantly without endangering a stock which appears to be underused.

1.2 Yellowfin tuna (YFT)

The hypotheses of single stocks for the Atlantic Ocean and the Indian Ocean is the one currently used by the scientific community, although in the case of the Indian Ocean there are indications of a more complex stock structure. In the Pacific Ocean, the hypothesis of two stocks separated by the meridian 150° W is maintained, but with limited exchanges between the two entities.

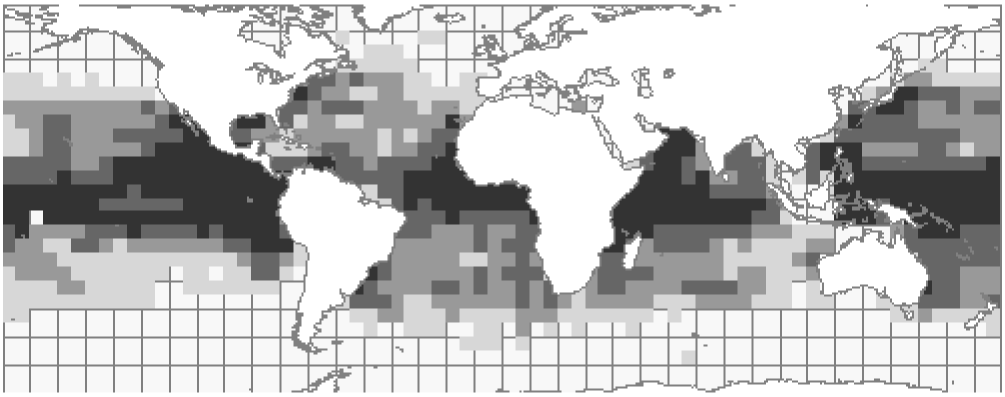


Figure 2: World cartography of catches of yellowfin tuna (1991-2001). Source FAO

In the Eastern Atlantic, several pole and line fisheries operate all along the African coast: the largest is that of Tema (average weight of fish: approximately 2.5 kg) but there are others, in Dakar (average weight of fish: approximately 7 kg) and in various archipelagos of the Atlantic (Azores, Madeira, Canary Islands and Cape Verde) with average weight of approximately 30 kg. The purse seiners catch large yellowfin tuna in the equatorial region during the first quarter of the year, thus coinciding with the spawning season and zone. They also catch small yellowfin tuna associated with skipjack and bigeye tuna using floating objects. The fish caught on free schools weigh on average approximately 34 kg, whereas those caught using floating objects weigh on average 4 kg, which represents a total average of approximately 18 kg.

In the Western Atlantic, the Venezuelan and Brazilian pole and liners fish for yellowfin tuna (14 kg on average) as well as skipjack and other small tunas. The seiner fisheries have been operating in the inshore zones since 1980, to the north of the coast of Venezuela. The long line fisheries catching yellowfin (average of between 27 and 51 kg) are distributed throughout the Atlantic.

Given that declared unloadings of yellowfin in 2001 seem to somewhat exceed the level of MSY estimated at the time of the 2003 evaluation (149,000 tonnes), and that the fishing effort and mortality could have exceeded the levels associated with the MSY, it is important to act to prevent actual effort exceeding the level for 2001. Projections indicate that stock biomass could reduce if fishing mortality increased and reached the level estimated for 1992, which has currently been achieved or exceeded. Consequently, any attempt to increase fishing power made by the purse seiners and other fleets also gives rise for concern, even if the overall capacity of the fleet remains constant. It should be noted that current estimates for total unloadings of yellowfin tuna in 2002 and 2003, which were not available at the time of the evaluation, rose to 139,000 tonnes and 124,000 tonnes, respectively. Consequently, under current conditions, the stock of yellowfin tuna is considered to be within the viable limit. The need to maintain fishing effort at levels below those recorded in 1992 continues to apply, and the search for solutions aimed at reducing the fishing of small yellowfin must be strongly encouraged by the ICCAT Scientific Committee.

In the Indian Ocean in 2002, an evaluation of the stock of yellowfin was carried out by the IOTC "Working Party on Tropical Tunas", using five different methods. The results obtained appeared to be consistent overall, revealing general trends. Since the beginning of the 1980s, fishing mortality has been continually increasing. From the middle of the same decade, a strong trend towards increased catchability was established, for both long liners and purse seiners (but especially for the latter); and the biomass of yellowfin began to decline.

In 2002, total catches of yellowfin in the Indian Ocean (including all fisheries) amounted to 312,000 tonnes. The contribution of purse seiners was 148,000 tonnes and that of long liners 86,000 tonnes. In 2003 and 2004, significant catches of large yellowfin were made, on free schools, by purse seiners in the Western Indian Ocean taking the total catch to approximately 420,000 tonnes (estimate). These catches, 50% higher than those for previous years, are currently unexplained, with only a certain increase in biomass being excluded. If we take the hypothesis that these exceptional catches were associated with recruitment which was itself exceptional, then the catches recorded in 2003 and 2004 do not correspond to an increase in stock productivity. On the other hand, the hypothesis according to which there may have been an increase in catchability in 2003 and 2004 may have serious consequences if it proves to be accurate. In fact, this would mean much higher fishing mortality which would definitely not be sustainable. In addition, this would result in a rapid decline of the adult biomass of yellowfin and a serious overexploitation of stock, if we relate this to the state of the stock evaluated in 2002. If this is the case, management measures must be taken immediately in order to reduce fishing mortality.

The MSY is estimated at between 280,000 and 350,000 tonnes. The margin of uncertainty is relatively high, and current catches could be close to, or even above, this critical level. It has not been possible to estimate the level of fishing mortality corresponding to the MSY.

In 2004, the IOTC Scientific Committee formulated the following management recommendations in its report:

- Total catches obtained under the current system of exploitation are close to, or even above, the MSY. In view of this, any increase in actual fishing effort and catches must be avoided.

- The current trend to increase fishing pressure on juvenile yellowfin by purse seiners fishing using floating objects (FADs) is likely to have a negative impact on stock if it is continued, insofar as fish of this size are clearly below the size corresponding to the optimum yield per recruit.

- The Scientific Committee also notes that juvenile yellowfin are caught by purse seiners which are principally targeting skipjack. Measures intended to reduce catches of juvenile yellowfin by purse seiners fishing using FADs will be accompanied by a reduction in catches of skipjack.

In the Central and Western Pacific, the most recent evaluation carried out confirms that the stock of yellowfin is not in a state of overexploitation. Current fishing mortality is lower than fishing mortality at the MSY, and the current biomass is higher than the MSY biomass. However, the SPC notes that the maximum threshold of exploitation is being approached and that any future increase in fishing mortality risks compromising long-term yield and may result in overexploitation. The evaluations also indicate that the stocks located in the equatorial regions are likely to be exploited to the maximum, unlike the stocks located in temperate regions. Moreover, the SPC observes that Indonesian fisheries have the greatest impact on the state of the stock, and that seining has a strong effect, particularly in the equatorial regions.

In the Eastern Pacific yellowfin is caught mainly using seines, with catches by long liners and pole and line vessels being moderate. Yellowfin fished in the Pacific have the peculiarity of being caught in schools associated with dolphins, even though the trend is to increase catches using FADs and those made in free schools. According to the IATTC, the stock of yellowfin appears to be at full exploitation with catches (limited by quota) close to or in excess of the MSY which is estimated at 280,000 tonnes. Simulations have recently indicated that catches for 2001 and 2002, as well as the associated fishing mortality may not be viable in the long term. The IATTC recommend that fishing mortality ought not to increase, particularly in relation to small individuals.

1.3 Bigeye tuna (BET)

In the Atlantic it is estimated that there is only one single stock which is distributed between 50° N and 45° S, although the hypothesis of the existence of two stocks, one in the Northern hemisphere, and the other in the Southern hemisphere, is being examined by the scientific community. In the Indian Ocean, the hypothesis of one single stock forms the basis of the evaluations. In the Pacific Ocean, from what we know at the moment, two stocks are believed to be in existence, one in the Western Pacific and the other in the Eastern Pacific (the separating line is the meridian 150° W). The hypothesis of one single stock for the Eastern Pacific has also been taken into consideration and has been the subject of shared observations since 2003.

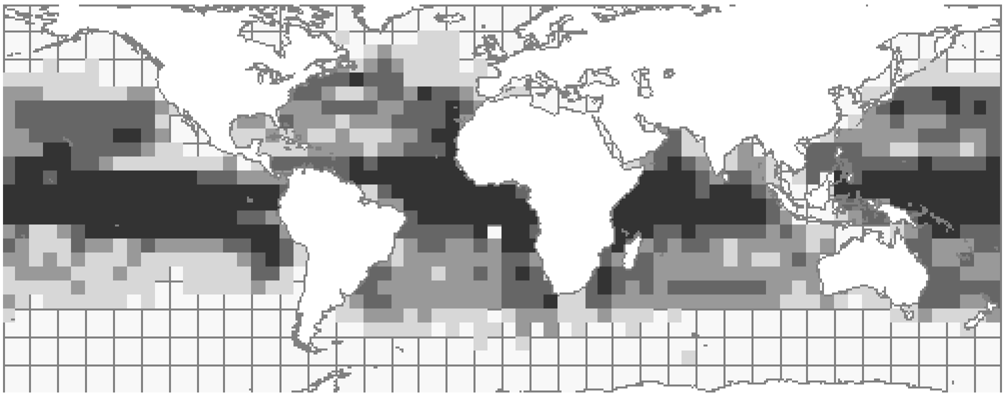


Figure 3: World cartography of catches of bigeye tuna (1991-2001). Source: FAO

In the Atlantic Ocean, the total annual catch increased up until the middle of the 1970s, when it reached 60,000 tonnes. It then fluctuated over the following 15 years. It exceeded 95,000 tonnes in 1991, then continued to rise to reach a historic record of approximately 130,000 tonnes in 1994. Since then catches have been dropping, being estimated at 76,000 tonnes in 2002. The total of reported catches for 2003 was approximately 85,000 tonnes, namely an increase of approximately 9,000 tonnes in comparison with 2002. The main pole and line fisheries are established in Ghana, Senegal, the Canary Islands, Madeira, and the archipelago of the Azores. The tropical fleets of purse seiners are active in the Gulf of Guinea, along the coast of Senegal, in the Eastern Atlantic, and off the coast of Venezuela in the Western Atlantic. The fleets include boats from the European Community (Spain and France), from Ghana and miscellaneous flags. The Venezuelan fleet operates in the Western Atlantic.

Two large long liner fisheries are run by Japan and China (Taipei), whose catches, in 2002, represented 45% of the global catch by weight.

Bigeye tuna is the principal target species of most long liners and some pole and line vessels. As far as other surface fisheries are concerned, on the other hand, this species has always been of secondary importance. Unlike yellowfin which is also fished in free schools, bigeye tuna is essentially caught during operations carried out in combined schools, using, for example, trunks and artificial fish aggregating devices (FADs). The size of the fish caught varies according to fisheries: medium to large for long liners, small to large for pole and line directed fishing, and small for other pole and line vessels and purse seiners. The average weights corresponding to these three types of fishery are 45-50 kg, 20-30 kg and 3-4 kg, respectively.

The situation of the stock of bigeye tuna was re-evaluated in 2004 following numerous difficulties encountered in carrying out this exercise in 2002. Various models estimated the MSY at between 93,000 and 113,000 tonnes, with a model according to age having estimated this at 114,000 tonnes. These analyses estimate that the total catch exceeded the upper limit of MSY estimates for most of the years between 1993 and 1999, resulting in a considerable reduction of stock, followed by stabilisation as total catches fell. These results also show that the current biomass is slightly below or above (85%-107%) the biomass corresponding to the MSY and that current fishing mortality is also within a bracket of between 73% and 101% of the level which would produce the MSY. According to these indications, the situation of the stock of bigeye tuna probably varies between full exploitation and a situation which will ultimately lead to overexploitation. However, indications from long line fishing and extended range fishing indicate a more pessimistic state than that implied by these model results. Stock projections were carried out on the basis of the results of the production model and by assuming a catch of 75,400 tonnes in 2003 and various levels of catches which were subsequently sustained. The results of the projection suggest that the stock biomass may well reduce further with sustained catches equal to or greater than 100,000 tonnes. On average, catches equal to or less than 90,000 tonnes would result in an increase in biomass.

The ICCAT Scientific Committee (2004) consequently recommends the following:

- that catches of juvenile bigeye tuna of a size less than the minimum size (3.2 kg) which still represent between 46 and 62% of catches should be reduced, particularly by respecting the moratorium relating to fishing with FADs.

- that the total annual catch should have a ceiling of 90,000 tonnes, with higher levels not allowing the stock to be replenished to sustainable levels.

In the Indian Ocean, total catches of bigeye tuna by long liners operating in the Indian Ocean have steadily increased since the 1950s, exceeding 100,000 t between 1996 and 2000 and reaching 115,000 t in 2003. Japan, Indonesia, Taiwan and China are the principal countries which fish for the bigeye tuna resource. More recently (since the beginning of the 1990s), bigeye tuna have been caught by seiner vessels fishing for tuna focused on floating objects, in increasing numbers. Total catches of bigeye tuna using seines in the Indian Ocean in 2003 rose to 23,000 t, in comparison with 29,000 t in 2002. 46 vessels have been active in this fishery since 1994. Most catches of bigeye tuna by purse seiners correspond to juveniles of under 10 kg, which explains why seine fishing catches a larger number of bigeye tuna than long line fishing. Large bigeye tuna (over 30 kg) are mainly caught by long liners, particularly deep long liners.

Unlike yellowfin and skipjack tuna which are mainly caught in the Western Indian Ocean, bigeye tuna is also caught in the Eastern Indian Ocean. Catches of bigeye tuna dropped in 2000 and 2001 in comparison with previous years in the Eastern and Western Indian Ocean, but increased in recent years in the Western Indian Ocean. The increase in catches in the east is usually due to the increased activity of small long liners fishing for fresh tuna (this fleet began to operate in around 1995). In the Western Indian Ocean, catches of bigeye tuna are usually the result of the activities of large long liners and purse seiners.

In 2004, the Scientific Committee carried out an evaluation of resources using the best information available. On the basis of the results considered to be the most reliable, but bearing in mind that there are still numerous gaps in the data, it was estimated that the MSY is approximately 96,000 t (confidence interval at 95%: 59,000 to 121,000 t). The evaluation suggests that the population is currently above the level of the MSY but has been in decline since the end of the 1980s. It is estimated that overall fishing mortality is currently that expected at MSY level, but recent catches, in spite of falling over the last two or three years, exceeded the MSY and, as a consequence, they do not seem to be sustainable. This apparent paradox can be explained by the fact that, according to the results of the evaluation, the current biomass is higher than the biomass of the MSY. In this case, even fishing mortality lower than that of the MSY can predict catches in excess of the MSY, at least temporarily. However, significant unknowns persist with regard to estimates of current fishing mortality and mortality of the estimated MSY. The current situation is connected with the rapid increase in fishing mortality and catches in the course of the last ten years. If current levels of catches are maintained, the population will rapidly fall below the threshold of the MSY.

The results of thorough evaluations of the stock of bigeye tuna conducted in 2004 are more pessimistic than previous evaluations. The Scientific Committee had already noted with concern the rapid increase in catches of bigeye tuna at its meeting in 1999, but catches then reduced over two of the last three years. Nevertheless, if the results of the current evaluation, which currently represents the best analysis of the data available within a formal framework, are taken into consideration, it is likely that catches (133,000 t on average) would still be above the MSY and it is possible that fishing effort has exceeded the value which produced the MSY. The Scientific Committee noted that the drop in exploitable biomass since 1995 (estimated at the time of the last evaluation), combined with the stability of catches and the seine nominal fishing effort, suggests an increase in the effectiveness of this fleet. The Committee recommends that a reduction of catches of bigeye tuna by all methods (in order to reach the level of the MSY) should be applied as soon as possible and that fishing effort should be reduced or, at least, should not exceed these current levels.

In the Pacific Ocean, the most recent evaluation revealed that the stock of bigeye was not in a state of overexploitation (the current biomass is close to the MSY biomass), although the stock is subject to overfishing (current fishing mortality is higher than MSY fishing mortality). Consequently, the current degree of exploitation does not seem to be sustainable, unless the high levels of recruitment noted are maintained. However the SPC indicates that the evaluation is very uncertain because of the difficulties in interpreting data relating to long liner effort, and that this opinion must be used with great care for management purposes. While awaiting a solution to this problem, the recommendation is to avoid any increase in fishing mortality. In the Eastern section of the Pacific, the IATTC considers that setting up a moratorium of two or three months for fishing using FADs could be a possible precautionary measure.

1.4 Summary of information

In the Atlantic Ocean, the state of the stock of skipjack (East and West) remains unknown, even though certain scientific hypotheses suggest possible localised overexploitation. The stock of yellowfin is considered to be in a state of full exploitation with catches and fishing effort at a sustainable level. The stock of bigeye fluctuates according to estimates between a state of full exploitation and a state of overexploitation. The latest recommendations of the ICCAT Scientific Committee note the need to limit catches of juvenile yellowfin and bigeye, and to limit the volume of captures of these two species so that catches remain compatible with a MSY level. Among the measures aimed at limiting catches of juveniles, maintaining the moratorium on surface fishing using FADs is recommended, as this also has a beneficial effect on the stock of skipjack.

In the Indian Ocean, the state of the stock of skipjack does not give rise to any concern, although the Scientific Committee notes that the current rate of growth in catches will not be able to be sustained indefinitely. The state of stocks of yellowfin and bigeye tuna suggests that prudent management profiles should be adopted: according to the latest estimates, the stock of yellowfin is probably in a state of full exploitation, but the exceptional catches recorded in 2003 and 2004 could mean that the level of exploitation has become unsustainable (hypotheses to be verified). With regard to the stock of bigeye tuna, according to the hypotheses, this is probably in a state of full exploitation or even slightly above this. Consequently, the IOTC Scientific Committee suggests not increasing fishing effort and catches of yellowfin in a desire to limit as far as possible catches of juveniles, reducing catches of bigeye using all methods, and to reduce, or at the very least maintain, the current level of fishing effort relating to this species. The prospect of a fishing moratorium on FADs has been set aside for the time being.

In the Eastern and Western Pacific Ocean, the state of stocks of skipjack does not give rise to any particular concern and the IATTC and the SPC indicate that catches could be increased without compromising the state of the stock. With regard to yellowfin, the east and west stocks are, according to evaluations, in a state of full exploitation. The recommendations of the two bodies have the same target of limiting catches and effort at current levels, and of reducing catches of juveniles. The state of the stock of bigeye tuna could not be estimated in a satisfactory way, but the indices available reveal a situation close to or above sustainable levels. Consequently, the recommendations incorporate the need to avoid increasing fishing effort with regard to this species.

We are therefore in the presence of relatively comparable situations in the three oceans. Although skipjack is not giving rise to any particular concern, world stocks of yellowfin and bigeye are considered to be in a state which does not allow catches to be increased, and measures of reduction may even be required. With regard to the latter two species, catches of juveniles have been noted as being capable of lowering stock productivity. As a result of the economic importance of world bigeye fishing, this species was recently the subject of a world scientific congress in the course of which management measures were discussed. During this congress, it was acknowledged that minimising catches of juveniles would increase stock protection, although the essential information about the natural rate of mortality of juveniles is still missing. A reduction of catches by purse seiners would have an impact which would be felt in the long term given the period required for bigeye to be recruited to the long line fisheries. The reduction of catches made by long line vessels will have more immediate effects. Moratoria on fishing using FADs (Atlantic and Eastern Pacific) have had a beneficial effect on the stock by slightly reducing the fishing mortality of juveniles, but in the last analysis the balance is less favourable than had been evaluated *ex ante*.

These observations relating to yellowfin and bigeye tuna have and will have an impact on the activity of all tuna fishing fleets, and particularly on fleets of purse seiners given the fact that their activity targets skipjack but incorporates significant accessory catches of juvenile yellowfin and bigeye tuna. As a result, the community fleet, 84% of whose catches of major tuna are, as stated earlier, carried out using seines is particularly affected by the management measures which are being taken, and will have to be taken, by the regional fishing organisations in response to scientific opinion. However the fact that the selectivity of purse seiners could be improved in the medium term cannot be ruled out. A major research project relating to the species associated with FADs is underway (FADIO, jointly financed by the European Community), and technical solutions are being sought. As an example, the IATTC has begun to think about solutions incorporating selective netting systems, procedures for bringing FADs out of the area surrounded by boats, or models of new types of FADs.

2 Major temperate tunas

The stocks of major tunas referred to as temperate (namely those which can be caught outside the inter-tropical band) mainly involve albacore (ALB) and the three species of bluefin tuna. Among the latter group, bluefin tuna from the Eastern Atlantic has a strategic economic importance for the Community fleet. Southern bluefin tuna (SBF) and Pacific bluefin tuna (PBF) which are fished in the waters of the Southern Hemisphere are much less important to Community vessels.

2.1 Albacore (ALB)

Albacore is a species with a fairly broad longitudinal distribution. The organisations in charge of managing this species consider that there are three separate stocks in the Atlantic Ocean: north and south stocks separated by the parallel 5°N and a Mediterranean stock. In the Indian Ocean, according to current information, albacore probably forms a single stock. With regard to the Pacific Ocean, there are probably two stocks, one in the North Pacific and the other in the South Pacific, with the separation line being the Equator.

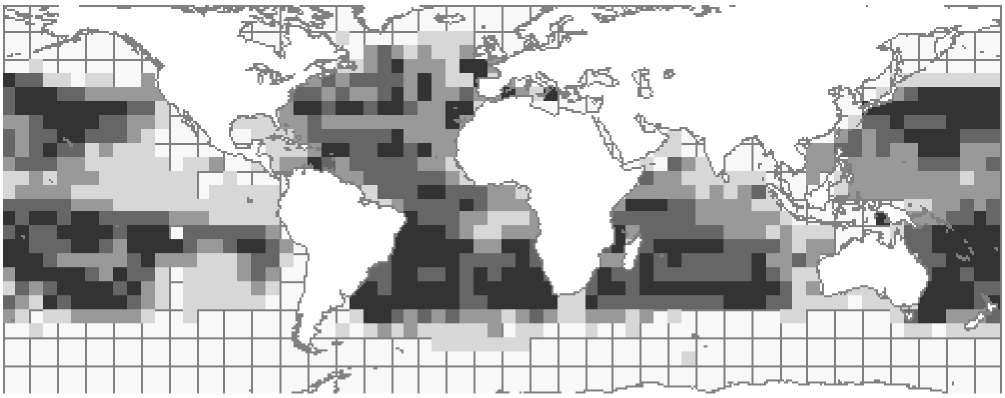


Figure 4: World cartography of catches of albacore (1991-2001). Source: FAO

In the Mediterranean, catches of albacore are very uncertain. Reported catches have oscillated between 2,000 t and 5,600 t since 1984, reaching a maximum of 7,415 t in 2003, the highest figure ever recorded. Catches in the Mediterranean have mainly been made by Italy which has notified the emergence of a large fishery in the southern Mediterranean. Cyprus, Malta, Spain and Greece are other Member States with fishing traditions based on this species. Catches of albacore are made by long liners and surface nets.

The Scientific Committee has never carried out any evaluation, and indicates that it is not in a position to do so while the quality of the data transmitted remains poor, and the historical production series are unavailable. Its main recommendation to the ICCAT commission is, logically, that an obligatory effort to collect data should be made.

In the North Atlantic the stock of albacore is exploited by the surface fisheries and long line fisheries. The traditional surface fisheries comprise Spanish long liners and pole and line vessels, which fish mainly in the Gulf of Gascony and in the neighbouring waters of the North Eastern Atlantic, with pole and line vessels operating in the Canary Isles and a few Spanish and Portuguese pole and line vessels operating in the Azores region. New methods of surface fishing (drift nets and pelagic trawls working in pairs) were introduced in 1987 by France in the Bay of Biscay and the neighbouring waters. In the early 1990s, Ireland and the United Kingdom joined in with drift net fishing. In 1998 Ireland set up experimental fishing with troll lines and pelagic trawls working in pairs). The surface fisheries mainly target juveniles and pre-adults (between 50 cm and 90 cm in length to the fork of the tail). Further to a prohibition by the European Community, drift net fishing ceased its operations in 2002. Long liners from China target pre-adult and adult albacore (60-120 cm) in the Central and Western zones of the North Atlantic. Other fleets catch smaller amounts, but, in most cases, albacore constitutes an accessory catch to long line fishing. The total catch for the North Atlantic has been showing a downward trend since the middle of the 1960s, mainly because of a reduction of fishing effort by traditional surface and long line fisheries. After stabilising during the 1990s, essentially due to increased effort and catches by new surface fisheries since 1987 and a record figure of 34,840 tonnes achieved in 1999, catches dropped in 2001/2002. Catches for 2003 rose to 25,516 t, which constitutes a rise in comparison with 2001/2002, particularly for surface fisheries.

At the time of the last evaluation in 2000, the ICCAT Scientific Committee emphasised that in terms of yield per recruit, fishing effort is at, or below, the level of full exploitation. With regard to the quantities associated with the MSY, assuming the hypothesis of a stock/recruitment ratio which allows recruitment to progress with the size of the reproductive stock, research indicates that the biomass of the reproductive stock for the northern stock (29,000 t) was situated at approximately 30% below the biomass associated with the MSY (42,300 t), and that the current value of fishing mortality was approximately 10% above fishing mortality at MSY. However, another model producing more stable recruitment values within the range of values of the biomass of the reproductive stock observed would provide a lower estimate of the SSB (spawning stock biomass) corresponding to the MSY, below the current value. It cannot therefore be said with certainty that the stock is in a satisfactory state or in an overfished state.

Up until a new examination of the stock situation takes place, which can only be carried out if catches according to age are more reliable, the recommendations made in 2000 are still the most up-to-date. The Committee noted in 2000 that if the Commission wants the biomass of the reproductive stock to start to increase in order to reach an estimated level to allow the MSY, catches for 2001 and 2002 should not then exceed 31,000 t. In 2003, the Committee repeated its previous opinion and has maintained it up until the next evaluation.

With regard to the stock in the Southern Atlantic, over the last five years, more than 92% of the total annual unloadings of albacore from the Southern Atlantic were attributed to four fisheries, namely the fleet of surface pole and line vessels from South Africa and Namibia as well as long liners from Brazil and China (Taipei). The surface fleets are completely focused on albacore and mainly catch juvenile fish (70-90 cm). These fisheries operate in a seasonal way, between October and May, when albacore is present in the offshore waters. The long liner fleets consist of boats which target albacore and boats which catch albacore as an accessory catch during their fishing operations directed at swordfish or bigeye tuna. On average, the long liners catch bigger albacore (60-120 cm) than the surface fleets. The fleet from Chinese Taipei makes a considerable effort in the Southern Atlantic and the catches of albacore (directed and accidental) made by this fleet represent approximately 56% of the overall catch of albacore from the Southern Atlantic. Catches in 2003 were close to 28,000 tonnes.

In 2003, a production model was used to supply an evaluation of albacore from the Southern Atlantic. The results proved to be similar to those obtained in 2000, but the confidence intervals were considerably narrower in 2003 than in 2000. The estimated MSY in 2003 (30,915 t) was similar to that estimated in 2000. In 2000 and 2003, the rate of fishing mortality was estimated at approximately 60% of fishing mortality at the MSY. The biomass of the reproductive stock fell considerably in comparison with the late 1980s, but this drop seems to have stabilised over recent years and the estimate for 2002 remains well above the biomass of the reproductive stock corresponding to the PMT. The stock is therefore considered to be within the biological limits of security. The Committee recommends that, in order to maintain the biomass within the near future, catches should not exceed 31,000 t for the next 3 to 5 years.

In brief, indications about the state of stocks of **albacore from the Northern Pacific** suggest a state of moderate overfishing, but with a great deal of uncertainty. The stock of **albacore from the Southern**

Pacific is in a satisfactory state and could sustain larger catches. The stock of **albacore from the Indian Ocean**, where the community long liner fleets work, was evaluated for the first time in 2004. The results are not considered to be reliable, but certain models place the stock in a situation close to overfishing, although others do not. While awaiting more reliable results, the IOTC Scientific Committee has recommended that any increase in catches and fishing effort should be prohibited.

2.2 Atlantic bluefin tuna (BFT)

During the 1980s, the ICCAT separated this species into two distinct management units, one referred to as the Western stock, the other as the Eastern stock (also including the Mediterranean). These management units are separated by 45°W to the north of 10°N and 25°W south of the Equator. New information suggests that in fact the stock is probably a single one and distributed throughout the North Atlantic. A working party which will meet during 2005 will attempt to establish whether the separation of stocks is actually justified.

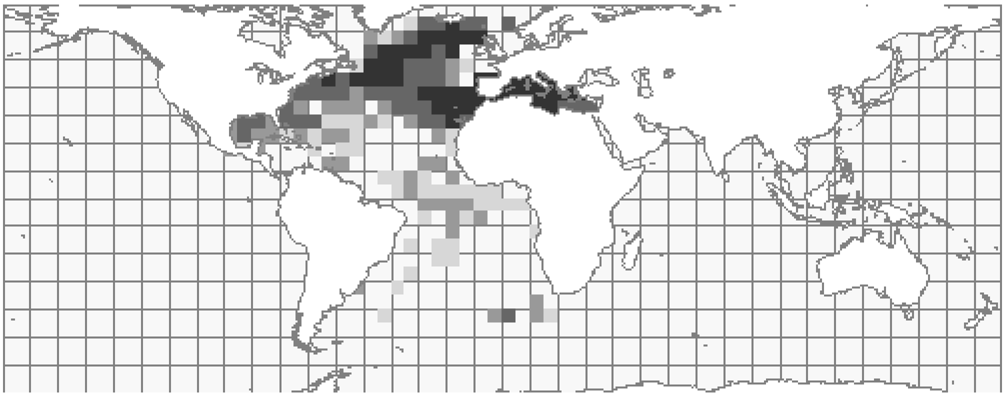


Figure 5: World cartography of catches of Atlantic bluefin tuna (1991-2001). Source: FAO

The bluefin tuna fisheries of the Eastern Atlantic (including the Mediterranean) are distinguished by a variety of boats, gears, and unloading ports located in numerous countries. As a result, unloading statistics are particularly difficult to obtain for the Eastern Atlantic, and even more so for the Mediterranean. According to estimated catches for 1995-2000, the largest catches in the Eastern Atlantic are made by the long liners, trap nets and pole and line vessels, and in the Mediterranean from purse seiners and long liners; the fleet of purse seiners were responsible for between 60% and 80% of the total Mediterranean catch. The Scientific Committee also suspects that vast quantities of undersized fish are caught without being reported.

In 2002, the stock evaluation did not include data for 2001 given that this was incomplete. In 2002, unloadings for the Eastern Atlantic and Mediterranean totalled 33,111 t, a figure lower than that for 1998 (39,097 t) but in the range of years 1991-2001 (32,454 t, 33,752 t and 34,557 t, respectively). The catch reported for 2002 is still incomplete and if the missing value approached the last catch declaration, catches for 2002 would be similar or slightly higher than the level for 2001. In 2003, the catch reported on the date of the ICCAT meeting was 28,365 t, but several important fishing countries had not yet filed any declarations. If these missing catches were in the region of the levels of the last declaration, the total catch for 2003 would then be in the region of 32,500 t. Given its knowledge of the fisheries and the exceptionally good fishing conditions in 2003, particularly in the Mediterranean, the Committee was surprised by such a low value. It clearly reinforces the scepticism of scientists with regard to the veracity of the basic statistics released by the fisheries for the stock of bluefin tuna in the Eastern Atlantic and the Mediterranean.

Under these conditions, the Scientific Committee has issued reservations about the quality of its analyses. Results suggest that current levels of catch are not sustainable in the long-term in relation to the current selectivity plan and fishing mortality for the stock. The Committee's projections indicated that current production or even higher production (possibly of over 50,000 t) could be sustained if it were possible to reduce total fishing mortality or juvenile fish mortality. The Committee continues to feel concern about the high catches of young fish, a phenomenon which greatly contributes to the increase in overfishing and which is seriously reducing the production potential of the resource in the long term. In addition, the abrupt increase in catches of large fish which has been taking place since 1994, is arousing a great deal of concern. The Committee believes that long-term sustainable production is probably situated short of current catches because of the high rates of fishing mortality, but in the absence of sound data the Scientific Committee did not wish to formulate any opinion relating to stock management.

Catches of bluefin tuna from the Western Atlantic stock have progressed little over recent years, remaining at between 2,100 and 3,200 tonnes. Three states, the United States, Canada and Japan declare catches using various types of device. Since 1998, additional catch quantities, exceeding the recommendations of the Commission, have been detected using the statistical documentation programme relating to exchanges.

A new estimate of stocks, subsequent to the one carried out in 1998, was conducted in 2002. The spawning biomass reduced steadily up until 1980 and has remained stable since then. The low recruitment noted prevents any conclusions being reached about stock revival capacity. Evaluations indicate that the stock is in a state of overexploitation, with a biomass below the biomass for MSY, and a fishing mortality exceeding fishing mortality at MSY. The evaluation is hindered by numerous uncertainties, including the extent of mixing between the Eastern and Western stocks. Consequently the Scientific Committee recommends maintaining the current programme which essentially aims at re-establishing the stock by the year 2018, with a probability of 50%, at the level of the reproductive biomass associated with the MSY. In view of the uncertainties surrounding the evaluation, the choice of a recruitment scenario, the re-establishment aims, and the assumptions made about the mix, scientific opinion prevailing within the Committee is that the TAC (total allowable catch) currently fixed at 2,500 t/annum should not be changed.

2.3 Pacific bluefin tuna (PBF)

The hypothesis maintained is that of a single stock in the Pacific Ocean, with marking studies having shown that there are significant exchanges between the Eastern Pacific and the Central and Western Pacific.

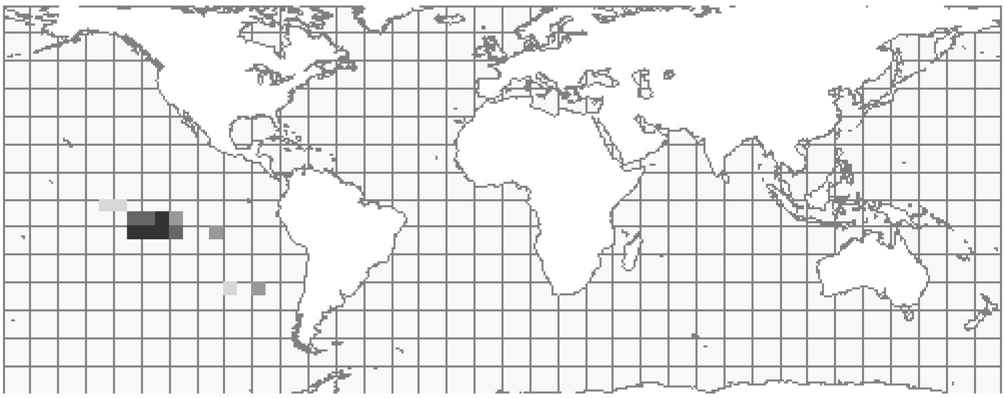


Figure 6: World cartography of catches of Pacific bluefin tuna (1991-2001). Source: FAO

This stock is not being monitored by any Commission at the moment. This species is fished by Japan and the United States which catch approximately 10 to 15,000 tonnes per year. Community fleets do not catch any of this fish. No opinion has been issued about the state of this stock.

2.4 Southern bluefin tuna (SBF)

Southern bluefin tuna is found only in the Southern Hemisphere, essentially in the Indian Ocean between 30° and 50°S., with a few rare occurrences in the Atlantic and Eastern Pacific Oceans. It should be pointed out that it is the only stock which straddles the three oceans. Southern bluefin tuna only reproduces in the far south of Java (Indonesia) and is managed as a single stock.

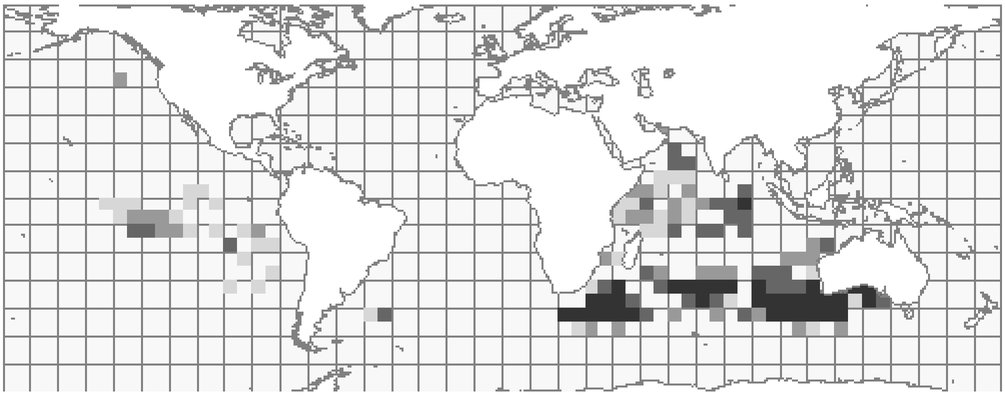


Figure 7: World cartography of catches of southern bluefin tuna (average 1991-2001). Source: FAO

The current total catch (2003) has risen to approximately 14,024 tonnes (preliminary data), and is in keeping with the falling trend of total catches observed in comparison with the maximums recorded in 1999 (19,529 tonnes), in 2001 (16,026 t) and in 2002 (15,212 t). In the course of the period 1952-2003, 79% of the catch was made with the long line and 21% with surface devices, principally using seines and pole and line/reels. The proportion of the catch made by surface fisheries reached the record level of 50% in 1982, reduced to 11-12% in 1992 and 1993, then rose again to approximately 30% after 1996. The Japanese long liner fishery (catching older fish) obtained its record catch of 77,927 t in 1961 and the Australian surface fishery (catching young fish) recorded its maximum catch of 21,501 t in 1992. New Zealand, Chinese Taipei and Indonesia have also fished for Southern bluefin tuna since the 1970s - 1980s, and Korea started up its fishery in 1991. In total, 73% of catches of southern bluefin tuna were made in the Indian Ocean, 21% in the Pacific Ocean and 6% in the Atlantic Ocean. Catches made in the Atlantic vary considerably, fluctuating between 400 t and 8,200 t since 1968. They achieved an average of 1,000 t during the last 20 years and reflect the movements of the long liner effort between the Atlantic and Indian oceans. Fishing in the Atlantic essentially takes place off the southern extremity of South Africa. Apart from a few anecdotal declarations for the Indian Ocean, Community fleets do not fish this stock.

Evaluations relating to southern bluefin tuna were updated at the 5th meeting of the CCSBT stock evaluation group which was held in Korea in 2004. Current evaluations suggest that the reproductive biomass of southern bluefin tuna represents a small fraction of its original biomass and is located well below that of the 1980 biomass. The estimate is that this stock is well short of the level allowing maximum sustained yield. Re-establishing the biomass of the reproductive stock would almost certainly increase sustainable production and would provide security in the event of unexpected environmental phenomena.

2.5 Summary of information

Stocks of albacore in the Atlantic are in a relatively satisfactory state. The Northern stock of albacore is, according to the models, in a state close to full exploitation or slightly overexploited, but the current volume of catches appears likely to restore the stock. The stock in the Southeast Atlantic is fully exploited, and the Mediterranean stock in an unknown state, although this does not give rise to any particular concern. With regard to the stocks in the North and South Atlantic, scientific recommendations are in agreement about maintaining catch limits, and it is likely that fishing possibilities will remain at current levels for a long time. With regard to Community fleets, current catch profiles are compatible with the recommendations of the ICCAT and they should be capable of maintaining current effort. These fleets are essentially French and Spanish vessels fishing for albacore during the season as part of their diversified activities, but also distant fishing fleets working in international waters and in the EEZs of third countries for which albacore is an accessory catch of long liner and purse seiner fishing.

The case of bluefin tuna is much more difficult. Stocks in the Western and Eastern Atlantic are in a state of overexploitation. Catches of adults, although information is inadequate, are excessive, and catches of juveniles are still too high. Reducing catches has become essential in order to protect the stock. We can therefore expect the ICCAT to decide on increasingly restrictive measures in the future, with an undoubted impact on Community fishing fleets and on its associated industries such as cage fattening.

CHAPTER 2 - STOCKS OF SWORDFISH AND SIMILAR SPECIES

As is the case with tuna, swordfish and similar species are highly migratory species and their management is on the working agenda of the geographically relevant regional fishing organisations. The following paragraphs summarise our current knowledge on the state of stocks of the two main species fished by long liners: the swordfish and the blue marlin. This information comes, as was the case for tuna, from the latest 2004 reports of the RFO Scientific Committees.

1 Swordfish (SWO)

There are probably several stocks of swordfish in the Atlantic. Currently a Mediterranean stock, a North Atlantic stock and a Southern Atlantic stock are believed to exist, with the latter two being separated by the 5° N parallel. In the Indian Ocean and the Pacific Ocean, working hypotheses are based on the existence of two single stocks distributed over each of these two oceans.

Over the last ten years, the estimated catch in **the North Atlantic** was on average 12,600 t, but unloadings for 2003, including discards, reached 11,028 t in response to the regulations recommended by the ICCAT. In 2003, the reported catches (including discards) recorded a drop of 46% in comparison with the maximum recorded in 1987 in North Atlantic unloadings (20,236 t), in response to the recommendations of the ICCAT. The decline in unloadings was also attributed to movements of the operational area of the fleets, including the movement of a few vessels towards the South Atlantic or the outer Atlantic. Moreover, certain fleets, including those from the United States, Spain, Portugal and Canada, have modified their fishing procedures in order to target tuna and/or sharks in an opportunistic way.

The biomass for the beginning of the year 2002 was estimated at 94% (bracket between 75% and 124%) of the biomass which is necessary to achieve the MSY. The rate of fishing mortality for 2001 was estimated at 0.75 times that corresponding to the level of the MSY (bracket from 0.54 to 1.06), which indicates that the stock is within sustainable limits. Given that the TAC for swordfish from the North Atlantic for 2002 was 10,400 t, it was felt that the biomass would probably increase even more with these catch levels. The TAC established for 2003-2005 rose to 14,000 t. Assuming the hypothesis of a TAC of 15,000 tonnes, projections on the stock situation are less optimistic.

The estimated catch in the **Southern Atlantic** was relatively low (generally less than 5000 t) before 1980. Since then, unloadings increased continuously throughout the 1980s and the beginning of the 1990s, reaching a peak of 21,780 t in 1995, with this level being comparable to that of the maximum catch for the North Atlantic. The increase in unloadings was due, among other things, to the progressive movement of fishing effort towards the South Atlantic, coming in the main from the North Atlantic, but also from other oceans. Estimated unloadings then fell to 13,835 t in 1998 (reduction of 36%). The reduction of catches, following on from the maximum recorded in 1995, was in response to the regulations, and is due, in part, to movement towards other oceans and to changes in target species. In 2002, the reported catches (13,946 tonnes) were somewhat lower than the level for 2001. The declared catches for 2003 rose to 10,919 t but this must be considered to be a provisional figure and is probably underestimated.

As a result of the gaps and inconsistencies in the data transmitted, the Committee was not able to produce reliable estimates of the stock situation for swordfish in the South Atlantic. Given the expansion of long liner fisheries in the past and the apparent stability of at least one directed fishery, the Committee recommends that catches should stay at more or less the same level as that for the last few years preceding the evaluation in order to maintain the stock at around the level of abundance which existed at that time. Given the development of the fishery and the apparent stability of at least one directed fishery following recent reductions in catches, the Committee recommends that catches should be maintained at approximately the same level as over recent years (14-15,000 t). It is highly unlikely that a more quantitative and more reliable opinion will be obtained since no CPUE (Catch Per Unit Effort) data is available about some of the largest fleets fishing in the South Atlantic.

In the **Mediterranean**, the main producers of swordfish over recent years (1997-2002) have been Italy (42%), Morocco (22%), Greece (12%), and Spain (9%). In addition, Algeria, Cyprus, Malta, Tunisia and Turkey have fisheries which target swordfish in the Mediterranean. The Committee has admitted that there is a possibility that other fleets are also fishing for swordfish in the Mediterranean (Israel, Lebanon, Egypt, Monaco and Syria, for example) but the data has not been declared to the ICCAT or the FAO.

The models used have indicated the presence of a stable situation in terms of recruitment, total biomass and reproductive biomass. These conclusions suggest that the current method and level of exploitation are sustainable in the short term. However, the lack of adequate historic data has not allowed the state of the stock to be determined in comparison with the MSY reference points. The analysis suggested the recent estimates of fishing mortality were higher than the reference points calculated for yield per recruit. The Committee notified numerous catches of small-sized swordfish, namely those of under three years of age, (with many swordfish probably never having spawned) and the relatively low number of large specimens in catches. Fish of under three years of age represent 50-70% of total annual catches.

Given the uncertainties in the evaluation, the Committee recommends that current levels of exploitation should not be exceeded, in accordance with current methods of exploitation. The percentage of juveniles in catches is relatively high, as is the case for several Mediterranean fisheries, and a reduction in their catches would improve the reproductive biomass and production per recruit. In the past the adoption of regulations fixing the minimum unloading size at 120 cm could have given rise to the under-reporting of catches of juveniles and has proved to be impracticable in certain situations, if the poor size-selectivity of the fishing devices used is taken into account. Other methods aimed at reducing catches of juveniles, such as closures of certain areas or closures at certain times, were submitted in 2001 and their applicability should be further analysed.

In the Indian Ocean, swordfish is caught as a target species or an accessory species in most long liner fisheries in the Indian Ocean, but is caught only rarely with a seine. Since the beginning of the 1990s, Taiwan has been the top country in terms of catches of swordfish in the Indian Ocean (41 to 60% of total catches). Taiwanese long liners, particularly in the equatorial South West and West zones of the Indian Ocean, target swordfish using surface long lines at night. These nocturnal sets contrast with the diurnal sets of Japanese and Taiwanese long liners targeting tuna. During the 1990s, a number of coastal or island states, in particular Australia, France (Reunion), the Seychelles and South Africa developed long line fisheries targeting swordfish, using monofilament equipment and light sticks at night. These devices obtain catch rates which are significantly higher than the Japanese or Taiwanese long lines. Consequently, the fisheries in these states have expanded rapidly, to the point of catching over 10,000 t per annum at the end of the 1990s.

An examination of stock indicators suggests that there has been a marked decline in swordfish in the Indian Ocean since this species began to be targeted at the beginning of the 1990s. Although uncertainties persist because of the poor quality of data notified by Taiwan, indicators from previous evaluations suggest that the situation could be more worrying in the Western part of the Indian Ocean than in the Eastern part. Total catches have dropped slightly over the last five years, after the peak of 36,000 t in 1998. However, the actual effort (estimated by dividing catches by the standardised Japanese PUE) continued to increase during this period. This suggests that the reduction of catches is not due to a drop in actual effort, but is more likely to be due to a drop in the biomass of swordfish. The apparent loyalty of swordfish to certain zones is a particular cause of concern, as this may lead to localised depletion of stock. The spatial structure of the PUE suggests that this could already be the case in the Southwest Indian Ocean.

Using stock indicators as a basis, the Scientific Committee concludes that current levels of catches (approximately 32,000 t) are probably not sustainable. In particular, changes in the abundance of swordfish are worrying in the Western Indian Ocean, where the largest catches are made. The spatial structure of the PUE suggests that there could already be a phenomenon of localised overfishing of swordfish in the Southwest Indian Ocean. However, these drops in catch levels have not been accompanied by any reduction in the average size of fish caught, as has been observed in other oceans. The Scientific Committee has expressed its concerns in view of the very rapid increase of fishing effort targeting swordfish in other zones of the Indian Ocean since 2000 and in view of the relatively high accessory catches of swordfish in adult fisheries. The strong increases of fishing effort followed by a reduction in catch rates, observed in the Southwest Indian Ocean, indicate that this could occur in other zones where fishing effort targeting swordfish is rapidly increasing. The Scientific Committee recommends that management measures aimed at controlling and/or reducing the effort of fisheries targeting swordfish in the Southwest Indian Ocean should be put in place. Similar measures could be required if drops in catch rate are noted in other zones of the Indian Ocean.

In **the Pacific Ocean**, the stock of swordfish has not been the subject of in-depth research. The hypothesis which is prevailing at the moment is that of one single stock, with zones of concentration. The IATTC attempted to evaluate the stock using Japanese series data for fish catch and effort, and concluded that the stock is within sustainable limits, and could be further exploited.

2. The Blue Marlin

Only the ICCAT seems to have undertaken monitoring of stocks of blue marlin at the moment. In the Atlantic as a whole, unloadings began to increase in the early 1960s. They reached a record figure of over 9000 t in 1963, dropped subsequently to 2000-3000 t between 1967 and 1977, then fluctuated showing an upward trend between 1978 and 1996 followed by a downward trend. Catches of blue marlin reported for 2003 (1951 t) are incomplete and could represent a considerable underestimate of the actual catch, because of the absence of declarations made by certain fleets which historically have unloaded vast quantities of this species. The general trends of catches have followed the intensity of deep sea long line fishing. However, recently reported catches by the inshore fishery using gill nets have become significant.

The 1996 evaluation of the blue marlin indicated that the biomass was equal to approximately 25% of the biomass at MSY in the mid-1990s, that fishing mortality was approximately three times fishing mortality for MSY and that this species had been subject to overfishing for about thirty years. The historical MSY was estimated at approximately 4,500 t. The latest evaluations which show a lower rate of stock renewal than was previously thought, confirm that the stock of blue marlin is in a severe state of overexploitation. The Committee recommends that the Commission should take measures to reduce catches of blue marlin as much as possible.

With regard to **the Indian Ocean**, the IOTC has not really undertaken any work aimed at analysing this species although it is included on the working agenda. In **the Pacific Ocean**, the latest evaluation available (Kleiber et al, 2003) indicates that, according to working hypotheses, the state of the stock is in a situation of full exploitation at the very worst. The fishing effort developed is probably lower or close to that which results in the MSY.

3 The other species

The ICCAT has obtained analyses of the stock situation of white marlin and Atlantic sailfish from its Scientific Committee. The stock of Atlantic white marlin has probably been in a state of overexploitation for many years, with the principal recommendation being to significantly reduce catches. Stocks of sailfish are probably in a state of full exploitation and prudence leads the Scientific Committee to recommend freezing effort relating to this species.

4. Summary of information

Information available about the state of stocks of Atlantic swordfish (including the Mediterranean) indicates that current levels of exploitation are compatible with sustainable levels. The stock of swordfish in the North Atlantic whose state had been judged worrying in the 1990s is re-establishing itself. Stocks in the South Atlantic and the Mediterranean are in states considered to be satisfactory. With regard to these three populations, the principal scientific recommendations suggest maintaining current catches and fishing effort, together with protection of juveniles. On this basis, the Community vessels which are responsible for practically half the catches in this ocean should be able to maintain these tonnages, without increasing them. The situation of stocks of other billfish is much more delicate. Stocks of blue and white marlin have been in a state of overexploitation for several years. Specific measures to protect these species could have an impact on fishing fleets since these are accessory species of deep and surface long liner fisheries.

In the Indian Ocean the situation of the stock of swordfish is more worrying. This species is the subject to intensive fishing in the south west of the region, particularly by Asian long liner fleets. According to the most recent estimates, the stock of swordfish may have exceeded sustainable levels of exploitation. The Scientific Committee has recommended better monitoring of this species and a reduction of effort principally in the western part. This situation will have an impact on Community fleets targeting this species, particularly the distant Spanish and Portuguese fishing fleet, and the local fleet based in Reunion Island.

In the Pacific Ocean, the small amount of data available indicates that stocks of swordfish and blue marlin are within sustainable biological limits.

Generally speaking, works estimating stocks of swordfish and similar species have come up against problems with data reliability. These species are very often the accessory catches of fleets targeting tuna and fishing declarations are at the very best approximate. Consequently, the low amount of information transmitted generates strong uncertainties which make the scientific opinions more indicative than anything else. This is particularly true for the Asian fleets which target tuna in the Atlantic and Indian Ocean but which, given the size of the fleets, catch significant quantities of swordfish, which may even be higher (Indian Ocean) than those caught by the specialised fleets. In view of this problem, the RFOs are reinforcing their statistical programmes and it is quite possible that stock evaluations provided in the medium term will produce different conclusions from those which could be formulated in 2004.

In the case of long liners, accessory catches of sharks are relatively abundant. The concerns of civil society in relation to the state of exploitation of these species recently led the FAO to put in place an international plan of action for the conservation of these species. For the future of this long liner fleet, specific measures for protecting sharks must therefore be incorporated, which may have an impact on activities relating to fishing for the target populations (swordfish, tuna). At the moment, the only measure is directed against shark finning, a practice which consists of only taking the fins of sharks caught and throwing the carcass back into the sea.

SECTION 2 - PRODUCTION

This section describes the production structures within the community and worldwide. Production structures are placed within a historical perspective before their current situation, their method of functioning and the restrictions facing them are described. The last chapter of this section aims to define production units of Community interest and then to identify the "sectors of Community interest".

CHAPTER 3 - PRODUCTION STRUCTURES

1. World fishing fleet

Data on the number and specifications of the world fleet involved with fishing for tuna is limited. The RFOs have attempted to list the number and characteristics of vessels fishing within their zones but this information cannot be used directly. In fact, there are several gaps in this information:

- this simple addition of the data available produces an overevaluation of the fleet, with some vessels being present on the list of several RFOs;
- the lists are supplied by the Member States and are not necessarily up-to-date with regard to movement of vessels;
- information is not provided in a uniform way, with a great deal of data being missing or incomplete;
- the lists do not make a distinction between active boats and inactive boats.

Data on purse seiners is the most complete. This seems logical as these boats generally have high tonnages and work for a relatively small number of operators. On the other hand, data about the fleet of long liners, pole and line vessels and hookers in general is even more uncertain as this type of vessel, of very variable tonnage, is operated by a multitude of shipowners spread over a very large number of countries.

1.1 Purse seiners

The tuna purse seiner is the predominant type in terms of catch, in each of the oceans. The FAO (2003) estimated their number at almost 570 ocean-going purse seiners with a capacity of 600,000 tonnes currently operating worldwide.

mt		Atlantic	Indian	East Pacific	West Pacific	TOTAL
<401	Vessel	1	0	52	23	76
	Capacity	400	0	11274	6215	17889
401-800	Vessel	35	1	31	38	105
	Capacity	26265	744	19802	21909	68720
801-1200	Vessel	10	15	74	156	255
	Capacity	11467	16213	72867	162833	263380
1200-1600	Vessel	6	9	33	24	72
	Capacity	8030	13204	44745	33033	99012
1601-2000	Vessel	1	9	6	4	20
	Capacity	1902	16343	10699	6909	35653
>2000	Vessel	0	33	9	1	43
	Capacity	0	80050	25558	2234	107842
TOTAL	***Vessel***	***53***	***67***	***204***	***246***	***570***
	Capacity	***48064***	***126554***	***184945***	***233133***	***592696***

Table 2: Estimate of the number of purse seiners operating worldwide (source: FAO)

This estimate may be slightly optimistic. An estimate carried out on the basis of other RFO studies produced a total of less than 500 ocean-going purse seiners operating worldwide.

The fleet of purse seiners represents approximately 60% of the almost 4 MT unloaded each year. Although the purse seiners are very variable in size (capacity of less than 200 up to 4000 tonnes), most of the loading capacity is taken up by the largest boats, and these account for the majority of catches.

The IATTC has a database with an interesting historical retrospective view. It includes all the purse seiners which have caught tuna in the Eastern Pacific together with their characteristics.

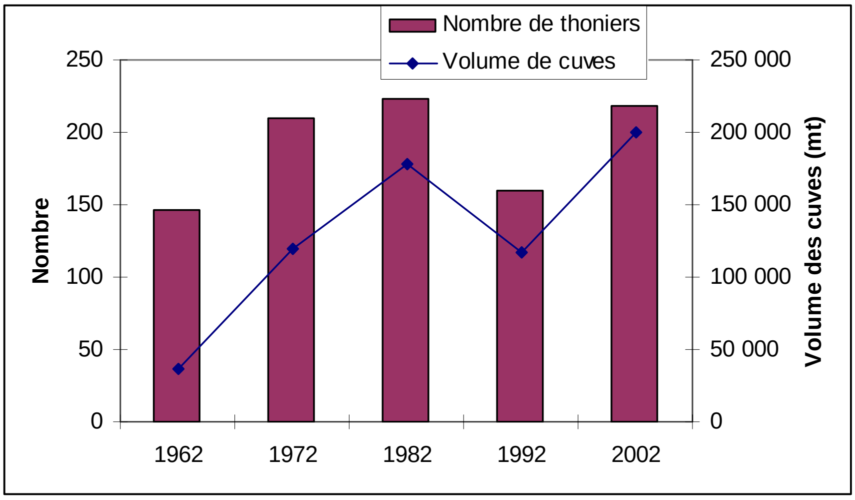


Figure 8: Number (bar) and volume of tanks (line) of purse seiners which have caught tuna in the Eastern Pacific (source: IATTC)

IATTC 2002									
Flag	Type	Class							Tanks capacity
		1	2	3	4	5	6	Total	
Belize	PS						1	2	1 018
Bolivia	PS				1		7	10	7 910
Colombia	PS				1	1	5	10	7 397
Ecuador	PS		7	12	12	2	37	76	47 609
Spain	PS					2	5	5	12 177
Guatemala	PS						4	4	7 640
Honduras	PS						2	2	1 798
Mexico	PS			50	4	11	36	56	47 832
Nicaragua	PS						1	1	1 229
Panama	PS				2		8	10	11 706
Peru	PS						1	1	1 022
Salvador	PS						3	3	5 686
USA	PS			2			9	11	13 339
Venezuela	PS						2	24	30 784
Vanuatu	PS					1	4	5	4 024
Unknown	PS						1	1	486
Total	PS		7	24	20	22	145	218	
		Tanks capacity							
Total	PS		758	4 397	5 622	9 333	179 832	199 942	

Table 3: Number and volume of tanks of purse seiners recorded by the IATTC in 2002

With regard to the Western Pacific, the list of boats is held by the FFA and the SPC. In its lists the FFA includes all vessels, according to flag and size, authorised to fish in the waters of countries which are members of the Agency, which covers most of the Western and Central Pacific region. Although some purse seiners fish without a licence in the region and are not included in the FFA list, it is considered to be reliable. The SPC has a similar list of vessels working in the waters covered by the convention but this list does not include all boats. In addition to boats which have fished in the waters of the SPC this organisation includes a few boats from outside the region, in particular those from the Philippines. There is an overlap between the FFA list and the SPC list, which is predictable given the fact that the zones for which the two organisations are responsible overlap considerably. Both the FFA and the SPC make the list public.

In 2002, the fleet operating in the WCPO consisted of the following (SPC source):

- Japan, United States, Republic of Korea and Chinese Taipei: 140 boats
- Fleet for the Pacific island countries: 41 boats (27 of which belong to PNG)
- Philippines: 11 boats
- New Zealand: 3 boats
- People's Republic of China: 3 boats

Outside the zones of these RFOs, no list of boats drawn up by public institutions is available for the Pacific in general. This lack of information significantly limits any studies on the capacities of the worldwide tuna purse seiner fleet. The creation of the new WCPFC should allow better identification of this aspect.

The majority of purse seiners operating in the waters of the Western Indian Ocean are recorded by the IOTC. This data completes that provided by the SFA which records the purse seiners fishing in the waters of the Seychelles, but only with difficulty can any tuna purse seiner fishing in the Indian Ocean avoid fishing in Seychelles waters.

The fleet of purse seiners fishing in the Indian Ocean consists of European boats (flying the Spanish, French or Italian flag), vessels owned by European interests, classified as similar (flying the Seychelles, Panama flag, and so on), around 10 boats from the former USSR working under the Panama and Belize flags as well as a few Iranian purse seiners. Spanish "supply vessels" must also be included in this fishing fleet. These are support vessels which help the purse seiners when they are fishing using FADs, thus helping to increase their efficacy and fishing power.

Whereas the European and related boats are the subject of regular monitoring by European scientists (IRD and IEO) and those from the Seychelles (SFA) within the framework of the resolutions of the Indian Ocean Tuna Commission (IOTC), the 9 to 11 former Soviet purse seiners which were still operating over recent years under the flags of Panama and Belize, have not notified the IOTC of any information about their activities in the region since 1995.

In the Atlantic, most catches are made by purse seiners flying the French or Spanish flag. Nevertheless the ICCAT records a fleet flying the Ghanaian flag (10 purse seiners), the flag of Guatemala (2 purse seiners), Russia (7 purse seiners), America (two purse seiners), and Venezuela (33 purse seiners).

1.2 Long liners

Long liners represent approximately 14% of tuna production. The fleet is usually split between ocean-going long liners and inshore long liners. The latter probably represent the majority of catches. The various RFOs are in the process of setting up databases about the long liners working in the zone for which they are responsible but these lists are not as well advanced as those for purse seiners. As a result the information is even less detailed.

At the *ICCAT 2000 Commission meeting, Document 019*, the world fleet of ocean-going long liners consisted of the following:

- Japan: 532 vessels;
- Chinese Taipei: 600 vessels;
- South Korea: 198 vessels;
- IUU: 236 vessels.

The total of 1,566 long liners is very likely to be an underestimate, as certain countries with a fleet of long liners have been omitted from this list.

Miyake (2003) estimated the fleet of long liners of over 24 m holding a fishing licence at 2,905 boats involved in tuna fishing and 609 involved in swordfish fishing.

	SMALL LL - >24m <35 m					LARGE LL - > 200GRT or > 35 m				
	Indian	Atl.	Pacif.	Duplicate	TOTAL	Indian	Atl.	Pacif.	Duplicate	TOTAL
Australia	14				14	14		2		16
Belize							1	20	2	19
Bolivia										1
Brazil	11				11					
Cambodia								3		3
Canada		5			5					
China	72		149		221	21	60	78	39	120
Cook			2		2					
France	3		14		17					
Ireland		8			8					
Portugal		32			32	12	12		6	18
Spain	75	351	73	142	357	57	43	54	80	74
Ecuador			6		6			20		20
Micronésia					4					
Fiji			37		37					
Georgia								1		1
Honduras							4			4
Island							1			1
Indonésia	722	1		1	722	17		1		18
Iran						1				1
Japan	83	35	171	94	195	477	482	480	951	488
Korea						175	1	176	163	189
Madagascar		1			1					
Mexico			6		6			3		3
Namibia							1			1
New			3		3					
Panama		10	38	1	47		2	15		17
Peru								1		1
Philippines						39	8	2	9	40
Seychelles	9	2	4	1	14					
South		7			7		10			10
St Vincent		5			5		3			3
TPC			14	3	11	173	163	164	50	450
Thaïland						2				2
United States		162	28	2	188		18			18
Uruguay		1			1		6			6
Vanuatu		1			1			48		48
Venezuela		13			13		18			18
TOTAL	***989***	***634***	***545***	***244***	***1924***	***989***	***833***	***1068***	***1300***	***1590***
SWO LL	75	483	87	142	503	69	69	54	86	106
TUNA LL	914	151	458	102	1421	920	764	1014	1214	1484

Table 4: estimate of the number of long liners operating in the Atlantic, Pacific and Indian Ocean

1.3 Pole and line vessels

Pole and line vessels, like purse seiners, are classified in terms of capacity. Before the 1950s, pole and line vessels were the dominant method of fishing used to catch tuna. When the purse seiners appeared on the scene, the pole and line vessels were rapidly superseded in terms of landed tonnage. As the number of pole and line vessels dropped, the number of long liners increased. Currently, catches by long liners and those by pole and line vessels are at approximately the same level, with pole and line vessels also responsible for approximately 14% of catches.

1.4 Other fleets

Approximately 12% of world catches are made using devices other than the seine, the long line and the pole and line. Approximately 50% of this 12% is caught using trawlers which target albacore with the rest being caught by various types of fishing device such as set nets, gillnets, harpoons or traps. No fleet estimate is available, as this mainly concerns seasonal activities.

1.5 Groups of shipowners

The tuna industry is extremely concentrated because of the global nature of the resource (migratory) and its high capitalisation.

Owners of purse seiners are grouped together in the World Tuna Purse Seine Organisation which was set up in 2000 following the second world meeting of tuna purse seiner owners, in order to halt the drop in the prices of raw material (skipjack tuna and albacore). The aim of the organisation is to hold a price level which is sufficiently remunerative by means of applying measures to limit supply.

Just as owners of purse seiners are grouped together in the WTPO, owners of long liners are grouped together in the Organisation for the Promotion of Responsible Tuna Fisheries (OPRT). This brings together owners from Japan, the Chinese province of Taiwan, Indonesia, the Philippines, Ecuador and China. The organisation targets illegal, unreported and unregulated fishing, as well as recourse to flags of convenience, in order to guarantee the environmental, economic and social durability of fishing.

Between 2000 and 2004 the OPRT has been trying to reorganise the fleet of ocean-going long liners by means of a programme for scrapping boats and registering boats under new flags in order to limit the presence of IUU boats.

2 IUU boats

2.1 Definition

The FAO defines IUUs in the following way:

- The term "illegal fishing" is understood to refer to fishing activities:
  - carried out by national or foreign boats in waters placed under the jurisdiction of a State, without the latter's authorisation or in contravention of its laws and regulations; or
  - carried out by boats flying the flag of States which are members of a relevant regional fishing management organisation, but which are contravening the measures of conservation and management adopted by this organisation and which have a restrictive nature for the States, or the relevant measures of applicable international law; or
  - contravening national laws or international obligations, including those contracted by States co-operating with a relevant regional fishing management organisation.

- The term unreported fishing is understood to refer to fishing activities:

  - which have not been reported, or have been falsely reported, to the relevant national

authority, thus contravening national laws and regulations; or
  - carried out within the zone under the responsibility of a relevant regional fishing management organisation, which have not been reported or have been falsely reported, thus contravening the reporting procedures of this organisation

- The term unregulated fishing is understood to refer to fishing activities:
  - which are carried out in the zone under the responsibility of a regional fishing management organisation by vessels without nationality, or by vessels flying the flag of a State which is not a member of this organisation or by a fishing entity, in a way which does not comply with or contradicts the measures of conservation and management of this organisation; or
  - which are carried out in zones, or which target stocks for which there are no applicable measures of conservation or management, and in a way which does not comply with the responsibilities of the State on the subject of the conservation of marine biological resources under international law

2.2 Historical reminder

In 1992, the International Conference on Responsible Fishing (Cancun-Mexico) adopted the Cancun declaration requiring the FAO to develop an international code of conduct for responsible fishing. After the Cancun conference, the United Nations Conference on the Environment and Development (UNCED Río de Janeiro, Brazil) adopted Agenda 21 and a programme of action to promote long-lasting development. Chapter 17 of agenda 21 emphasised the problems associated with unregulated fishing, vessels changing flag in order to escape controls and the lack of co-operation between states in managing fishing on the high seas.

The United Nations conference of September 1992, on the subject of stocks of fish incorporated the work carried out by the FAO. Consequently the "compliance agreement" was adopted at the 24th session of the FAO conference in November 1993. The negotiating of this agreement was directly motivated by the problems associated with IUU fishing. This agreement attempts to ensure that the flag States are able to control their boats more effectively when fishing on the high seas, ensuring that they have authorisation to carry out this fishing. In this way, the agreement ought to discourage boats which do not have authorisation to fish on the high seas from flouting measures of conservation and management issued by the relevant authorities.

The term IUU fishing was officially acknowledged for the first time at the meeting of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) in 1997. In the course of this meeting, the international community indicated its interest not only in illegal fishing but also in unregulated and unreported fishing. Since 1997, the term IUU fishing has been regularly used in international negotiations on fishing.

An action plan against IUU fishing (IPOA-IUU) was developed by the FAO as a voluntary instrument within the framework of the international code of conduct for responsible fisheries and in response to the request made by the FAO Committee on Fisheries (COFI) at its 23rd session.

The world summit for sustainable development (Johannesburg, South Africa, September 2002) recognised that the protection and management of natural resources are essential factors for sustainable development. The summit decided to "implement the FAO's international action plan in order to prevent, discourage and eliminate illegal, unregulated and unreported fishing by the year 2004".

In November 2002, the International Conference of Santiago de Compostela (Spain) on illegal, unregulated and unreported fishing was held in order to provide political momentum and to follow up the international action plan for combating IUU fishing. The conference formulated initiatives and points of view on creating the action plan aimed at eradicating IUU fishing as far as possible at regional, national and international level. In the course of its meeting at Evian in June 2003, the members of the G8 acknowledged the need for stronger and more concentrated action against illegal, unregulated and unreported fishing. Having done so, they insisted on the need to attack the matter of insufficient controls carried out by the flag states of fishing boats and in particular those flying flags of convenience.

2.3 IUU and tuna fishing

Two sectors of activity are referred to most often as attracting intense activity from IUU boats: fishing for toothfish in the Antarctic and tuna fishing. Obviously, given the very nature of the activity, it is difficult to formulate a very accurate approach.

In the Indian Ocean the number of IUU boats probably breaks down as follows (*Anganuzzi - IOTC):*

- refrigerated long liners: 80 IUU for 690 non-IUUs, namely 12% of the fleet;
- non-refrigerated long liners: 150 IUU for 1,350 non-IUUs namely 11% of the fleet;
- purse seiners: 9 IUUs for 62 non-IUUs, namely 15% of the fleet

These figures corroborate those supplied by Gianni and Simpson in the work carried out by the OCDE entitled "fish piracy: combating IUU fishing" 2004. Gianni and Simpson believe that the world fleet of fishing boats of a size in excess of 24 m includes approximately 14% of IUUs.

The "Fisheries Agency of Japan" (Hanafusa and Yagi - 2004) estimates that 232 IUU long liners flying flags of convenience were operating in 2000 to supply the Japanese *sashimi* market and that the problem of IUU boats is essentially a problem involving Chinese Taipei. After setting up a complex mechanism including discussions with shipowners from Chinese Taipei, it seems that the number of ocean-going long liners has been reduced to a lower level in the region of 25 boats. However, this same agency reports that shipowners from Chinese Taipei are probably having recourse to the same methods (use of flag of convenience) in order to develop a fleet of purse seiners (28 boats in February 2004) and long liners of under 24 m. The establishment of the WCPFC should be able to reduce the activity of these boats.

Although this information does not allow us to gain a very accurate idea of IUU activity at least it allows us to consider that:

- IUU activity is a world problem affecting all types of fishing but especially the tuna industry,
- IUU activity is dangerous to stocks and seriously affects the protective and management measures taken,
- IUU activity has effects on the marine environment,
- IUUs are a factor distorting competition and are a threat to the economic survival of shipowners and operators who comply with the laws and regulations in force,
- IUUs are a factor of social regression, with operators being located outside any field of application of social regulations.

3 The European community fleet

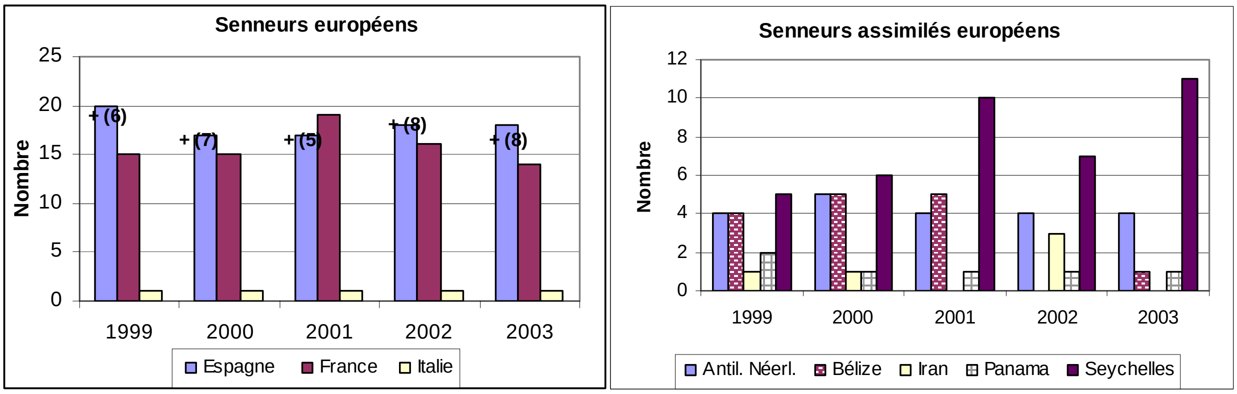
3.1 Ocean-going purse seiners

Two countries from the European community own purse seiners, in order of importance, Spain and France.

A few observations can be made:

- The total number of purse seiners controlled by European companies is approximately 88 boats[4], namely approximately 20% of the world fleet, but certainly one of the most profitable;
- boats controlled by Spanish shipowners work in the three oceans, whereas the fleet controlled by French shipowners only works in the Atlantic Ocean and in the Indian Ocean;
- the fleet controlled by Spanish shipowners breaks down its boats in the following way: 28 in the Indian Ocean, 19 in the Atlantic Ocean and 17 in the Pacific;
- the fleet controlled by French shipowners is broken down between the Indian Ocean, accounting for 15 boats, and the Atlantic Ocean, accounting for 9 boats;
- the fleet controlled by Spanish shipowners has recourse to non-Spanish flags for approximately half of its fleet (Seychelles, Panama, Cape Verde, Guatemala, Salvador, etc.);
- the fleet controlled by French shipowners is totally under the French flag, with the exception of one boat flying the Italian flag.

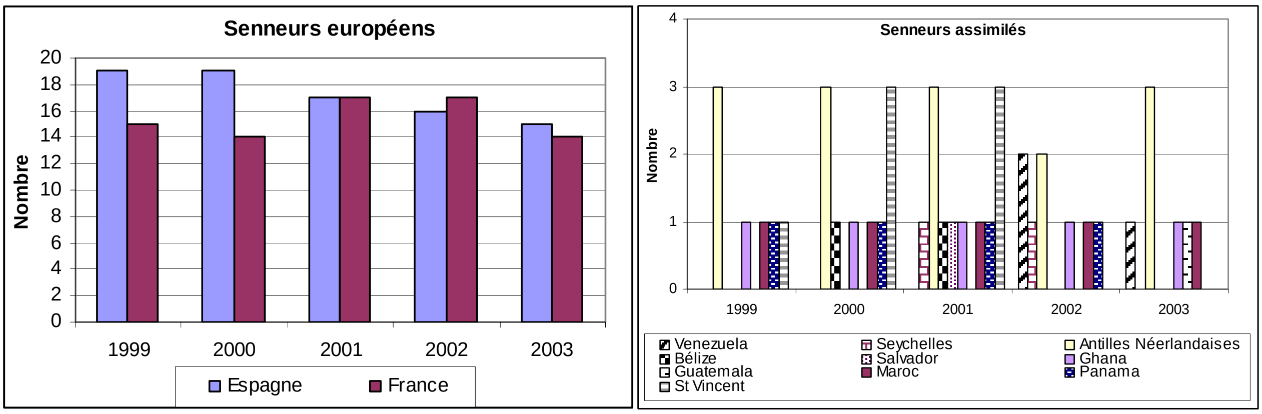
  - ***Indian Ocean***



(note: in brackets: the number of Spanish supply boats)

Figure 9: Composition of the fleet of European and related purse seiners, between 1999 and 2003 (source: Pallarés et al., 2004)

  - ***Atlantic Ocean***



(note: may involve double entries in the event of changing flag in the course of the year)

Figure 10: Composition of the fleet of European and related purse seiners, between 1999 and 2003 (source: Pallarés et al, 2004)

[4] *It is advisable to point out that this figure can only be approximate given the constant movement within the fleet (construction, sale, registering under new flags, etc.)*

Table 5: View of the fleet belonging to or controlled by Community interests, broken down according to flag

Company	INDIAN OCEAN			ATLANTIC OCEAN			PACIFIC OCEAN		
	Tuna vessel	Remark	Flag	Tuna vessel	Remarks	Flag	Tuna vessel	Remarks	Pavillon
							Guayatuna 1	Guyatuna	Ecuadorr
							Guayatuna 2	Guyatuna	Ecuador
							Kai Alai		Ecuador
							Eli	?	?
ALBACORA	Albacora IV		Spain	Albacora Caribe	Overseas Tuna C°	Panama	Albacora 15		Spain
	Albacan		Spain	Albacora 9	Overseas Tuna C°	Panama	Albacora 1		Spain
	Intertuna 1	Intertuna Ltd	Seychelles	Albacora 10	Overseas Tuna C°	Panama			
	Intertuna 2	Intertuna Ltd	Seychelles						
	Intertuna 3	Intertuna Ltd	Seychelles				Panama	Overseas Tuna	Panama
	Intertuna 4	Intertuna Ltd	Seychelles						
	Albatun 2		Spain						
	Albatun 3		Spain						
TUNIDOS	Mar de Sergio		Spain						
CALVOPESCA	Montelape	Calvopesca indico	Seychelles	Montefrisa 9	CalvoPesca Cabo	Cap Verde	Montelucia	Calvopesca El	Salvador
	Montealegre	Calvopesca indico	Seychelles	Montecelo	CalvoPesca Cabo	Cap Verde	Monterocio	Calvopesca El	Salvador
PETUSA				Almadabra 1		Spain			
				Almadabra 2		Spain			
JEALSA (NICRA 7)				Kurtzio		Spain			
				Maxicorta		Spain			
				Sant Yago 1	Atunera de Sant	Guatemala			
				Sant Yago 2	Atunera de Sant	Guatemala			
IGORRE AITZUGANA ETXEBASTAR	Campolibre Alaï		Spain	Txirinne		Spain			
	Elai Alai		Spain	Gure		Spain			
	Erroxape		Seychelles						
	Demiku		Seychelles						
	Xixili		Seychelles						
INPESCA	Txori Berri		Spain						
	Txori Aundi		Seychelles						
	Txori Urdin		Spain	Txori Eder		Spain			
	Txori Toki		Spain						
	Txori Argui								
PEVASA	Playa de Bakio		Spain						

	Playa de	Spain						
	Felipe Ruano	Spain						
	JR Egana	Spain						
	Playa de Anzoras	Spain						
ATUNSA	Doniene	Spain	Alboniga		Spain			
	Artza	Seychelles	Egaluze		Spain			
	Izurdia	Spain						
	Zuberoa	Spain						
PEBERTU			Bermeotarrak		Ghana			
			Bermeotarrak III		Spain			
ATUNPESCA								
GARAVILLA						Isabel 5		?
						Rosita C	?	Spain
						El Amirante	?	?
						Charro	Garavilla	?
						Isabel 1	?	Cyprus
						Aurora B		Spain
SOMATHON (Moroco)			Germon	Equipage espagnol	Morocco			
FRANCE THON - CMB	Cap Ste Marie	France	Santa Maria	Gestion ex-ACF	France			
	Cap St Vincent	France	Cap St Paul		France			
	Avel Vor	France	Cap St Pierre		France			
	Sterenn	France	Avel Viz		France			
	Avel Vad	France						
	Cap Bojador	France						
	Men Goe	France						
	Torre Giulia	Italy						
	Gueotec	France						
	Talenduic	France						
	Trescao	France						
	Men Cren	France						
	Huon de	France						
	Gueriden	France						
	Kersaint	France						
SAUPIQUET			Via Mistral		France			
			Via Euros		France			
			Via Avenir		France			
			Via Harmattan		France			
			Pere Briant		France			

3.2 Mediterranean purse seiners

The purse seiners which operate in the Mediterranean have specific characteristics in comparison with the rest of the fleet: they are of average size (the longest is no more than 45 m), the traditional hauling mast is replaced by a hydraulic crane and the mesh in the body and bottom of the net is wider (over 200 mm).

Three countries in the European Union have purse seiners which fish in the Mediterranean:

- France: the fleet consists of around forty boats. These have an average size of 33 metres and an average power of 69 kW. They operate in the Gulf of Lion and the Catalan Sea. (between March and April or August to November), the Balearic Islands and the waters off Libya or Malta. Bluefin tuna is the main catch. Most of the fishing effort, traditionally concentrated in the Western section of the Mediterranean basin, is extending in a more and more marked way towards North Africa and the Eastern basin.
- Spain: the fleet consists of around ten boats. Fishing takes place around the Balearic Islands between April and October.
- Italy: has around thirty boats.

3.3 Pole and line vessels

The fleet of European pole and line vessels operating in the Atlantic Ocean:

- 15 community boats (5 French and 10 Spanish) fish along the African coast (zone between Senegal and Mauritania) and catch tropical tunas. The French fleet has been stable for five years. A few French pole and line vessels fly different flags (Senegal, Cape Verde, Spain);
- around twenty Spanish pole and line vessels fish close to the Canary Islands;
- Portuguese tuna fishing mainly takes place in the archipelagos of Madeira and the Azores where the local fleet of pole and line vessels (around twenty boats) target various species according to numbers and season.

Table 6 - Pole and line vessels from the European and related fleet according to flag between 1991 and 2003

Flag	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Netherlands Antille									1	5	3	2	3
Cap Verde		1	1	1	1	1	1	1	1				
Spain					3	4	6	7	7	7	5	9	11
France	9	8	9	7	8	7	7	7	5	5	5	5	5
Panama									1	1			
Sénégal	1		1	2	3	1	2	3	3	6	2	2	4
St Vincent						1	1	2	2	2	1	1	1
Total	10	9	11	10	15	14	17	20	20	26	16	19	24

3.4 Long liners

<u>In the Mediterranean</u>:
Spanish long liners operate from the Straits of Gibraltar (5° West) to 7° East, close to Sardinia, and from 42°N of the Algerian coast. Around 145 long liners fish for swordfish in the Mediterranean waters and around one hundred individual boats fish the inshore waters during the summer.

The Italian fleet of long liners fishes for swordfish and tuna. It is mainly based in Sicily, in Sardinia, in Puglia, in Campania and Liguria. The fleet has over 1500 boats mainly operating in the Gulf of Tarento, the south of the Adriatic and the Aegean Sea.

Greek statistical services include long liners in the category of "inshore fishing", so no count of this fleet is available. However, in 1991 Caminas and De la Serra (1995) produced an estimate of 400 long liners fishing for swordfish. Approximately 180 boats were also fishing for tuna in the Central and Northern Adriatic.

Atlantic Ocean:
Community long liners which fish for inshore species in the Atlantic Ocean are very numerous. On the other hand, around fifty boats targeting swordfish have been counted (approximately forty Spanish and around ten Portuguese). This fleet is very mobile and can easily change ocean.

Indian Ocean:
According to the register of boats authorised to fish in the IOTC zone, there are 3 French long liners, 97 Spanish, 22 Portuguese and 2 British long liners operating in the Indian Ocean. Around 30 long liners from Reunion Island can be added to this number.

Pacific Ocean:
According to the IATTC boat register, 110 Spanish and 14 French (French Polynesia - outside the European Community) fish in the Eastern Pacific Ocean. There is no information about their actual activity. In the Central and Western Pacific, in 2004, 75 boats from French Polynesia were fishing, mainly for yellowfin tuna.
Up to 2004, no Spanish long liners were operating in the Central and Western Pacific waters. Since then, tests on swordfish fishing have been conducted by eight long liners in an area between Melanesia, New Zealand and Australia.

4 Farming and fattening

4.1 Technical parameters

Various parameters have an influence on the biology of the bluefin tuna:

- salinity: tuna is incapable of osmoregulation in fresh water or water which is desalinated, they are strictly bound to the marine environment;
- oxygen: significant demand given their metabolism, tuna swim on a permanent basis but are capable of anaerobiosis;
- food: extraordinary ability to ingest and digest, producing rapid growth.
- turbidity
- brightness: semi-surface fish appreciating direct sunlight especially in the juvenile stages.

The reproductive technique has only been partially monitored, but it is hoped that within a few years' time a team with knowledge of other species will be able to control all the techniques for bluefin tuna reproduction, thus opening the way for promising prospects.

At the moment, current information indicates as follows:

- age of maturity: between 3 and 5 years (90-95 cm, weight between 15 and 18 kg).
- ovarian maturity and egg-laying: the techniques used for sea fish are likely to be applicable to tuna. Natural maturation does not occur in captive stocks. The first induction tests are promising.
- fertility: between 9 and 12 million eggs (0.9 to 1.1 mm in diameter) per individual (100 to 200 kg), egg-laying frequency 1 to 2 days.

- Seasonality (end of April and mid-July) of reproduction within the natural environment.
- Sex differentiation easy by means of measuring steroids in the blood.

Pre-maturity stages

- Classic larva stages with a larva life of between 50 and 60 days (10 to 12 mm)
- larva feed on zooplankton, juveniles on fish
- more significant growth than with other fish (300 to 500 mg in September, 3 to 5 kg in 1 year, 40 to 50 kg after 5 years)
- the quality of juveniles currently produced in fish hatcheries is not good (conformation; mortality)

Nutrition

- The use of game fish produces high rates of conversion in the order of 15 to 17. In addition, feeding with game fish may result in risks of pollution and sickness.
- Tests have been carried out with semi-wet foods which produce results comparable to those carried out with sardines. Research is aimed at perfecting extruded dry foods, which are easier to handle, better assimilated and less polluting.
- Foods must produce a great deal of energy and protein and must be aimed at increasing the level of fat in the muscle.

Fattening

- at the moment fattening takes place offshore because of the size of the fish.
- cages measure between 40 and 90 metres in diameter and are placed on beds of under 50 m. Tests have been carried out on raceway type cages.
- there are 3 categories of rigid or flexible cages (submersible, semi-submersible, non-submersible) requiring large tensioner distances.
- temperature extremes must be between 15 and 25°C
- the feeding rate is between 10 and 50% of the biomass depending on temperature.
- the conversion rate is high, and better with small tuna (but lower growth).
- the maximum load is between 4 and 10 kg/m^3 (a seeding load of 2.4 kg/m^3 in order to ultimately produce 4 kg/m^3 once fattening is complete).
- capture mortality: over 5%
- recapture mortality: over 5%
- presence of viruses affecting farms.

Growth

Studies on wild fish show very rapid growth (1 year: 2.6 kg, 5 years: 74 kg, 10 years: 110 kg, 15 years: 145 kg). This is confirmed in the case of farming with the initial results obtained in Japanese universities and on various farms.

4.2 Method of production

Aquaculture production of tuna to a very great extent consists of fattening individuals caught by fishing boats in captivity. The fish is transferred from the seines into special transportation cages which are dragged up to the farming enclosures where the fish are fed up until the sale period with small pelagics such as squid, sardines or mackerel.

The growth of tuna in captivity differs according to whether or not this concerns small or large individuals. Juvenile tuna caught at a weight of between 7 and 10 kg and kept for periods of approximately one year grow approximately 5 kg per month while retaining morphological and organoleptical characteristics compatible with the requirements of the Japanese market. Adult tuna of between 70 and 250 kg caught in spawning areas are too thin at the time of being caught to satisfy the requirements of purchasers. Keeping them in captivity for a period of six months allows them to replenish the reserves of fat required, with a weight gain which may reach 20% of their starting weight.

4.3 State of the industry

Canada:

This country was the forerunner in the farming of Atlantic bluefin tuna with the first trials being conducted in St Margaret's Bay in Nova Scotia, in the late 1970s. These trials took place in rectangular cages measuring 100 x 50 by 30 metres, on large sized tuna (approximately 350 kg). The tuna was then exported to Japan after having gained between 30 and 80 kg. The experiment ended in the 1980s due to a lack of catches of tuna. Since 1993, a new project has begun, but without any real progress being made (approximately 78 tonnes produced in 1998). This first experiment was fundamental from a scientific point of view (physiology, pathology, etc.), a technical point of view (trials on the first cages, feeding, etc.) and also from a commercial point of view with the sale of this product on the Japanese market.

Japan:

This country became interested at a very early stage in the aquaculture potential of tuna (since 1973) with development taking two approaches:

- increasing the value of juveniles by means of fattening in cages (with the creation of a stock of spawners)
- ensuring domestication with a view to aquaculture and repopulation

However this activity remains marginal in terms of volume, with 2000 Tonnes per annum produced by 18 farms. This may be explained by the specific nature of tuna fattening in Japan where juveniles of 500 g are caught as opposed to 15 to 30 kg elsewhere. The juveniles are raised for 3 to 4 years and are then marketed at around 30 kg. Japan is involved in a national programme for tuna repopulation which has involved setting up a marine farm (in Amani, Oshima). This project is based on the production of a million juveniles, resulting from a process of controlled maturation and reproduction, which will then be released. Japanese companies have decided to invest in farms in the Mediterranean (Spain, Malta, Croatia, etc.) and in Australia.

The United States:

One single unit is operating, in southern California, to the south of San Diego, with two fattening sites producing 1,750 tonnes.

Australia:

The fattening activity developed in the 1990s, following the fishing quotas for bluefin tuna (SPF) introduced in the years 1989-1990. 16 farms (20 to 30 ha of concessions on beds of 20 m) produce 9,000 Tonnes of SBF in association with the Japanese, solely on the basis of fished tuna (15 to 25 kg). Currently a research programme involving controlled reproduction has been put in place. Farms use circular cages of the Bridgestone type (JP) measuring between 40 and 50 m in diameter (± 20 m in depth). Natural frozen feed is used (10 to 30% of biomass per day), although an initial unit conducted trials using dried granulated feed.

The Mediterranean

In 2004, several tuna farming sites were operating. The majority of these farms are in the waters of Member States of the Community, with Spain in first place (11 farms for a production capacity of 9,950 tonnes), Italy (6 farms for a production capacity of 2,350 tonnes), Malta (5 farms for a production capacity of 6,350 tonnes), Cyprus (production capacity of 500 tonnes) and Portugal (production capacity of 500 t) with one farm each. No farm is operating in France, and one farm is probably at an advanced planning stage in Greece. Amongst the other Mediterranean countries, Croatia (7 farms), Turkey (5 farms for a production capacity of 5,300 t) and Tunisia (4 farms for a production capacity of 2,400 tonnes) are the principal extra-community players. Libya, Israel and Morocco also probably own installations, but at the experimental stage. In accordance with a report produced by the Spanish research company ATRT[5], all these farms are backed by Japanese and Australian investments in partnership with the major European groups in the sector of fishing and the fish trade. The target market of fattened tuna is the *sashimi* market in Japan, either directly, or via trading and processing companies established in South Korea or Taiwan. The tuna is dispatched to the site in refrigerated containers equipped with ultra freezing modules, or in the case of the best specimens, by plane under chilled conditions. The Community market is restricted to catches of dead tuna.

4.4 Interaction with fishing

Thanks to tried and tested technology and profiting from sustained Japanese demand, farming of bluefin tuna has developed spectacularly in the Mediterranean. In 1997, the initial exports of Atlantic bluefin tuna (*Thunnus thynnus*) farmed in the Mediterranean to Japan became possible. Since then, the Mediterranean industry has developed considerably and in 2002 it was estimated that 30, 37 and 50% of the quantities caught using seines in 1999, 2000 and 2001 respectively had been transferred to fattening cages (Myake *et al*, 2003)[6]. In 2003, these proportions probably reached 70%. The advent of this new industry therefore profoundly changed the structure and strategy of the fishing fleet targeting bluefin tuna. It encouraged investment at sea and on land at a time when the international Community was becoming fully aware of the state of overexploitation of stocks of this species, and was deciding on increasingly restrictive management measures via the ICCAT (moratoria, subjecting to TACs). The principal concerns associated with the increased capacity of bluefin tuna farming were, in 2002, according to the ICCAT, the following (Myake *et al*, 2003):

- an initiative to increase fishing effort in relation to small and medium sizes which are finding a new up-and-coming commercial outlets via farming. Fishing effort on large individuals is also likely to increase. Subjecting to TACs can only provide a partial solution as demand is pushing boats to stop respecting quotas.

- A possibility of laundering illegal catches in excess of quotas: statistical documents on exchanges only relate to dead fish. Living fish are not involved in this monitoring system which guarantees good traceability of catches.

[5] *A.T.R.T. C/O'Donnell, 32 - E 28009 Madrid, author of the study entitled Tuna Ranching Intelligence Unit*
[6] *General review of Bluefin Tuna Farming in the Mediterranean area. Col Vol. Sci. Pap. ICCAT, 55(1): 114-124 (2003)*

- Difficulties in obtaining the data needed for monitoring stocks: there is a time lag between fishing and marketing which makes it difficult to obtain data on catches for a given year. Moreover, it proves virtually impossible to sample the sizes of live caught fish given the fact that they are directly transferred from seines into farming enclosures. Scientists are not able to access this information at a time when the change in fleet strategy may have an impact on the state of the resource

- Environmental problems: the impact which the quantities of food not eaten by the tuna and which fall onto the seabed through the cages could have on the coastal environment is not yet known, or the possible effects of zootechnical treatment which might be administered to the tuna in the course of farming.

These concerns, to be repositioned within the more global framework of the bluefin tuna fisheries, have been relayed by environmental defence associations and are the subject of a very far-reaching communications operation with the public and management institutions being conducted by the WWF.

These problems have led the ICCAT to adopt resolution 03-09, replaced by resolution 04-06. These texts specifically provide for the following: a declaration by each State listing the boats and farms authorised to carry out fattening of bluefin tuna (with the list of farms being public), accurate documentary monitoring of the quantities fished and placed in cages and the quantities marketed, monitoring of production by farms (growth, mortality), sampling of fattened fish, and a change in the statistical document for monitoring exchanges of bluefin tuna to include live fish. Moreover the contracting parties are also strongly urged to check that these measures are actually respected.

CHAPTER 4 - VOLUMES PRODUCED - TUNAS

1 Global assessment

In 2002, the total catches of the seven principal species of major tuna for the first time exceeded 4 million tonnes. As indicated on the graph provided below, skipjack tuna represents the top species caught with 48% (average 1991-2002) of catches, in front of yellowfin tuna (33%), bigeye tuna (11%) and albacore (6%). The three species of bluefin tuna (Atlantic, Southern and Pacific) each account for less than 1% of the tonnage caught, but the unit value of these species makes them major products on the international market

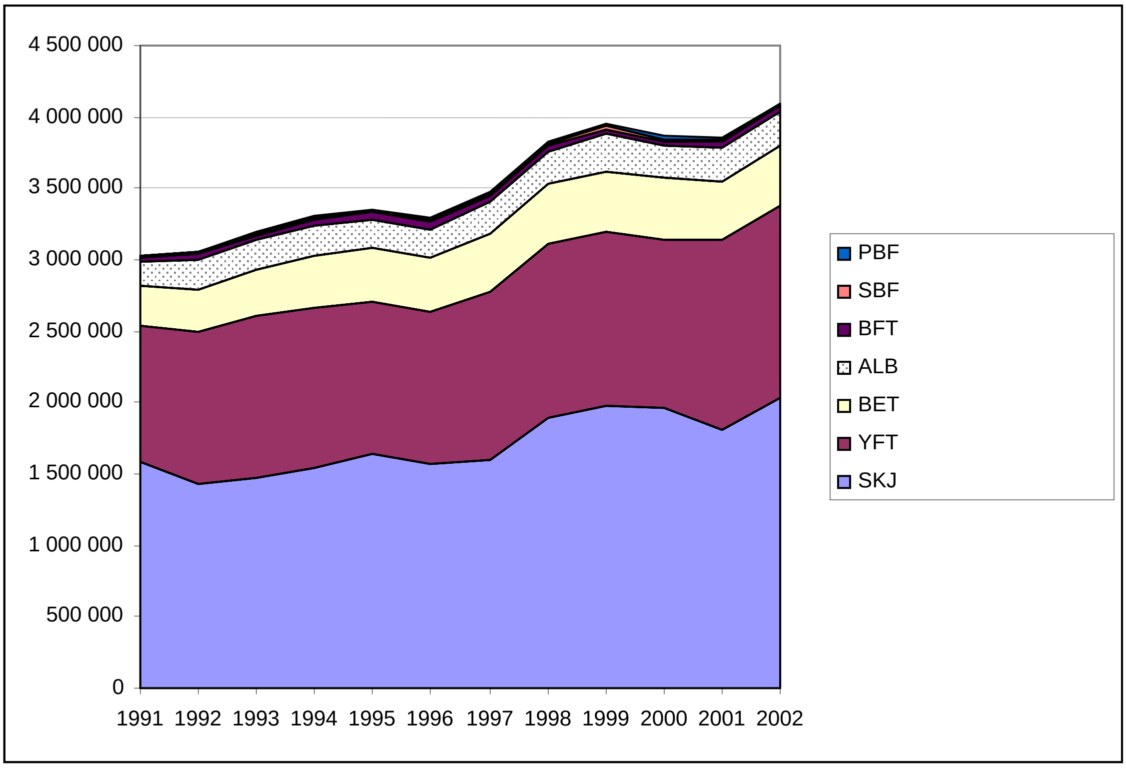


Figure 11: Change in catches of principal species of tuna since 1991. Source: FAO

Over the period 1991-2002, catches of the species of tuna described have all progressed substantially. World catches of bigeye tuna thus increased by 55%, those of yellowfin tuna and albacore by 40%, whereas catches of skipjack tuna and Atlantic bluefin tuna increased by almost 30%. Over the period 1991-2001, world catches therefore increased by 35%, equivalent to over one million tonnes in absolute value.

2 Catches per ocean

The graph provided below indicates the tonnages caught in each of the three oceans over the period 1991-2002. It can be seen, overall, that the Pacific Ocean remains the top fishing zone with catches often in excess of 2 million tonnes per annum (approximately 63% of world catches of major tuna on average over the period 1991-2002). The Indian Ocean is the second major production region with an average of 22% of world catches, in front of the Atlantic Ocean (14%). The trend of catches indicated on the graph is clearly on the increase for the Pacific and Indian Oceans, but decreasing for the Atlantic Ocean. The latter two trends are explained by the start-up in the early 1990s of industrial seine fishing in the Indian Ocean partly using fishing capacities which had been used up until that time in the Atlantic Ocean.

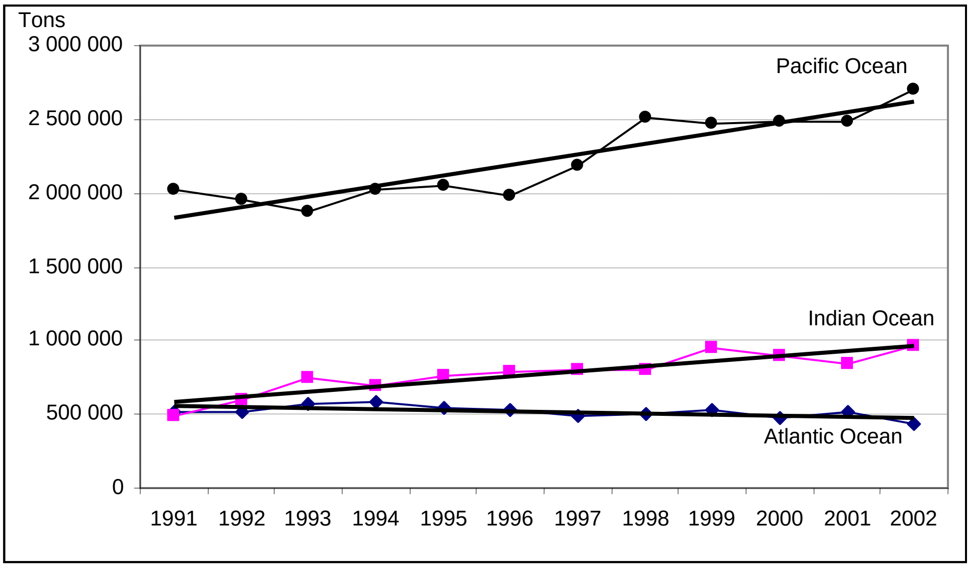


Figure 12: Development of catches of major tuna in the three oceans between 1991 and 2002 and straight lines indicating trends. Source: FAO

Catches in the Pacific Ocean increased overall by 34% between 1991 and 2002. Those in the Indian Ocean practically doubled, whereas catches in the Atlantic Ocean decreased by 18%. In 2002, 66% of world catches came from the Pacific Ocean, 24% from the Indian Ocean and 10% from the Atlantic Ocean (including the Mediterranean Sea).

With regard to composition in terms of species, the table provided below shows that fishing in the Indian and Pacific Oceans is very clearly dominated by skipjack tuna and yellowfin tuna (87% of catches on average in the Pacific, 81% in the Indian Ocean). In the Atlantic Ocean, average catches of these two species only account for 58% of the total, mainly because of a more significant representation of bigeye tuna and albacore (21 and 13% of catches respectively, whereas the total of these two species is around 15% in the other two oceans). In absolute value, catches of bigeye tuna in the Indian Ocean and in the Atlantic are more or less equivalent (*approximately* 110,000 tonnes).

Table 7: Catches per species and per ocean. Source: FAO

	Species	Catches (average)	%	1991	2002
Atlantic Ocean	SKJ	153 852	30%	38%	28%
	YFT	147 614	29%	30%	32%
	BET	106 780	21%	16%	18%
	ALB	66 933	13%	11%	14%
	BFT	39 975	8%	5%	8%
	SBF	2 282	0%	1%	0%
Indian Ocean	SKJ	344 005	44%	49%	52%
	YFT	284 877	37%	35%	31%
	BET	111 932	14%	11%	14%
	ALB	26 491	3%	4%	2%
	SBF	10 153	1%	1%	1%
Pacific Ocean	SKJ	1 210 224	54%	57%	52%
	YFT	723 574	32%	31%	33%
	BET	160 503	7%	7%	8%
	ALB	122 424	5%	5%	6%
	PBF	10 166	0%	0%	0%
	SBF	2 692	0%	0%	0%

3 The principal players and position of the Community

Catches of tuna are registered per country in accordance with the flag flown by the boat. As indicated in the table below, Japan is the top nation in terms of catches with 18% of world catches over the period 1991-2002 (around 600,000 tonnes per annum). The European Community, including the four Member States which declared over 5,000 tonnes caught on average are Spain, France, Italy and Portugal, forms the second-placed world entity with 13% of catches over the period 1991-2002 (approximately 450,000 tonnes per annum). The other major players in global fishing for major tuna are Taiwan (11% of catches on average 1991-2002), Indonesia (9%), South Korea (6%) and the Philippines (5%). In 2002, these six states caught almost 60% of the total world catches.

Table 8: World catches (tonnes) of major tuna according to flag. Source: FAO

	2000	2001	2002	% 2002	Average 1991-2002	Average %
Japan	621 458	564 476	560 754	14%	634 871	18%
E.C.	***453 143***	***405 840***	***460 253***	***11%***	***449 781***	***13%***
Of which :						
Spain	*289 456*	*254 004*	*277 453*	*7%*	*266 730*	*8%*
France	*151 937*	*136 025*	*161 230*	*4%*	*161 151*	*5%*
Italy	*7 475*	*10 329*	*13 420*	*0%*	*9 661*	*0%*
Portugal	*4 275*	*5 482*	*8 150*	*0%*	*?12 240*	*0%*
Taiwan	435 946	439 251	495 855	12%	384 785	11%
Indonésia	419 512	387 866	406 175	10%	325 963	9%
Republic of Korea	218 197	230 510	257 570	6%	222 444	6%
Philippines	206 380	190 836	211 964	5%	176 097	5%
Other nca	190 703	180 151	208 030	5%	146 293	4%
Mexico	120 422	144 717	160 151	4%	139 119	4%
USA	152 361	149 743	154 153	4%	208 013	6%
Maldives	91 868	103 667	137 050	3%	88 455	3%
Venezuela	90 002	138 728	135 956	3%	90 501	3%
Ecuador	171 499	149 220	135 362	3%	99 930	3%
Other countries	691 091	763 229	776 717	19%	558 224	16%

The graph shown below, indicating the development of catches by the six principal international states within the field of fishing, shows disparate progress. Overall, Japanese catches are showing a downward trend (-20% over the period). The data available on catches made by Korea, the Philippines or the European Community indicate stagnation, or even a slight fall back, particularly in relation to EC catches. Catches made by Taiwan and Indonesia, on the other hand, have increased very substantially (between + 50 and +100%). This development must be placed in perspective with the development of national fishing capacities, and possible movements of boats between different flags.

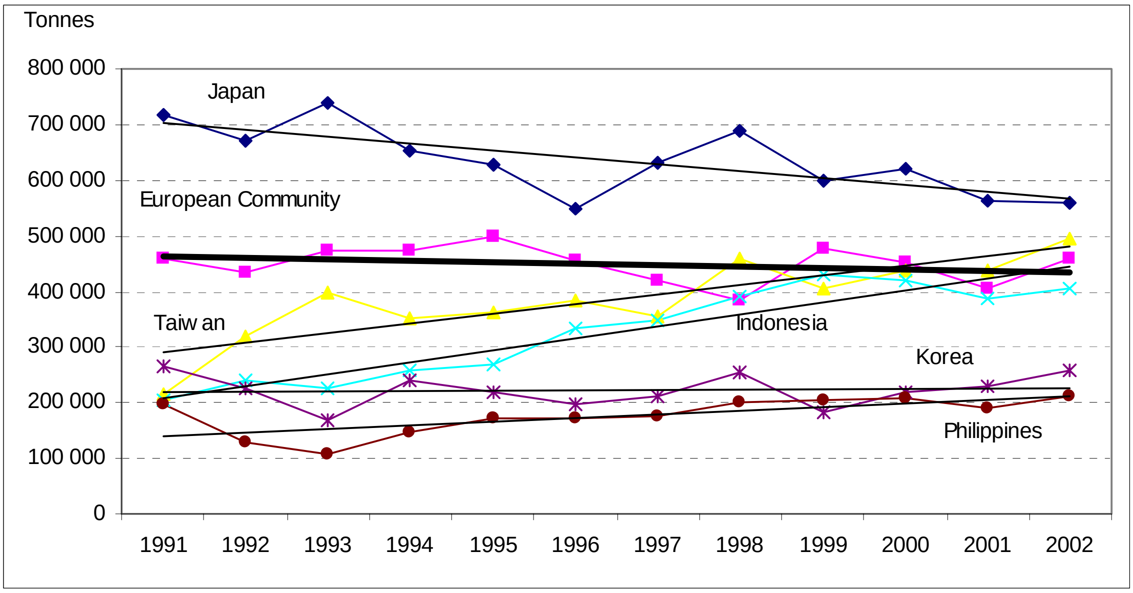


Figure 13: Development of catches of major tuna made by the principal international entities since 1991 with trend line. Source: FAO

3.1 The Atlantic Ocean: principal players and position of the community

As specified in the table provided below, the European Community (including Spain, France, Italy and Portugal[7]) is the top entity catching major tuna in the Atlantic with 38% of catches on average over the period 2000-2002. Boats flying the Ghanaian flag are responsible for 10% of catches on average over the period (but 14% in 2002), in front of two Asian nations, Taiwan (China) with 9% and Japan (8%). The category of boats referred to as "not included elsewhere" (NIE) which include boats flying various flags of convenience produced 5% of catches in 2002.

Table 9: World catches (tonnes) of major tunas according to flag in the Atlantic Ocean. Source: FAO.

Countries	2000	2001	2002	% 2002	Average 1991-2002	Average %
E.C.	***175 002***	***166 939***	***165 100***	***38%***	***198 201***	***38%***
Of which :						
Spain	*95 976*	*87 385*	*83 763*	*19%*	*118 225*	*23%*
France	*67 285*	*66 888*	*64 556*	*15%*	*76 626*	*15%*
Portugal	*4 266*	*5 463*	*8 121*	*2%*	*12 235*	*2%*
Italy	*7 475*	*7 203*	*8 660*	*2%*	*7 633*	*1%*
Ghana	52 546	88 077	61 279	14%	51 259	10%
Taiwan	44 627	45 884	49 020	11%	44 984	9%
Japan	36 080	28 325	21 782	5%	41 606	8%
NIE	35 620	32 401	20 229	5%	34 405	7%
Other countries	135 714	156 007	112 489	26%	135 475	26%

Over the period under consideration, the trend is clearly towards a fall in catches by boats flying European Community flags (-40%), with a very marked reduction for Spanish boats. Catches made by boats flying the flags of Ghana or Taiwan have significantly increased (+ 60 and + 80% respectively), with those made by Japanese boats having fallen back by an amount comparable in volume to that of the catches made by European boats (-50%). Catches made by boats flying flags of convenience (category of boats not

[7] *The other member states are not included as they declare very low volumes of catches of major tunas*

included elsewhere) remain at relatively modest levels (35,000 tonnes per annum) and indicate a somewhat downward trend since 1991.

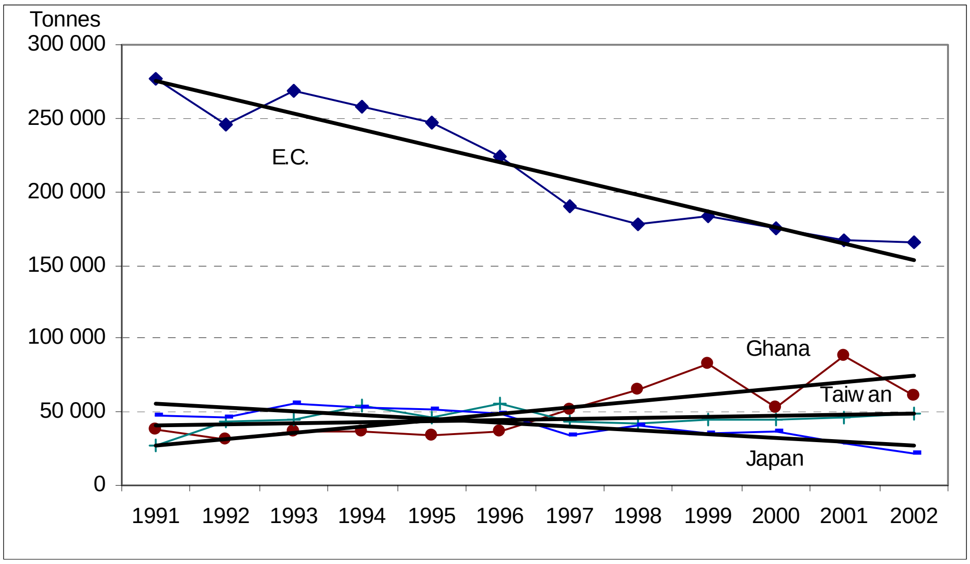


Figure 14: Development of catches of major tuna made by principal nations in the Atlantic Ocean. Source: FAO

3.2 The Indian Ocean: main players and position of the Community

As indicated in the table provided below, boats flying flags of a Member State of the Community constitute the first fishing power in the Indian Ocean in terms of volume of catch with 27% of tonnages caught. The Maldives, whose traditional fleet is highly developed, are the second entity with caught volumes close to those of the Indonesian boats. These two countries each account for 11% of catches on average over the period 1991-2002. Boats referred to as "not included elsewhere" (various flags of convenience) caught up to 14% (2002) of the total catches.

Table 10:World catches (tonnes) of major tuna according to flag in the Indian Ocean. Source: FAO

Countries	2000	2001	2002	% 2002	Average 91-2002	Average %
E.C.	***225 375***	***197 229***	***258 432***	***27%***	***211 613***	***27%***
Of which :						
Spain	*140 714*	*124 947*	*156 969*	*16%*	*125 055*	*16%*
France	*84 652*	*69 137*	*96 674*	*10%*	*84 525*	*11%*
Italy	-	*3 126*	*4 760*	*0%*	*4 866*	*1%*
Portugal	*9*	*19*	*29*	*0%*	*19*	*0%*
Maldives	91 868	103 667	137 050	14%	88 455	11%
Indonésia	103 761	112 345	112 345	12%	87 311	11%
NIE	148 761	96 467	102 367	11%	99 101	13%
Taiwan	89 017	83 129	86 730	9%	81 353	10%
Sri Lanka	74 499	62 728	61 183	6%	49 244	6%
Seychelles	26 297	44 471	54 338	6%	18 653	2%
Iran (Islamic Rep. Of)	36 181	46 641	54 031	6%	31 896	4%
Japan	34 714	34 289	37 110	4%	42 492	5%
Other countries	61 953	64 714	60 300	6%	70 450	9%

The change in the activity of boats over the period 1991-2002 indicates a significant progression of catches made by community boats (+ 46%), principally under the impetus of Spanish boats whose catches increased by 65%, whereas catches made by French boats only increased at a moderate rate (+ 11%). Catches made by Taiwanese boats more than doubled between 1991 and 2002 (from 40,000 tonnes in 1991 to 86,000 tonnes in 2002). We can also see that catches made by boats operating under various flags of convenience (the "others not included elsewhere") also more than doubled over the period under consideration, rising from 35,000 tonnes in 1991 to over 100,000 tonnes in 2002, indicating the unmistakable interest on the part of certain shipowners in this type of flag in the Indian Ocean over the period under consideration.

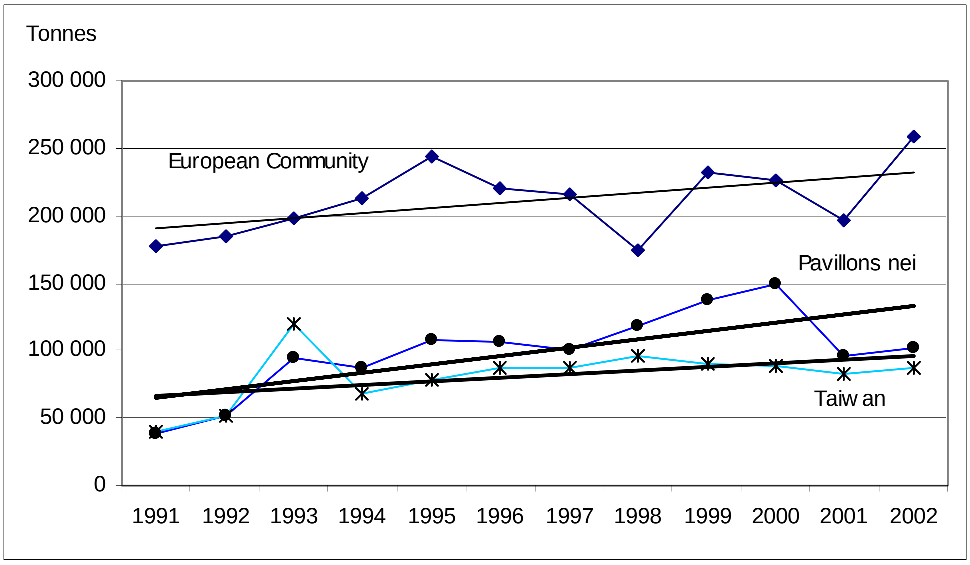


Figure 15: Development in catches of major tunas made by the principal nations in the Indian Ocean. Source: FAO

3.3 The Pacific Ocean: principal players and position within the Community

The top four flag States in terms of tonnage caught in the Pacific Ocean are Japan (average of 25% over the period 1991-2002), Taiwan (12%), Indonesia (11%) and Korea (10%). These four countries total 56% of catches. Of all the Member States of the Community, only Spain seems to have a substantial fishing activity, although the tonnages fished by this country are considerably lower than those of the other nations referred to in the table. Both in relation to recent years, and in relation to the average for 1991-2002, Community catches represent approximately 1% of total catches (between 20 and 50,000 tonnes per annum).

Table 11: World catches (tonnes) of major tunas per flag in the Pacific ocean. Source: FAO

Pays	2000	2001	2002	% 2002	Average 91-2002	Average %
Japan	550 664	501 862	501 862	19%	550 774	25%
Taiwan	302 302	310 238	360 105	13%	258 448	12%
Indonésa	315 751	275 521	293 830	11%	238 652	11%
Republic of Korea	211 893	226 923	256 393	9%	213 362	10%
USA	147 794	145 675	150 232	6%	202 846	9%
Philippines	203 339	189 044	209 771	8%	174 754	8%
Mexico	118 914	143 530	158 648	6%	137 956	6%
Ecuador	171 499	149 220	135 362	5%	99 930	4%
Venezuela	74 850	112 150	121 190	4%	70 205	3%
Vanuatu	66 596	22 121	14 720	1%	50 035	2%
Spain	***52 766***	***41 672***	***36 721***	***1%***	***23 450***	***1%***
Others	274 199	366 965	467 371	17%	209 170	9%

In terms of trend, the graph below indicates a marked decrease in catches made by boats from Japan (-20% on average), a trend similar to that observed in the other two oceans. Boats flying the Taiwanese flag more than doubled the total of their catches between 1991 and 2002, rising from 150 to 360,000 tonnes of tuna caught. According to data on catches, Korea's activity remained constant, whereas the United States, whose boats were very active in the 1980s, suffered a decline in their unloadings since 1991 (-34%).

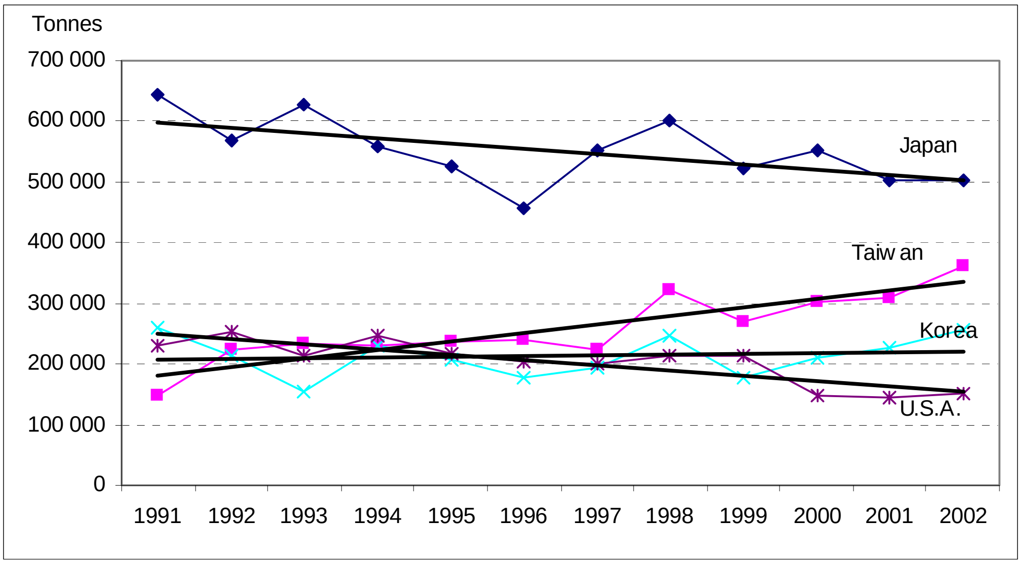


Figure 16: Development in catches of major tunas made by the principal nations in the Pacific Ocean. Source: FAO

3.4 European Community

Approximately 90% of catches made by the Community fleet are French or Spanish.

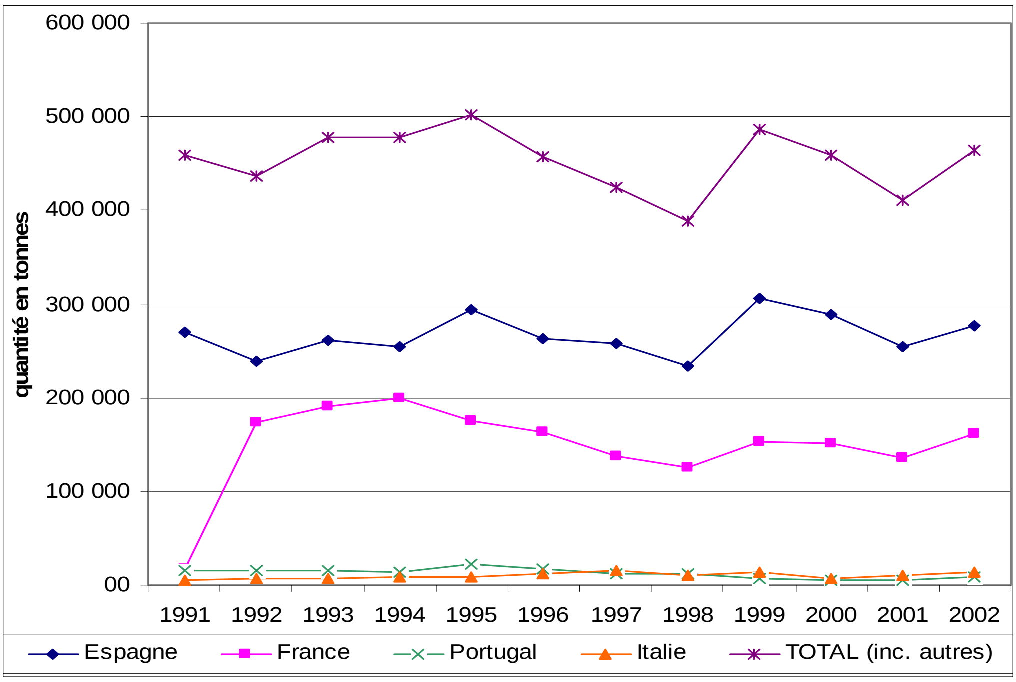


Figure 17: Development in catches of tuna per tonne made by the EU according to country between 1991-2002 (source: FISHSTAT).

The tuna caught by the European fleet essentially comprises skipjack tuna and yellowfin tuna, as can be seen in the figure below. Catches of skipjack tuna made by the European Community reached 216,700 tonnes in 2002, 68% of which was caught in the Western Indian Ocean and 20% in the Central-Eastern

Atlantic Ocean. With regard to catches of yellowfin tuna, these were 159,600 tonnes in the same year: 57% were caught in the Western Indian Ocean and 40% in the Central-Eastern Atlantic Ocean.

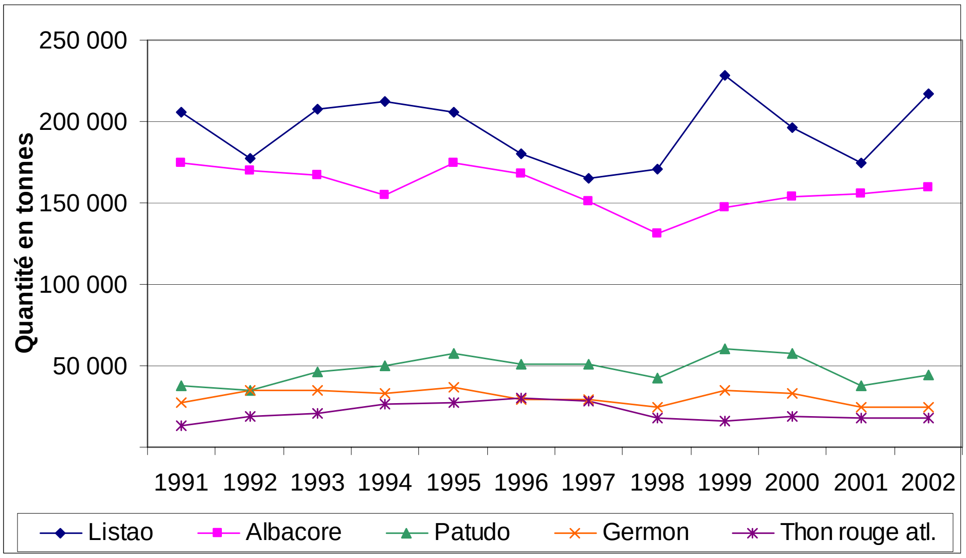


Figure 18: Development in catches of tuna per species between 1991 and 2002 (source: FISHSTAT)

The development over recent years in catches of skipjack tuna and yellowfin tuna in the Indian Ocean and the Atlantic Ocean is shown in the figures below:

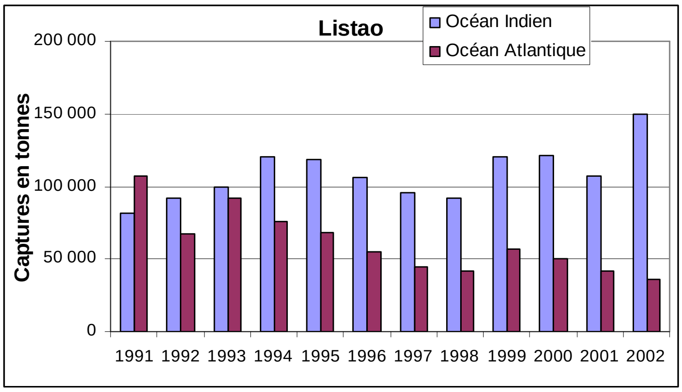


Figure 19: Development in European Union catches of skipjack tuna in the Atlantic and Indian oceans between 1991 and 2002 (source: FISHSTAT)

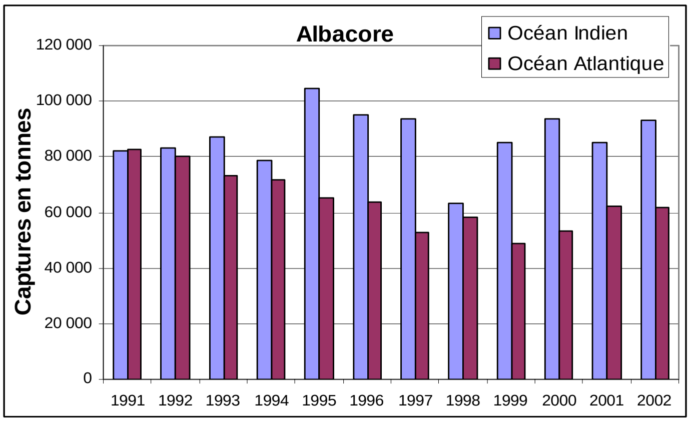


Figure 20: Development in the European Union catches of yellowfin tuna in the Atlantic and Indian Oceans between 1991 and 2002 (source: FISHSTAT).

3.4.1 Spain

Spanish boats catch tuna mainly in the Western Indian Ocean and in the Central-Eastern Atlantic Ocean; catches of tuna in the Central-Eastern Pacific and the Southeast Pacific increased during the 1990s. These trends are illustrated in the figure below:

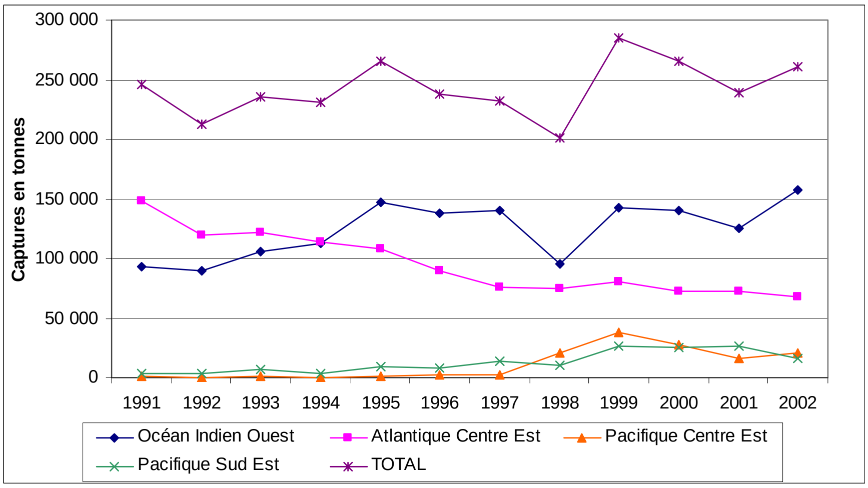


Figure 21: Development in Spanish catches of tuna per fishing zone (source: FISHSTAT).

The species caught by the Spanish fleet are mainly skipjack tuna and yellowfin tuna. The development in their catches between 1991 and 2002 is shown on the figure below:

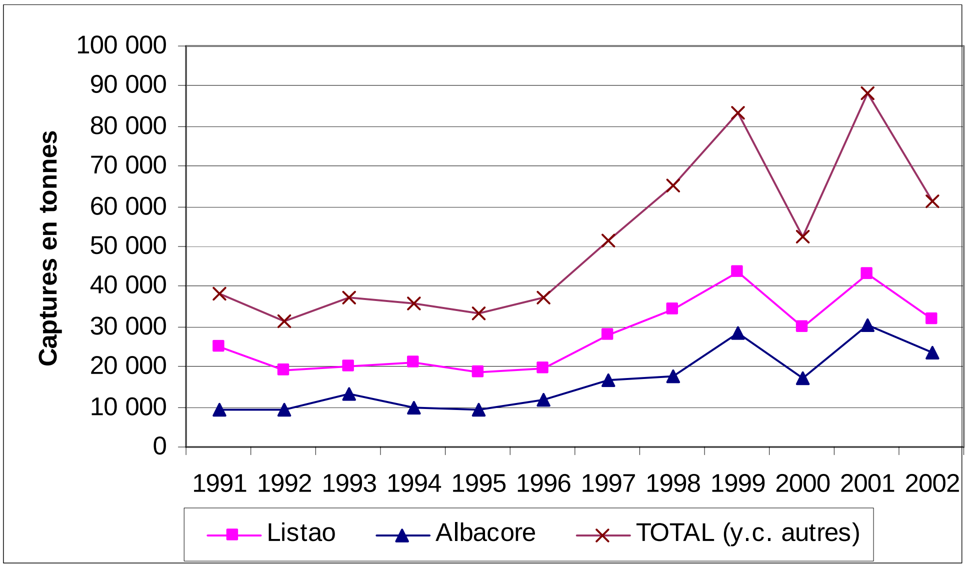


Figure 22: Development between 1991 and 2002 in Spanish catches of tuna (source: FISHSTAT).

3.4.2 France

The French fleet is mainly active in the Western Indian Ocean (60% of catches of tuna in 2002), and targets both skipjack tuna and yellowfin tuna.

The two graphs below show the development in catches of tuna per species and per fishing zone:

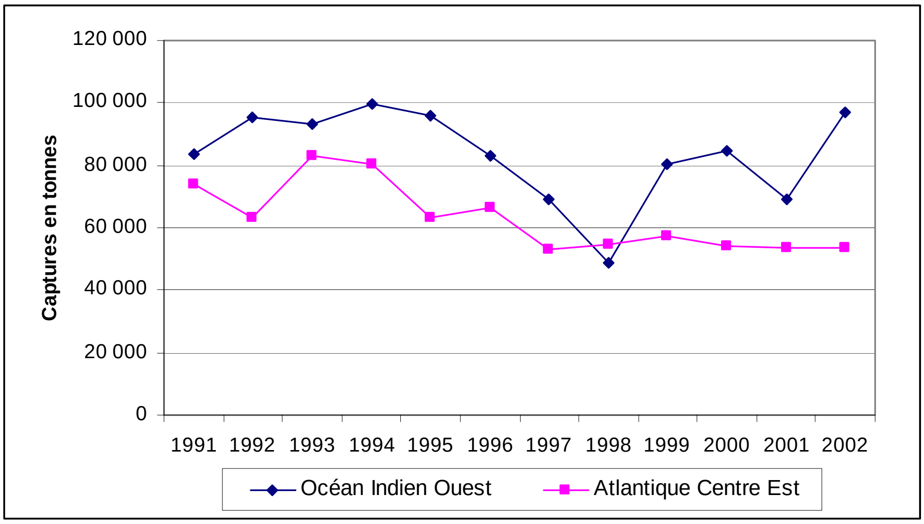


Figure 23: Development in French catches of tuna per fishing zones (source: FISHSTAT)

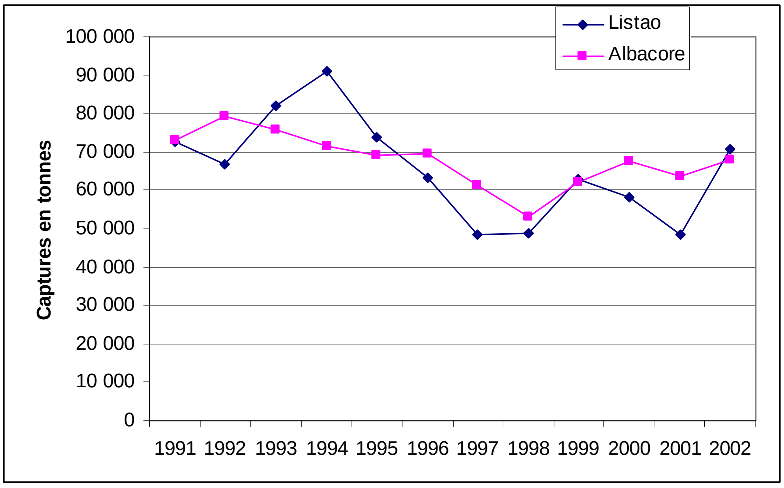


Figure 24: Development in French catches of yellowfin tuna and skipjack tuna (source: FISHSTAT).

3.5 Asia

Catches of tuna for processing by fleets of purse seiners totalled an average of 761,400 tonnes in the period 1991-2002, mainly caught by fleets from the Chinese province of Taiwan, Japan, South Korea, the Philippines and Indonesia.

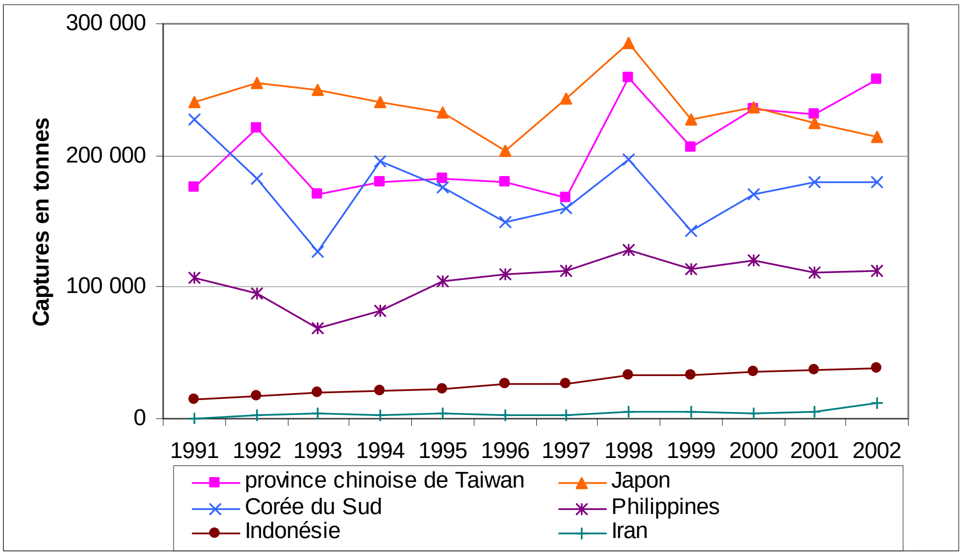


Figure 25: Development in catches made by Asian purse seiners per country, 1991-2002 (source: FIGIS).

Species most commonly fished are skipjack and yellowfin tuna , with approximately 40% of catches made by Asian fleets consisting of skipjack tuna caught in the Central Western Pacific, the most productive zone targeted by the Asian purse seiners.

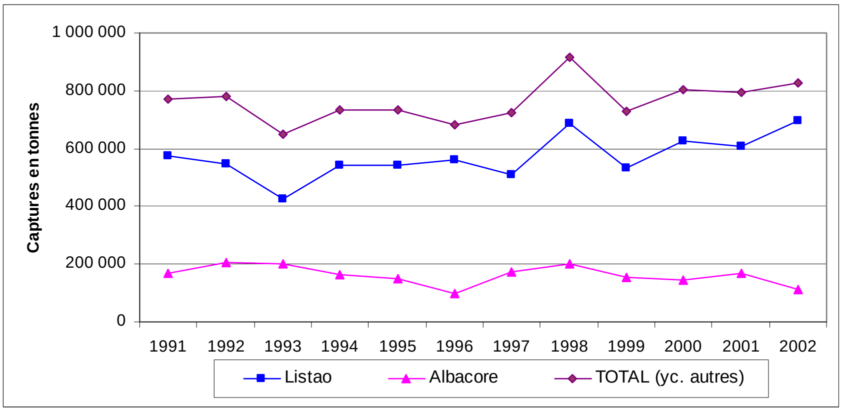


Figure 26: Development in catches made by Asian purse seiners per species, 1991-2002 (source: FIGIS).

3.5.1 Iran

Catches (principally skipjack and yellowfin tuna) made by Iranian purse seiners operating in the Eastern Indian Ocean multiplied by 12 between 1991 and 2002.

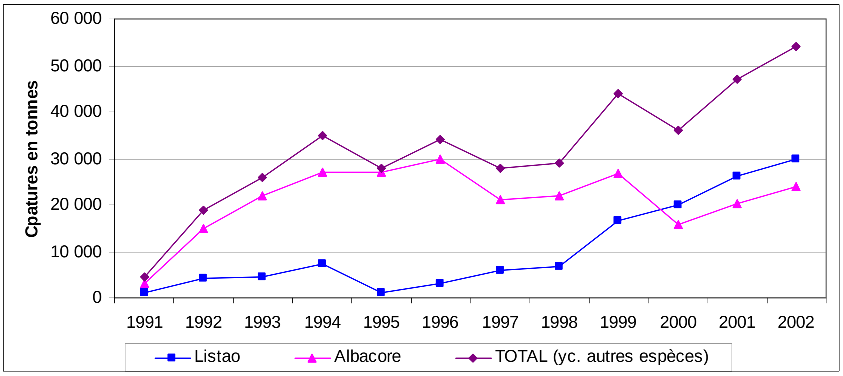


Figure 27: Development in catches made by Iranian purse seiners per species, 1991-2002 (source: FISHSTAT).

3.5.2 Japan

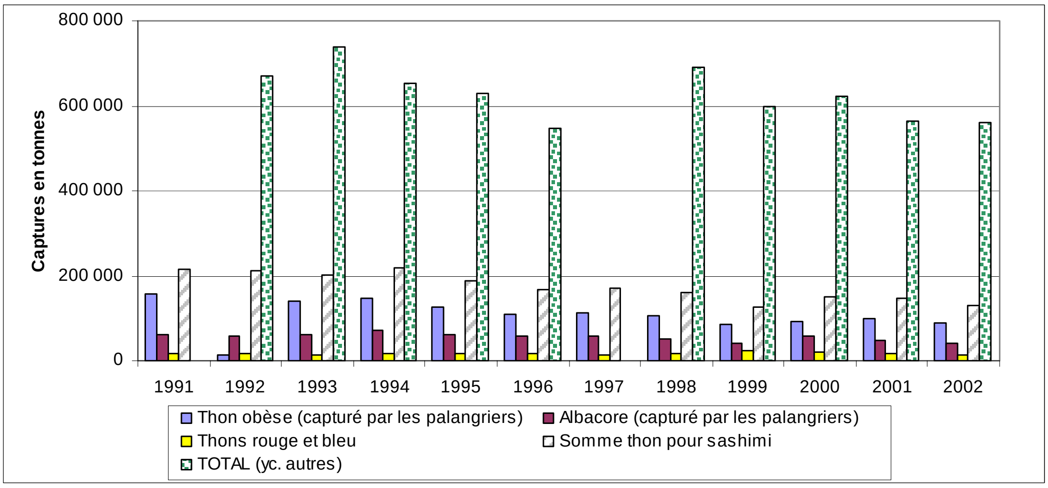


Figure 28: Development in Japanese catches of tuna, 1991-2003 (source: FISHSTAT and FIGIS).

3.5.3 Indonesia

The Indonesian fleet comprises the following:

- 2013 long liners which target yellowfin tuna and bigeye tuna for the Japanese *sashimi* market,
- 279 tuna pole and line vessels which target skipjack tuna, in particular for processing into *fushi* (dried and smoked skipjack tuna) but also for canning,
- 1,474 purse seiners whose contribution to catches is very limited[8].

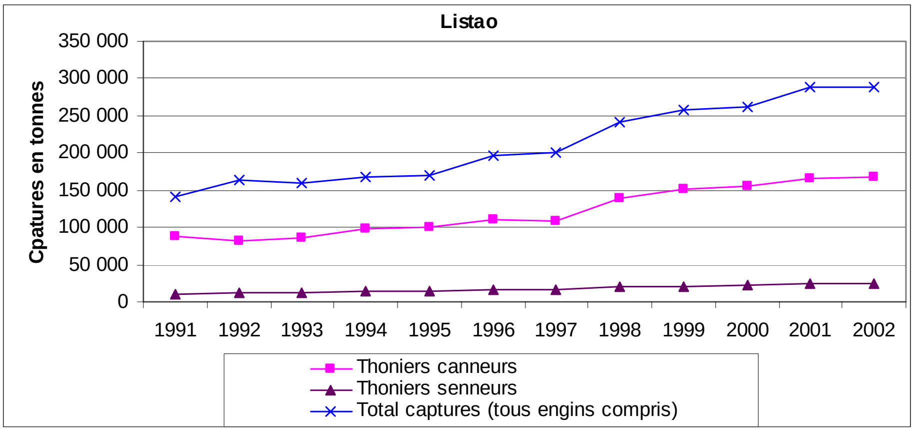


Figure 29: Development in Indonesian catches of skipjack tuna per type of device, 1991-2002 (source: FIGIS).

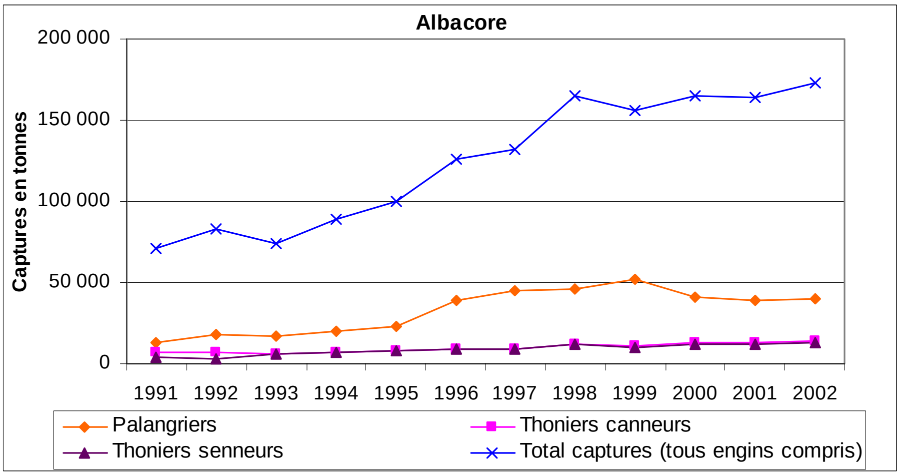


Figure 30: Development in Indonesian catches of yellowfin tuna per type of device, 1991-2002 (source: FIGIS).

3.6 *The American continent*

The principal producers of tuna are the United States, Mexico and certain South American countries such as Ecuador, Colombia and Venezuela. The tuna industry is not integrated at regional level as it is in the EU and Africa, except with regard to the relationship between the United States and Ecuador, which will be analysed in the chapter below.

Catches of tuna from the American continent increased by 30% between 1988 and 2002, particularly because of increased catches made by Latin American countries (Venezuela and Ecuador). On the other hand the decline in catches made by the United States was fairly marked (over 40%) because of the crisis in the national industry.

[8] *(source: Ministry of Marine Affairs and Fisheries, Indonesia)*

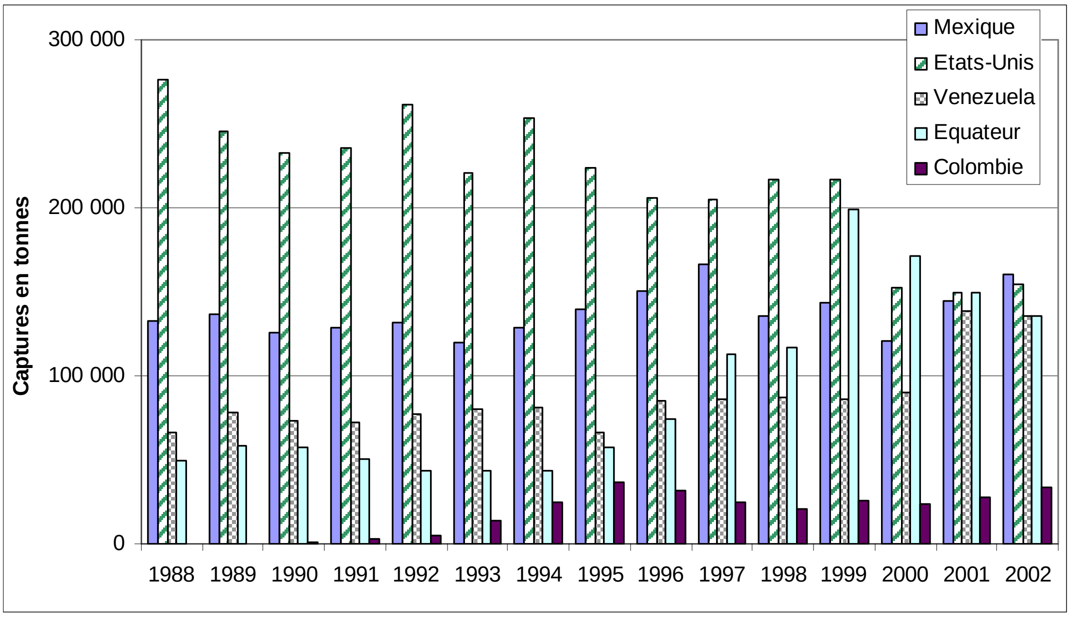


Figure 31: Development in catches of tuna made by the American continent according to country, quantity 1991-2002 (source: FISHSTAT)

3.6.1 The United States

In the 1980s, the Eastern Pacific was the most productive fishing zone. From 1991 onwards, catches in the Eastern Pacific declined dramatically because of the "dolphin safe" affair and the movement towards the Western Pacific. This phenomenon is illustrated in the graph below:

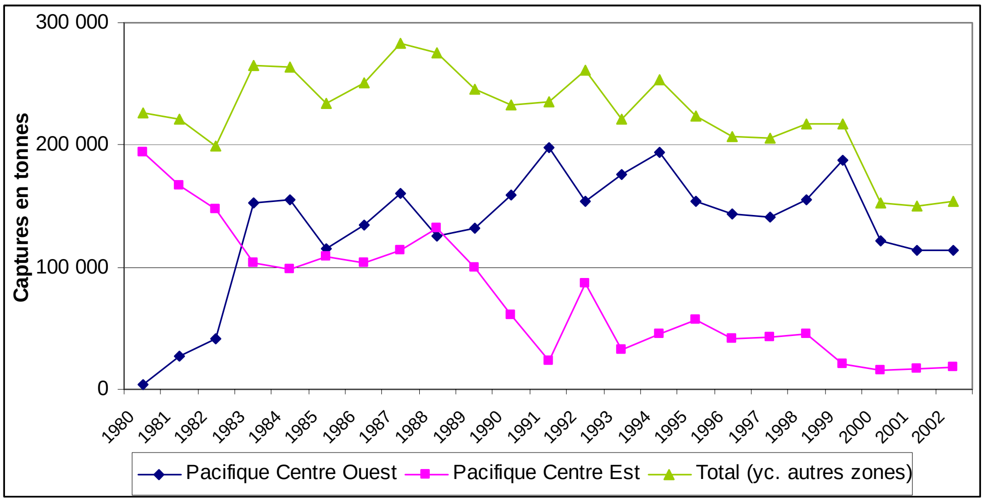


Figure 32: Development in catches of tuna made by the United States fleet according to fishing zone, 1980-2002 (source: FISHSTAT)

Because of the "dolphin safe" issue, catches of yellowfin tuna reduced significantly in comparison with catches of skipjack tuna. Skipjack and yellowfin tuna are caught by purse seiners. Albacore is another important species, caught by troll fishing and processed into canned white tuna.

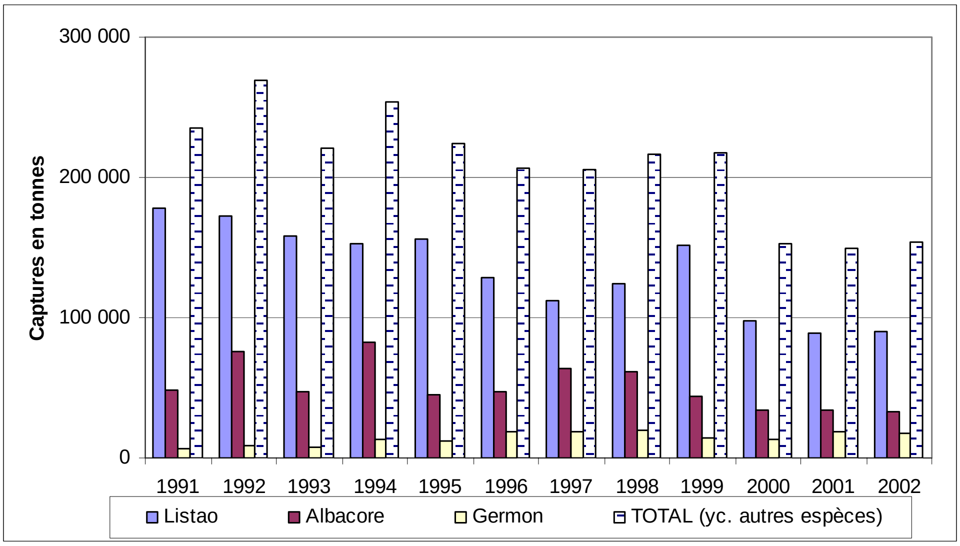


Figure 33: Development in catches made by the United States according to principal species, 1991-2002 (source: FISHSTAT)

3.6.2 Mexico

The tuna industry in Mexico possesses a powerful industrial fleet of purse seiners which operate in the Central Eastern Pacific. The target species is yellowfin tuna which represents 80% of catches in this fishing zone.

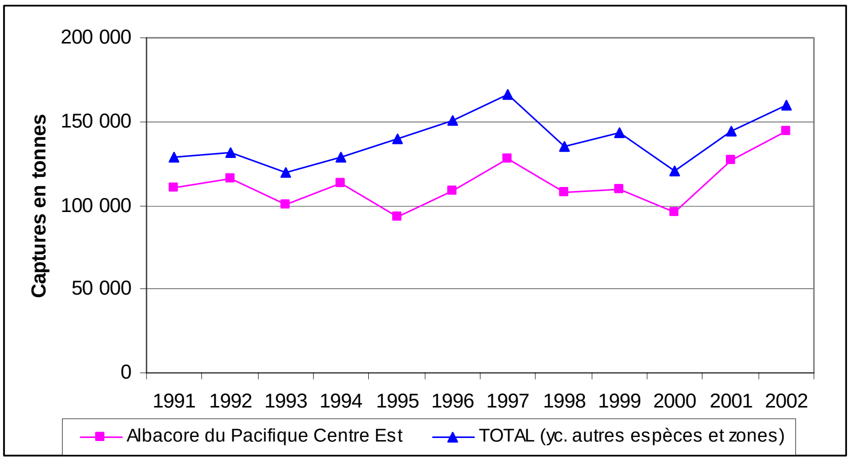


Figure 34: Development in Mexican catches of tuna, 1991-2002 (source: FISHSTAT)

3.6.3 Ecuador

The fleet of Ecuador purse seiners is the most productive in South America, and its catches increased by 170% between 1988 and 2002. Catches are essentially made in the Southeast Pacific. The species caught most is skipjack tuna, followed by yellowfin and bigeye tuna.

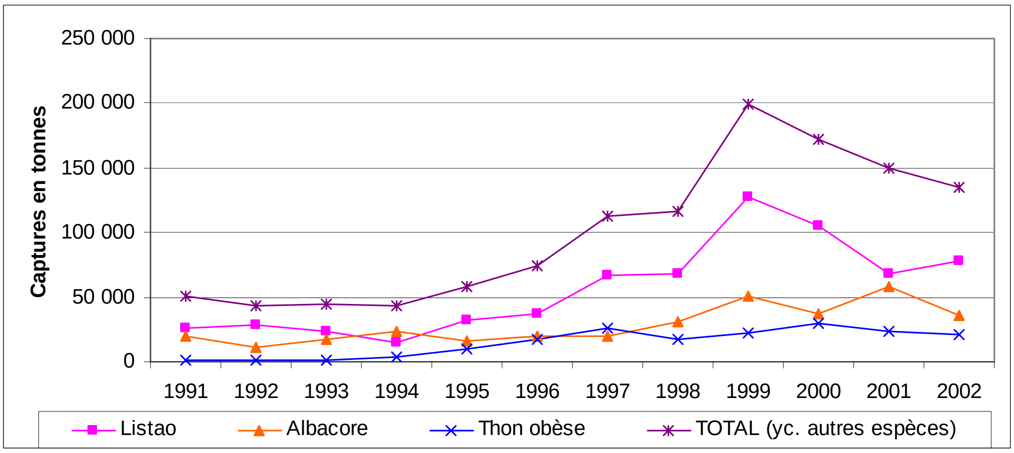


Figure 35: Change in catches of tuna made by Ecuador per species, 1991-2002 (source: FISHSTAT)

4 World catches in accordance with fishing methods

The information used in this section has been taken from the "*Global Tuna Nominal Catches*" database produced by the FAO[9]. The data from this base comprise a consolidation/harmonisation of information held by the regional organisations in charge of monitoring and/or managing stocks of tuna. This data, unlike the data used in the first section, insofar as it does not take into account declarations made by States to the FAO, allows a breakdown according to stock to be obtained (i.e. per management unit, such as, for example, the stock of albacore in the North Pacific and according to fishing device, as well as basic information about species, flag state and year.

The graph below indicates that amongst the five categories of gears used by the various organisations, the purse seine is the principal method of catching major tunas with approximately 55% of world catches on average over the period 1991-2002 (namely almost 2 million tonnes per annum). The long line is the second category of device, representing 18% of world catches (approximately 650,000 tonnes per annum on average). Pole and line fishing with live bait (14% of annual catches on average) and other gears (12%, principally gill nets, hand line or even pelagic trawlers) are the last two important categories. Troll fishing (1% of world catches with 35,000 tonnes on average) makes a modest contribution to catches as a whole.

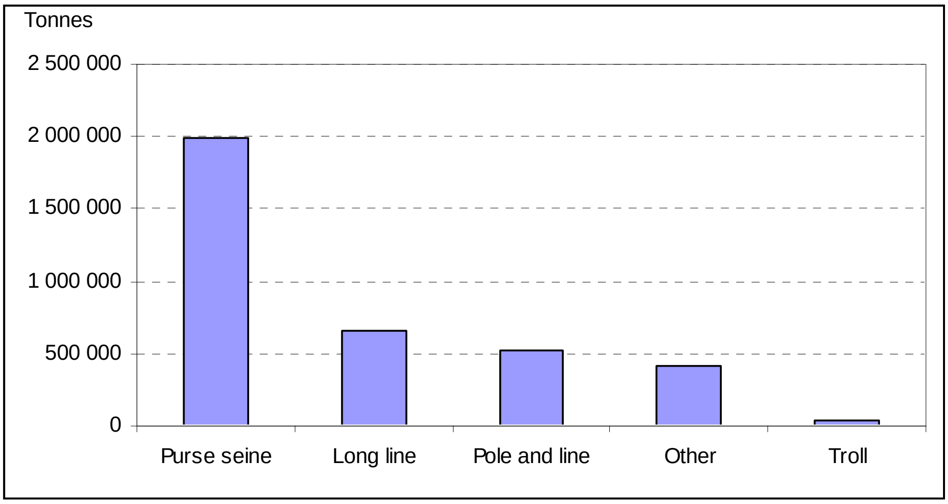


Figure 36: World catches per category of fishing device. Source: FAO

[9] *http://www.fao.org/figis/servlet/static?dom=collection&xml=tuna-nomcatch.xml&xp_detail=med*

If we compare the development in catches made by the principal devices in the course of the last ten years, we can see that catches of tuna using seines have increased markedly (+ 30% approximately, equivalent to progress of over 500,000 tonnes in absolute value between 1991 and 2002). At the same time, examination of trends indicates stagnation or modest progression of catches of major tuna by long liners (+ 2%) or with pole and line (+ 6%).

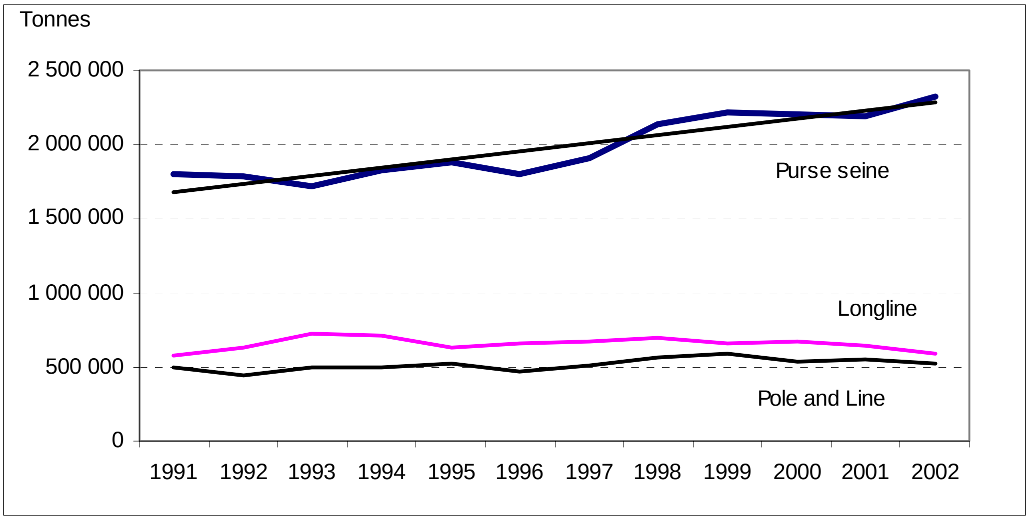


Figure 37: Development in total world catches for principal fishing gears. Source: FAO

For the five principal species of major tunas, the examination of the breakdown of world catches according to type of device allows us to identify that in the case of skipjack tuna, purse seiner fishing is the principal method of capture (66% of world catches over the period 1991-2002), in front of pole and line fishing (23%). Long line or troll catches are low in comparison. In the case of yellowfin tuna, although 59% of world catches are made using seines, 20% are caught using long liners and 18% using miscellaneous devices (mainly gill nets). As for bigeye tuna, this is essentially caught using long liners (69% of catches), with purse seiner fishing representing 21% of catches. Catches made using other devices represent less than 10% of world catches of bigeye tuna. Finally, for Atlantic bluefin tuna, 50% of catches over the period 1991-2002 were made using seines, and 22% using long lines. For this species, miscellaneous devices represent 21% of world catches (hand lines, gill nets, various traditional devices such as trap nets).

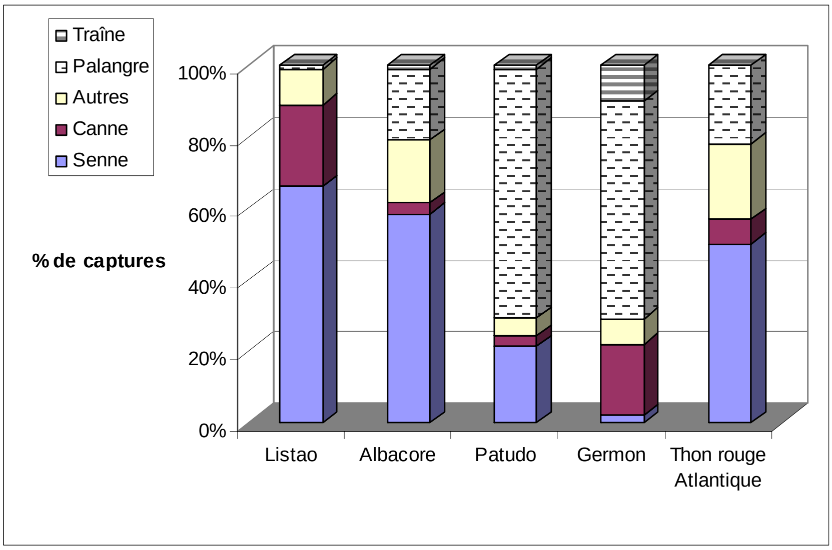


Figure 38: Percentage of catches of species according to type of fishing gear (average over the period 1991-2002).Source: FAO

For the six principal flags identified in Table 10 (Japan, European Community, Taiwan, Indonesia, South Korea, Philippines), the breakdown of catches of major tunas according to type of device reveals a very marked trend towards seines for boats from the fleet flying the community flag (84% of average catches over the period 1991-2002 were made using this type of device) and for boats flying the Korean flag (80%). Tonnages caught using seines and long lines are more or less equal for Japanese boats (38% seine, 34% long line) and Taiwanese boats (49% seine and 50% long line). In the case of the Philippines, seine fishing represents 80% of catches, with other miscellaneous types of device representing a large proportion of catches, which can be explained by the traditional nature of the majority of this country's fleet. Indonesian catches mainly come from using devices of a traditional type.

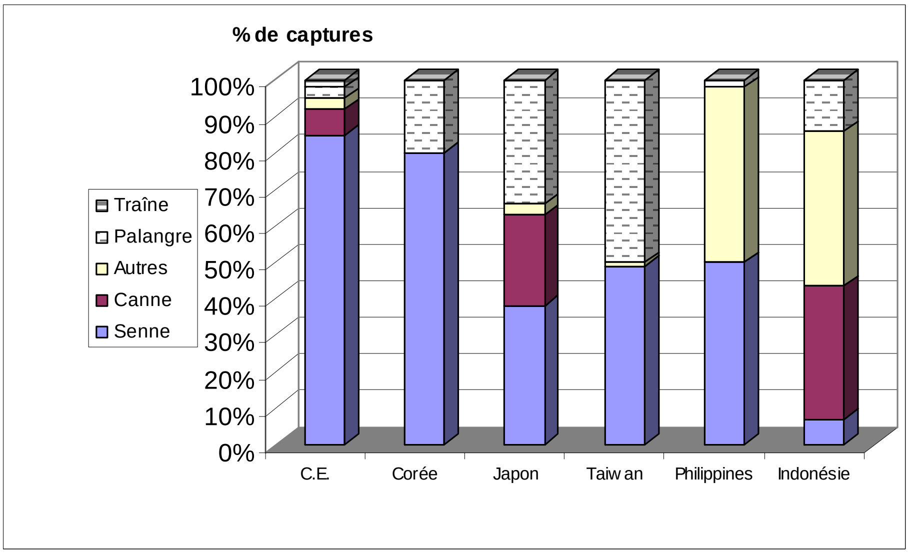


Figure 39: Percentage of catches made by flags according to type of gear (average over the period 1991-2002).Source: FAO

CHAPTER 5 - VOLUMES PRODUCED - SWORDFISH AND SIMILAR SPECIES

The swordfish (*Xiphias gladius*) constitutes a target or accessory species of boats operating on the high seas. It is mainly fished using surface long lines, but also using miscellaneous devices in inshore zones. The species is also caught by deep long liners which target yellowfin and bigeye tuna. Fishing targeted on swordfish also catches other similar species (marlins and sailfish), including the blue marlin (*Makaira nigricans*), the black marlin (*Makaira indica*), the Atlantic sailfish (*Istiophorus albicans*) and the Atlantic white marlin (*Tetrapturus albidus*). As with tunas, these are large migrators which are monitored and managed by the same regional fishing organisations.

World catches of these species are very low in comparison with catches of major tunas (approximately 100,000 tonnes per annum, as opposed to over 4 million tonnes of tuna), but they have significant strategic importance for the community fleets which have specialised in these species, in particular the long line fleet which targets swordfish. Unlike the Asian fleets which look for tuna using deep long liners, European boats target these surface species by using the long lines in the first metres below the surface.

1 World catches of swordfish and similar species

The graph below shows that world catches mainly include swordfish and blue marlin, with catches of other species remaining very modest. A significant increase in catches (+ 30%) since 1991 can be seen, with the increase being due to increased catches of swordfish (+ 50%) whereas catches of blue marlin have maintained their position. In 2002, reported catches of swordfish were in the region of 107,000 tonnes, those of blue marlin slightly lower at 30,000 tonnes. Catches of all these species were in the region of 140,000 tonnes during that year.

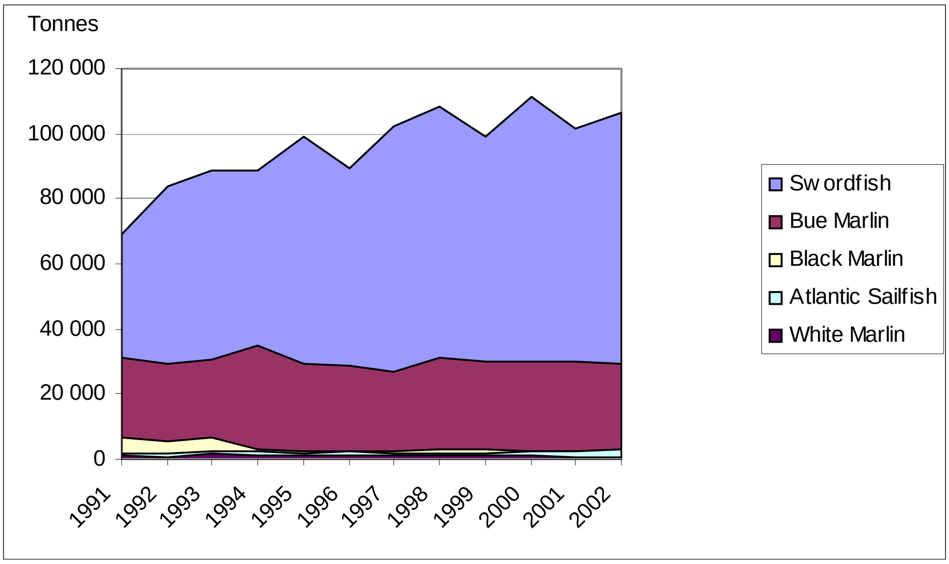


Figure 40: World catches of swordfish and similar species. Source: FAO

The situation differs significantly according to ocean. In the Atlantic, catches of swordfish are tending to decrease, after an increase in tonnage at the end of the 1990s, with catches of other species remaining very modest. In the Indian Ocean, catches of swordfish literally exploded at the beginning of the 1990s with a slowdown, or even a fall in catches from 1998 onwards. Catches of blue marlin remain at significant levels. In the Pacific, catches of swordfish have increased over recent years, with catches of blue marlin representing a significant share of the species caught from this group. In 2002, we have seen world catches of swordfish coming in more or less equal proportions from the three oceans.

Table 12: Breakdown of world catches of swordfish and similar species according to ocean. Source: FAO

Area	Species	1991	1996	2002	Average 91-2002	Trend 91-2002
Atlantic Ocean	Swordfish	36 986	43 824	35 280	42 079	-5%
	Atlantic White Marlin	945	1 172	575	1 076	-39%
	Blue Marlin	2 699	4 114	2 844	3 463	5%
	Black Marlin	91	17	319	133	X 3.5
	Atlantic Sailfish	1 722	2 259	2 774	2 142	61%
Indian Ocean	Swordfish	5 755	25 672	34 494	25 594	X 6
	Blue Marlin	8 388	5 480	6 789	7 472	-19%
	Black Marlin	3 112	1 017	636	1 441	-80%
Pacific Ocean	Swordfish	26 625	19 908	36 975	28 012	39%
	Blue Marlin	19 971	19 369	19 784	19 265	-1%
	Black Marlin	3 231	1 413	1 560	1 975	-52%

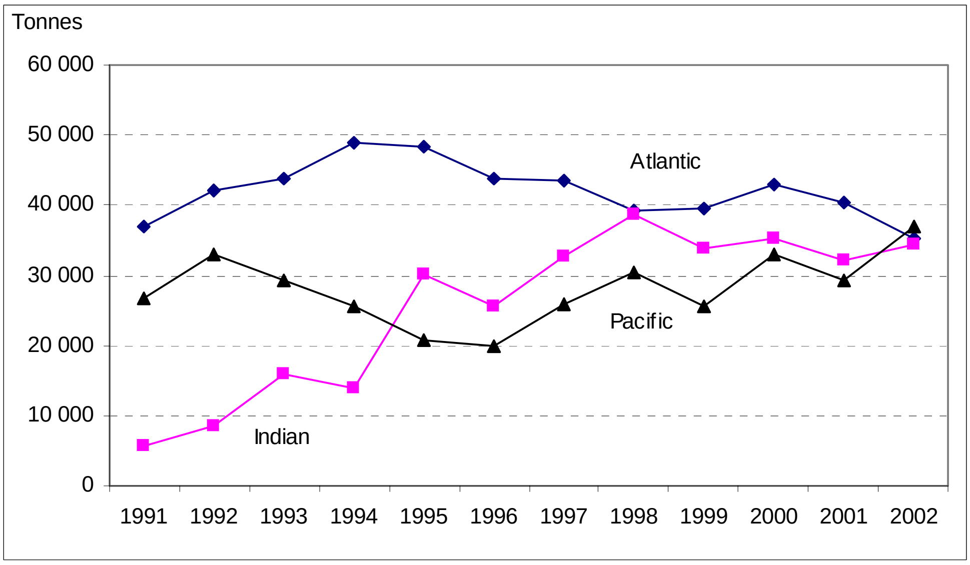


Figure 41: Breakdown of the development of catches of swordfish in the three oceans. Source: FAO

2 The main players and position of the Community

In 2002, and on average between 1991 and 2002, the European Community was the top world power for swordfish fishing. The average catches made by Community boats was 28% of world catches between 1991 and 2002. Over the same period, the second placed power in relation to average catches was Japan, but over a more recent period (2000-2002), we have seen that boats from Taiwan exceeded catches by boats flying the Japanese flag in terms of tonnage.

Table 13: World catches of swordfish per boat flag. Source: FAO

Countries	2000	2001	2002	Average 1991-2002	Average %
E.C.	**28 146**	**25 779**	**29 505**	**27 177**	**28%**
Of which :					
Spain	*15 209*	*13 930*	*21 020*	*16 490*	*17%*
Italy	*7 515*	*6 388*	*3 539*	*6 204*	*6%*
Greece	*1 960*	*1 730*	*978*	*1 522*	*2%*
Portugal	*1 335*	*1 809*	*1 938*	*1 503*	*2%*
France	*1 870*	*1 685*	*1 825*	*1 239*	*1%*
Of which La Réunion	*1 744*	*1 572*	*1 572*	*1 140*	*1%*
Malta	*175*	*102*	*253*	*122*	*0%*
Cyprus	*82*	*135*	*104*	*97*	*0%*
Japan	13 181	12 818	13 072	16 005	17%
Taiwan	20 330	19 661	22 284	15 743	16%
United States	8 076	4 268	3 921	6 857	7%
NIE	7 833	3 065	3 065	5 339	6%
Other countries	33 784	36 338	34 902	24 563	26%

Amongst the Member States of the Community, Spain is the main producer (61% of Community catches), in front of Italy (23%). Greece, Portugal and France (including La Reunion) are at equivalent levels representing between 5 and 6% of Community catches. The Member States of the Community have different strategies in relation to swordfish. Spain and Portugal mainly fish for swordfish on the high seas and in the waters of third countries. The Mediterranean Member States and France (Reunion) fish for this species in their own waters or adjacent waters.

In the case of the blue marlin, Taiwan (14,200 tonnes in 2002), Japan (6,500 tonnes), and the Philippines (3,900 tonnes) are responsible for over 80% of world catches. Community boats only declare marginal quantities of this species.

2.1 The Mediterranean: principal players and position of the Community

As shown in the table below, boats from the European Community are in top position in relation to fishing for swordfish in the Mediterranean, representing 62% of catches over the period 1991-2002, and 53% of catches in 2002. Morocco is the second flag fishing for swordfish, but lags considerably behind catches made by the Community.

Table 14:Catches of swordfish in the Mediterranean. Source: FAO[10]

Countries	2000	2001	2002	% 2002	Average 1991-2002	Average %
E.C.	**11 181**	**9 966**	**6 404**	**53%**	**8 535**	**62%**
Of which :						
Italy	*7 515*	*6 388*	*3 539*	*29%*	*6 204*	*45%*
Greece	*1 960*	*1 730*	*975*	*8%*	*1 520*	*11%*
Spain	*1 436*	*1 484*	*1 498*	*12%*	*1 288*	*9%*
Malta	*175*	*102*	*253*	*2%*	*122*	*1%*
Cyprus	*82*	*135*	*104*	*1%*	*97*	*1%*
Portugal	*13*	*115*	*8*	*0%*	*45*	*0%*
France	*-*	*12*	*27*	*0%*	*20*	*0%*
Morocco	2 708	3 026	3 379	28%	2 879	21%
NIE	-	-	-	0%	1 292	9%
Other countries	1 672	2 008	2 322	19%	1 480	11%

As shown in the graph below, community catches of swordfish in the Mediterranean do not show any clear trends, apart from a marked drop in 2002 probably associated with the prohibition against using drifting gill nets.

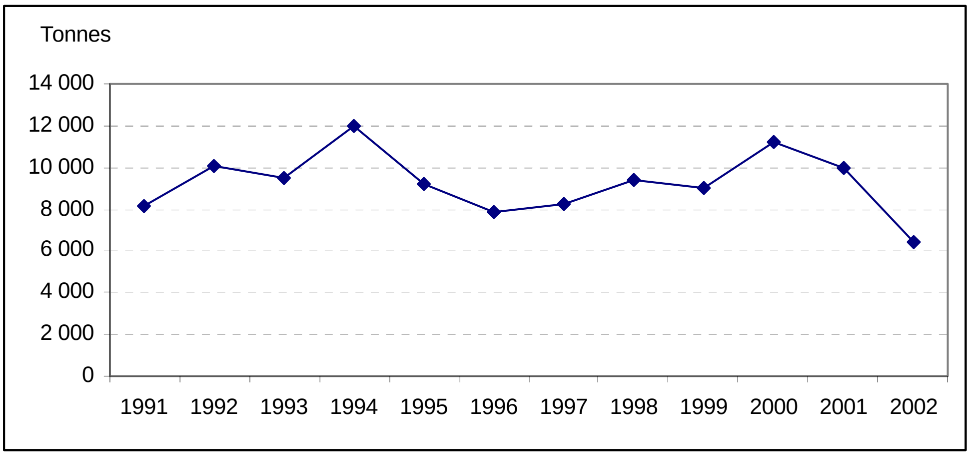


Figure 42: Development between 1991 and 2002 in catches of swordfish in the Mediterranean made by the Community fleet. Source: FAO

2.2 The Atlantic: principal players and position of the Community

The statistics on catches indicate that the community fleet is the one which catches most swordfish in the Atlantic Ocean (excluding the Mediterranean). Average tonnages were 13,800 tonnes over the period 1991-2002, and seem to have fallen again over the last three years. Amongst long-range fishing fleets, we can see the presence of Japanese and Taiwanese boats which together are responsible for almost 20% of catches. The other countries declaring consistent catches of swordfish probably fish for these within the limits of their own waters.

[10] *Catches of swordfish made by community boats declared to the ICCAT are identical to those declared by the FAO in 2000 and 2001. In 2002, they diverged (7,112 tonnes for the ICCAT as opposed to 6,404 tonnes listed by the FAO). The origin of this difference is not known.*

Table 15:Catches of swordfish in the Atlantic (excluding the Mediterranean) according to flag. Source: FAO

Pays	2000	2001	2002	% 2002	Average 1991-2002	Average %
E.C.	**12 234**	**10 986**	**10 917**	**47%**	**13 891**	**46%**
Of whicht :						
Spain	*10 983*	*9 758*	*9 698*	*42%*	*12 460*	*42%*
Portugal	*1 125*	*1 127*	*1 145*	*5%*	*1 335*	*4%*
France	*126*	*101*	*74*	*0%*	*96*	*0%*
Japan	1 402	791	814	4%	3 187	11%
Brazil	4 697	4 082	2 910	13%	2 977	10%
United States	2 444	1 764	1 909	8%	2 428	8%
Taiwan	3 249	3 174	1 958	8%	2 179	7%
Canada	968	1 079	959	4%	1 263	4%
Other countries	2 402	3 562	3 693	16%	2 321	8%

The development in catches made by the three major distant-waters fishing fleets catching swordfish shows relatively different trends. After having reached their highest level in 1995, Community catches fell significantly up to 1998 and then stabilised at the levels recorded in 2002. The development of Japanese catches indicates a general trend downwards, but those from Taiwan do not demonstrate any specific trend. With regard to these two nations, swordfish only constitutes an accessory catch of the long liner fishing which targets tuna, unlike the Community fleet which targets this species.

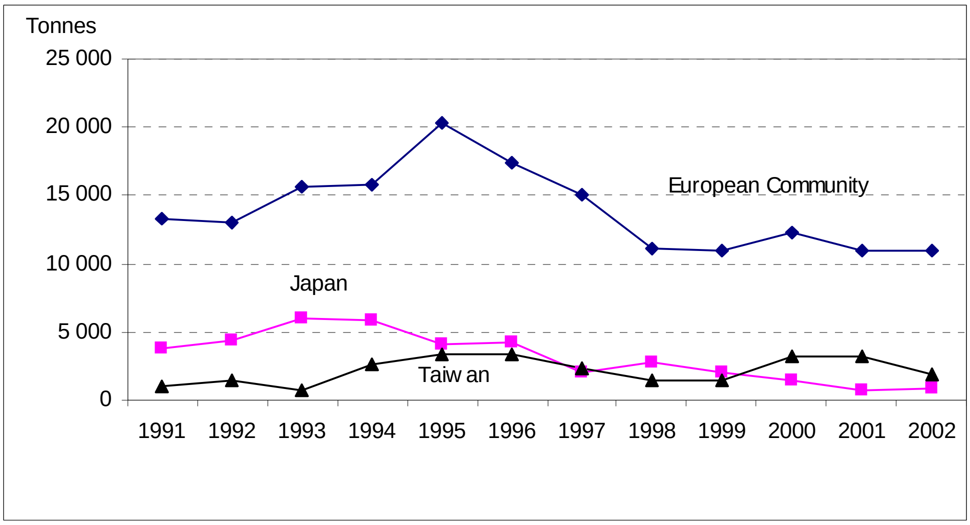


Figure 43: Development in catches of Atlantic swordfish by three distant waters fishing fleets. Source: FAO

2.3 The Indian Ocean: principal players and position of the community

According to data issued by the FAO, boats flying the Taiwanese flag constitute the top group catching swordfish in the Indian Ocean with 48% of catches in 2002, and an average of 45% between 1991-2002. Up until 2000, flags of convenience (of the type "not included elsewhere") were responsible for significant catches (20% of catches over the period 1991-2002), but have been declining since then. Community boats made a modest contribution to total catches over the period 1991-2002, but in 2002 constituted the second-placed fishing power for swordfish in the Indian Ocean. The French fleet registered in Reunion was for a long time the top fishing Member State, but data indicate that the Spanish fleet has significantly increased its catches recently, becoming the top Member State fishing for swordfish in the Indian Ocean in 2002.

Table 16:Catches of swordfish according to flag in the Indian Ocean. Source: FAO

Countries	2000	2001	2002	% 2002	Average 1991-2002	Average %
Taiwan	14 127	14 148	16 522	48%	11 465	45%
NIE	7 833	3 065	3 065	9%	5 108	20%
Sri Lanka	5 545	4 757	2 467	7%	3 003	12%
E.C.	***2 924***	***3 999***	***5 859***	***17%***	***2 233***	***9%***
Of which :						
France (La Réunion)	*1 744*	*1 572*	*1 572*	*5%*	*1 140*	*4%*
Spain	*983*	*1 860*	*3 502*	*10%*	*1 124*	*4%*
Portugal	*197*	*567*	*785*	*2%*	*377*	*1%*
Japan	1 265	1 147	1 379	4%	1 305	5%
Australia	1 798	2 900	2 005	6%	739	3%
Other countries	1 829	2 247	3 197	9%	1 741	7%

The development of catches made by the principal long-range fishing fleets (but including, for the European Community, Reunion catches which do not, strictly speaking, relate to long-range fishing) indicate very surprising variations for the Taiwanese fleets, with a very marked increase of catches in 1995 followed by a considerable drop in 1996, then an upswing starting from 1997, to tonnages comparable to those declared in 2002. European catches are following an overall upward trend. Catches made by boats flying a flag of convenience fell post 2000, after having registered a general upward trend since 1991. Declared Japanese catches remained low without any significant variation.

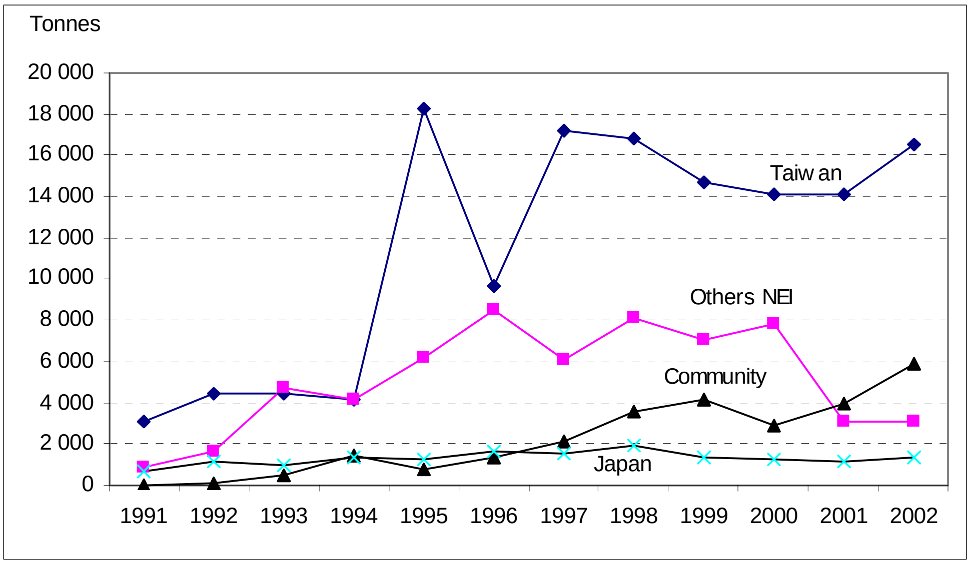


Figure 44: Development in catches of swordfish in the Indian Ocean for the principal long-range fishing fleets. Source: FAO

Catches of blue marlin in the Indian Ocean, which we have seen may represent considerable tonnages, have mainly been made by Taiwan which declared 4,400 tonnes in 2002 and Indonesia (1200 tonnes). Together these two countries catch 82% of the declared tonnages. Amongst the community countries, only Spain reported catches in 2002 but these remained insignificant (5 tonnes).

2.4 Pacific Ocean: principal players and position of the Community

35% of catches of swordfish in the Pacific Ocean were made by Japanese boats over the period 1991-2002. The European Community, within which only Spain reported catches, has for a long time been a marginal entity in terms of catches, but significantly increased the tonnages it caught in 2002 in order to constitute the second-placed entity in terms of tonnage of swordfish caught, suggesting a recent increase in fishing capacities in this Ocean. This increase places the tonnages of swordfish caught by the Community fleet in the Pacific at a level higher than the tonnages caught in the Indian Ocean (for 2002).

Table 17: Catches of swordfish according to flag in the Pacific Ocean. Source: FAO

Pays	2000	2001	2002	% 2002	Average 1991-2002	Average %
Japoan	10 513	10 879	10 879	29%	11 509	35%
USA	5 632	2 504	2 012	5%	4 428	14%
Chili	2 973	3 262	3 523	10%	4 092	13%
Philippines	2 677	3 158	3 421	9%	3 085	9%
Taiwan	2 954	2 338	3 804	10%	2 098	6%
Australia	2 077	1 853	2 337	6%	2 089	6%
Spain	***1 807***	***828***	***6 322***	***17%***	***1 806***	***6%***
Other countries	4 430	4 396	4 677	13%	2 785	9%

The detailed examination of trends reveals nothing of particular note except for a decrease in Japanese catches between 1992 and 1997. At the same time this decrease was accompanied by an increase in catches by countries bordering the Pacific, suggesting that Japanese boats have been re-registering under other flags in the Pacific island countries.

With regard to blue marlin, whose tonnage caught in this Ocean is significant (approximately 20,000 tonnes in 2002), three nations, Taiwan (9,400 tonnes), Japan (5,700 tonnes) and the Philippines (3,900 tonnes) represented 98% of declared catches for 2002. Spain did not declare any catch of this species over the period beginning in 1991.

CHAPTER 6 - IMPACT OF FISHING ON OTHER SPECIES

The various fishing devices used to catch tuna and similar species work in the column of water, well above marine depths. Consequently, no impact on the sessile marine flora and fauna needs to be reported. Tuna fishing has an impact on the species targeted, but also on the accessory species, amongst which we can include species such as marine mammals, seabirds, marine turtles or sharks, which, in addition, are particularly important in terms of public opinion.

1 Current situation

1.1 Seine fishing

One of the particular features of tuna purse seine fishing is the use of FADs. These devices have the special feature of fixing the schools of skipjack tuna searched for by the purse seiners in terms of position, thus reducing the time needed to search for fish and increasing the probability of a positive set (90% probability of catch using FADs, compared with 50% on free schools). The marine fauna caught by the FADs also includes yellowfin tuna and small bigeye tuna, as well as various species from the ocean pelagic ecosystem including:

- dolphinfish (of the type *Coryphena, C. hippurus*)
- sharks: silky shark (*Carcharinus falciformis*), oceanic white tip shark (*C. longimanus*) and hammerhead shark (*Sphyrna* genus).

- billfish: striped and white marlin (*Tetrapturus audax et albidus*), sailfish (*Istiophorus* genus)
- pelagic triggerfish (*Belistes* genus)
- runners: rainbow or comet (*Elagatus bipinnulata*) amber fish (*Seriola* genus) and other runners (*Caranx* genus)
- barracudas (*Sphyraena barracuda*)
- other species including marine turtles

Given the significant aid to fishing provided to ship owners by FADs, over recent years we have seen a marked increase in catches of tuna made using FADs. Catches of tunas made using FADs exceed 50% in the Atlantic, Indian and Western Pacific Oceans (figure below).

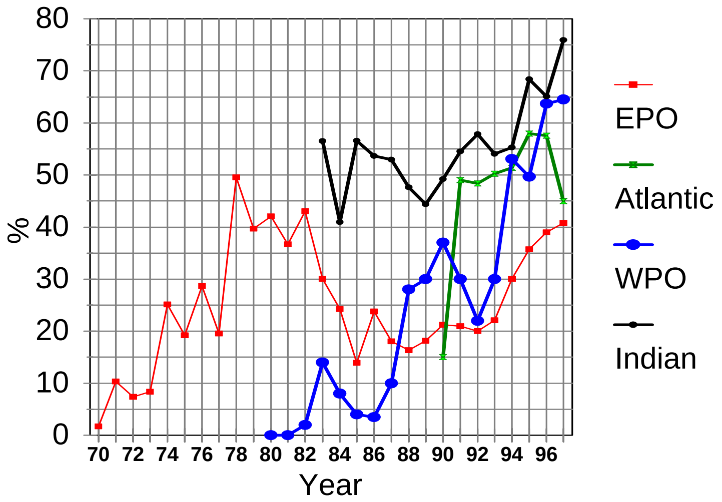
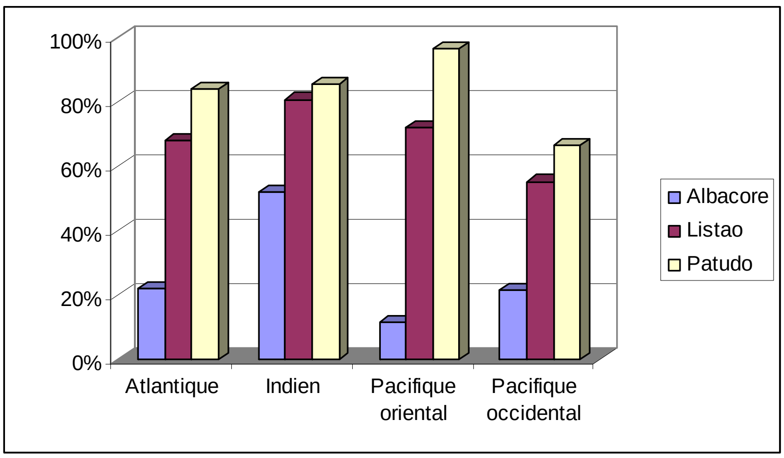


Figure 45: Estimated percentage of tuna caught using FADs or by wreck fishing in each region. Source: Fonteneau et al, 1999[11]

The figure below shows the percentages of catches using FADs according to species. The majority of catches of skipjack tuna are made using FADs (from 81% in the Indian Ocean to 55% in the Western Pacific). Catches of bigeye tuna by purse seiners are largely made using FADs (from 96% in the Eastern Pacific to 66% in the Western Pacific), thus indicating that this species is practically inaccessible to the purse seiners if they do not use FADs. In the case of yellowfin tuna, the proportions show that the majority of catches of this species by purse seiners are made without using FADs on free schools, with the exception of the Indian Ocean.



[11] *WPO: Western Pacific Ocean; EPO: Eastern Pacific Ocean; FAD: Fish Aggregating Devices*

Figure 46: Percentage of catches using FADs in comparison with total catches for purse seiners over the period 1994-1998.Source: Fonteneau et al, 1999

The average proportion of each species in catches made using FADs is indicated in the figure below. It shows that skipjack remains the dominant species, but on average sets on FADs catch around 25% of yellowfin tuna species, and between 10 and 15% of bigeye tuna. The relatively low percentages recorded for the Western Pacific is probably the result of bias in the separation between yellowfin and bigeye tuna.

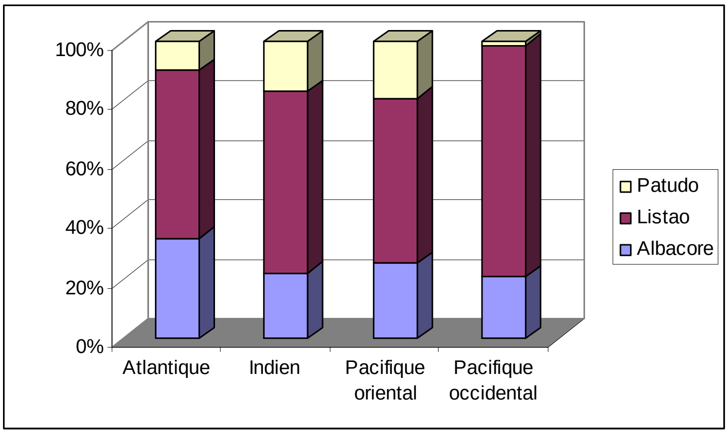


Figure 47: Average proportion of each species in catches made using FADs for purse seiners over the period 1994-1998. Source: Fonteneau *et al*., 1997

The average size of fish caught using FADs is 48 cm for the three species, namely an approximate weight of 1 kg, with comparable profiles for the three oceans. This mode indicates that the yellowfin tuna and bigeye tuna fished in this way are juveniles. However, catches using FADs also include large yellowfin tuna (over 1 m) which means that in the last analysis catches of large yellowfin tuna made using FADs represent a significant proportion of catches (especially in the Indian and Western Pacific Ocean).

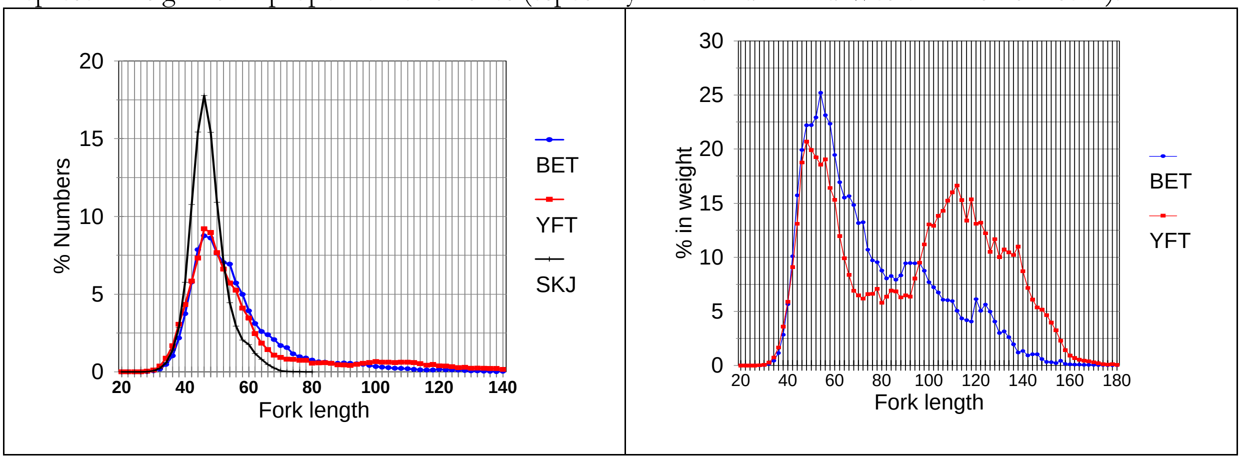


Figure 48: Average size of skipjack tuna (SKJ), yellowfin tuna (YFT) and bigeye tuna (BET) according to numbers caught using FADs (left) and average proportion by weight of catches according to size of yellowfin tuna and bigeye tuna. Source: Fonteneau *et al*, 1999

The impact of the development of fishing using FADs by purse seiners has resulted in a very marked increase in catches of juvenile bigeye and yellowfin tuna. These catches of juveniles are a source of concern for the RFOs in charge of managing these stocks as has been shown in previous sections relating to the state of the stocks fished. In the case of bigeye tuna, the development of catches of juveniles by purse seiners has been added to the problems of catches made by long liners which are already excessive. As can be seen in the figure below, stocks have been subjected to a dual sequential fishing pressure, on young fish by purse seiners, and on adults by long liners.

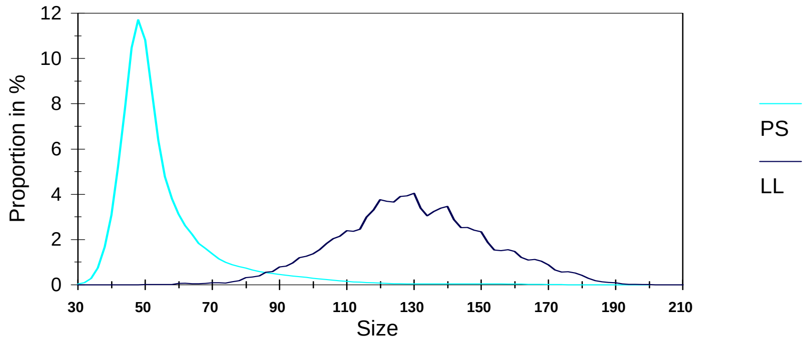


Figure 49: Sizes of bigeye tuna fished by purse seiners (PS) and by long liners (LL).Source: Fonteneau *et al*, 1999

Currently, the tuna RFOs lack the scientific data they need to judge the exact effect of fishing using FADs on the juveniles of major species. The uncertainty essentially lies in the estimate of the natural mortality of young individuals. If this is high, as in the Pacific, then the effect of fishing for juveniles will not be very visible, unless stocks of adults are already extremely exploited. Conversely, low natural mortality would mean that fishing for juveniles will result in a drop in yield-per-recruit and a decline in fertile biomass in the medium term. No clear trend has been observed to date, but the principle of precaution recommends that we seek to reduce these catches as far as possible. This is precisely the aim of the principal management measures taken to date by the RFOs (moratoria, minimum sizes).

As indicated in the introduction, fishing using FADs and seines is also responsible for catching other species. The figure below shows the data on discards from purse seiners collected in the course of several observation programmes in the three oceans.

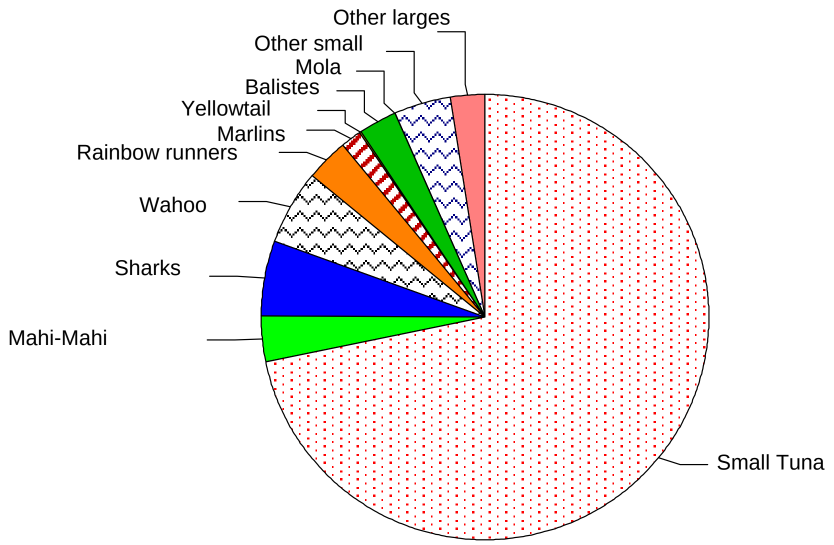


Figure 50: Proportions by weight of discards from purse seiners for all oceans. Source: Fonteneau *et al*, 1999

Total accidental catches account for approximately 10% of the weight of catches of tuna made using FADs. However, the 100,000 tonnes per annum which this represents in absolute value may be considered as having a lower impact if we take into account the significant surface area of the tropical ocean ecosystems (Fonteneau *et al*, 1999). For the purposes of comparison, total discards of shrimping worldwide has been estimated at 9.5 million tonnes (Alverson, 1994). However, the potential impact on certain sensitive species such as sharks or turtles must not be ignored and is the subject of monitoring by the principal RFOs.

Finally, there is a degree of international pressure to reduce the use of FADs by purse seiners. This has a logical association with the principle of precaution, although to date the long-term effects of this practice on the populations fished and accessory catches are unknown. In the awareness that excessively far-reaching limitations would result in losses of catches of skipjack and large yellowfin tuna which would be unsustainable for the economy of the shipowners, the identification of intermediate/balanced solutions is proving difficult.

1.2 Long line fishing

There are in fact two major categories of long line fisheries: deep long line fisheries which target major tunas (bigeye, yellowfin), and surface long line fisheries which target swordfish. Both of these fisheries are known for catching accessory species in variable quantities, amongst which are sharks, turtles, and other species of billfish.

Generally speaking, accurate data relating to accessory catches is not available, as the obligation to collect this is recent and the formats of log books are not always suitable. The partner scientific institutions have each accumulated information by means of observation programmes at sea which still need to be standardised and improved. Information is therefore fragmented and extrapolating this to the oceans is a hazardous exercise.

The tunas targeted by the long liners are generally mature individuals. On the other hand, the swordfish caught using these devices are sometimes juveniles. This problem is known to the RFOs, particularly to the ICCAT. This organisation has established a minimum size accompanied by a margin of tolerance. As noted by the scientific committee, this minimum size is difficult to respect because of the non-selectivity of the equipment. In the opinion of numerous scientists, temporary closures of zones would be preferable. The United States has applied this type of measure in a unilateral way in its waters, but no decision in this regard has been taken by the RFOs to date, due to lack of consensus.

Atlantic Ocean

There is relatively little information about the accessory catches of long liners. In order to list them, two notifications submitted to the ICCAT, one relating to accessory catches made by surface long lines, the other relating to accessory catches made by deep long liners of the Japanese type, have been analysed[12]. On the basis of these two contributions, the list of species caught by the two types of device is shown in the table below. The list of species caught by the surface long liner is relatively short as only species of swordfish, Istiophoridae and sharks were recorded.

[12] *Cramer (J): Pelagic Long line by-catch. Col. Vol. Sci. Pap. ICCAT, 55(4): 1576-1586 (2003) Matsumoto (T) et al: report of the observer programme for the Japanese Tuna Long Line Fishery in the Atlantic Ocean from September 2002 to January 2003.Col. Vol. Sci. Pap. ICCAT, 56(1): 254-281 (2004)*

Table 18: List of species (excluding tuna) caught by surface and deep long liners. Source: ICCAT

Nom français	*Nom latin*	Palangre surface	Palangre fond
Swordfish	*Xiphias gladius*	√	√
Sailfish	*Istiophorus sp.*	√	√
Blue Marlin	*Makaira nigricans*	√	√
White Marlin	*Tetrapturus albidus*	√	√
Longbill spearfish	*Tetrapturus pfuegeri*		√
Blue shark	*Prionace glauca*	√	√
Dusky shark	*Carcharhinus obscurus*	√	
Silky shark	*Carcharhinus falciformis*	√	
Night shark	*Carcharhinus signatus/isodon*	√	
Hammerhead shark	*Syphyrna sp*	√	√
Crocodile shark	*Pseudocarcharias kamoharai*		√
Thresher shark	*Alopiidae*	√	√
Mako shark	*Isurus oxyrinchus*	√	√
Portbeagle	*Lamna nasus*		√
Lancet	*Alepisaurus spp*		√
Opah	*Lampris guttatus*		√
Oarfish	*Regalecus russellii*		√
Seerfish	*Trachipteridae*		√
Pomfret	*Taractes rubescens*		√
Div. Bramidae	*Bramidae*		√
Mahi-Mahi	*Coryphaena sp*		√
Wreckfishr	*Polyprion moeone*		√
Snake mackerel	*Gempylus serpens*		√
Escolier	*Lepidocybium flavobrunneum*		√
Wahoo	*Acanthocybium solandri*		√
Moonfish	*Masturus lanceolatus*		√
Moonfish	*Mola mola*		√
Stingray	*Dasyatis violacea*		√

The quantitative information provided by these two studies indicates significant proportions of sharks. The graph below, adapted from the notification relating to the Japanese observer programme in the Atlantic (Matsumoto *et al* 2004) compares accessory catches in several zones. In the most northerly fishing zones, the target species (bluefin tuna) is caught at the same time as sharks and other species (including albacore). In the more southerly latitudes (off the shores of Senegal, Côte d'Ivoire or Angola), the search for the target species (bigeye tuna) results in sharks, swordfish and various other species being caught. No catch of seabirds or marine turtles was indicated in the two notifications.

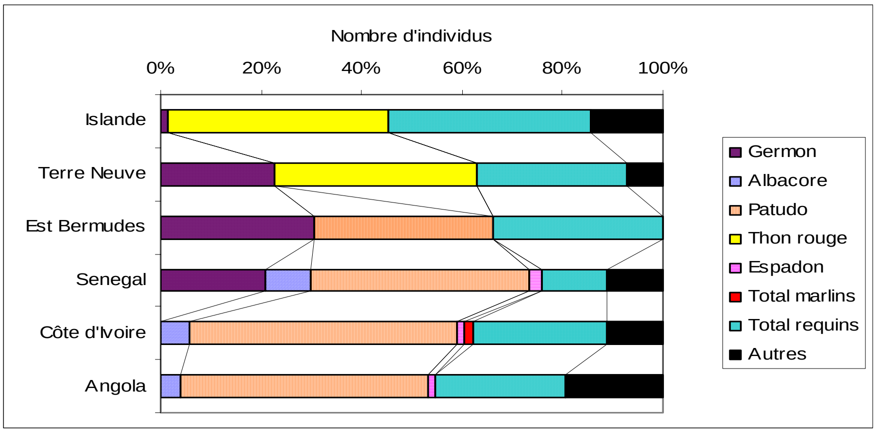


Figure 51: Relative composition in number of catches made by Japanese long liners in the Atlantic. According to Matsumoto *et al* 2004.

Reported catches of sharks in the Atlantic Ocean fluctuate around 40,000 tonnes per annum. 86% of catches consist of blue sharks, and 40% of mako sharks. There is no data about catches of other species, but they are assumed to be marginal. Almost 70% of catches of blue sharks are declared by Spanish boats, and 14% by Portuguese boats, which places the European fleet in top position of the entities declaring catches of sharks. With regard to the mako shark, Community boats are responsible for 70% of reported catches. For the purposes of evaluation the Scientific Committee has produced an estimate of likely catches, and suggests that actual catches are closer to 50,000 tonnes than to 140,000 tonnes, by re-evaluating catches of mako at double the catches declared.

Indian Ocean

Two categories of data on catches have been analysed: unloading from Spanish long liners targeting swordfish in the Western Indian Ocean, over the period 1998-2000 (Garcia-Cortes and Mejuto, 2001); and the results of experimental fishing for swordfish and associated species, carried out during the same period (May 1998-November 2000) between Reunion Island and the Eastern coast of Madagascar, in the course of a series of scientific campaigns (Poisson and Reynaud, 2001). The breakdown of accessory catches made by Asian long liners targeting tuna species beneath the surface is not available.

The species unloaded by the Spanish long liners are similar to those for catches from experimental fishing, with a few exceptions (those of any unreported discards). A list of species, currently involved in catches made by surface long liners fishing in the Western Indian Ocean, has been established using two sources of data. This list has numerous points in common with that for accessory catches made by long liners in the Atlantic.

Table 19: Species caught by surface long liners, targeting swordfish in the Western Indian Ocean

Family	Scientific Name
Xiphiidae	*Xiphias gladius*
Thunnidae	*Thunnus obesus*
	Thunnus alalunga
	Thunnus albacares
Carcharhinidae	*Prionace glauca*
	Carcharinus longimanus
	Carcharinus falciformis
	Galeocerdo cuvieri
Sphyrnidae	*Sphyrna zygaena*
Lamnidae	*Lamna nasus*
	Isurus oxyrinchus
	Isurus paucus
Dasyatidae	*Dasyatis violacea*
Istiophoridae	*Istiophorus platypterus*
	Tetrapturus audax
	Tetrapturus pfluegeri
	Tetrapturus angustirostris
	Makaira nigricans
	Makaira indica
	Makaira mazara
Scombridae	*Lepidocybium flavobrunneum*
	Acanthocybium solandri
Sphyraenidae	*Sphyraena barracuda*
Coryphaenidae	*Coryphaena hippurus*

Amongst the catches[13] made in the course of the series of scientific campaigns, swordfish represents 46% of total catches (and other species 54%). Amongst the accessory species, major tunas dominate (28%), followed by sharks (15%) and Mahi-mahi (6%).

Amongst unloadings from Spanish long liners, accessory catches are much more abundant than the target species, swordfish, and represent 69% of unloadings. They consist of billfish (1%), major tunas (3%) and above all sharks (65%).

Even if the two series of data are not totally comparable (unloadings are expressed by weight and experimental fishing catches by number of individuals), we can see a considerable difference in the proportions of sharks fished (65% and 15%). This may reflect the fact that sharks are targeted by commercial boats, contrary to the attitude of research boats.

The size of unloadings of sharks by long liners has continued to increase every year. They rose from approximately 1,400 t to over 16,000 t in 2002, according to IOTC estimates. The sharks unloaded mainly come from the families of Carcharhinidae, Laminidae and Sphyrridae.

Two species are dominant: the blue shark, *Prionace glauca* (85% of the total weight of catches of sharks), and the shortfin mako, *Isurus oxyrhynchus* (13%). No occurrence of catches of marine turtles has been notified.

The paragraphs below describe the interactions between tuna fisheries and four groups of species (sharks, marine turtles, marine mammals and seabirds) in greater detail.

[13] *expressed by number of individuals*

2 The principle groups of species concerned

2.1 Sharks

Sharks are species with a low rate of specific renewal which makes them vulnerable to fishing mortality (slow growth, low fertility). In the face of increased catches, associated with changes in target species and the geographical expansion of long line fisheries, the FAO has drawn up an international instrument, the shark IPOA, intended to encourage countries to manage shark fisheries in a responsible way.

Two species are particularly involved in long line fishing in the Atlantic and Indian oceans: the blue shark and the shortfin mako with tonnages which probably exceed 60,000 tonnes per annum. Seine fishing catches relatively few sharks.

For the first time the ICCAT Scientific Committee has attempted to evaluate the stock of the two principal species fished, the blue shark (*Prionace glauca*) and the mako (*Isurus oxyrhynchus)* -also known as the blue pointer shark. The estimates submitted were considered to be "very preliminary" because of the lack of historical data about catches and discards of these species, and uncertainties affecting the knowledge of biological parameters. With regard to the blue shark, the stock in the North Atlantic is probably in a totally satisfactory state, close to the state of virgin stock. With regard to mako, the analyses produced a diagnosis of ratio between the North Atlantic and the Southern Atlantic, although numbers were slightly lower. The same type of conclusion was formulated for stocks in the Pacific. In the Indian Ocean, no attempt to evaluate stocks has been undertaken so far.

The ICCAT has taken several measures to control stocks more effectively. Consequently, the contracting parties must supply detailed information about catches and trading in sharks, and must undertake not to increase effort on these species until the fishing effect on natural populations is better understood. In 2004 the ICCAT will formally prohibit the practice of finning which consists of only taking the fins and discarding carcasses. A provision of this nature has been in existence since 2003 in community law (Regulation 1185/2003). In 2005, the IOTC also adopted a resolution aimed at protecting sharks, inviting contracting and cooperating parties to declare their catches, and prohibiting finning.

No technical measure is envisaged by the ICCAT for the time being. American scientists have tested certain technical measures such as the use of specific bait which does not attract sharks while continuing to attract the target species, or the use of devices to remove hooks from the mouths of sharks caught in order to release them alive. Additional research is still required.

2.2 Marine turtles

Surface long line fishing continues to be considered to be responsible for the decline in populations of loggerhead turtles (*Caretta caretta*) and leatherback turtles (*Dermochelys coriacea*) (Spotila *et al*. Nature 405/1 June 2000 Page 529). According to these authors the long line and the gill net kill almost 1500 female turtles in the Pacific Ocean every year, and a link between this mortality and the number of turtles frequenting the principle nesting sites in Costa Rica has been established. These two species are considered to be in danger (loggerheads) or in critical danger (leatherback) and have been placed on the UICN red list. The leatherback turtle is also listed in appendix 1 of the CITES.

Another study (Lewinson *et al* - 2004) analysed the data for accessory catches from 40 countries and 13 observer programmes. According to this study, accessory catches made by long liners vary between zero and 14 loggerhead turtles per 1000 hooks, and between 0 and 2.4 leatherback turtles per 1000 hooks. The catch rates are probably higher in the Mediterranean and in the Atlantic than in the Pacific. In the case of the Atlantic, the authors estimate, on the basis of extrapolations, that between 150000 and 200,000 loggerhead turtles, and between 30,000 and 60,000 leatherback turtles are probably the victims of fishing, which suggests that this fishery has a very significant impact on populations. Surface fishing also probably catches almost 10 times more marine turtles than deep fishing targeting bigeye tuna (Crowder and Myers, 2001).

At the moment, it seems that only the American authorities have taken strong measures to reduce the fishing mortality of marine turtles caused by long liners. A large proportion of the fishing zone in the North Pacific has been closed to American boats while awaiting technical solutions. After three years of research (and closure to fishing), new types of long liners have been made obligatory (type of hook, bait, colour of wire) and the fishing has been re-opened under very strict monitoring measures.

Aware of the need for a worldwide approach, in 2005 the FAO adopted measures aimed at reducing fishing mortality of marine turtles (26th session of the FAO-COFI). In 2003 the ICCAT had already recommended that data should be collected and submitted by the contracting parties, and had made an undertaking to sustain the efforts of the FAO in defining a holistic approach. In 2004, the IATTC adopted a triennial programme for mitigating the impact of tuna fishing on catches of turtles. This plan, ambitious and innovative for an RFL, is based on several stages: collection and analysis of data, technical measures (evaluation of measures - improvement of fishing devices), information about fishermen, assistance to coastline states. In 2004, the IOTC adopted a resolution inviting its contracting parties to implement the recommendations of the FAO relating to reducing fishing mortality of turtles caused by tuna boats (purse seiners and long liners).

In the case of seine fishing, the observer programmes conducted in the three oceans have reported occurrences of catches of marine turtles when fishing takes place using FADs. In fact the nets which the fishermen use to make the FADs are probably responsible for trapping the turtles. Simple solutions (shortening nets) have been identified and unilaterally implemented.

2.3 Marine mammals

Tuna purse seiner fisheries in the Eastern Pacific have caught significant quantities of dolphins (principally *Stenella attenuata, S. longirostris* but also other species). Without it really being possible to explain this, the phenomenon of accessory catches is limited to this fishing region, and no accidental catch of dolphins has been recorded in other tropical tuna fisheries (Atlantic, Indian, Western Pacific Ocean). This problem was responsible for an extensive boycotting movement in the United States in the early 1990s which had serious consequences on the South American tuna industry. In order to alleviate this problem, in 1999 the IATTC put in place the Agreement on the International Dolphin Conservation Programme (AIDCP) whose aim is to gradually reduce the accessory mortality of dolphins due to tuna purse seine fishing in the zone of application of the agreement to a level close to zero. Under the programme, dolphin mortality associated with this type of fishing is reduced thanks to setting up annual limits, and seeking methods which are effective from an ecological point of view for catching large yellowfin tuna without catching dolphins. After 4 years, the IATTC indicates that, thanks to the AIDCP, accidental mortality of dolphins is tending towards zero, and although boats are continuing to fish on tuna schools associated with dolphin schools, they are complying with the procedures approved by the programme. The European Community supports this programme.

There is also interaction between long line fisheries and marine mammals. This phenomenon has been studied in detail in the Indian Ocean as attacks by marine mammals (false killer whale *Pseudorca crassidens*, tropical shortfinned pilot whale *Globicephala macrorhyncus*, the killer whale *Orrinus orca* and Risso's dolphin *Grampus griseus*), on swordfish and tuna caught by long lines have caused significant losses for fishing boats. In the EEZs of Canada and the United States, studies have indicated that the Risso dolphin, two species of shortfin pilot whales (*Globicephala macrorhyncus and G. melas*) and the bottlenose whale (*Hyperoddon ampullatus*) were interacting with long line fisheries (Crowder and Myers, 2002). Amongst these species, only a few occasional catches, relatively rare, of Risso dolphins have been reported. With regard to the other species, their weight allows them to escape from the long lines if they are caught, but we do not know the consequences of the injuries caused.

On a more modest scale, accidental catches of cetaceans by European fishing boats targeting tuna and other species in Community or adjacent waters are always a problem. The ban on drifting gill nets in 2002 had the effect of bringing an end to this source of dolphin mortality, but the use of pelagic trawlers (Atlantic) or gill nets (Mediterranean) continues to be responsible for a few cases. The European Community took charge of this problem by adopting Council regulation 812/2004. This regulation envisages, among other things, programmes for observing and using repellents on pelagic trawlers.

2.4 Seabirds

Fishing fleet targeting tuna using long lines record accessory catches of seabirds. According to the partial data available to the ICCAT, it is essentially long liners and netters working in latitudes outside the Atlantic inter-tropical zone which are responsible for this. According to information notified by the ICCAT Accessory Catches Committee, quantities are probably low, but unknown. One of the ICCAT's recommendations is to ask the contracting parties to supply the data they possess, and to respond where applicable to the seabird IPOA. The IOTC has done the same thing by means of a resolution adopted in 2005. In the North Pacific, accessory catches of albatross by long liners constitute a real problem which has been the subject of in-depth research in order to find solutions to reduce mortality. These concern the shooting methods of long liners, or the use of sound repellent.

2.5 Summary

The impact of tuna seine fishing using FADs (and to a lesser extent that of pole and line fishing) is beginning to be well-understood from a qualitative point of view, even if the effects of this fishing in the medium term on stocks are still unknown. Given the state of stocks of bigeye and yellowfin tuna, there is significant pressure on this type of fishing which, as a result of abundant catches of juveniles, to a certain extent helps to cause an imbalance in the natural populations, factors aggravated by excessive fishing of adults by long liners. This problem is known to the RFOs and is the subject of management measures, the most noteworthy of which are the closures of fishing zones in certain areas or for certain periods. In view of what is taking place in the Atlantic and Eastern Pacific Ocean, we may assume that this type of measure is likely to be extended to the Indian and Western Pacific oceans. This will limit *de facto* the possibility of increased catches by purse seiners, until fishing is more selective in terms of size. The accessory catches of purse seiners around FADs have little impact on the pelagic ecosystem, and are not considered to be a matter of concern at the moment. Interactions between seine fishing and marine mammals in the Eastern Pacific have been the subject of very strict measures and are considered to be under control. This type of problem is not reported in other world fisheries.

Long line fishing includes among its accessory catches two groups of species which are the subject of an international plan of action: sharks and seabirds, and a third group which will shortly be the subject of a plan of this kind, marine turtles. The preservation of these species is also a subject of major concern to environmental defence associations. It is quite true to say that at the moment very few concrete measures have actually been taken by the RFOs in order to protect and conserve these species. Monitoring devices are gradually being put in place in order to force the contracting parties of these RFOs to declare accessory catches more accurately, but no technical measure has yet been taken. The unilateral measures taken by the United States in relation to their fishing fleets may foreshadow the future for long line fleets, with the obligation to use certain types of long lines and the closure of zones as soon as accessory catches reach levels considered to be unsustainable.

CHAPTER 7 - VOLUMES PRODUCED – TUNA FARMS - FATTENING

Australia remains the top producer of bluefin tuna (*Thunnus maccoyii*) from fattening farms with production of 9,000 tonnes per annum.

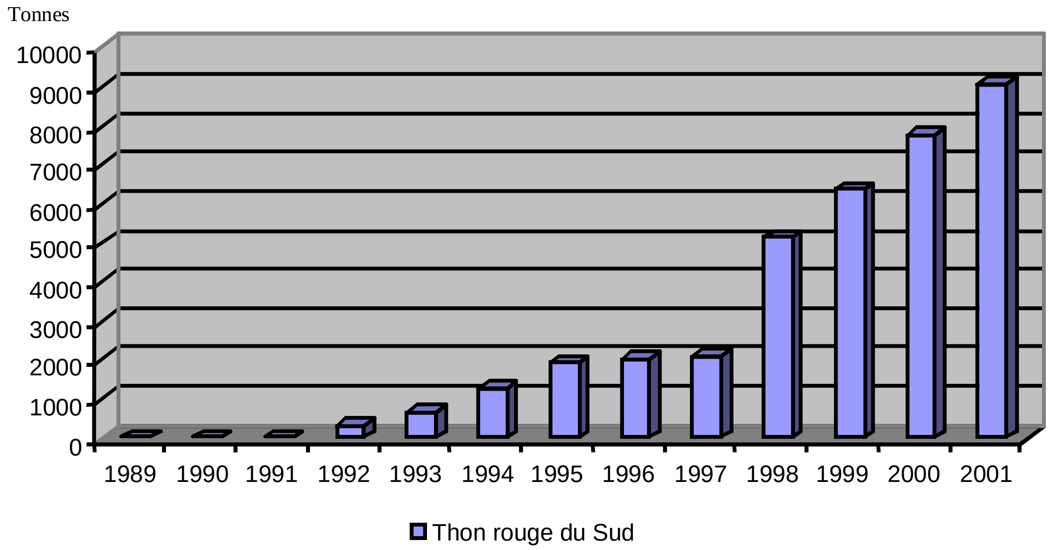


Figure 52: Development of SBTF (*Southern Bluefin Tuna Fishery*) aquaculture in Australia (source: FAO: 2002).

Spain is the second producer of bluefin tuna (*Thunnus thynnus*) with actual production estimated at 7000 tonnes.

World production is estimated at below 25,000 tonnes, covering all species of bluefin tuna, distributed between each country in the following way:

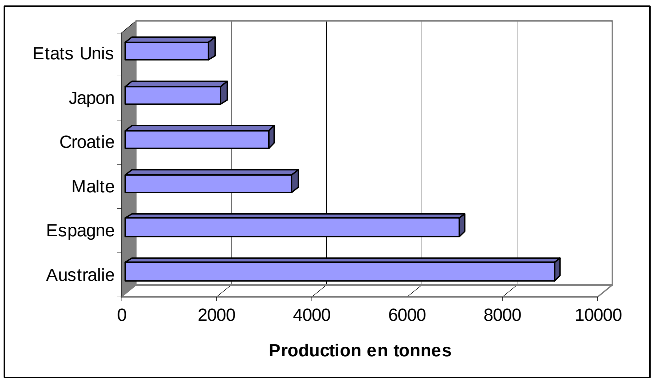


Figure 53: World production of bluefin tuna taken from farming and fattening establishments

SECTION 3 - METHODS OF REGULATION

CHAPTER 8 - REGULATING CATCHES

1 The management framework: the RFOs

The regional fishing organisations (RFOs) find their legitimacy in article 64 of the United Nations Convention on Law of the Sea which stipulates that "the coastline state and other states whose nationals indulge in fishing for the major migrators in the region (...) must cooperate, directly or via the appropriate international organisations, in order to ensure the conservation of the species in question and to promote optimum exploitation of these species in the whole of the region, both in the exclusive economic zone and beyond this. In the regions for which there is no appropriate international organisation, the coastline State and the other States whose nationals fish for these species in the region should co-operate in order to create an organisation of this nature and participate in its work."

The regional fishing organisations are the principal vector of international cooperation on the subject of the management of shared stocks. Based on international agreements, they constitute a framework within which the representatives of the States meet in order to define, using the best scientific data available, the terms and conditions for managing halieutic resources. Consequently they represent a particularly suitable tool since they offer a legal framework which allows them to take into account the details and characteristics particular to their zone by virtue of their regional nature.

In the course of recent years, there has been a significant increase in their number and importance. The intensity of their action has also increased. Their role, which was initially and essentially limited to formulating opinions on the subject of the conservation and management of halieutic resources has extended to exercising powers on the subject of managing and regulating the exploitation of these resources.

The measures adopted within this framework have resulted in the establishment and definition of concepts and principles gradually creating the outline of an international legal order on the subject of the management of halieutic resources based on the agreement relating to Marine Law and applicable in the first instance to the contracting parties but also increasingly involving the implementation of provisions directed at non-contracting parties.

The International Commission for the Conservation of Atlantic Tuna (ICCAT) whose head offices are in Madrid, Spain.

The ICCAT was created in 1969. Its mandate covers around thirty species including the major tunas, swordfish and other billfish, and various species of tuna. The geographical zone covered corresponds to the Atlantic Ocean, plus adjacent seas (including the Mediterranean). The ICCAT's scientific works are conducted by national scientific institutions. The ICCAT has made recommendations about the management of fisheries since its creation, and more specifically has put in place catch quotas for Atlantic bluefin tuna (BFT), swordfish (SWO) and albacore (ALB). The ICCAT has also established a minimum size for yellowfin tuna (YFT), BFT and bigeye tuna (BET), as well as measures aimed at reducing catches of small tuna by limiting the use of fish aggregating devices (FADs).

There are currently 40 members of the commission: United States, Japan, South Africa, Ghana, Canada, France (overseas Territories), Brazil, Morocco, Korea Republic, Côte d'Ivoire, Angola, Russia, Gabon, Cape Verde, Uruguay, Sao Tome & Principe, Venezuela, Equatorial Guinea, Guinea-Conakry, United Kingdom (overseas Territories), Libya, People's Republic of China, Croatia, European Community, Tunisia, Panama, Trinidad and Tobago, Namibia, Barbados, Honduras, Algeria, Mexico, Vanuatu, Iceland, Turkey, Philippines, Norway, Nicaragua, Guatemala, Senegal and Belize.

The Indian Ocean Tuna Commission (IOTC) whose head offices are in Mahé, Seychelles

The IOTC came into existence in 1997. The Commission is involved in managing 16 migratory species, including the major tunas, swordfish and billfish, and a few species of inshore tunas. It covers the Indian Ocean as well as the north of the zone of Antarctic convergence. As in the case of the ICCAT, the IOTC conducts its scientific work within the framework of the research programme in which the national scientific institutions of the member countries of the convention take part.

There are currently 24 member countries, following the recent addition of Kenya: Australia, China, European Community, Comoro Islands, Republic of Korea, Eritrea, France (by virtue of its territories in the Indian Ocean), India, Islamic Republic of Iran, Japan, Kenya, Madagascar, Malaysia, Mauritius, Oman, Pakistan, Philippines, United Kingdom (by virtue of its territories in the Indian Ocean), Seychelles, Sri Lanka, Sudan, Thailand, Vanuatu and Kenya.

The Inter-America Tropical Tuna Convention (IATTC) whose head offices are in La Jolla, United States

This Commission, established in 1950, is responsible for the management of tuna and billfish between the Western coast of the American continent and 150° W. The IATTC is also responsible for the preservation of marine mammals captured in the course of tuna fishing operations. One of the special features of the IATTC is that it has its own scientific teams producing its own research programmes. The work involved in this research forms the basis of recommendations made to members of the Commission. The IATTC already recommended controlling catches of yellowfin tuna as long ago as 1966, bigeye tuna caught using seines in 1998 and dolphin mortality in 1993. The Commission is currently concentrating its efforts on controlling the fishing capacity of the fleet of purse seiners working in the Eastern Pacific (period of closure to seine fishing of 41 days in 2004 for example).
There are currently 14 member countries: Costa Rica, Ecuador, El Salvador, France, Guatemala, Japan, Mexico, Nicaragua, Panama, Peru, Spain, United States, Vanuatu, Venezuela.

The Western and Central Pacific commission (WCPFC) whose head offices are in Ponapé (Federal States of Micronesia)

The WCPFC is the youngest of the regional fishing organisations. The convention came into force in June 2004. This new Commission is taking responsibility for the management of tuna and billfish within the Central and Western Pacific zone (up to 150° W).
This commission now has 19 members: Australia, Cook Islands, Federal States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Papua New Guinea, Samoa, Solomon, Tonga, China, Korea, Tuvalu, European Community, Chinese Taipei, Tokelau (participating Territory) and Japan.

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) whose head offices are in Canberra, Australia.

Created in 1993, the CCSBT is dedicated to the management of southern bluefin tuna which has the particular attribute of being a stock distributed over the three oceans. It is remarkable in this sense in comparison with the other tuna RFOs. Like the ICCAT and the IOTC. the CCSBT works using scientific opinions issued by the national institutes of scientific research. Setting up catching quotas allocated to the Member States of the Commission is the principal CCSBT management measure, which has been the case since it was set up. Australia, New Zealand, Taiwan and Japan are the major contracting party States.

2 The position of the EEC within the RFOs

By virtue of its exclusive compentency on the subject of fishing, the Community has undertaken an active policy for representing and defending its interests within the RFOs. Within the field of tuna management, in December 2004 there were five regional organisations whose mandate included the management of tunas. The Community is a member or associate member of four of these. Generally speaking, the mandate of the Community incorporates representation of the Member States. These are only contracting parties as an exception, usually under the heading of overseas dominions and territories whose foreign relations are placed under their sovereignty.

ICCAT

Approximately 2,500 Community boats from 7 Member States are potentially affected by the ICCAT's measures. The European Community is a contracting party of the ICCAT.

IATTC

In December 2004, Spain and France were contracting parties of this RFO as individuals. The European Community only had the status of a co-operating party. The Antigua Convention, whose aim is to reinforce IATTC functioning, was signed by 18 states (including France) and by the European Community. The Convention will come into force after the 7th ratification instrument has been filed (at the moment only Salvador and Mexico have filed theirs). At the moment the Community fleet affected only involves Spanish boats. The French boats taken into consideration fly the flag of French Polynesia (Overseas Countries and Territories) and are not entered on the Community register.

IOTC

The activity of around 100 community boats belonging to 4 Member States is involved in the measures issued by the IOTC. The European Community is a contracting party of the IOTC.

WCPFC

To date, essentially 5 Spanish purse seiners appear to be involved in this zone. The European Community joined in January 2005.

CCSBT

The European Community does not have any particular interest in this fishery and at the time being is not considering joining the convention which governs this Commission.

Information about the budget of the principal RFOs, as well as Community participation in these budgets is provided in the table below. It can be seen that the Community is the principal entity contributing to the ICCAT and IOTC budgets (approximately 30% of the annual budget of these organisations).

Table 20: budget and contributions of the EC to the regional fishing organisations involved with tuna. Source: Internet site for the Commission

Commission	Yearly Budget	E.C. Contribution per year (% budget)	Other main contributors
ICCAT	€ 1 937 860 (2004)	€ 615 035 (31.7%)	Ghana (9.8%), USA (7%), Brazil (6.8%), Japan (4.9%)
CTOI	USD 1 111 907 (2002)	USD 316 687 (28.5%)	Japan (11.6%), Australia (7.6%), France (6.7%), United Kingdom (6%)
IATTC	n.a.	- -	n.a.
WPCPFC	USD 975 000 (2005)	USD 41 664 (4.3%)	Japan (23,9%), China (16,6%), Korea (12.9%), USA (12%)
TOTAL		***Approx. € 915 000***	

The RFOs shown take part in the research programmes on the state of the stocks fished in the zones for which they are responsible, either using their own resources, or by co-ordinating the work of the scientific institutions of their contracting parties, and they issue recommendations or resolutions about measures for stock management. These resolutions or recommendations are becoming obligatory for the contracting parties but also for non-contracting parties who have joined the principal international conventions (case of the European Community). The measures taken by the RFOs are incorporated in Community law, in particular, by means of two specific regulations, regulation 973/2001 providing for technical measures of conservation for certain stocks of major migrators, and regulation 1936/2001 establishing certain measures of control applicable to the fishing activities affecting certain stocks of highly migratory fish.

3 Measures associated with the anti-IUU fight and controlling fishing capacities

In the three oceans, the development of fishing capacities has posed a problem. On the one hand this is because certain stocks (yellowfin tuna, adults, swordfish) are in a state which requires limiting catches, and therefore capacities, and secondly, because the activity of IUU (illegal; unreported; unregulated) fleets has developed significantly, thus compromising the efforts of the international community to manage stocks. This IUU fleet essentially works using deep long lines. Consequently it has an impact on stocks of adults of both bigeye and yellowfin tuna. In the Indian Ocean there is probably a fleet of about ten IUU purse seiners from the former Soviet union.

3.1 The positive lists

One of the most effective measures has been the establishment, in 2002, of public lists of boats authorised to fish, known under the name of positive lists. These lists are proving to be more effective than the black list of boats considered to be IUU insofar as these boats are able to change identity rapidly. The positive lists of boats have been adopted virtually simultaneously by the ICCAT in the Atlantic, the IOTC in the Indian Ocean and the IATTC in the Eastern Pacific. In the Western Pacific, there is no actual positive list, but the Forum Fisheries Agency keeps an updated list of boats authorised to fish in the central and Western Pacific zone. One of the first measures of the WCFPC will be to draw up a positive list of this kind. The lists of authorised boats are only open to contracting and cooperating parties. In fact they prohibit boats flying the flag of States which do not have formal relations with the RFOs from fishing. The main effect of the positive lists has been to limit the advantage of flags of convenience by prohibiting them from fishing, keeping on board, transhipping or unloading tuna or similar species. The advent of these lists is making a strong contribution to the anti-IUU fight.

The positive lists mainly concern boats of over 24 m between perpendiculars, namely large boats capable of fishing over significant areas. The parties which register the boats must provide details of their origins, thus preventing the regularisation of boats which have had an IUU past. In the Atlantic and the Indian Ocean, the positive lists are long lists of boats able to fish, as opposed to the restricted list of boats actually active within the zones covered by the conventions. As an example, in September 2004 the IOTC positive list contained 257 community boats, and that of the ICCAT almost 1,680 EC boats.

Once established, the positive lists have been used by the IOTC and the ICCAT as an initial way of controlling the increase in authorised fishing capacities. The lists have been frozen and any registration of a new boat must be accompanied by the withdrawal from the list of equivalent fishing capacities, measured in terms of number of boats and tonnage, namely transport capacity measured in tonnes in the Eastern Pacific. These measures are accompanied by exemptions for the coastline States in relation to the zones covered by the conventions in order to allow them to continue to develop their fishing industry.

In 2003 the IATTC set up a positive list of long liners of over 24 m authorised to operate within the Eastern Pacific waters.

However it must be pointed out that the spirit of the positive lists is starting to be corrupted. This is confirmed by the appearance of long liners of 23.99 m whose working capacities are not far from those of long liners working the high seas. Up until 2004, the boats did not need any other authorisation than that of the State of their flag in order to fish the stocks of the major migrators. The IOTC is the first RFO to try to control this segment of boats of under 24 m by requiring its contracting parties to register them on the positive list of boats authorised to fish as soon as they are fishing outside the EEZ of the State of their flag (resolution 05-02). This initiative is likely to be followed by the other tuna RFOs. It should be noted that the appearance of purse seiners of under 24 m is highly unlikely, or in any event these would have negligible catch capacities.

3.2 Documentation on trade

The measures referred to above considerably hinder the activity of IUU boats but do not prevent it because of the difficulty in checking the movements of boats, and in particular transhipment operations at sea. As a result the RFOs have put in place systems for monitoring trade in sensitive species. These programmes for collecting statistical documentation require all international trading operations to be accompanied by a certified document which can trace right back to the boat which made the catches and the zone in which it was working. At the end of 2004, the statistical documentation programmes involved the following:

- Atlantic: Atlantic bluefin tuna, bigeye tuna, swordfish
- Indian: bigeye tuna
- Eastern Pacific, bigeye tuna
- all oceans: Southern bluefin tuna

A few years after setting up these measures, it seems that monitoring catches has allowed an appreciable limitation of the laundering of illegal catches. It has also allowed alternative databases to be made available on international trade, which, cross-referenced with national foreign trade databases, may be used to identify illegal practices, and, in this way, the flags under which the boats operate.

3.2.1 The CCSBT "Trade information scheme (TIS)"

In June 2000, the CCSBT introduced the TIS for monitoring trade in Southern bluefin tuna. The TIS also aims to eliminate illegal, unreported and unregulated fishing by blocking access of this type of products to the markets of the Member States (which are Japan, Australia, New Zealand, the Chinese province of Taiwan and South Korea). Any importation of southern bluefin tuna must be accompanied by the TIS statistical document. The document must be approved by a relevant authority in the exporting country and must include details about dispatch, i.e. the name of the fishing boat, the fishing device, the fishing zone, the date of capture. Dispatches which are not accompanied by the TIS form may not enter the Member States. The forms are recorded in a database held by the CCSBT Secretariat.

Recently, the programme has been modified to allow the destination countries to be included in the document, because of the development of the market of southern bluefin tuna outside the Member States. In fact, non-member countries such as the United States and the Philippines have indicated their intention to co-operate with implementing the programme. Minimum standards for preparing TIS documentation have also been introduced.

3.2.2 The ICCAT Bluefin Tuna Statistical Document (BFTSD) and the Bigeye Tuna Statistical Document (BETSD) issued by the ICCAT.

The ICCAT started up the BFTSD for frozen tuna in 1993 and for fresh tuna in 1994. According to this programme, any Member State of the ICCAT[14] must require any product of Atlantic bluefin tuna to be accompanied by the BFTSD or a re-export certificate immediately after entry. The BFTSD must specify the weight of the batch in relation to the nationality of the fishing boat, the zone of capture and the types of products. The main aim of the programme is to identify unreported catches of bluefin tuna. A special form for farmed tuna was introduced in 1999 and has been implemented since 2000, in order to make a distinction between trading in wild tuna and trading in farmed tuna. Finally, in 2002, the ICCAT introduced a document relating to bigeye tuna-based on the BFTSD.

3.2.3 Bigeye Tuna Statistical Document (BETSD) issued by the IOTC

The IOTC introduced the BETSD for frozen tuna in 2002. All bigeye tuna imported into the territory of a contracting party[15] must be accompanied by an IOTC statistical document or an IOTC re-export certificate. The bigeye tuna fished by purse seiners and pole and line vessels, mainly intended for canneries in the zone of the Convention is not subject to the requirements associated with the statistical document.

3.3 Summary

The effect of these measures appears to have produced some results in the Atlantic where the ICCAT seems to have converging facts to conclude that IUU practices have declined considerably to the point of almost disappearing. In the Indian Ocean, it seems that there is still work to be done before the same conclusion can be reached. The regulations exist, but national action is necessary in order to put in place programmes for destroying or reintegrating these boats. In the Indian Ocean, Japan recently took measures, working with Taiwan, the Seychelles and Vanuatu, in order to eliminate IUU activities of long liner fleets. This action led to the destruction of 43 IUU boats, and to the reintegration of 47 boats under the Taiwan flag. 69 IUU boats registered under the Seychelles and Vanuatu flags accepted the common management framework proposed by Japan. Around thirty boats have probably refused to take part in an elimination programme.

4 Technical measures

Technical measures have been adopted by the RFOs in order to limit the impact of fishing by boats. The table below shows the principal technical measures in force in mid-2005 over the three oceans for the major groups identified: major tropical tunas, temperate tunas, swordfish and similar species.

---

[14] *in order of joining the ICCAT: United States, Japan, South Africa, Ghana, Canada, France for St Pierre and Miquelon, Brazil, Morocco, South Korea, Côte d'Ivoire, Angola, Russia, Gabon, Cape Verde, Uruguay, Sao Tome & Principe, Venezuela, Equatorial Guinea, Guinea Conakry, United Kingdom for its overseas territories, Libya, China, Croatia, European Community, Tunisia, Panama, Trinidad and Tobago, Namibia, Barbados, Honduras, Algeria, Mexico, Vanuatu, Iceland, Turkey, Philippines, Norway, Nicaragua, Guatemala and Senegal.*

[15] *Australia, China, European Community, Comoro Islands, Republic of Korea, Eritrea, France (by virtue of its territories in the Indian Ocean), India, Islamic Republic of Iran, Japan, Kenya, Madagascar, Malaysia, Mauritius, Oman, Pakistan, Philippines, United Kingdom (by virtue of its territories in the Indian Ocean), Seychelles, Sri Lanka, Sudan, Thailand and Vanuatu.*

4.1 Major tropical tunas

The table below summarises the principal technical measures applicable to fishing for major tunas in the three oceans, classified into three major groups: minimum size, limitations of effort or catches, and the moratoria which incorporate various prohibitions.

At the moment only the ICCAT has established minimum sizes for bigeye and yellowfin tuna. According to the Scientific Committee, this measure is not respected, including by Community boats, not because of any deliberate wishes on the part of the shipowners to transgress, but, given the current situation, it is impossible for pole and line vessels and purse seiners to avoid these accessory catches when they are looking for their target species, skipjack tuna. Given their low relevance, these resolutions on minimum sizes had to be reviewed, and probably replaced by other measures to protect juveniles. Consequently in 2005 the ICCAT decided to cancel the minimum size regulation for bigeye tuna, while maintaining that for yellowfin tuna.

Restrictions on catches relate to bigeye tuna in the Atlantic, the Indian Ocean and the Eastern Pacific Ocean. In the Atlantic, the parties must not exceed the levels of catch decided on by the ICCAT. With regard to Community boats, this amounts to a quota varying between 24 and 25,000 tonnes per annum (which has never been achieved since 1991-92). In the Indian Ocean, the ceiling on catches is limited to recent catches, except in the case of Taiwan which is limited to 35,000 t per annum. On the occasion of its 10th Session in 2006, the IOTC should decide on quotas of bigeye tuna for each of its contracting parties and associates. In the Eastern Pacific, the ceiling on catches of bigeye tuna only concerns long line fisheries. With regard to Atlantic yellowfin tuna, the limitation relates to fishing effort, which is difficult to monitor and control because of the difficulty in accurately measuring fishing effort. The Scientific Committee has noted that given the fishing mortality observed in 2003, it is likely that the actual effort has increased, thus contravening the resolution.

The moratoria are used in the Atlantic and the Eastern Pacific principally in order to reduce the fishing effort on juvenile bigeye and yellowfin tuna. Up to 2004 the Atlantic moratorium concerned a partial temporary closure of a fishing zone using FADs to purse seiners, it being understood that the latter could nevertheless fish inside the zone on free schools. The measure was changed in 2005 to a total prohibition of surface fishing (seine and pole and line) in the zone known as Picolo (0°- 5°N/10°-20° W). In the Eastern Pacific, the notion of moratorium prohibits purse seiners from carrying out any form of fishing for 40 days within a given zone, with the latter having to remain in port. The IATTC has also set up a moratorium relating to discards in the sea made by purse seiners, obliging them to keep all the species caught on board.

There is no specific measure for skipjack tuna as world stocks are considered to be in a satisfactory state. Having said this, moratoria concerning surface fisheries are helping to temporarily alleviate fishing pressure on this species.

Table 21:Principal technical measures applying to major tropical tuna in mid- 2005

Species		Atlantic (ICCAT)	Indian (CTOI)	East Pacific (IATTC)	Western Pacific (WCPFC)
YFT	Minimum sizes	3,2 kg (15% tolerance calculated on landed fish number)	None	None	None
	Fishing effort / Catches	Fishing effort restrited to 1992 level	None		None
	Moratorium	Surface fishing (pole and line ; seine) forbidden in November between 0° and 5°N, 10° and 20°W	None	-Seasonal closure for seine fishing -Discards forbidden (seiners)	None
BFT	Minimum sizes	None (since 2005)	None	None	None
	Fishing effort / Catches	Fishing capacities stopped at 2005 declared capacities. TAC fixed at 90 000 t for 3 years, with E.C. quota fluctuating between 24 000 and 25 000 t.	BFT catches limited to recent level of catches. Maximum catches of 35 000 t for Taiwan Quota management from 2006	-Long lines catches for 2004-2006 equal to 2001 catches, for contracting parties - Quota for asian longliners catches	Néant
	Moratorium	Surface fishing (pole and line ; seine) forbidden in November between 0° and 5°N, 10° and 20°W	None	-Seasonal closure for seine fishing -Discards forbidden (seiners)	None
SKJ	No specific measure				

Given their length of experience in comparison with the newly created Commissions for the Indian and Western Pacific ocean, the ICCAT and the IATTC are clearly playing a driving role in establishing international regulations which must necessarily reach a certain level of harmonisation between the oceans. Consequently, it is possible to imagine that the resolutions issued by these two RFOs are prefiguring what it will be possible to put in place in the regions covered by the IOTC and the WCPFC in the near future, using as a hypothesis subjecting bigeye tuna, or even yellowfin tuna, to TAC, and moratoria applicable to seiner boats in order to protect the juveniles of these species.

4.2 Temperate tunas

This section will deal with the technical measures which apply to temperature tunas which are important for the community fleets (Atlantic bluefin tuna, albacore).

With regard to **Atlantic bluefin tuna** from the Eastern stock (Eastern Atlantic and Mediterranean), the alarming state of the resource has encouraged the ICCAT to take numerous measures considered to be helpful for restoring stock. These measures include:

Minimum size: since 2004, the minimum size of bluefin tuna fished in the Mediterranean has been 10 kg, without any tolerance. The minimum size for the Atlantic remains unchanged.

Fishing effort/catches: fishing mortality restricted to the levels for 1975, TAC with distribution of national quotas. According to the ICCAT Scientific Committee, the fixing of a ceiling for fishing mortality which is, moreover, difficult to apply, has not prevented the latter from increasing significantly above this reference level. In the case of the TAC, the data which is available, although doubtful, indicate that this is probably respected. The European Community which benefits from a quota of 18,450 tonnes has respected this over recent years.

Since 2004, the ICCAT has set a ceiling for catches made by the large long liners at the level for 1999/2000, in the zone located to the north of 10° N and between 30° W and 45° W.

Moratoria: the ICCAT has introduced several moratoria over the Mediterranean zone: seasonal prohibition of aircraft flying over the area in order to detect schools, seasonal prohibition of long line techniques for boats of over 24 m and for purse seiners, finally total prohibition of the use of the drifting gill net. These moratoria are essentially intended to protect juveniles.

With regard to **albacore**, the stock in the North Atlantic is subject to TAC. The Community which has a quota of 28,700 tonnes, catches much lower numbers than this. There is also a restriction on fishing capacity to the levels for 1993-1995. In the Southern Atlantic, catches from stock are also limited by a TAC (29,200 tonnes). This has probably been exceeded recently. The Community fleets respect the quota which has been allocated to them (1,915 tonnes). Provisions specific to the Japanese fleet restrict accessory catches of southern albacore to 4% of catches of bigeye tuna. No measure relating to a size limit or moratorium is in force or being researched for the two Atlantic stocks. No specific measure has been taken for Mediterranean albacore.

In the Indian Ocean the IOTC has not taken any measures relating to fishing for albacore. Nor is there any specific measure relating to this species in the Pacific.

4.3 Swordfish and similar species

4.3.1 Swordfish

Minimum size: swordfish from the Northern and Southern Atlantic stocks cannot be smaller than 125 cm (i.e. 25 kg) with 15% tolerance, or 119 cm without tolerance. The measure does not seem to be respected because of the lack of selectivity of the devices used. Community boats caught 21% of swordfish under 125 cm, i.e. a few points above the margin of tolerance.

Ceiling on catches: catches of swordfish from the two Atlantic stocks are limited by TACs of 14,000 and 15,000 tonnes. The European Community has a quota of approximately 6,000 tonnes in the Northern and Southern Atlantic which is respected.

There is no moratorium relating to the closure of zones in order to protect juveniles in spite of the fact that the ICCAT Commission has been officially approached about this matter.

In the Mediterranean, there is no measure relating to the management of swordfish, apart from the national measures. The fixing of a minimum size (120 cm), in force previously, has been abandoned as it encouraged parties to under-report. The setting up of seasonal moratoria could be envisaged in the future.

4.3.2 Blue and white marlin

The unfavourable situation of these stocks in the Atlantic has led to the creation of ceilings for levels of catches of these species at 25% of catches made in 1996 for white marlin, and 50% of catches made in 1996 or 1999 for blue marlin. These species, which continue to be accessory catches, must moreover, be released live as far as possible. There is no regulation relating to minimum sizes or moratoria.

CHAPTER 9 - MEASURES FOR SUPPORTING PRODUCTION

1 Aid for shipbuilding

1.1 Community framework

Measures for restructuring the fishing fleet were based around multi-annual guidance programmes (MAGPs) designed with the aim of reducing catch capacity. The European tropical tuna fishing fleet has been included in successive MAGPs, even though resources of tropical tuna do not in principle come under this plan, designed to ensure conservation of the stocks present in Community waters.

The mechanisms and rules of intervention put in place in order to finance the construction and modernisation of tuna boats stem from provisions relating to the basic regulation of the four Community structural bases of which the Financial Instrument for Fisheries Guidance (FIFG) forms part. The FIFG meets the need to improve the efficiency of assistance to the fishing sector by making it consistent, within the framework of an integrated strategy.

Within the sector of primary production, the granting of structural aid was subject to complying with targets relating to limiting fishing capacity. European assistance was then coupled with national assistance: for the European Community to pay assistance, the Member State had to pay at least 5% of the amount of the total investment, with Community aid not being able to exceed 25% of the total investment, and with total aid not being able to exceed 40% of the total investment. These aids were also plentiful in an indirect way via recourse to aid with shipbuilding, supplied within the framework of a national policy of support for this sector.

Aid relating to shipbuilding was eliminated within the framework of international undertakings. The IFOP was re-formed (EC Regulation nº 1260/1999). EC regulation nº 2792/1999 defined, for the period 2000 to 2006, the terms and conditions for structural Community interventions for achieving targets in the fishing sector as part of the Financial Instrument for Fisheries Guidance (FIFG) and to provide guidelines and encourage the restructuring of fishing structural policy.

The structural actions put in place under the heading of this new regulation are aimed at providing guidelines and pursuing restructuring of the sector. This process was in fact considered necessary in order to ensure the future of the industry, in view of the persistent imbalance between the resources available and fishing capacities. Within this framework no public aid resulting in an increase in fishing effort is authorised.

Public aid with construction therefore came to an end on 1st January 2005. Aid for modernisation will only be maintained beyond this date if investments do not result in increased fishing capacity. Consequently, tuna boats carrying out their activities outside Community waters are also subject to this dual system of restricting fishing capacities and non-public financing of new constructions.

1.2 Foreign frameworks

It has not been possible to conduct any comprehensive study on support plans or those for restricting tuna fishing capacities. Nevertheless, it seems that, amongst the major tuna nations, no special measure for restricting new constructions or modernisation exists.

2 Access to resources

Since the establishment of the EEZs, tuna fishing has needed to obtain fishing authorisation within the waters of the coastline states. Given the very nature of the activity, access to the waters of coastline states must be sufficiently extensive to respond to fish migration, consistent from the point of view of fishing and financially compatible with the costs of operating boats.

This access can take place by means of private licences, negotiated directly by the shipowner or a group of shipowners. It can also be managed by the public authorities. Fishing agreements then constitute a method of guaranteeing access of tuna fishing fleets to the resources of third countries. In the latter case, just as with any international legal instrument, this should be made public.

It should be pointed out that all the major tuna fishing powers have taken steps to sign fishing agreements with countries in possession of significant resources. In this case, the cost of the actual negotiation is supported by the public authorities as well as by certain direct considerations (calculation of cost of access, various obligations for which the shipowners are responsible) or indirect (action involving co-operation).

However, it is advisable to point out that information about the cost of access to tuna resources and the nature of access considerations is not, generally speaking, easy to obtain. However it should be emphasised that the European Community publishes its agreements in full.

Within the framework of the common fisheries policy, the European Union develops different relations with third countries. The European Community has signed 16 fishing agreements with the ACP countries, for a budget representing approximately €145 million annually, to which must be added approximately €30 million paid by the shipowners. The European Community is currently in the process of converting its bilateral agreements involving a financial consideration into partnership agreements in the field of fisheries (FPA), in order to encourage long-lasting fishing in the interests of the parties to the agreement. Some of these agreements may be considered to be purely "tuna-related" (Seychelles, Madagascar, Kiribati, for example). In the case of agreements with sections relating to tuna fishing, it is necessary to establish a link between these and access to the community market for the products of the processing industry based in these countries. (Yaounde, Lomé, then Cotonou Conventions). This originally concerned finding a balance between the interests of the French processing sector (mainly developed within the framework of bilateral commercial agreement between France and Senegal and between France and the Côte d'Ivoire) and the Italian sector located exclusively on national territory.

Fishing agreements between the European Community and the ACP countries establish provisions relating to the limits on fishing possibilities, to financial considerations, to the formalities relating to issuing fishing licences, to declarations of catches, to observers and finally to any obligations relating to the embarkation of seamen and unloading of catches.

The limits of fishing possibilities consist of determining the number of European purse seiners authorised to fish simultaneously in the waters of the partner country. The issuing of fishing licences is conditional on the payment by the shipowner of a non-refundable advance on a certain volume of catches, variable according to country. The amount of the lump sum advanced by the shipowner in order to acquire a licence is then adjusted to the catch potential of the EEZ of the partner country, but the cost of the unit fee is in the region of €25/tonne. European purse seiners are obliged to make declarations of catches which are used in the final calculation of the fees owed by the shipowners, in the event of exceeding the catches corresponding to the lump sum advance indicated by the licence.

The breakdown of catches is generally certified by the Spanish Oceanographic Institute (IEO) or the French Institute for Development (IRD). If the partner country has its own research centre, such as the Seychelles Fishing Authority (SFA) or the CRODT in Senegal, it is jointly responsible for calculating catches. Tuna purse seiners are obliged to take on board seamen who are nationals of certain partners such as Senegal, the Côte d'Ivoire, Madagascar or the Seychelles. They must also board observers on board if the authorities of the partner country request this. European purse seiners are also subject to a vessel monitoring system (VMS) which uses satellite buoys. The financial consideration paid by the Community usually relates to interventions in favour of the development of the fishing sector, or measures aimed at improving the capacities of the partner country within the field of fisheries research but also on the subject of Monitoring Control and Surveillance. Financial compensation is fixed according to the reference tonnage which corresponds to an estimate of expected or assumed annual catches by the whole of the European tuna fleet. The amount of the counterpart is then calculated on the basis of the payment by the Community of a right of access of €75 per tonne of tuna.

Fishing agreements therefore offer European shipowners security in relation to their fishing zones, with a cost partly borne by the public authorities. Nevertheless, the costs and constraints of the conditions imposed on the shipowners must not be ignored. In addition, they make the European tuna fleet a fleet whose activities are amongst the best recorded in the world, allowing scientific bodies to have available statistical material of an excellent quality.

3 Compensation to tuna producers

3.1 Historical recap

As long ago as 1970, the European Council considered, in the first regulation relating to the common organisation of markets within the sector of products of fishing, *"that a drop in the importation price of tuna intended for the canning industry may threaten the level of the revenue of Community manufacturers of these same products"* and *"it is therefore advisable to provide compensatory allowances to manufacturers where required"* (EC 1970). This plan was revised in 1976. In both cases, the common organisation of the market for products of fishing describes the terms and conditions for fixing a "price for Community production" for tuna intended for the canning industry, but simply indicates that the general rules concerning the granting of compensatory indemnity for tuna would be halted, if applicable, by the Council, ruling on a proposal of the Commission on a qualified majority[16].

The context of crisis on the market of tuna products led to the successive adoption of two regulations establishing these general rules in the course of the same year 1976. At the same time as the second version of the common organisation of the markets for products of fishing appeared, an initial regulation was published establishing the mechanisms for triggering compensatory indemnity for tuna (EC 1976b). The level of prices for community production as well as the calculation rule adopted for triggering indemnities would not allow this mechanism to be brought into play before 1986.

The second major tuna crisis occurred in Europe after 1985, when changes in the parity of the US dollar against the French franc and the Spanish peseta experienced an abrupt reversal of trend. In 1986, the compensatory indemnity for tuna producers was triggered for the first time. The real difficulties posed by compensating Community producers led the Commission to propose that the Council adopt a regulation establishing the practical terms and conditions for applying the regulation relating to granting compensatory indemnity: this concerned both specifying the supporting documents which the producers had to provide, particularly with regard to the quantities delivered to the processing industry and to providing proof of the Community origin of the products as well as indicating the penalties to be incurred by those making false declarations (EC 1986). However, although the tuna crisis came to an end in 1986, the conditions for triggering the compensatory allowance for tuna continued to be met in subsequent years.

The Compensatory Allowance for Tuna mechanism was then the subject of two successive revisions, in 1987 then in 1988, because "in order to avoid encouraging abnormal development of tuna production, it is

[16] *This is the procedure described by article 15 of the EC regulation n° 2142/70 of 20 October 1970 (Official Journal of the EC n° L.236 of 27 October 1970) then article 16 of EC regulation n° 100/76 of 19 January 1976 (EC Official Journal n° L 20 of 28 January 1976).*

necessary to provide limits within which this compensation can be granted to producer organisations" (EC 1988). The new system establishing the general rules relating to granting compensatory allowance for tuna, henceforth inserted in the text for the common organisation of the market of products of fishing of which it constitutes article 17a, is based on the principle in accordance with which "in order to evaluate whether, on the Community market, there is a situation associated with the changes in price levels on the world tuna market justifying the payment of the compensatory indemnity, it is advisable to ensure that the drop in prices on the Community market is the result of a drop in prices for imports" (EC 1988b). The system developed in order to take better account of the effects of fluctuations in rates on the world markets and to be less sensitive to the consequences of changes in Community production itself.

3.2 Current system

Currently the Compensatory Allowance for Tuna is subject to the provisions repeated in regulation (EC) n° 2183/2001 of the Commission dated 9 November 2001 establishing the terms and conditions for applying the regulation (EC) n° 104/2000 of the Council with regard to granting Compensatory Allowances for Tuna intended for the processing industry, and abrogating regulation (EC) n° 142/98 of the Commission dated 21 January 1998.

The Compensatory Allowance for Tuna is granted to organisations of producers when, for a given quarter, the price of tuna is located at a level lower than a triggering threshold, fixed by a Council Regulation establishing price trends, on the basis of monthly average rates which are notified to it by the Member States.

The Compensatory Allowance for Tuna is essentially granted for skipjack, albacore, yellowfin and bigeye tuna, the species involved in the canning industry.

Aid is granted within the limit of the volumes established by the regulation (EC) n° 104/2000. The volume of quantities eligible to benefit from the Compensatory Allowance for Tuna may not exceed, for the quarter in the course of which it is granted, the average of the quantities sold and delivered in the course of the same quarter of the three fishing campaigns preceding the one for which the compensation is paid.

The Compensatory Allowance for Tuna is granted when it is noted for a given calendar quarter, that the average sale price recorded on the Community market and the importation price are located simultaneously at a level lower than a triggering threshold equal to 87% of the Community production price of the product under consideration. These products must be sold and delivered to a processing industry established on the Community customs territory, and must be intended for complete and final processing. The Compensatory Allowance for Tuna is only granted for products of Community origin, if these products are delivered to a processor established on Community customs territory. The Compensatory Allowance for Tuna is granted to recognised producer organisations. The only operations taken into account for determining the right to compensation are sales of tuna whose invoices are dated in the quarter preceding the one in which the Compensatory Allowance for Tuna application is filed.

Table 22: Quantities taken into account for implementing the Compensatory Allowance for Tuna - period 1992-2004

	ALB	YFT+10	YFT-10	SKJ	BET
1992	0	57 591	9 776	37 034	0
1993	747	87 515	2 256	19 327	4 579
1994	0	51 884	0	0	1 440
1995	0	0	0	28 100	4 138
1996	0	39 172	3 788	9 467	0
1997	0	0	0	0	0
1998	403	0	0	10 462	0
1999	330	13 636	14 523	34 165	0
2000	0	30 438	18 880	50 345	3 749
2001	0	0	0	10 423	0
2002	0	0	0	0	0
2003	0	11 433	0	0	0
2004	0	0	0	0	0

The triggering of this complex mechanism is directly associated with variations in prices of tuna on the world market and not with an increase in quantities caught by Community shipowners.

CHAPTER 10 - THE TRADE REGIME

1 Tariffs and tariff quotas: general information

Imports of tuna are subject to tariffs which, in principle, increase to reflect the degree of processing. Tariffs applied to fresh and frozen tuna intended for consumption or industrial processing are generally reduced to zero, whereas tariffs applied to processed products such as tuna loins and canned tuna are normally higher in order to protect the domestic industry. However there are a certain number of exceptions to this general rule within the framework of preferential systems, whether these are unilateral (e.g. the Generalised System of Preferences (GSP) for developing countries) or reciprocal (e.g. free-trade agreements).

Reciprocal tariff quotas are the result of negotiations between the two parties to the agreement whereas in the case of unilateral quotas these find their justification in the need for economic development in the beneficiary countries.

2 European Union Trade system

2.1 General information

There are two main categories of tariff duties within the EU trade system: there are the duties *erga omnes* (most-favoured-nation clause), applied in principle to all third countries, and preferential tariffs, which may be applied either within the framework of unilateral systems such as GSP or the Cotonou agreement (for African, Caribbean and Pacific countries-known as "ACP" countries), or within the framework of reciprocal preferential agreements, whether these are regional or bilateral (Table 23).

Table 23:Basic tariff legislation in accordance with the EU multilateral agreements, 2005 (source: the Integrated Tariff of the Community, TARIC).

Tarif	Règlement	Validité
Erga omnes	Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff (incl. subsequent corrigendum)	-
GSP	Council Regulation (EC) No 2501/2001 of 10 December 2001 applying a scheme of generalised tariff preferences for the period from 1 January 2002 to 31 December 2004 - Statements on a Council Regulation applying a scheme of generalised tariff preferences for the period from 1 January 2002 to 31 December 2004 Council Regulation (EC) No 2211/2003 of 15 December 2003 amending Regulation (EC) No 2501/2001 applying a scheme of generalised tariff preferences for the period from 1 January 2002 to 31 December 2004 and extending it to 31 December 2005	1/10/2002 – 31/12/2005
	Council Regulation (EC) No 980/2005 of 27 June 2005 applying a scheme of generalised tariff preferences	1/1/2006 – 31/12/2008
Bilateral Agreements	Several	According to the agreement

With regard to the tuna trade, and processed tuna products in particular, the most advantageous tariff treatments are those granted to the ACP countries (Table 24), to the least advanced countries (Table 25) within the framework of the system entitled "Everything but arms" (EBA), under a special system of the GSP, as well as to the beneficiary countries of the GSP included in the special subsystem for the fight against drugs, (Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Pakistan, Panama, Peru and Venezuela). The latter system has only been in existence since 1st July 2005. In fact, with the adoption of the new Regulation, the GSP has been subdivided into three subsystems: a basic system, the EBA system for the least advanced countries and a special system for encouraging long-lasting development and good governance. The latter sub system came into force on 1 July 2005. As for the new basic system, this will come into force on 1 January 2006.

The ACP countries, partners of the Cotonou Convention, benefit from zero duties for all their exports of fresh, frozen (whole or in fillets) and processed tuna to the EU.

Table 24:The ACP countries

Angola	Congo	Guinea Bissau	Mauritius
Antigua et Barbuda	Ivory Coast	Equatorial Guinea	Mauritania
Bahamas	Djibouti	Guyana	Mozambique
Barbade	Dominique	Haïti	Namibia
Bélize	Erythrea	Jamaica	Niger
Bénin	Ethiopia	Kenya	Nigeria
Botswana	Fidji	Kiribati	Ouganda
Burkina Faso	Gabon	Lesotho	Papua New Guinea
Burundi	Gambia	Libéria	Dominican Republic
Cameroon	Ghana	Madagascar	Solomon Islands
Cap Verde	Grenada	Malawi	Samoa
Comoros	Guinea	Mali	Tonga

The least advanced countries, ACP and non-ACP, also have the possibility of exporting any product to the EU and thanks to the "Everything but arms" system, with zero duties. This system covers all products eligible for GSP including in this fresh, frozen (whole or in fillets) and processed tuna.

Table 25:The least advanced countries

Afghanistan	Solomon Islands	Népal	Sierra Leone
Angola	Kiribati	Niger	Somalia
Bangladesh	Lesotho	Ouganda	Soudan
Bénin	Libéria	Centrafica	Tchad
Bhoutan	Madagascar	Congo (DR)	Togo
Burkina Faso	Malawi	Laos (PDR)	Tuvalu
Burundi	Maldives	République Unie de Tanzanie	Vanuatu
Guinea	Mali	Rwanda	Yemen
Guinea-Bissau	Mauritania	Samoa	Zambie
Equatorial Guinea	Mozambique	Sao Tomé e Principe	
Haïti	Myanmar	Sénégal	

Since 1990, the EU has implemented a policy of reducing tariffs for drug-producing countries committed to fighting against the production of drugs. These reductions included a zero tariff for imports of all tuna products (fresh, frozen, whole or in fillets, processed) coming from these countries (Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Pakistan, Panama, Peru and Venezuela). The production of loins, as well as canned tuna, for the EU market represents a very important activity for the industries in the Latin American countries which benefit from these exemptions. The entry into force on the 1st July 2005, of the new special system for encouraging long-lasting development and good governance will allow these countries, provided that they comply with the conditions listed in the new Regulation (980/2005), to continue to benefit from access of this kind to the European market for their processed tuna products.

In addition to the various customs systems listed above, certain tariffs maybe lowered within the framework of quotas, namely:

- Independent quotas intended for processing which are established legitimately and do not concern any particular country;
- open quotas for particular countries, such as, for example, Thailand and the Philippines;
- open quotas within the framework of free exchange agreements (Mexico and Chile) or pre-membership agreements (Romania).

2.2 The rule of origin

Any tariff exemption applied to processed tuna is subject to strict rules of origin: the tuna used as raw material must also come from this origin. This tuna must therefore have been caught by the Community fleet or that of the beneficiary country or by that of a third country benefiting from plurality with the latter. It must then be processed by establishments set up within the customs territory of the beneficiary countries, complying with a certain number of conditions or with Community regulations.

These rules of origin have been put in place in order to ensure that the preferences granted play a part in the economic development of the beneficiary country and not in that of developed countries which would be tempted to use this preferential access to the European market.

These rules are specific to each agreement, whether reciprocal or unilateral, within ad hoc protocols.

For example, the rules of origin currently in force and which determine the preferential access of products of ACP origin on the Community market are listed in the Cotonou agreement - Appendix 5 - Protocol 1.[17].

[17] *The rule of origin as defined by the Lomé and then the Cotonou agreements is the subject of criticism in that this would be an indirect subsidy for the European industry, would generate distortions of competition and would be contrary to the Kyoto Convention. (c.f.: "EU rules of origin for ACP tuna products" Block and Grynberg. 2003*

2.3 Tuna intended for direct consumption

In principle, a tariff of 22% is applied to EU imports of tuna intended for direct consumption except for the various preferential systems dealt with above. (Table 26).

Table 26:EU tariffs for tuna for uses other than production, 2005 (source: TARIC)

<table>
<tr><th rowspan="2">N. TARIC</th><th rowspan="2">Description</th><th colspan="7">Tariffs %</th></tr>
<tr><th>ACP</th><th colspan="5">Other specifics</th><th>Third countries</th></tr>
<tr><td>03023190</td><td>Thunnus alalunga, fresh and refrigerated, other uses</td><td rowspan="14">0</td><td rowspan="7">0 (Algéria, Andorra, Croatia, Lebanon, Macedonia, Morocco, San Marino, Tunisia, Turkey, Albania, Bosnia-Herzegovina, Serbia et Montenegro, GSP « drugs », GSP least advanced countries)</td><td rowspan="14">6.6 (European Free Trde Association: Iceland, Noway, Swiss, Lichtenstein)</td><td rowspan="14">8.8 (Mexico)</td><td rowspan="14">11 (Romania)</td><td rowspan="14">16 (Chili)</td><td rowspan="14">22</td></tr>
<tr><td>03023290</td><td>Thunnus albacares, fresh and refrigerated, other uses</td></tr>
<tr><td>03023390</td><td>Euthynnus/Katsuwonus pelamis, fresh and refigerated, other uses</td></tr>
<tr><td>03023490</td><td>Thunnus obesus, fresh and refrigerated, other uses</td></tr>
<tr><td>03023590</td><td>Thunnus thynnus/Thunnus orientalis,other uses</td></tr>
<tr><td>03023690</td><td>Thunnus maccoyii, fresh nd refrigerated, other uses</td></tr>
<tr><td>03023990</td><td>Others tuna, fresh and refrigerated, other</td></tr>
<tr><td>03034190</td><td>Thunnus alalunga, frozen, autres uses</td><td rowspan="7">0 (Algéria, Andorra, Croatia, Lebanon, Macedonia, Morocco, Saint Marino, Tunisia, Turkey, Albania, Bosnia-Herzegovina, Serbia et Montenegro, GSP « drugs », GSP least advanced countries)</td></tr>
<tr><td>03034290</td><td>Thunnus albacares, frozen , other uses</td></tr>
<tr><td>03034390</td><td>Euthynnus/Katsuwonus pelamis, frozen, other uses</td></tr>
<tr><td>03034490</td><td>Thunnus obesus, frozen, other uses</td></tr>
<tr><td>03034590</td><td>Thunnus thynnus/Thunnus orientalis, frozen, other uses</td></tr>
<tr><td>03034690</td><td>Thunnus maccoyii, frozen, other uses</td></tr>
<tr><td>03034980</td><td>Other frozen tuna, other uses</td></tr>
</table>

2.4 Tuna fillets

In principle, a tariff of 15% is applied to EU imports of fresh tuna fillets for direct consumption from third countries and a tariff of 18% is applied to EU imports of frozen tuna fillets for direct consumption from third countries. However the EU grants a series of preferential treatments including zero tariffs for ACP countries, to drug-producing countries (up to 30 June 2005), countries benefiting from the special GSP arrangement for long-lasting development and good governance (as of 1st July 2005) and to the less-advanced countries. Other concessions, certainly less advantageous, are granted within the framework of agreements with reciprocal concessions (Table 27).

Table 27: EU tariffs applicable to tuna fillets, 2005 (source: TARIC)

N. TARIC	Description	Tariffs %						
		ACP	Other specifics					Third countries
0304109850 **0304109865** **0304109890**	Fresh and refrigerated fillets (*Thunnus thynnus/orientalis*) Fresh and refrigerated fillets (*Thunnus obesus*) Fresh and refrigerated fillets, other fish including other tuna	0	0 (Algéria, Andorra, Bulgaria, Croatia, FeroesIslands, Iceland [quota], Lebanon, Macédonia, Morocco, Mexico, Norway [quota], San Marino, Tunisia, Turkey, Albania, Bosnia-Herzegovina Serbia et Montenegro, GSP « drugs », GSP least advanced countries)	4.5 (European Free Trade Association, EFTA : Iceland, Norway, Swiss, Lichtenstein)		7 (Romania)	10.9 (Chili)	15
0304204510 **0304204520** **0304204590**	Frozen fillets (*Thunnus thynnus/orientalis*) Frozen fillets (*Thunnus obesus*) Frozen fillets, other tuna		0 (Algéria, Andorra, Bulgaria, Croatia, Falkland Islands, Iceland, Lebanon, Macedonia, Morocco, San Marino, Tunisia, Turkey, Albania, Bosnia-Herzegovina Serbia et Montenegro, GSP « drugs », GSP least advanced countries)	5.4 (European Free Trade Association, EFTA : Iceland, Norway, Swiss, Lichtenstein)	9 (Romania)	7.2 (Mexico)	13.1 (Chili)	18

2.5 Raw tuna for processing

All raw material for processing, fresh and frozen, is imported by the EU at zero tariff (Table 28).

Table 28: EU tariffs for raw material for processing, 2005 (source: TARIC).

N. TARIC	Description	Tariffs %		
		ACP	Other specifics	Third countries
03023110	*Thunnus alalunga*, fresh and refrigerated, to be processed as products under n. 1604			
03023210	*Thunnus albacares*, fresh and refrigerated, to be processed as products under n. 1604			
03023310	*Euthynnus/Katsuwonus pelamis*, fresh and refrigerated, to be processed as products under n. 1604			
03023410	*Thunnus obesus*, fresh and refrigerated, to be proecssed as products under n. 1604			
03023510	*Thunnus thynnus/Thunnus orientalis*, fresh and refrigerated, to be processed as products under n. 1604			
03023610	*Thunnus maccoyii*, fresh and refrigerated, to be processed as products under n. 1604			
03023910	Other tuna, fresh and refrigerated, to be processed as products under n. 1604			
03034111 -whole (03034111) -gutted, gilled (03034113) -others (e.g. beheaded, 03034119)	*Thunnus alalunga*, frozen, to be processed as products under n. 1604			
03034212 -whole (03034212 weighting more than 10 kg/piece ; 03034218 others) - gutted, gilled (03034232, weighting more than 10 kg/piece ; 03034238 others) -others (e.g., beheaded, 03034252, weighting more than 10 kg/piece ; 03034258 others)	*Thunnus albacares*, frozen, to be processed as products under n. 1604		0	
03034311 -whole (03034311) -gutted, gilled (03034313) -others (e.g., beheaded, 03034319)	*Euthynnus/Katsuwonus pelamis*, frozen, to be processed as products under n. 1604			
03034411 -whole (03034411) -gutted, gilled (03034413) -others (e.g., beheaded, 03034419)	*Thunnus obesus,* frozen, to be processed as products under n. 1604			
03034511 -whole (03034511) -gutted, gilled (03034513) -others e.g., beheaded, 03034519)	*Thunnus thynnus/Thunnus orientalis*, frozen, to be processed as products under n. 1604			
03034611 -whole (03034611) -gutted, gilled (03034613) -others (e.g., beheaded, 03034619)	*Thunnus maccoyii*, frozen, to be processed as products under n. 1604			
03034911 -whole (03034931) -gutted, gilled (03034933) -others (e.g., beheaded, 03034939)	Other tuna, frozen, to be processed as products under n. 1604			

2.6 Tuna loins

A tariff of 24% is applied to EU imports of tuna loins from third countries. However, a tariff quota established every two years allows importation at a tariff of 6% of an annual quota of 4,000 tonnes of loins for processing. Once again there is a series of preferences which reduce the tariffs to zero for the ACP countries, the drug producing countries (up to 30 June 2005), countries benefiting from the special GSP arrangement for sustainable development and good governance (as of 1 July 2005) and the least advanced countries (Table 29).

Table 29:EU tariffs for tuna loins, 2005 (source: TARIC)

<table>
<tr><th rowspan="3">N. TARIC</th><th rowspan="3">Description</th><th colspan="9">Tariffs %</th></tr>
<tr><th rowspan="2">ACP</th><th colspan="5" rowspan="2">Other specifics</th><th colspan="2">Third countries</th></tr>
<tr><th>quota</th><th>general</th></tr>
<tr><td>1604141620</td><td>Thunnus thynnus/Thunnus orientalis, loins, to be processed</td><td rowspan="6">0</td><td rowspan="6">0 (Algéria, Andorra, Bulgaria, Croatia [quota], Lebanon, Macédonia, Morocco, San Marino, Tunisia, Turkey, GSP drug (up to July2005) – sustainable development and good governance, least advanced countries GSP</td><td rowspan="3">3 (Roumania [quota])</td><td rowspan="6">7.2 (European Free Trade Association, EFTA : Iceland, Norway, Swiss, Lichtenstein)</td><td rowspan="6">6 (Mexico [quota])</td><td rowspan="3">12 (Croatia, Romania)</td><td rowspan="3">6</td><td rowspan="6">24</td></tr>
<tr><td>1604141630</td><td>Thunnus obesus, loins, to be processed</td></tr>
<tr><td>1604141695</td><td>Other tuna, loins, to be processed</td></tr>
<tr><td>1604141625</td><td>Thunnus thynnus/Thunnus orientalis, loins, other uses</td><td rowspan="3"></td><td rowspan="3">12 (Croatia, Romania)</td><td rowspan="3"></td></tr>
<tr><td>1604141635</td><td>Thunnus obesus, loins, other uses</td></tr>
<tr><td>1604141699</td><td>Other tuna, loins, other uses</td></tr>
</table>

2.7 Canned tuna

A tariff of 24% is applied to EU imports of canned tuna and other tuna preparations. Once again, the ACP countries, the drug producing countries (up to July 2005), countries benefiting from the special GSP arrangement for sustainable development and good governance and the less advanced countries benefit from a total reduction of tariffs. (Table 30). Generally speaking, the new GSP arrangement adopted by the EU in June 2005, which will come into force in January 2006 (with the exception of the system for sustainable development which came into force on 1 July 2005) reduces customs duties for the products of fishing by 3.5% (products of fishing are categorised as "sensitive products" in the GSP). Consequently, the countries benefiting from the GSP will see themselves, as of January 2006, paying customs duties reduced from 24% to 20.5% for processed tuna.

In addition to the preferences referred to above, and following the mediation of the WTO in 2002, the EU adopted regulation 975/2003 which introduced a tariff quota of approximately 25,000 tonnes per annum (more precisely 25,000 tonnes from 1 July 2003 to 30 June 2004, 27,750 tonnes from 1 July 2004 to 30 June 2005 and from 1 July 2005 to 30 June 2006), for exports of canned tuna from Thailand (52% of the quota), from the Philippines (36%), from Indonesia (11%), as well as from other third countries (1%).

Table 30: EU tariffs for canned tuna, 2005 (source: TARIC)

<table>
<tr><th rowspan="3">N. TARIC</th><th rowspan="3">Description</th><th colspan="9">Tariffs %</th></tr>
<tr><th rowspan="2">ACP</th><th colspan="6">Other specifics</th><th colspan="2">Third countries</th></tr>
<tr><th></th><th></th><th></th><th></th><th></th><th></th><th>Quota</th><th>général</th></tr>
<tr><td>1604141120</td><td>Thunnus thynnus/Thunnus orientalis canned products, with vegetable oil</td><td rowspan="17">0</td><td rowspan="17">0 (Algéria, Andorra, Bulgaria, Croatia [quota], Lebanon, Macedonia, Morocco, San Marino, Tunisia, Turkey, GSP drug (up to July 2005) – sustainable development regime and good governance, GSP least advanced countries)</td><td rowspan="12">6 (Romania [quota])</td><td rowspan="17">7.2 (European Free Trade Association, EFTA : Iceland, Norway, Swiss, Lichtenstein)</td><td rowspan="17">7.9 (Mexico [quota])</td><td rowspan="17">8 (Chili [quota])</td><td rowspan="12">12 (Croatia, Indonésia [quota], Philippines [quota], Romania, Thaïland [quota])</td><td rowspan="12">12</td><td rowspan="17">24</td></tr>
<tr><td>1604141125</td><td>Thunnus thynnus/Thunnus orientalis, other preparations, with vegetable oil</td></tr>
<tr><td>1604141130</td><td>(Thunnus obesus, canned products, with vegetable oil</td></tr>
<tr><td>1604141135</td><td>Thunnus obesus, other preparation, with vegetable oil</td></tr>
<tr><td>1604141195</td><td>Other tuna, canned products, with vegetable oil</td></tr>
<tr><td>1604141199</td><td>Other tuna, other preparations, with vegetable oil</td></tr>
<tr><td>1604141820</td><td rowspan="2">Thunnus thynnus/Thunnus orientalis, canned products, others</td></tr>
<tr><td>1604207030</td></tr>
<tr><td>1604141830</td><td rowspan="2">Thunnus obesus, canned products, others</td></tr>
<tr><td>1604207040</td></tr>
<tr><td>1604141895</td><td rowspan="2">Other tuna, canned products, others</td></tr>
<tr><td>1604207095</td></tr>
<tr><td>1604141835</td><td rowspan="2">Thunnus thynnus/Thunnus orientalis, other preparations, others</td><td rowspan="5"></td><td rowspan="5">12 (Croatia, Romania)</td><td rowspan="5"></td></tr>
<tr><td>1604207035</td></tr>
<tr><td></td><td rowspan="2">Thunnus obesus, other preparations, others</td></tr>
<tr><td>1604207045</td></tr>
<tr><td>1604141899
1604207099</td><td>Other tuna, other preparations, others</td></tr>
</table>

3 United States customs system

The United States tariffs are published in the document entitled "Harmonized Tariff Schedule" (HTS), printed each year by the International Tariff Commission. In brief, the HTS provides two tariff levels:

1. Any country, with exemptions based on the GSP and bilateral agreements (I);
2. Products from Cuba, Laos and North Korea (II).

3.1 Preferential tariffs and tariff quotas

Table 31 shows the relevant preferential tariffs for imports of tuna to the United States on the basis of bilateral and multilateral agreements. The acronyms for the agreements will be used in the following tables.

Table 31: Preferential tariffs for the United States (source: USITC).

Code	Agreement	Beneficiaries	Contents and objectives
A	GSP	WTO and IMF developing countries members sharing some democratic and free trade economy values	Implementation of the WTO policies on trade liberalisation
A*		Countries A less certain countries	
A+		Least advanced countries amongst countries A	
CA	North America Free Trade Agrement (NAFTA) – goods from Canada	Canada and Mexico	Free trade areas creation aiming establishment of the American Free Trade Area (AFTA)
MX	North America Free Trade Agreement (NAFTA) goods from Mexico		
CL	USA-CHILI free trade agreementi	Chili	
E	Caribbean Basin Economic Recovery Act (CBERA)	Caribbean countries	
R	Caribbean Basin Trade Partnership Act (CBTPA)		
J	Andean Trade Promotion and Drug Eradication Act (ATPDEA)	Colombia, Ecuador, Peru and Bolivia	
D	African Growth and Opportunity Act (AGOA)	African countries	Promoting development in Africa through lower tariffs implementation. Other measures for democratic and market economy countries dismantling barriers tto US investments
AU	USA-AUSTRALIA free trade agreement	Australia	Free trade areas création
IL	USA-ISRAEL free trade agreement	Israël	
JO	USA-JORDAN free trade agreement	Jordan	
SG	USA-SINGAPORE free trade agreement	Singapore	

In addition to these preferences, the agreement known as "Compact of Free Association" between the United States, Micronesia and the Marshall Islands, grants free access to canned tuna from these countries for a quota which must not exceed 10% of tuna consumption in the United States.

3.2 Rules of origin

The country of origin is, in accordance with the legislation of the United States, the country in which the goods were manufactured, produced or grown. If the process or the material added in another country "makes a substantial change", namely changes the name, use and characteristics of the original material, the origin must be considered to be the country in which the change took place. The presence of a "substantial change" is evaluated for each individual case.

The preferential tariffs for the United States, both with a reciprocity clause (free trade agreements, NAFTA) and without this clause (GSP, AGOA, CBERA, CBPTA), are subject to strict rules of origin. The goods which qualify for origin in the beneficiary country include the following:

- goods manufactured, produced or grown in the beneficiary countries, or;
- goods in which the sum of the costs or the value of the material produced or substantially changed in the beneficiary countries, as well as the direct costs of processing operations in the beneficiary countries is equal to or greater than 35% of the estimated value of the goods.

The rules of origin may have other clauses depending on the specific agreement.

3.3 Tariffs for fresh, refrigerated and frozen tuna

In principle, any import of fresh, refrigerated and frozen tuna benefits from a zero tariff (both general and special).

Table 32:Tariffs for imports to the United States of fresh (refrigerated) and frozen tuna (source: USITC).

Code	Products	Tariffs		
		I		II
		General	Spécial	
0302.31.00.00	ALB fresh	zero	zero	zero
0302.32.00.00	YFT frais	zero	zero	zero
0302.33.00.00	SKJ freshs	zero	zero	zero
0302.34.00.00	BET - fresh	zero	zero	zero
0302.35.00.00	BFT and PBF - fresh	zero	zero	zero
0302.36.00.00	SBF - fresh	zero	zero	zero
0302.39.01.00	Other tuna - fresh	zero	zero	zero
0303.41.00.00	ALB - frozen	zero	zero	zero
0303.42.00.20	YFT - frozen	zero	zero	zero
0303.42.00.40	SKJ - congelé	zero	zero	zero
0303.42.00.60	BET - frozen	zero	zero	zero
0303.43.00.00	BFT and PBF - frozen	zero	zero	zero
0303.44.00.00	SBF - frozen	zero	zero	zero
0303.45.00.00	ALB - frozen	zero	zero	zero
0303.46.00.00	ALB - frozen	zero	zero	zero
0303.49.01.00	SKJ - frozen	zero	zero	zero

3.4 Tariffs for tuna loins

Tuna loins of a weight in excess of 6.8 kg (yellowfin tuna) are subject to a tariff of 1.1 cents per kilo. The tariff is zero for developing countries which benefit from the GSP. Tuna loins of a weight lower than 6.8 kg (skipjack) are subject to a tariff of 6%. The tariff is zero for developing countries which benefit from the GSP except for Thailand and Colombia.

Table 33:Tariffs for imports to the United States of frozen and pre-cooked loins (source: USITC).

Code	Products	Tariffs			
		I			II
		General	Special		
1604.14.40.00	Tuna loins >6,8 kg	35 %	zero (A+,AU,CA, CL,D,E,IL,J,JO,SG)	0.2¢/kg (MX)	45 %
1604.14.50.00	Tuna loins <6,8 kg	6 %	zero (A* except Thaïland and Colombia,AU,CA, CL,E,IL,J,JO, MX)	3 % (SG)	25 %

3.5 Tariffs for canned tuna

Canned tuna (as well as tuna in foil pouches) in oil is subject to a tariff of 35%, with the exception of tuna from the less advanced countries which benefit from zero tariff. Other types of canned tuna (for example, natural tuna) can be imported at a tariff of 6% for a quota equivalent to 4.8% of canned tuna consumption in the United States in the previous year. The tariff above the quota is 12.5%. The less advanced countries benefit from zero tariff.

Table 34:Tariffs for imports to the United States of canned tuna (source: USITC)

Code	Products	Tariffs					
		I					II
		General	Special				
1604.14.10.00	Tuna and SKJ cans, with oil	35 %	zero (A+,AU,CA,D, IL)	7 % (MX,R)	17.5 % (JO)	28 % (SG)	2.8¢/kg
1604.14.10.10	Tuna and SKJ in < 6.8 kg (gross weight) pouches						
1604.14.10.91	ALB cans, with oil						
1604.14.10.99	Other tuna cans, with oil						
1604.14.22.00	Tuna and SKJ in < 7 kg (gross weight) cans, other than oil (quota)	6 %	zero (A+,AU,CA,D, IL,JO)	1.2 % (MX,R)	3 % (SG)	4.8 % (CL)	25 %
1604.14.22.51	ALB in < 6.8 kg (gross weight) pouches, other than oil (quota)						
1604.14.22.59	ALB in > 6.8 kg (gross weight) pouches, other than oil (quota)						
1604.14.22.91	Other tuna in < 6.8 kg (gross weight) pouches, other than oil (quota)						
1604.14.22.99	Other tuna in > 6.8 kg (gross weight) pouches, other than oil (quota)						
1604.14.30.00	Tuna and SKJ in < 7 kg (gross weight) cans, other than oil (over quota)	12.5 %	zero (A+,AU,CA,D, IL,JO)	2.5 % (MX,R,JO)	9.3 % (SG)	10 % (CL)	
1604.14.30.51	ALB in < 6.8 kg (gross weight) pouches, other than oil (over quota)						
1604.14.30.59	ALB in > 6.8 kg (gross weight) pouches, other than oil (over quota)						
1604.14.30.91	Other tuna in < 6.8 kg (gross weight) pouches, other than oil (over quota)						
1604.14.30.99	Other tuna in > 6.8 kg (gross weight) pouches, other than oil (over quota)						

3.6 Special tariffs for tuna in foil pouches

In accordance with chapter 98 of the HTS "Special Classifications", tuna in foil pouches of less than 6.8 kg, gross weight (code: 9821.01.01) imported from Bolivia, Colombia, Ecuador and Peru, the countries benefiting from the ATPDEA, is imported at zero tariff by the United States (in a similar way to the EU "drug" GSP), provided that the raw tuna has been caught by the United States fleet or by that of the beneficiary countries and that the tuna in foil pouches has been processed in a beneficiary country.

4 Customs system in Japan

Japan has set up a general system which applies to all products, together with exemptions. Temporary systems are applied for certain products, at a lower level than for the general system.

WTO duties are applied to countries which are members of the WTO and to non-members with whom Japan has signed bilateral agreements, particularly by virtue of the most favoured nation clause[18]. A series of tariff concessions is applied in favour of Singapore further to the "Agreement between Singapore and Japan for a new economic partnership". The WTO and Singapore duties are applied if they are lower than the general tariff, or the temporary tariffs. The lowest tariffs are applied, within the framework of the GSP arrangement, to certain developing countries.

All fresh, refrigerated and frozen tuna is imported into Japan subject to a WTO tariff of 3.5%, with the general tariff (not applied) being 5%. All canned tuna and *fushi* is imported under a general tariff of 9.6%, but developing countries which benefit from the GSP export canned skipjack tuna and other bonitos (*Euthynnus* spp.) at a tariff of 7.2%, and other canned tuna at a tariff of 6.4%. The less advanced countries may export *Euthynnus* spp. as well as other canned tunas at zero tariff.

Amongst the principal countries exporting to Japan are Indonesia (principal exporter of *fushi* products) and Thailand (principal exporter of canned products) which benefit from the GSP clause (source: APEC).

[18] *In accordance with the most favoured nation clause, which appears in the WTO agreements, any advantage, favour, privilege or immunity granted by a contracting party to a product originating in or intended for any other country will be, immediately and without any conditions, extended to any similar product originating in or intended for the territory of all the other contracting parties.*

CHAPTER 11 - TECHNICAL, HEALTH AND ENVIRONMENTAL STANDARDS

Tuna remains first and foremost a foodstuff, therefore subject to technical standards - labelling, packaging, quality, etc. - and health standards. At international level, these aspects are governed for canned tuna, by two Codex documents:

- the code of international application for canned fish, crustaceans and molluscs (appertised)-*Codex Alimentarius* CAC/RCP 10-1976;

- standard for canned tuna and bonito - *Codex Alimentarius* STAN 70-1981 - Rev 1995.

1 Technical and health standards within the European Union

1.1 Technical standards

1.1.1 Labelling

In accordance with EC directive EC/2000/13 relating to the harmonisation of the legislations of the Member States in relation to labelling and presenting food as well as the advertising produced in relation to the latter, the labelling of food involves the following obligatory references alone:

1) the sale description;
2) the list of ingredients;
3) the quantity of certain ingredients or categories of ingredients;
4) for pre-packaged food, the net quantity (as well as the drained quantity of food stored in liquid);
5) the deadline date for consumption;
6) the special conditions for storage and use;
7) the name or company name and address of the manufacturer or packer, or of a vendor established within the Community
8) the place of origin or provenance if omitting this information would be likely to mislead the consumer in relation to the actual origin or provenance of the foodstuff;
9) instructions for use if omitting this information would prevent the foodstuff from being used in an appropriate way.

The information referred to above must be supplied in one or several EU languages, without prejudice to any translation into other languages. The sale of products indicating information in languages which are not comprehensible in the countries where the products are to be sold is strictly prohibited.

Regulation EC/1536/92 establishes common marketing standards for canned tuna and bonito. Without prejudice to the stipulations indicated by the labelling directives (EC/2000/13), the sale description show on the outer packaging of canned tuna and bonito must indicate the following:

- the type of fish used (tuna or bonito);
- the presentation in which the fish is marketed (whole, in chunks, in flakes), the description of the covering medium used (olive oil, vegetable oil, etc)[19];
- specific details about culinary preparation (in the case of tuna salads).

The sale description cannot, under any circumstances, consist of a combination of the words "tuna" and "bonito". Member States may impose additional conditions on labelling.

1.1.2 Canned goods

In accordance with regulation EC/1536/92, the sale name "canned tuna or bonito" can only be used for products covered by the codes of the Combined Nomenclature (CN) 1604/14/10, formerly 1604/20/70. They must be prepared exclusively from one of the following species: *Thunnus albacares, Thunnus alalunga, Thunnus thynnus, Thunnus maccoyii*, other species of the *Thunnus* and *Katsuwonus pelamis* genus. The mixture of different species of fish in the same can is not authorised. However, culinary preparations based on tuna or bonito flesh involving the disappearance of its muscular structure may contain the flesh of other fishes which have undergone the same process, provided that the proportion of tuna or bonito, or their mixture, is at least equal to 25% of the net weight.

The tuna may be packaged in various forms. Specifications applicable to each description are as follows:

- "Whole": the muscle mass is cut transversely and is presented in the form of a whole slice, consisting of a single piece or reconstituted by the compacted assembly of one or several portions of flesh; the presence of flakes is tolerated up to the proportion of 18% of the weight of fish. However, if the muscle mass is canned raw, the presence of flakes is prohibited; fragments of flesh may however be added, if necessary, to complete the filling of the container;

- "In chunks": fragments of flesh whose initial muscle structure is retained and whose dimension in the smallest of its directions must not be below 1.2 cm. The presence of flakes is tolerated up to a proportion of 30% of the weight of fish;

- "In fillets":
  a) longitudinal strips of muscle taken from the muscle mass in parallel with the spinal column;
  b) strips of muscle coming from the abdominal wall; in this case the fillets may also be referred to as "ventreche";

- "In flakes": fragments of flesh whose initial muscle structure is retained and whose size is heterogeneous;

- "Shredded": particles of flesh of uniform dimensions, not constituting a paste.

Any other form of presentation or any culinary preparation is accepted, provided that it is clearly identified in the sale description.

[19] *The description "in olive oil" is reserved for products using olive oil alone, excluding any mixture with oils of another kind. The designation "natural" is reserved for products using the natural juice (liquid exuding from the fish at the time of cooking) or brine or water, possibly with the addition of herbs, spices or natural flavourings. The designation "in vegetable oil" is reserved for products using refined vegetable oils, alone or in a mixture. The designation of any covering juice used must be clearly and explicitly mentioned, using its usual commercial name.*

1.1.3 Fresh products intended for the consumer

With regard to fresh products, additional requirements relating to providing the consumer with information are applicable.
The need to ensure correct consumer information with regard to product origin was introduced in the EU by regulation EC/104/2000 concerning the common organisation of markets within the fishing and aquaculture sector. The terms and conditions of application are defined by regulation EC/2065/2001 of the Commission relating to consumer information within the sector of the products of fishing and aquaculture.

In accordance with the aforementioned regulations, fish under code NC03, therefore including tuna, cannot be offered for retail sale to the end consumer unless an appropriate display or label indicates:

1. The commercial name of the species: every Member State of the EU has supplied a list of corresponding commercial and scientific names to the Commission; however, the indication of the scientific name, in Latin, is not obligatory unless required by the consumer;

2. The type of production (caught at sea, in inshore waters, farming);

3. The zone of capture: regulation EC/2065/2001, in appendix, has supplied a list of zones of capture with their definitions, which are based on the zones of capture established by the FAO Directory of "Fishing Statistics".

Regulation EC/104/2000 and EC/2065/2001 specifically exclude the application of these obligations to canned products (these products come under code 1604).

1.2 Health standards

Tuna is subjected to a certain number of health risks from the point when it is caught until it is marketed:

- biological danger: development of histamine and the development of pathogenic flora;

- physical danger: contamination by particles or debris associated with the fishing zone or fishing operations (hooks), transportation or processing (metals, nature and maintenance of surfaces, etc)

- chemical dangers: associated with the product's natural environment (heavy metals, in particular mercury); or contamination by chemical products associated with the operations present at the time of carrying out fishing, transportation and processing.

Up to 1 January 2006, directive 91/493/EEC establishes the health regulations governing the production and marketing of products of fishing within the European Union. As of 1 January 2006, the hygiene of products of fishing will be governed by regulation EC/853/2004 relating to the hygiene of food and the associated texts which repeat the same principles as a whole.

1.2.1 Control systems

Any company producing and marketing products of fishing on the Community market must comply with the standards put in place by directive 91/493 establishing the health rules governing the production and marketing of the products of fishing. As of 1 January 2006, this directive will be replaced by regulation 853/2004 relating to the hygiene of food.

The establishments which produce fish and products of fishing must also have authorisation for this purpose, and must then be regularly inspected, by the relevant authority in the Member State (veterinary services, health services, etc). This authorisation to carry out an activity, also referred to as health approval, is based in particular on implementing an internal system of control known as HACCP (Hazard Analysis and Critical Control Point) as well as on the general conditions of hygiene for the establishment.

1.2.2 HACCP

Establishments must implement a self monitoring system known as HACCP.

The Commission's directive 94/356/EEC concerning terms and conditions for applying directive 91/493/EEC identifies the principles with which any HACCP system must comply in order to be recognised:

- Identification of dangers, risk analysis and determination of measures required to control these;
- Identification of critical points;
- Establishment of critical limits for each critical point;
- Establishment of procedures for supervision and control;
- Establishment of corrective action which must be taken when required;
- Establishment of procedures for verification and revision;
- Establishment of documentation relating to all procedures and registrations.

An HACCP plan must be supplied for each family or type of product.

On the subject of canned fish, the principal risks are associated with the potential presence of histamine in the flesh, heavy metals or with the presence of botulinic toxin in canned goods (only if inadequately sterilised)

1.2.3 Histamine

The maximum limits as well as the technique for identifying histamine content are established by directive 91/493/EEC. Examinations must be carried out using reliable methods which are scientifically recognised, such as the method of a high-performance liquid chromatography (HPLC). In accordance with the directive, nine samples must be taken from each batch; the average content must not exceed 100 ppm. Two samples may have a content in excess of 100 ppm but under 200 ppm, and no sample must have a content exceeding 200 ppm.

These limits only apply to fish from the *Scombridae* and *Clupeidae* families. Tolerances are proposed for products which have undergone an enzyme maturing treatment in brine.

1.2.4 Other internal checks

The HACCP system must include in particular sterilisation controls involving recording durations and temperatures, quality of cooling water, verification of crimping, etc.

1.2.5 Heavy metals

Regulation EC/466/2001 establishes the maximum content for contaminants in food (produced within the EU or imported). With regard to tunas (*Euthynnus* spp. and *Thynnus* spp.) the maximum content of lead is 0.2 ppm, the maximum content of cadmium is 0.05 ppm and the maximum content of mercury is 1.0 ppm. Systems of control and monitoring covering mercury, cadmium and lead, which are able to ensure that the products marketed do not exceed these limits, must be in place.

1.2.6 Additives and colorants

Food additives are defined in Community legislation as "any substance not usually consumed as a foodstuff in itself, and not usually used as a characteristic ingredient of the foodstuff, whether or not it possesses a nutritional value, and whose intentional addition to food, for a technological purpose, has the effect that it does itself become, or its by-products become, directly or indirectly, a component of these foods." (Directive 89/107/EEC)

Community legislation on food additives is based on the principle that only explicitly authorised additives may be used. Most additives can only be used in limited quantities in certain food.

Food additives can only be authorised if:

- there is a technological need to use them,
- they do not mislead the consumer,
- they do not present any risk to the consumers' health.

Prior to their authorisation, the safety of food additives is evaluated by the Scientific Committee on Human Food, a group of experts which advises the European Commission on scientific matters relating to food products.

Hydrolysed proteins, considered as additives, are not authorised in canned tuna, in accordance with a response of Commissioner Byrne to the European Parliament in December 2003.

1.2.7 Recognition of third countries

The basic principle is that imported products of fishing must have been produced under conditions of hygiene and control "at least equivalent" to those in force within the European Union. It is with this aim in mind that the European Union has developed a system of recognising third countries authorised to export their products to the Union and based on the description and recognition of the relevant authorities, the equivalence of applicable health conditions and the recognition of measures for supervising establishments and products (including herein supervision of contaminants). This recognition is granted by decision of the Commission, after an inspection of the third country concerned has been carried out by the Food and Veterinary Office, an office of the European Commission, establishing the list of third countries from which the importation of products of fishing for human consumption is authorised. It is then up to the third country to notify the list of establishments authorised to carry out exports.

Subsequently batches imported to the European Union will be subjected to a documentary control, including in particular a check on the health certificate. These controls involving taking samples are able to check that the products comply with the health standards in force. Rapid alert systems have been put in place, to allow the exchange of information between Member States in the event of irregularities.

1.2.8 Traceability

In accordance with regulation EC/178/2002, establishing the general principles and general stipulations of food legislation, setting up the European Food Safety Authority and establishing procedures relating to the safety of food, traceability is "the ability to retrace, via all stages of production, processing and distribution, the progression of a food, an animal food, an animal which produces food or a substance intended to be incorporated or able to be incorporated in the food or animal feed".

Traceability is therefore a notion which cannot be dissociated from food hygiene and must be established at all stages of production, processing and distribution.

Consequently, foods marketed or likely to be marketed within the EU, must be labelled or identified in a way capable of facilitating their traceability, and, where appropriate, accompanied by relevant documents or information in accordance with the stipulations of application.

It is important to point out at this point that traceability, although defined initially as being for hygiene purposes, is actually a complete tool which can be used to back up a number of quality steps requiring product monitoring.

2 Technical and health standards in the United States

2.1 Technical standards

2.1.1 Labelling

In accordance with federal regulations on canned tuna in the United States, labelling refers to the presence of salt, oil and other covering products. Any presence of colorants and chemical preservative agents (tolerated) must be clearly shown on the label. Colorants are not tolerated if they are intended to camouflage the poor state of preservation or the true quality of the product.

2.1.2 The "standard of identity" for canned tuna

The United States government agency for the health of food and drugs (FDA, Food and Drug Administration) has prepared a "standard of identity" for canned tuna, which is Federal Regulation 21CFR161.190. More specifically, this standard uses a set of organoleptical criteria (colour, texture, etc) and defines the authorised covering products and condiments/flavourings.

Table 35: The "standard of identity" for canned tuna (source: FDA).

Presentation	I - Parts	II - Whole		
Colour	A – Tropical tuna (« Light »)	B – Albacore (« White »)		
Covering juice	1- Water	2 – Vegetable oil (except olive oil)	3 – Olive oil	
Spices/aroma	Salt; glutamate de mono sodium; hydrolised protein; spices, spice oils or extractsépices, vegetable stock ; garlic ; lemon ; vegetable oil or hydrogenated oil			
Salt and sodium level	a – « regular » (< 1,5% salt)	b – « no salt added » (when processed)	c – « very low sodium » (< 35 mg or less in each portion)	d- « low sodium » (140 mg or less in each portion)

In accordance with the federal regulations, tuna must be the only species used and must be in a good state of preservation: it must have the colour and odour typical of tuna which has been handled carefully. Cut or exposed surfaces may only display minimal changes in colour (flesh which is browner or less clear) caused by age, dehydration or microbial activity. Odours which are not typical of tuna must not be present. Frozen tuna must not show any signs of having been re-frozen after defrosting or other examples of incorrect handling.

2.1.3 Packaging

The standard format[20] of the can of tuna for consumption at home is 170 g (6 ounces), net weight, whereas the standard format for canned tuna for the catering business is approximately 2 kg (66.5 ounces). The format for foil pouches is more varied.

Table 36:Formats of canned tuna in the United States

Products	Net weight (ounce)	Net weight (gram)
Tuna cans (home)	6	170
Tuna cans (catering)	66,5	1 890
Tuna pouches and tuna salad in pouches	3	85
	5	140
	7	200
	12,23	350
	43	1 220
	78,5	2 230

It is prohibited to fill the can to overflowing with the covering product.
Finally, federal regulations describe in detail the minimum ratio between fish flesh and covering product per type of canned goods.

2.2 Health standards

The FDA is responsible for monitoring products of fishing, including canned tuna. Production establishments must comply with the specific requirements applicable to producers of low acidity foods; they must also have an HACCP system dealing in particular with checking for histamine and heavy metals. Since 2003, following the September 11 2001 attacks, a system of safeguarding against terrorism has been introduced.

2.2.1 Checks on low acid foods processed by cooking

These requirements are defined in section 21 of the Code of Federal Regulations, parts 108, 113 and 114.

All commercial producers of low acidity foods must register their establishments. They must also document information about thermal processes and values of F_0 (associated with the sterilising value) for all their products. The documentation must be kept for a period of three years, with the FDA being able to check these reports at any time during this period.

It is obligatory for processing plants established on United States territory and for processing plants exporting their products to the United States to have their establishments registered, and they must also keep documentation on processing.

The processing process must be supervised by a manager who is identified by name and whose qualifications must be acknowledged by the FDA. Manufacturers must put in place procedures for destroying batches of goods and for returned goods. They must inform the FDA of any cases of deterioration or deviation in relation to good practices for processing products which have already been marketed.

These rules also apply to exporters.

[20] *By comparison the European market accepts a theoretically unlimited number of formats of cans*

The other obligations for manufacturers and exporters of low acidity foods also cover aspects such as good practices relating to processing, personnel, equipment and procedures, etc.

2.2.2 HACCP

On 18 December 1997, section 21 of the Code of Federal regulations, part 123 entitled "Fish and Products of Fishing" (21CFR 123) came into force. The basic HACCP provisions in the United States and in the EU are similar, but the way in which they are implemented has proved to be different.

In accordance with part 123.13 of section 21, in the absence of a protocol of agreement in relation to checking that the HACCP has been put in place, the responsibility for demonstrating that "positive measures" for ensuring the implementation of the HACCP have been taken lies with the importer. National authorities in the exporting country do not have any obligations within this field. The importer must therefore show a copy of the HACCP plan and demonstrate that he had taken one of the six possible "positive measures", to check that exporters have applied the HACCP regulations. These measures are:

a) obtaining from foreign producers HACCP supervision reports for the batch of products put forward for importation;
b) obtaining certification, permanent or per batch, issued by the foreign authority in charge of health inspection or a relevant third-party certifying that the imported fish or products of fishing have been processed in compliance with HACCP regulations;
c) regularly inspecting the foreign producers' establishments in order to ensure compliance with the HACCP regulations;
d) retaining one copy, in the English language, of the foreign producer's HACCP plan, and a written guarantee from the producer indicating that the fish or products of fishing have been processed in application of the HACCP regulations;
e) regularly testing the fish or products of fishing which are being imported, and retaining one copy, in the English language, and a written guarantee issued by the producer that the fish of products of fishing have been processed in application of the HACCP regulations;
f) other equivalent measures

The FDA manages a programme for sampling and analysing imported products of fishing (including canned tuna) at the point of entry, in order to guarantee compliance with the HACCP. The level of sampling is higher for new exporters, or for exporters who in the past have attempted to introduce products which did not comply with HACCP regulations (subject therefore to an "FDA Import Alert").

2.2.3 Histamine

Section 540.525 of the guide to application of FDA policies "*Decomposition and Histamine Raw, Frozen Tuna and Mahi-Mahi Canned Tuna and Related Species*" establishes limits for histamine in tunas and the common dolphinfish (*Coryphaena hippurus*).

Sampling for histamine is based on batch of 24 cans. A level of histamine equal to or greater than 500 ppm is considered to be a "health risk", but if two or more batches of 24 cans have levels of histamine equal to or greater than 50 ppm, the batch must be rejected in its entirety.

2.2.4 Methyl mercury

Recently, the "methyl mercury" affair created a panic situation amongst North American consumers.

Section 540.600 of the guide to applying FDA policies entitled "Fish, Shellfish, Crustaceans and Other Aquatic Animals - Fresh, Frozen or Processed Methyl Mercury" establishes limits for methyl mercury in canned tuna at 1 ppm, with each lot exceeding this limit having to be considered as damaged and therefore to be rejected.

In March 2001, the FDA published consumer advice which alerted pregnant women and those of childbearing age about the risks of mercury poisoning. Given the chronic toxicity of methyl mercury for the cardiovascular and immune systems, the environmental protection agency (EPA) established stricter limits in June 2001. According to these, adults weighing 70 kg must limit their consumption of fish to:

- 4 portions (0.908 kg) per month of fish at levels of concentration of methyl mercury of between 0.12 and 0.24 ppm, with this group including canned tuna according to estimates issued by the FDA, or
- 3 portions (0.681 g) per month of fish at a level of concentration of methyl mercury of between 0.24 and 0.32 ppm, with this group including fresh and frozen tuna according to FDA estimates, or
- 2 portions (0.454 kg) per month of fish at levels of concentration of methyl mercury of between 0.32 and 0.48 ppm, with this group including fresh and frozen tuna in accordance with FDA estimates.

Certain States have established stricter levels of protection than federal level.

On 22 March 2004, the FDA and the EPA published new advice which clarified previous information. This opinion mentioned, in particular, the low concentration of methyl mercury in canned tuna (use of smaller and younger individuals than those used for tuna steaks). At the same time pregnant women or those of child bearing age and young children are advised not to eat more than 6 ounces (one portion) of white tuna per week, because it has a higher content of methyl mercury than other tunas.

2.2.5 The "bioterrorism act" of 2002

The terrorist attacks of September 11, 2001 reinforced the need to increase security in the United States, including with regard to the safety of food. For this reason, Congress approved the "Public Health Security and Bioterrorism Preparedness and Response Act of 2002" also referred to as the "Bioterrorism Act", signed by the President of the United States on 12 June 2002. The law aims to improve the United States' ability to prevent, prepare for and respond to bioterrorism and other emergencies involving public health. The law came into force in December 2003, and was implemented as of August 2004.

In accordance with the law, any establishment which processes, produces, packages or stores foods intended for consumption in the United States must be registered with the FDA. It is also obliged to appoint an agent from the United States to be responsible for relations with the authorities. Fishing boats and factory vessels are exempted from this obligation.

In the case of exporters, the FDA must receive prior notification of any food imported or offered for importation to the United States. The period of preventive notification is 8 hours. Only batches from registered suppliers will be considered to be suitable for importation. Batches imported by unregistered suppliers will be blocked at the point of entry until the supplier has regulated his position.

3 Environmental labelling

Ecological labelling allows a product to carry a distinctive logo, or a declaration, assuring consumers that the product concerned has been produced in accordance with a set of environmental standards, such as durability of the resource used as raw material, environmental impact of the method of production, or product recyclability. The underlying idea of an ecological labelling programme is that if consumers are correctly informed, their choices could be useful for encouraging the promotion and consumption of products which respect the environment. In this way consumers could lead producers and decision-makers to behave in a way considered to be more environmentally responsible by those promoting the programme.

At the moment, sectors of industry and sylviculture have a wide variety of ecological labelling and certification programmes. The system for allocating the Community ecological label[21] already covers industrial products but notably does not apply to food.

Distributors are showing an increasing interest in food associated with considerations of durable development. This trend has created dynamics in the fishing sector with regard to the development of private ecological labelling programmes, some of which have found their place on the markets. ("dolphin safe"; "MSC"). Moreover, private initiatives are multiplying, involving environmental statements whose credibility is not always easy to establish. The tuna sector was the first in the fishing sector to be abruptly confronted with putting in place ecological labelling. At the moment, the debate on ecological labelling has moved from the environmental organisations alone, in the strict sense of the term, towards organisations of a public nature.

3.1 "Dolphin safe" tuna in the United States

For reasons which are still unknown, in the Central and Eastern Pacific Ocean dolphins mix with schools of yellowfin tuna. For the captains of boats, following the dolphins has always been a very effective way of targeting tuna.

The United States law on the protection of marine mammals (MMPA, "*Marine Mammal Protection Act*") of 1972 establishes strict dolphin protection standards for the national fleet which catches tuna in the Eastern Pacific Ocean. The MMPA contains the prohibition against importing tuna products from countries whose boats catch tuna in the Eastern Pacific Ocean if these boats fail to implement standards identical to those of the United States.

In April 1990, following the boycotting threat made by consumers, American canneries refused to process tuna caught without a device allowing dolphins to escape. The "Dolphin Protection and Consumer Information Act", of November 1990, defines "dolphin safe" as tuna caught "without encircling dolphins" and prohibited the sale of tuna which was not "dolphin safe" in the United States. This encouraged the United States fleet to move into the Central Western Pacific Ocean and to implement a *de facto* embargo on countries which catch tuna by encircling dolphins in the Central and Eastern Pacific Ocean, in particular Mexico and Venezuela.

Subsequently, countries referred to as intermediaries, which process tuna from a country subject to embargo have also been subject to sanctions: Costa Rica, Italy, Japan and Spain, and before them, France, the Netherlands Antilles and the United Kingdom. Several other countries such as Canada, Colombia, New Zealand, South Korea and the Association of Southeast Asia Nations (ASEAN) were considered to be "intermediaries".

In January 1991 Mexico raised the question about the legitimacy of the MMPA within the special group for regulating differences with the former GATT (General Agreement on Tariffs and Trade, now the WTO). In September 1991 the group concluded in favour of Mexico: the United States could not prohibit imports of tuna-based products from Mexico solely for the reason that Mexican regulations relating to the way in which the tuna was produced did not comply with United States regulations. In addition, the GATT rules did not authorise a country to take a commercial measure aimed at attempting to have its own internal laws applied within another country.

[21] *Regulation (EC) NI950/2000 of the European Parliament and Council of 17 July 2000 establishing a revised Community system for allocating the ecological label (OJ l 237 dated 21.09.2000)*

The task of the special group was restricted to examining how the rules of the GATT applied to this matter. It was not asked to judge whether or not the policy in question was correct from an environmental point of view. The special group suggested that the decision of the United States should be modified in order to be brought into conformity with GATT rules. The special group was also invited to issue an opinion on the provision in United States legislation which stipulated that tuna-based products should be labelled as "Dolphin safe", leaving consumers the choice about whether or not to buy these products. It concluded that this measure did not contravene GATT rules since it intended to prevent the practice of deceitful advertising for all tuna-based products, whether imported or produced within the country.

Meanwhile, Mexico had decided not to pursue the matter and the special group's report was never adopted, in spite of the wishes of a number of "intermediary" countries. In 1992, the EU filed its own claim. The proceedings resulted in a second report being produced by the special group, similar to the first one which, once again, was not adopted.

Mexico and the United States embarked on their own bilateral consultations with the aim of reaching an agreement outside the framework of the GATT, and this resulted in the preparation of the Agreement on the International Dolphin Conservation Programmes (AIDCP) within the IATTC. The AIDCP laid down a system by virtue of which tuna caught with seines under conditions not resulting in death or serious injury to dolphins was qualified as "dolphin safe". This system is based on a list of captains of boats which have made a commitment to comply with the stipulations of the programme, the embarkation of observers, the regular transmission of information by boats, and on the issuing of "dolphin safe" certificates by the relevant national authorities which must accompany the tuna up until its final utilisation. As a contracting party of the IATTC the United States supported the AIDCP and undertook to transpose these rules into American law, which required a modification of the Dolphin Protection Act.

In parallel with the implementation of the AIDCP, the environmentalist NGO Earth Island Institute (EII) developed its own monitoring plan and a number of canneries joined this, thus ensuring access to the American market. Consequently, the Secretary of Trade was immediately attacked by EII and other non governmental organisations (NGOs) which fought to retain the previous definition of "dolphin safe" (tuna caught "without encircling" dolphins), considering that the methods allowing dolphins to escape when hauling in the seine did not offer sufficient guarantees with regard to the absence of impact on dolphin populations (mortality associated with stress).

In April 2003, the Federal Court of San Francisco required that the original definition of the label "dolphin safe", as provided for under the Dolphin Protection Act, in the United States, should be maintained. This complex argument unfortunately had numerous detrimental effects on international trade, with Mexico in particular finding it impossible to export its catches to the USA.

The European Community is also a contracting party of the IATTC and adopted the measures necessary for applying the Tuna Tracking System. As a consequence, following the entry into force of regulation 882/2003, any tuna imported from the Eastern Pacific Ocean must be accompanied by catch documentation certifying whether the tuna has been caught with or without a risk to dolphins. Membership of the Dolphin safe programme remains voluntary. Neither of the two definitions has been recognised or rejected by the Community and, at the moment, canners and those involved on the tuna market remain free to join one or other of the "dolphin safe" systems, either the EII or the AIDCP.

3.2 The position of the public administration on ecological labelling

3.2.1 The European Community

In December 1997, the European Commission's notification on the future of the market for products of fishing within the European Union[22] for the first time tackled the need to discuss non-discriminatory certification programmes, based on the free membership of participants. In 2002, the Commission adopted a notification defining a community action plan aimed at integrating the requirements of environmental protection within the common fishing policy[23] and announced its intention to launch a debate on the ecological labelling of the products of fishing. In June 2005, a Communication launching the debate and supplying topics of discussion was adopted.

3.2.2 The FAO

The discussion on ecological labelling began in the course of the 22nd session of the FAO fishing Committee (COFI) in 1997, in response to the creation of the MSC.

Little progress has been made, essentially because of fears that ecological labelling might create barriers to commercial trade. Experts do however agree that if guidelines were perfected, they ought to comply with the FAO code of conduct for responsible fishing. At the time of its 25th session, the COFI invited the FAO to draw up guidelines on ecological labelling for fish and products of sea fishing. The final text of the guidelines was adopted in the course of the 26th session of the COFI in March 2005.

3.2.3 The World Trade Organisation

In accordance with the undertaking made in paragraph 32,iii) of the Doha Programme for development to pay special attention to stipulations on the subject of environmental labelling, discussions were held within the WTO committee about trade and the environment, following the Doha ministerial conference in 2001.

[22] *European Commission notification to the European Parliament - the future of the market for products of fishing within the European Union: responsibility, partnership, competitiveness. Final COM (1997) 719 of 16/12/1997*

[23] *Commission notification defining a Community action plan for integrating the requirements for environmental protection within the common fishing policy. Final COM (2002) 186 28/05/2002.*

SECTION 4: TRADE - PRODUCTS - MARKET

International flows of tuna products are the consequence of the development of the world tuna economy since the 1950s. Historically, the world tuna economy was based on three major foci of consumption: Japan, the United States and Europe. Responsible for the vast majority of world consumption of tuna products, whether in the form of canned tuna or in the form of canned tuna and *sashimi* in the case of Japan, these countries initially exploited fishing sites close to their coasts, in both temperate and tropical zones. At first, in fact, the major consumer countries completely controlled the supply sectors of their own markets, fishing for tuna raw material using their fleets and if necessary processing this tuna in factories based on their national territory. However, sustained by strongly increasing demand, their production could not however develop solely on the basis of the stocks of tuna present in their traditional fishing zones. The tuna fleets of the major industrialised countries then extended their field of activity southwards.

Following the southerly deployment of the fishing fleets of the developed countries, growth in production was from then on based on fishing for tropical species. The extension of the limit of the EEZs to 200 miles led to an increase in the numbers of countries involved in world catches of tuna, which, nevertheless, are still dominated by a small number of traditional major fishing nations. Within the processing sector, a large number of tuna canning factories have moved from their original location in the consumer countries (United States, Europe, Japan) to certain countries in the south where they benefit from cheap labour costs and the proximity of the most productive fishing zones. Insofar as the countries producing tuna raw material and the major foci for the consumption of canned tuna have remained more or less the same over the last 50 years, it is the multiplication of countries producing canned tuna which is the principal cause of the strong growth in international trade in tuna products.

However, despite its globalisation, the tuna economy still remains compartmentalised, because of the dominant positions acquired by certain companies, and also because of the specific nature of types of consumption on the three major end markets: this is why it is important to analyse it in terms of flow. After a historical recap of the world trade in tuna products, this chapter describes the current state and trends of the principal international flows.

CHAPTER 12 - HISTORY OF WORLD TRADE IN TUNA PRODUCTS

The tuna economy has developed very steadily since the end of the Second World War: estimated at approximately 400,000 tonnes in 1950, world production of major tuna exceeded 4 million tonnes in 2002. However this development was not homogeneous either in terms of fishing zones, or in terms of species fished. As long ago as the 1950s, temperate tuna offered few prospects of increased catches. The spatial extension of tuna fisheries between 1950 and 1960 therefore encouraged the development of tropical fishing zones. Consequently the tropical species, skipjack, yellowfin and bigeye tuna, would quickly represent the vast majority of catches, reaching 48%, 33% and 11% respectively of the average total production in the course of the period 1991-2002 (see chapter 4). It was mainly on the basis of these species that world trade in tuna products was to develop.

1 Globalisation of the tuna economy

Up to the beginning of the 1960s, the world tuna economy was organised around three dominant sectors. The Californian sector satisfied the domestic demand for canned tuna in the United States thanks to its processing factories based in San Diego and San Pedro, which obtained their supplies of raw material from the American tuna fleet operating in the Central Eastern Pacific. The European sector was based on fishing in the northern, then tropical, section of the Atlantic Ocean carried out by Spanish and French tuna fleets, whose catches supplied the canneries of countries in Mediterranean Europe, which sold their production on their domestic market.

Finally, the Japanese sector was already becoming the most complex and the most open. It supplied the Japanese canned tuna and *sashimi* market, but as long ago as the 1950s, it exported tuna raw material and canned tuna to the American market, whose strongly increasing demand could not be completely satisfied by supplies from the Californian sector. The Japanese sector was based on the activity of a tuna fleet originally present in the North Pacific but whose range of action rapidly extended after the early 1950s to the Central Western Pacific, then to the Indian Ocean and the tropical zone of the Atlantic. In this way the Japanese fleet opened the way to the complete cover of the inter-tropical ocean zone by world tuna fleets.

In the course of the 1950s, pole and line vessels, which, after the end of the Second World War, constituted the basis of the world tuna fleet, declined in comparison with other types of boats. The Japanese replaced them gradually with long liners whereas the Americans adopted purse seiners from 1957 onwards, copied in this regard by a few Japanese shipowners and, in particular, by virtually all the European shipowners from 1963 onwards. This modernisation of the world fleet accelerated the spatial extension of the tuna fisheries. Although the tuna sectors then became global from the point of view of the extension of the fishing zones, their complete internationalisation would be the result of a combination of economic and political phenomena which occurred after the end of the 1960s (Mongruel 2000).

2 The increase in numbers of countries producing tuna raw material

The spatial extension of tuna fisheries was gradually accompanied by a deconcentration of world catches per country, due to the entry of newly arrived tuna shipowners. This phenomenon, perceptible as far back as end of the 1960s, was to accelerate in the course of the 1970s and 1980s. Subsequently, the increase in numbers of countries producing tuna raw material and the shift of fishing zones would also result in the relocation of processing equipment, resulting in additional numbers of countries producing canned tuna, which will be listed in the paragraph below.

The early beginnings of the globalisation of the tuna economy manifested themselves with the appearance, in the course of the 1960s, of strong demand for tuna products on the North American market, which national production facilities could not manage to cover in spite of modernisation. Because of the level and stability of American currency, this outlet was very attractive to foreign operators. Already present on this market, with supply networks covering the whole of the fishing zones exploited, the major Japanese companies trading in tuna products then joined up with Taiwanese and South Korean shipowners, whose fishing campaigns they financed, as well as guaranteeing exports to the American market. Taiwan then became the fifth world producer in 1966, then the third in 1968, whereas South Korea, the seventh world producer in 1966, as far back as 1969 came in just behind the top trio formed by Japan, the United States and Taiwan. As in the case of the Japanese shipowners, the Taiwanese and Korean shipowners mainly used long liners, as well as a minority of purse seiners. In parallel with the fishing operations, Taiwan equipped itself with canneries, which sold half of their products on the American market and half on the European market (Mongruel 2000).

Starting from the second half of the 1970s, three major events precipitated the arrival of new players within the world tuna economy: this concerned *i)* most of the coastline States adopting the extension of the limit of the EEZ to 200 miles, *ii)* the customs disarmament of the GATT, which promoted the free circulation of tuna raw material and, to a lesser extent, canned tuna, for the industry and *iii)* the signing of the Lomé agreement between the ACP countries and the EC, opening up the large European canned tuna market to numerous developing countries bordering the three oceans. The equivalent of this preferential customs system would be set up in 1994 for the South American countries in the form of the "GSP-drugs" agreement. Very rapidly, new entrants filled out the ranks of the traditional major producers of frozen tuna: these were principally the countries in Southeast Asia (Indonesia, the Philippines and the Maldives) and countries in Central and South America (Mexico, Ecuador, Venezuela and Colombia). The world distribution of the production of tuna raw material was then completely overturned, marked by the deconcentration of catches.

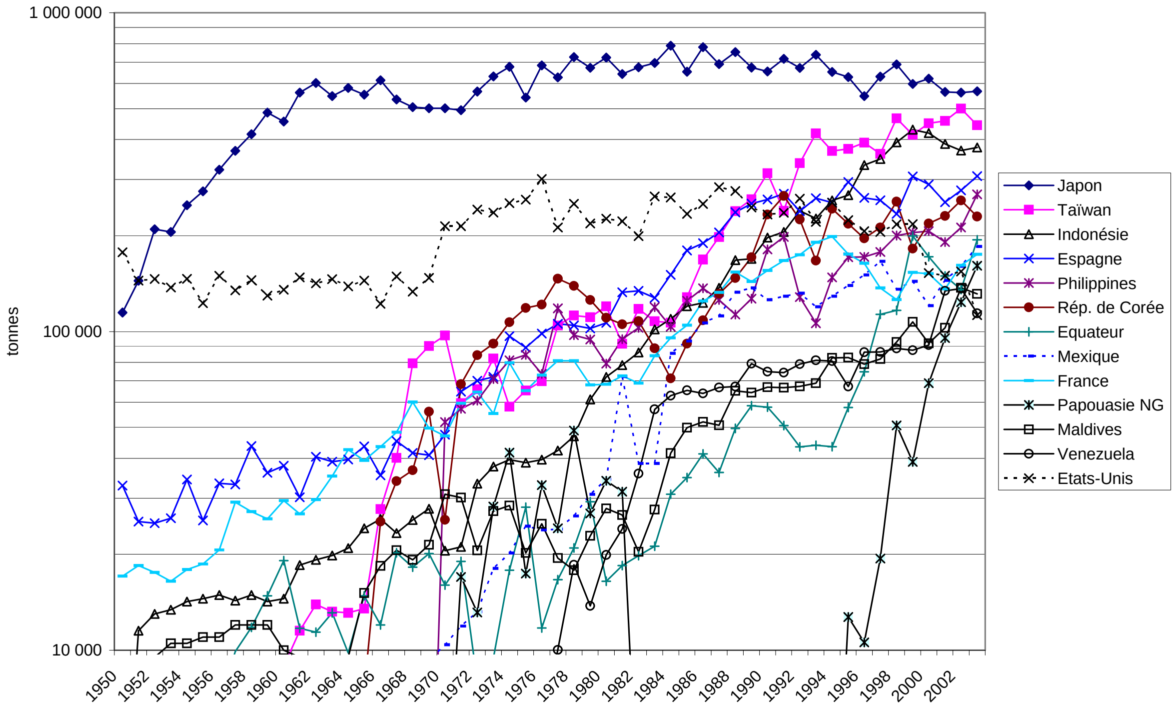


Figure 54: Principal tuna producing countries, 1950-2003. Source: according to Fishstat+, FAO

Between 1950 and 2003, the United States' share of world catches fell by 44% to under 3%, whereas Japan's share rose from 57% in 1960 to approximately 13% at the moment. From then on the United States was only in 13th place in the classification of tuna producing countries. Japan remained the leading world producer, but its lead was considerably reduced in comparison with its two immediate rivals which, from then on, were Taiwan and Indonesia. Amongst the major traditional regions of production, only Western Europe has maintained its share in relation to world catches, at around 11% at the moment, as opposed to approximately 10% in the 1960s, but nevertheless registered a downward trend in its catches in terms of volume (see chapter 4).

The increase in the numbers of countries equipped with tuna shipowners clearly resulted in a real deconcentration of world production of tuna raw material. In 1950, Japan and the United States were responsible for 72% of world catches; in 2003, the top two producing countries (Japan and Taiwan) carried out less than one quarter (23%) of world catches. Between 1950 and 2003, the share of the top five producing countries fell from almost 90% to less than half (44%) of total catches, and that of the top ten producing countries dropped from 95% to 65%.

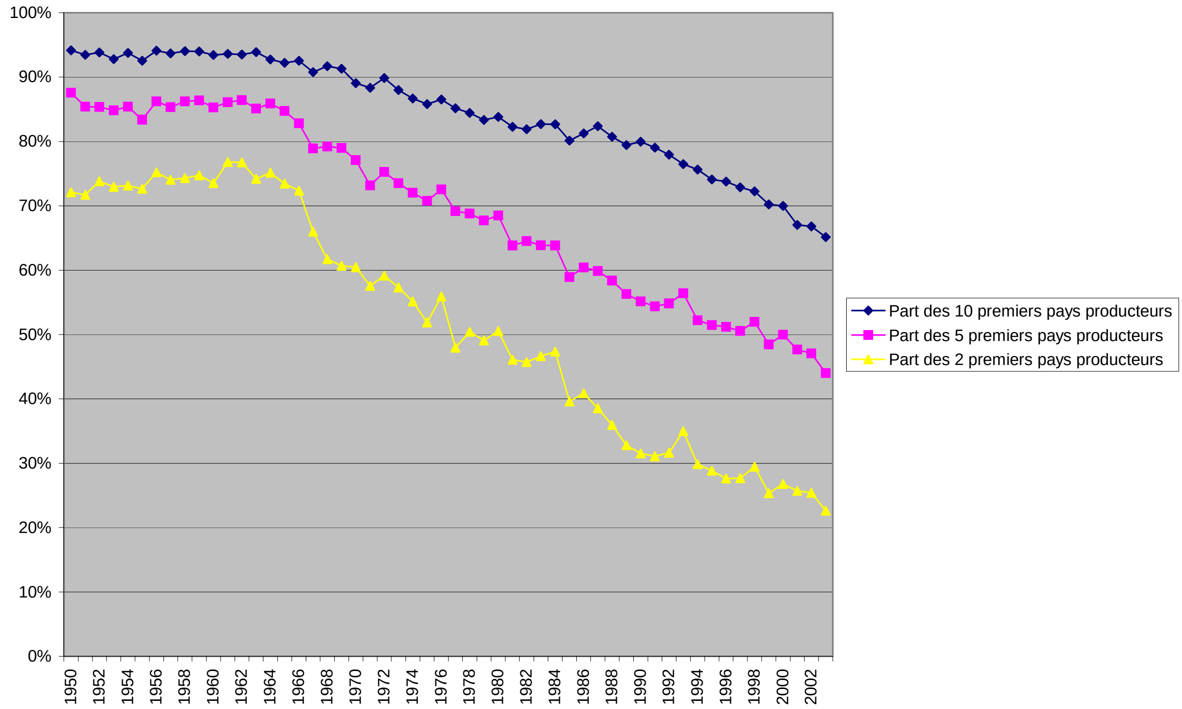


Figure 55: Deconcentration of world production of tuna between 1950 and 2003. Source: according to Fishstat+, FAO

3 The increase in the number of countries producing canned tuna

The processing sector reacted to the spread of tuna fisheries towards the inter-tropical ocean zone by relocating its tuna canning factories from their original locations in the consumer countries (United States, Europe, Japan) to overseas territories or developing countries where they benefited from the dual advantage benefiting cost price: cheap labour costs and the proximity of the most productive fishing zones. An initial wave of cannery relocation then took place in the course of the 1960s, initiated by the major groups in the tuna industry in the developed countries. New countries then emerged as producers of canned tuna, however without this resulting in new companies entering the sector. Some French canneries were then closed to the benefit of those opened in West Africa by *Saupiquet* and *Pêche et Froid*. In the United States, the leader companies *Bumble Bee*, *Star Kist* and *Van Camp*, initially based exclusively in California, opened factories in Puerto Rico and in the American Samoan islands. Amongst the Japanese groups already present on the American market for tuna products, *Mitsui* and *Mitsubishi* also set up canneries in Puerto Rico.

After the end of 1970s, the increased number of countries involved in fishing operations caused a big rise in the world supply of tuna raw material which was accompanied by a marked drop in prices. This economic context favoured the entry of new arrivals within the processing sector. In this way new processing foci emerged, mainly in Southeast Asia and South America. In South America, the modern tuna fleet which Mexico had possessed since the mid-1970s was not able to find any outlet in the United States market, with profound differences on the subject of the management of tuna resources in the Central Eastern Pacific Ocean bringing the two countries into conflict with each other. This situation forced Mexico to equip itself with tuna canneries, which would then sell their production on the national market.

However it was the emerging processing focus in Southeast Asia which would experience the most sustained rate of growth. In this area the canned tuna sector is favoured both by the interest displayed by numerous local investors in the sources of currency represented by exports to markets in the industrialised countries and by the establishment of joint ventures with leader companies within the world tuna industry. This new focus of production for canned tuna is centred on Indonesia, the Philippines and Thailand. New companies are thus appearing within the world tuna economy, including the Thai companies *Unicord*, set up in 1978 and the *Thai Union Manufacturing Company*, set up in 1980, which became the owner of the North American company *Chicken of the Sea.*

At the same time, after the start-up of a national production sector in Mexico from the late 1970s, the growing production of tuna raw material from other South American countries, such as Ecuador or Venezuela, attracted foreign investors from the 1980s onwards. As a result the Spanish company *Calvo* opened a branch in Venezuela and Ecuador benefited from the Spanish company *Garavilla* being set up (Isabel brand) as well as the American companies *Bumble Bee*, *Star Kist* and *Tri Marine.*

Finally, a second wave of investment took place in Africa at the beginning of the 1990s, following the growth of catches by European tuna fleets operating in the Western Indian Ocean and the development of the activities of the Ghanaian tuna fleet in the East and Central Atlantic. French interests set up *Indian Ocean Tuna* in 1987, the only Seychelles cannery, subsequently owned briefly by the American group *Heinz*, and then owned by the Seychelles government. The Japanese company *Mitsubishi* opened the only cannery in Mauritius. The French group *Pêche et Froid* set up the only cannery in Madagascar in 1990. Finally, the American company *Star Kist* opened a branch in Ghana, becoming the main cannery out of the three present in the country. This restructuring of the tuna processing industry, marked by the emergence of new foci of production and the attraction they had for investments by multinational companies within the sector, resulted in the multiplication of countries producing canned tuna (see Figure 56).

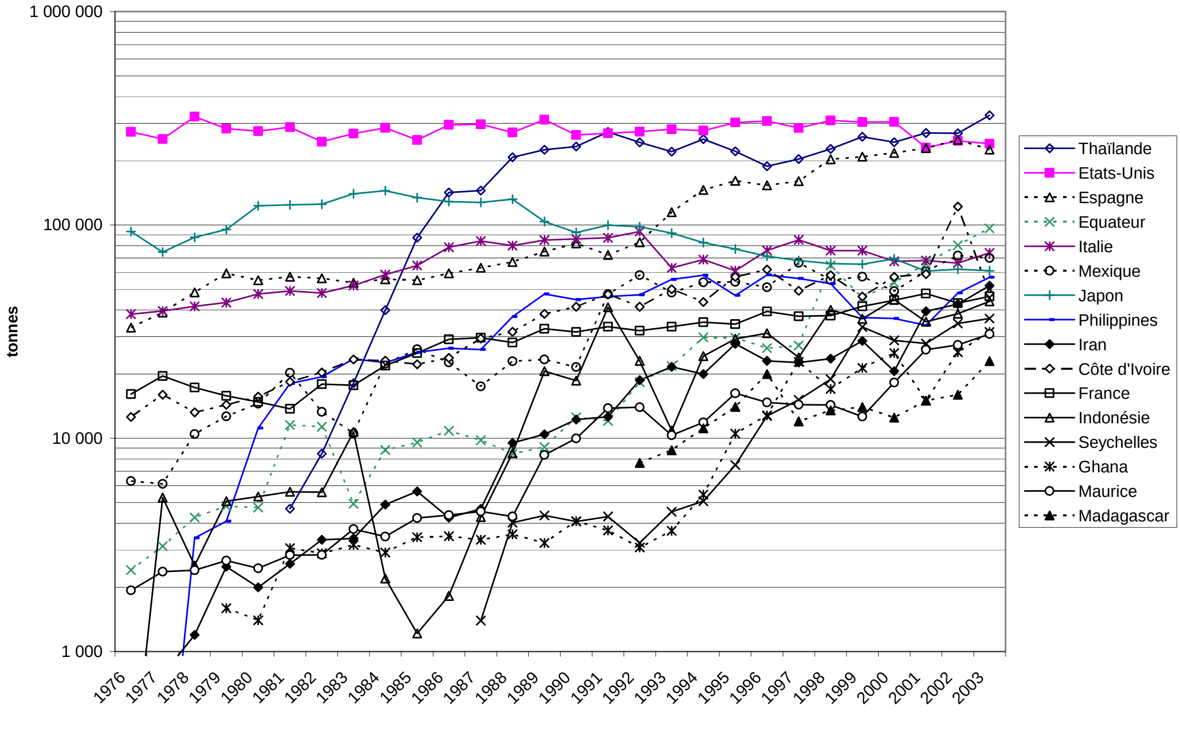


Figure 56: Principal countries producing canned tuna, 1976-2003. Source: according to Fishstat+, FAO

However, this apparent deconcentration of production of canned tuna according to country must be put into perspective (see Figure 57). Certainly, the share represented by the top two producing countries has dropped by half, falling from 70% in 1976 to approximately 36% in 2003, and that of the top five has experienced an equally marked reversal by falling from almost 90% to approximately 60%. However the top ten countries producing canned tuna continue to account for over 80% of world production which means that the level of concentration in terms of production foci is still high. Above all, the increased number of countries producing canned tuna could easily mask the persistent domination of the world tuna industry by a small number of multinational companies. Unfortunately, it is not possible to accurately reconstitute the share of world production of the principal multinational companies within the sector, as most of these are set up in countries where various companies operate without releasing production statistics combined at national level.

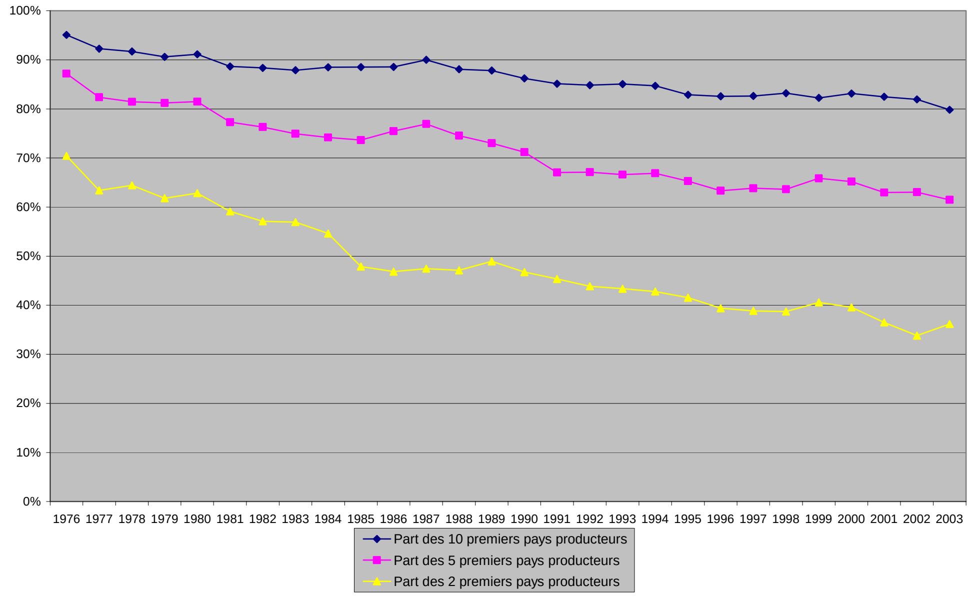


Figure 57: Relative deconcentration of world production of canned tuna.
Source: according to Fishstat+ FAO

In terms of geographical origin, the development of production foci for canned tuna since the 1970s can be simplified in the following way: maintenance or even decline of the traditional production foci in the north and appearance of new production foci in the south. In 1976, the United States was responsible for 53% of world production of canned tuna, with Japan and Europe (member countries of the European Union) producing 18% each. By 2003, the United States only represented 15% of world production, while Japan's share had fallen to 4%. Alone amongst the major traditional producing regions, Western Europe saw its share progressing to reach 23%. In the course of the same period, the share of the ACP countries in the world production of canned tuna rose from 5% to 12%, that of the countries covered by the GSP-drug arrangement rose from 3% to 9% and that of the countries in Southeast Asia rose from 1% to 28%. Together, these three new processing centres are now responsible for almost half (48%) of the world production of canned tuna.

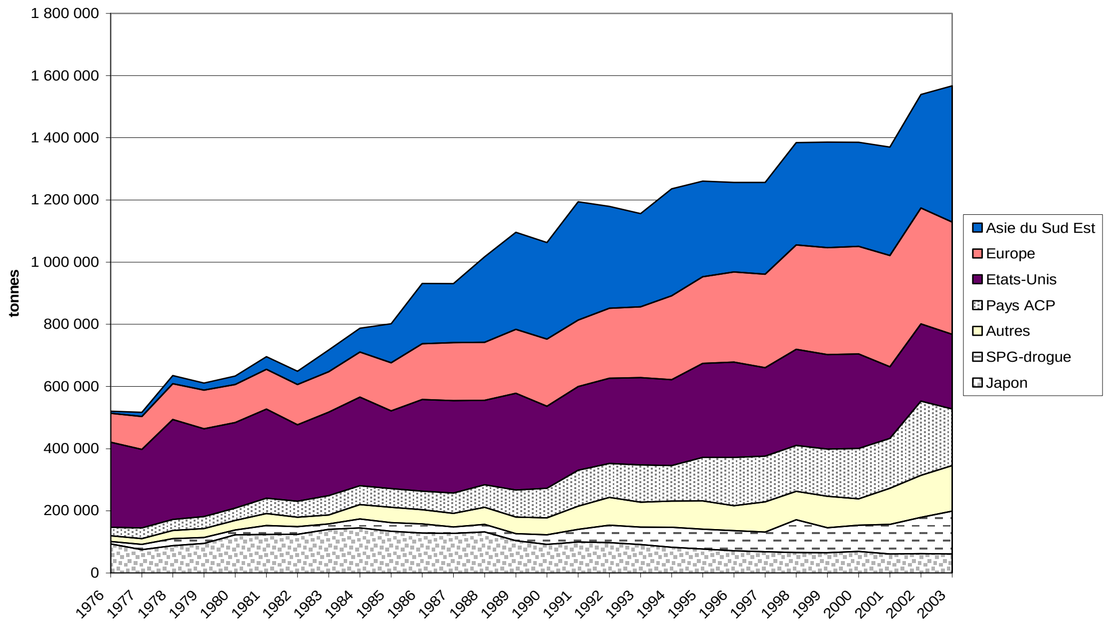


Figure 58: Principal production foci for canned tuna, 1976-2003. Source: according to Fishstat+, FAO

It must to be noted that the 6 major production foci for canned tuna are all either major foci of consumption (as in Europe, the United States and Japan), or major foci of exports intended for these foci of consumption (as in Southeast Asia, the ACP countries and the countries covered by the GSP-drug arrangement). Moreover, 83% of the production of countries grouped under the category "others" was, in 2003, actually produced by Mexico (70,000 tonnes) and Iran (50,000 tonnes), two countries which direct all of their production to their own domestic market.

4 Historical evaluation and position of European producers

The development in the structure of the world tuna economy is therefore marked by the appearance of new regions producing tuna raw material and canned tuna. With regard to the sector of tuna raw material, this concerns first of all Southeast Asia with Taiwan, Indonesia, the Philippines and South Korea, and secondly South America with Ecuador, Mexico and Venezuela. With regard to the canned tuna sector, first of all this concerns Southeast Asia with Thailand, the Philippines and Indonesia, followed by South America, with countries which also produce tuna raw material, and finally Africa, where it is possible to make a distinction between the relatively old focus formed by West Africa around the Côte d'Ivoire and initially Senegal, which has been replaced more recently by Ghana, and the new production focus constituted by the region of the Western Indian Ocean, with the Seychelles, Mauritius and Madagascar. All these new players have helped to erode the United States' and Japan's domination of the world tuna economy: even if it still remains the leading world producer of tuna raw material, Japan is currently only the seventh producer of canned tuna, whereas the United States is now only the second world producer of canned tuna, overtaken by Thailand, and the thirteenth producer of tuna raw material.

At the same time, the member countries of the European Union, which always featured amongst the major players within the tuna industry but whose levels of production were situated clearly below those of the Japanese and Americans until the beginning of the 1970s, have, for their part, experienced steady development, in relation to both tuna raw material and canned tuna, which now positions their volume of activity on a level with the major world producers. Within the sector of tuna raw material, Spain and France are the third and ninth producing countries, respectively, at world level, whereas within the sector of canned tuna, the Member States of the EU together constitute the second focus of world production behind Southeast Asia.

CHAPTER 13 - TUNA FOR DIRECT CONSUMPTION

Tuna for direct consumption is generally considered to be a luxury food which can obtain very high prices. Consequently, this type of tuna (whole, in loins or in steaks) is imported by developed countries, as the developing countries do not have any real market for these products.

Tuna is eaten fresh, particularly in Japan, in the form of a product of a thousand-year old tradition known as *sashimi*. In other developed countries, fresh tuna for direct consumption is eaten fresh or frozen mainly in the form of steaks although on the Western coast of the United States and in other regions with high Japanese immigration rates, *sashimi* is also a popular product.

1. Volumes and species

1.1 Global data

The quantities of tuna caught for direct consumption can be estimated using data from the five species used most often for direct consumption, which are supplied by the FAO FIGIS database[24]. These species are:

Bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares)* caught by long liners;
Atlantic bluefin tuna (*Thunnus thynnus*), Southern bluefin tuna (*Thunnus maccoyii*) and Pacific bluefin tuna (*Thunnus Orientalis*).

The graph below, which probably underestimates the true situation, shows the growing trend of the market at the beginning of the 1990s, followed by a reduction in catches in the second half of the decade (Figure 59). The reduction was caused by the fall in catches of bigeye tuna by long liners and by the introduction of fishing quotas on bluefin tuna.

[24] *FIGIS: Fisheries Global Information System (http://www.fao.org/figis).*

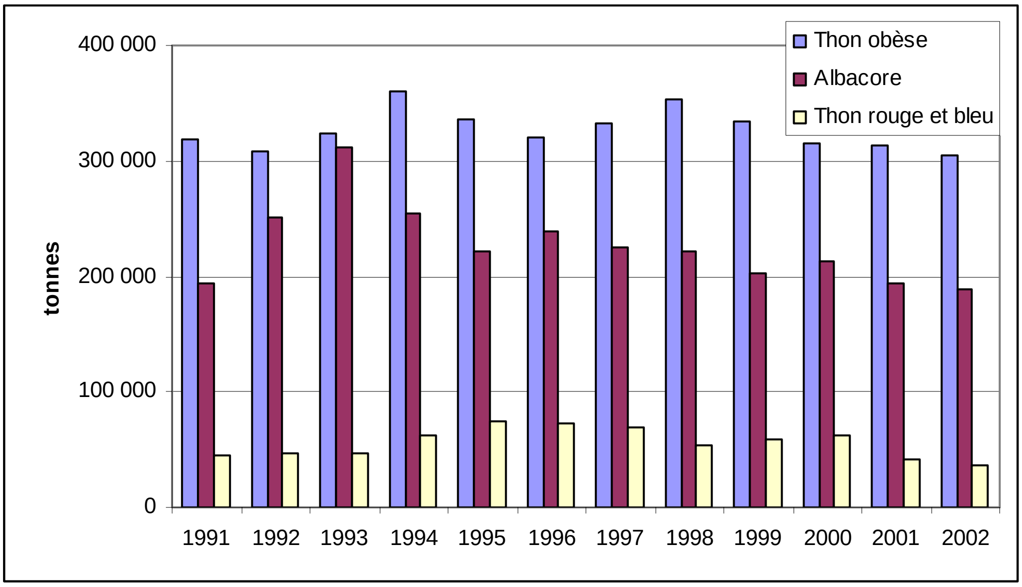


Figure 59: Development of sales for direct consumption of the principal species of tuna sold, 1991-2002 (source: FIGIS).

Other species are sold in smaller proportions: skipjack, albacore, marlin, spearfish and swordfish as well as Japanese amberjack (*Seriola quinqueadiata*).

Another method of estimating the total production of tuna for direct consumption is to deduct the production of canned tuna (live weight[25]) from catches of commercial species of tuna. Catches of tuna for direct consumption increased by 70% between 1980 and 2002, reaching over a million Tonnes in 2002 (Figure 60).

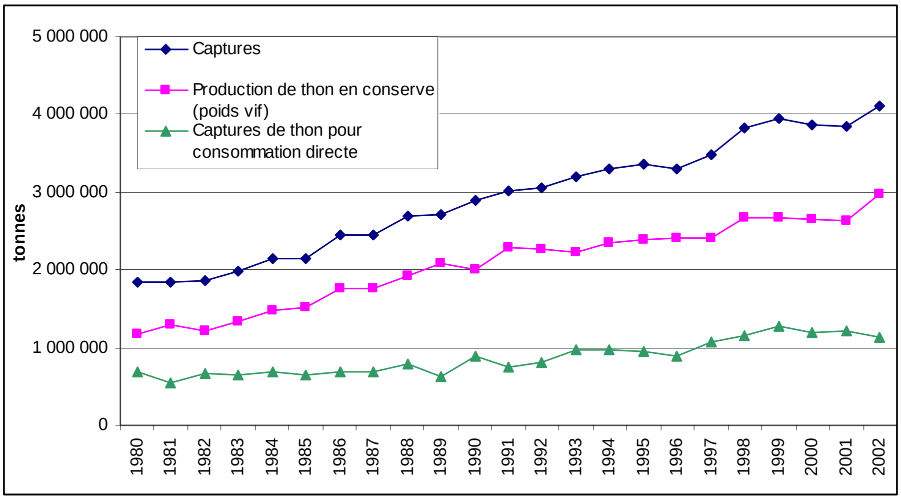


Figure 60: Development of estimated catches of tuna for direct consumption, 1980-2003 (source: FISHSTAT)

The disparity between the estimates is symptomatic of the difficulty in accurately quantifying catches made by long liners whose data collection has never been as systematic and controlled as data on catches made by purse seiners.

[25] *See appendix II for the table of conversion factors*

1.2 The European Community

The European fleet of tuna boats active in tropical waters is associated with the processing industry, therefore almost all the tuna caught, and particularly skipjack and yellowfin tuna, is intended for processing. On the other hand, the fleets which target bluefin tuna in the North Atlantic (and particularly the Mediterranean) send their catches to the market for direct consumption, although most of this tuna is exported to Japan for the sashimi market. Figure 61 shows a comparison between EU catches of bluefin tuna and exports of this same tuna (live weight[26]) over the period 1995-2003. The break-off of European exports to Japan in 2003 created significant difficulties for tuna fattening companies and, indirectly, for the purse seiners working in the Mediterranean, the traditional suppliers of these companies.

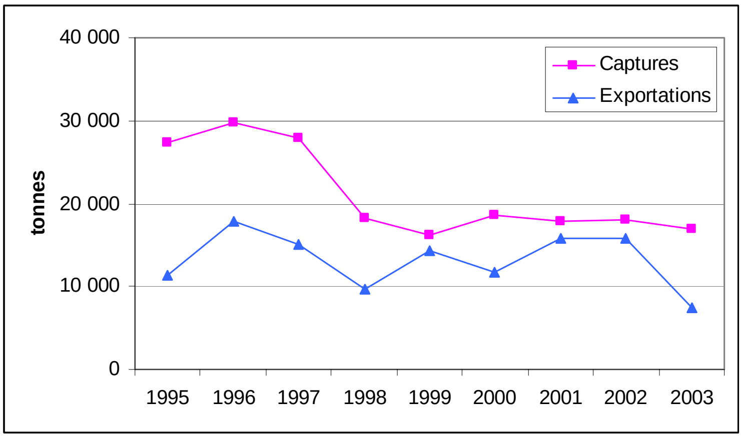


Figure 61: Comparison between the EU catches of bluefin tuna and exports to Japan, quantity (tonnes - live weight) 1995-2003 (sources: Fishstat for catches up to 2002 and ICCAT for 2003, EUROSTAT for exports).

The community fleets of surface long liners, pole and line vessels and hookers catch albacore in the North Atlantic. On the one hand these catches are intended for the canning industry, but a significant quantity is also consumed directly. The quantity of albacore tuna caught for direct consumption is estimated at approximately 15,000 tonnes[27] (Figure 62).

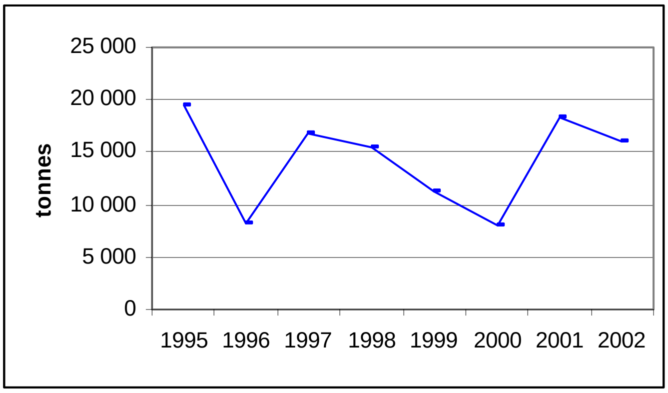


Figure 62: Estimate of catches of albacore intended for direct consumption, 1995-2002 (based on FISHSTAT and EUROSTAT data)

The albacore caught by the EU Atlantic fleets may be intended for either canneries or direct consumption, depending on the state of the market. However, in 2002 and 2003 white tuna was processed, from imported material in particular.

[26] *See appendix II for the table of conversion factors*

[27] *Method of approximation: Community production of canned white tuna (live weight) - importation of albacore from third countries (live weight) intended for canning - European catches*

Tuna loins have not been taken into consideration because of the absence of EUROSTAT data on imports of albacore loins, but the presence of canneries on Community territory which process tuna from loins should reduce the proportion of canned tuna produced from albacore from European fisheries, and as a consequence, increase the volumes of white tuna intended for direct consumption.

1.3 Japan

Japanese catches of tuna, including species which are not traditionally intended for *sashimi* (skipjack, albacore, as well as bigeye tuna and yellowfin tuna caught by purse seiners) fell by 21% between 1991 and 2002. Catches of tuna for the sashimi market (bigeye tuna and yellowfin tuna caught by long liners; bluefin tuna) dropped by 40% during the same period. The species caught most for the *sashimi* market are bigeye and yellowfin tuna (Figure 63).

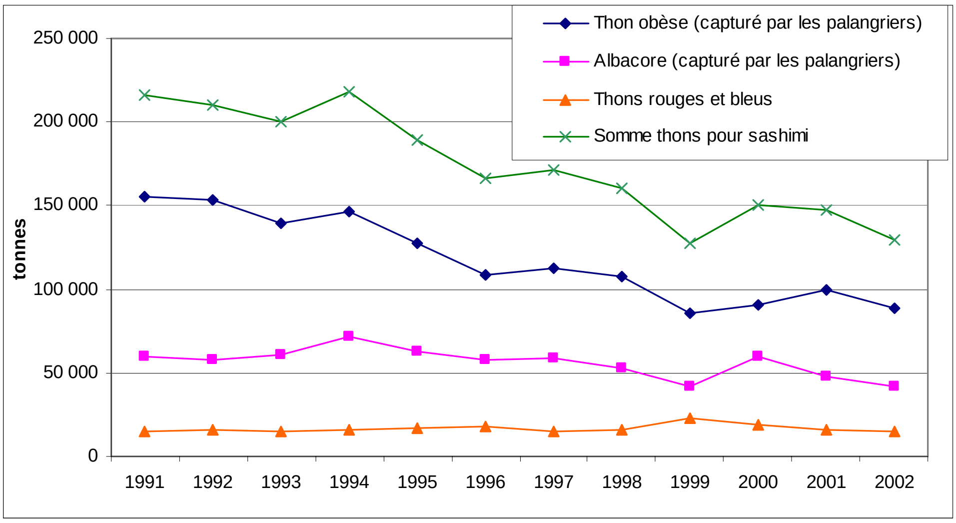


Figure 63: Development of Japanese catches of tuna, 1991-2003 (source: FISHSTAT and FIGIS)

1.4 United States

Most of the tuna used for direct consumption in the United States is imported, and according to an estimate made on the basis of Figis and Fishstat data, the North American fleet now catches no more than 9,000 to 10,000 tonnes of tuna for direct consumption per annum.

1.5 Others

It is clear that a significant quantity of tuna is consumed without being processed in most of the fishing countries. This consumption takes the form of auto-consumption and sales of fresh fish on the domestic market in these countries. It has not been possible to evaluate either the production assigned to this type of consumption, or the species mainly concerned. In any event, all the species of tuna are involved in this type of consumption.

2 Products

2.1 Sashimi

2.1.1 Size, devices used and method of conservation

Generally speaking, the larger fish are considered to be preferable to the smaller fish. With regard to the devices used, tuna for top-quality *sashimi* is caught using a line (hand line and long line) which minimises stress on the fish. The pole and line tuna vessels which specifically target bluefin tuna guarantee a good quality product. The quality of *sashimi* produced from fresh fish is considered to be better than that of *sashimi* produced from tuna which is frozen at sea. Tuna which is frozen at sea, used in the preparation of *sashimi* and tuna steaks, is bled and gutted then frozen at a temperature of -40°C, and ideally -60°C. To retain the quality of the flesh, the product must remain frozen at the same temperature, from being frozen on board up until it is sold.

2.1.2 Evaluation of quality

The quality of *sashimi* produced from Atlantic and Pacific bluefin tuna is the highest, followed by the quality of *sashimi* produced from Southern bluefin tuna, bigeye tuna and yellowfin tuna. However, *sashimi* produced from top-quality bigeye tuna is considered to be of better quality than *sashimi* produced from average quality bluefin tunas.

The quality of tuna for the *sashimi* market is evaluated on the basis of objective criteria such as species, the period and region of capture, the method of conservation (fresh/refrigerated or frozen) and the fishing device used. It is then evaluated on the basis of organoleptical criteria such as the presence of fat, the appearance of the skin, protuberant, clear and moist eyes, intact stomach and fresh smell.

According to experts, the best *sashimi* is produced by large bluefin tuna individuals caught during the season preceding the reproductive season. The categories are as follows:

- **1+**: bluefin and bigeye tuna, whose flesh is bright red, compact, clear and fat. This *sashimi* of outstanding quality is produced by tuna caught with a hand line or long line, refrigerated on board.
- **1**: tuna whose muscle tissue is red, with compact, clear and fat flesh, caught by long liners, refrigerated on board.
- **2**: tuna whose muscle tissue is red, with compact, fairly clear but lean flesh, which can be used for the production of steaks as well as for lower quality *sashimi*. Grade 2 tuna can be either refrigerated or frozen at sea.
- **3**: tuna whose muscle tissue can be both red or brown and whose flesh is compact but opaque and lean. It is frozen at sea and used for the production of steaks in Europe and the United States.
- **4**: tuna whose muscle tissue is greyish-brown, and whose flesh is soft and opaque. This tuna is sent to the processing industry.

It must be pointed out that the difference in quality between tuna for *sashimi* and tuna for steaks is not necessarily very marked; in fact, the decision to process tuna flesh into *sashimi* or steak would depend on the price level obtained on the market.

2.1.3 Presentation

Sashimi is served raw in small pieces, dipped in soy sauce with *wasabi* (Japanese horseradish). *Sushi* is rice in vinegar, served with a piece of sashimi.

2.2 Fushi (smoked and dried) products

Smoked and dried skipjack is a Japanese specialty which shares the same customs code 1604 as canned tuna, hence its inclusion in this list. Smoked and dried products are called *fushi* by the Japanese. Amongst these we can list:

- *Katsuobushi*, the best known: loins of skipjack boiled, grilled or even smoked; the product is partially dried,
- *Kezuribushi*, produced from scraping fillets of *katsuobushi*,
- *Arabushi*, produced from dried and smoked fillets of *katsuobushi*;
- *Namaribushi*, equivalent to *Arabushi* but not so dry;
- extract of powdered *Katsuobushi* used as raw material for preparing soup in Asian countries.

In order to prepare *katsuobushi*, the skipjack is boiled, smoked and dried naturally. The fish must be covered by mould to allow the flesh to be thinly sliced. In order to prepare *kezuribushi*, the *katsuobushi* is grated into pieces (larger) or flakes (very small). *Katsuobushi* and *kezuribushi* are used in Oriental cuisine, mixed in salads or on refrigerated tofu, and are used to prepare hot dishes as well.

2.3 Other products

Tataki is skipjack grilled on its surface but raw inside and served with onion, garlic and other spices, vinegar and soy sauce.

Tuna steak is a niche product which is very popular in the United States and Europe.

3 Markets

3.1 The European Union

Every year, several hundreds of tonnes of tuna come into the EU under the name of "other tunas" and are not intended for the industrial manufacture of canned products. As there is a certain degree of confusion in customs statistics between tuna imported for direct consumption and raw material intended for processing (especially for tuna loins), imports of fresh and refrigerated tuna for direct consumption have been recalculated (Figure 64) for a better market approach.

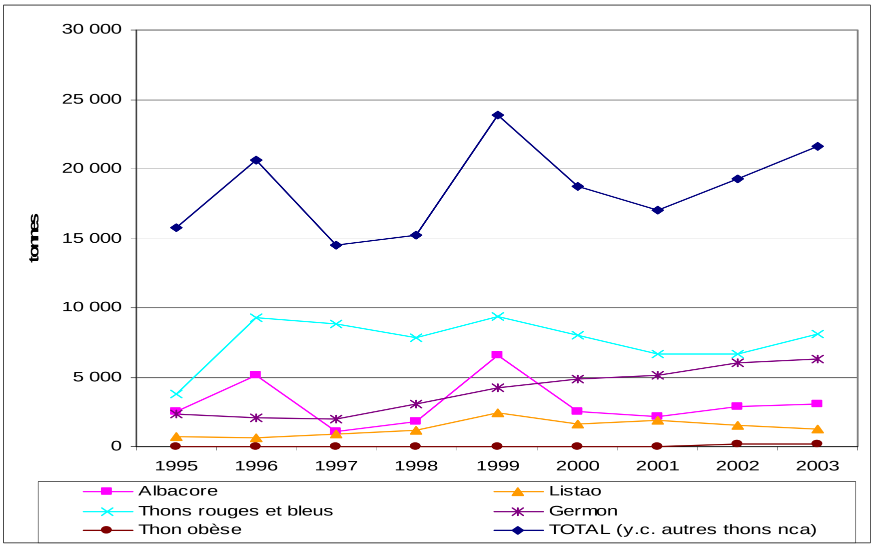


Figure 64: Re-evaluation of EU imports of tuna for direct consumption, fresh and refrigerated, per species, (tonnes). 1995 – 2003 (source: EUROSTAT)

In order to determine the principal countries of origin of tuna for direct consumption, we have used as a basis imports of fresh and refrigerated tuna which show that the principal countries of origin are Yemen, Morocco and Senegal (Figure 65).

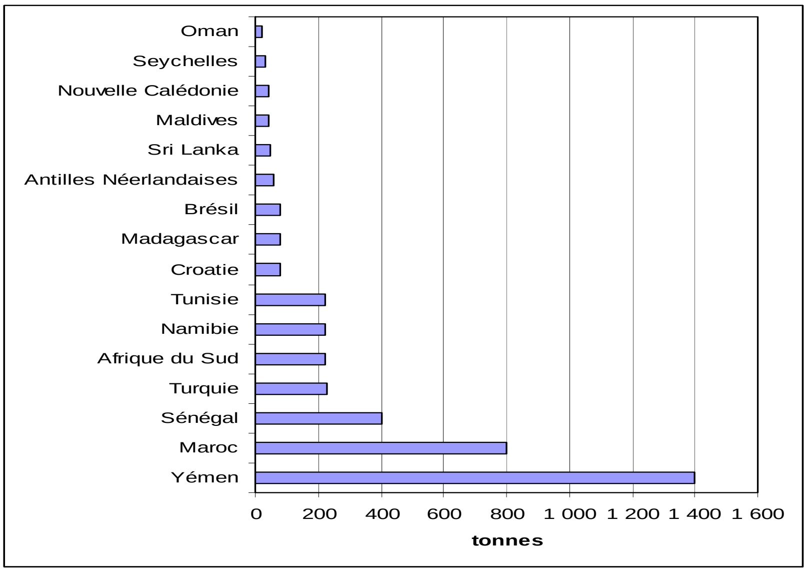


Figure 65: EU imports of tuna for direct consumption, per country of origin, (tonnes), 2003 (source: EUROSTAT).

The principal countries for which fresh tuna is intended are Spain (with approximately 50% of imports of tuna for direct consumption in 2003) and Italy (with approximately 33% of imports). The European Community also imports approximately 10,000 tonnes of fillets of frozen tuna per annum, mainly from Indonesia, Yemen and Colombia (source: EUROSTAT), used to make tuna steaks.

In total, it can be estimated that the market for tuna intended for direct consumption is probably in the region of 40,000 tonnes, accounted for by approximately 50% by community production (albacore and bluefin tuna). This market is growing steadily. The species for which there is most demand are yellowfin and bluefin tuna and albacore. The market of tuna for direct consumption in the EU is concentrated on the Mediterranean (bluefin tuna) and in the principal urban centres.

3.2 Japan

The Japanese consume tuna mainly in the form of *sashimi* and *katsuobushi* (smoked and dried). The demand for *sashimi* has changed radically over recent years. Preparations of *sashimi* made from wild individuals of high-quality species, such as bluefin tuna, has reduced following the implementation of restrictions on catches. In addition, the Japanese recession in the 1990s reduced expenditure on luxury items (including top-quality *sashimi*). Consequently, demand for other cheaper species increased: bigeye and yellowfin tuna of average quality, species of a smaller size, used less often for *sashimi* (albacore and skipjack), fattened bluefin tuna while the prices offered by the Japanese market displayed a downward trend. (Figure 66)

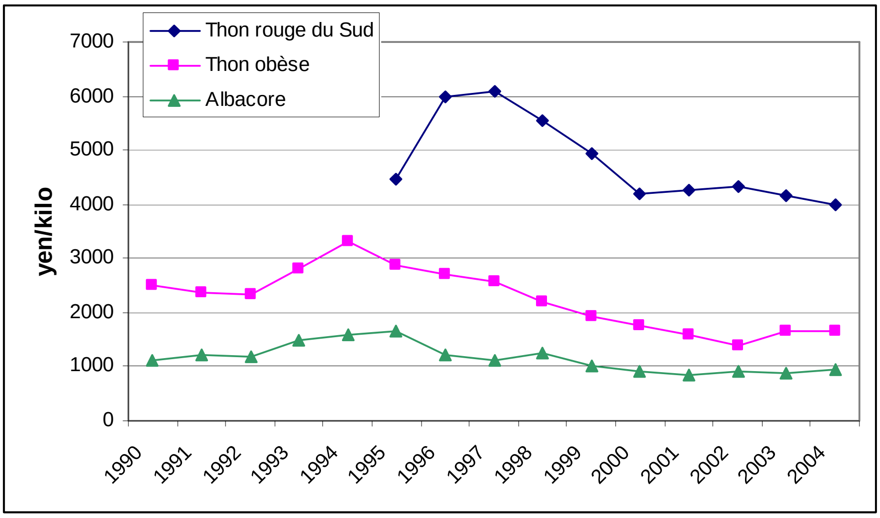


Figure 66: Average import prices for principal species of *sashimi* tuna (yen/kilo) on the principal Japanese markets, 1990 – 2004 (source: INFOFISH Trade News)

In total, we can estimate that the Japanese market for tuna intended for direct consumption is in the region of 250,000 tonnes. *Sashimi* is eaten throughout the year, but particularly over three holiday periods: the *sashimi*, the Golden Week in May, the Festival of Good Luck from mid-July to mid-August and during New Year celebrations.

Premises for eating *sashimi* tuna have evolved: traditionally the fish was eaten at home or in a restaurant, but over the last twenty years, *sushi* bars have become very popular. In general, *sashimi* ordered in a restaurant is of better quality than *sashimi* purchased in supermarkets and in *sushi* bars.

3.3 The United States

In the United States, the market for tuna for direct consumption was marginal up until the mid-1990's. The spread of Japanese restaurants and *sushi bars* in major towns and particularly in towns on the West Coast (California) has increased demand for whole, fresh and frozen tuna, for direct consumption. The market for tuna for direct consumption in the United States has been estimated at around 35,000 tonnes per annum (source: INFOFISH).

The types of tuna used most for direct consumption are fresh yellowfin tuna, bluefin tunas (fresh and frozen), bigeye tuna (fresh and frozen) and to a lesser extent, albacore.

Figure 67 shows that imports of fresh and refrigerated tuna between 1990 and 2003 rose by 200%. The most important species are yellowfin tuna and bluefin tuna.

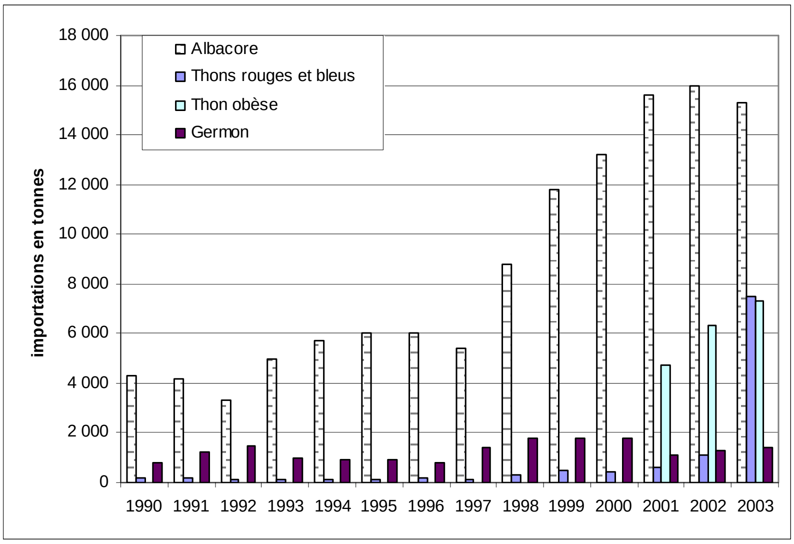


Figure 67: Development of United States imports of principal species of tuna, fresh and refrigerated,

Most tuna imported fresh for direct consumption is processed in the United States into loins, steaks and "*saku bars*" (rectangular bars) and then sold to Japanese restaurants and to *sushi* bars. Supermarkets prefer to purchase frozen loins and steaks.

CHAPTER 14 - CANNED TUNA

1 The canning industry

1.1 History

Tuna fishing has been extensively practised since the Phoenician age. The word "tuna" comes from the Phoenician "*than*" which means "large animal". The Romans mastered the technique of fishing for bluefin tuna in the Mediterranean by introducing encircling using nets in inshore coastal zones ("*Magna Retia*"). The first documents which refer to the existence of tuna preserved in oil (fifteenth century) in the region of Sevilla, indicate that the most desirable part of the tuna, the belly, was pre-cooked in boiling sea water and then canned. In the eighteenth and nineteenth centuries the Genoese set up a tuna canning industry applying a market strategy similar to that of current industries, which was based on the relocation of factories to the most profitable countries and territories (Sardinia, followed by Spain, Portugal and Tunisia). However, the real modern tuna processing industry was begun by the Californians in 1903, when, after a prolonged shortage of sardines, they began to can albacore.

The tuna processing industry is dominated by five multinational giants: Bolton, Bumble Bee, John West/Heinz, Starkist and Thai Union.

The flowing table aims to provide basic information about the principal tuna canneries, while more detailed information will be provided in subsequent chapters.

Table 37: Principal producers of canned tuna at world level

Company	Owner	Headquarter	Factories	Markets
Bolton Alimentari	Bolton Group (Dutch company)	France (Saupiquet) and Italy (Bolton Alimentari - Rio Mare)	France, Italy and Ivory Coast (that stopped its activity in 03/2005)	French market: 21% of the retail market and 21% of the catering market. Italian market : 38% of the tuna cans market. Also a major supplier on the German, Eastern Europa, Greece, Slovenia, Croatia and Saoudi Arabia.
Bumble Bee	Centre Partners Management Ltd and Connor Bros Income Fund	United States	California, Puerto Rico, Fiji, Trinidad and Ecuator	USA: 24% of the market Canada: 24% of the mrket
Calvo, Grupo	Calvo	Spain,	Spain, Venezuela, Salvador, Brazil, Morocco	Spain, Italy, pays de l'UE
Chicken of the Sea	Thai Union Inc.	Etats-Unis	Samoa Américaine	USA : 17% of the market
FRINSA	Frinosa, ONA, Ribeira, Sagres, Salvora	Spain	Spain	Spain
Heinz		United States	Seychelles and Ghana, Portugal and France	United Kingdom and Ireland: John West Australia : Greenseas France : Petit Navire Italy : Mareblú
Isabel Garavilla	Isabel	Spain	Spain, Ecuador, Morocco	Spain and EU
Jealsa-Rianxeira	Jealsa	Spain	Spain, Guatemala, Chili	Spain, Italy, EU
Salica - Albacora	Albacora	Spain	Spain, Ecuador	Spain, EU
Starkist	Texas Pacific Investment Group (Del Monte)	United States	Samoa Américaine et Ecuador	USA : 40% of the market
Thai Union Group		Thaïland	Thaïland	United States with Chicken of the Seathe rest of the world undeer different brands

An overview of the production capacities of the principal canneries referred to in the report in terms of tonnes of raw material or loins processed per day is presented in a table attached in appendix. However, this table is probably not comprehensive.

1.2 The species used in the canning industry

The species of tuna which are canned most frequently are skipjack, yellowfin and albacore. Canned skipjack and yellowfin tuna are referred to as "tropical tuna" because of the origin of the tuna used, or in English-speaking countries as "light meat tuna" because of the light pink colour of the flesh. Canned albacore is referred to as "white meat tuna" in English-speaking countries because of the white colour of the flesh.

Skipjack is the most important species of tuna from the point of view of catches and the processing industry. It is often processed into everyday products. The products made from skipjack include "traditional" canned tuna in brine and oil but also products with added value such as tuna salads, tuna in sauce, tuna in foil pouches. In Japan, skipjack is also processed into *fushi,* a series of salted and dried products used extensively in Japanese cuisine.

Yellowfin is a tropical tuna whose quality and price is higher than skipjack: as a reminder yellowfin tuna caught by the fleets of Asian long liners is sold on the *sashimi* market in Japan, and yellowfin tuna caught by purse seiners is used for canning. Yellowfin tuna, which has a better yield of flesh than skipjack, is considered to be a fish with a more compact, tender flesh and a more delicate flavour. Products made from yellowfin include "traditional" canned tuna in brine and oil, as well as products with added value such as tuna salads, tuna in sauce, tuna in foil pouches. Luxury products are bellies and fillets of yellowfin tuna in glass jars.

Albacore is a tuna with white flesh and a distinctive flavour, and is generally more expensive than yellowfin and skipjack tuna. Albacore occupies a niche market in the United States, France and Spain. Recently, a cheap substitute for albacore, longtail tuna (*Thunnus tonggol*) generally fished and processed in Thailand, has begun to gain in commercial importance, especially in the United States.

The other commercial species of tuna, bigeye tuna, and Atlantic bluefin tuna, Pacific bluefin tuna, and Southern bluefin tuna are generally sold fresh. However, young bigeye tuna caught by purse seiners are canned because their flesh is similar to that of yellowfin tuna. Atlantic bluefin tuna is canned in Italy as a luxury product (particularly bellies).

1.3 The processing process

The processing of tuna raw material into canned tuna involves a procedure which is split into several phases.

As soon as the fish is caught, it is immediately frozen[28] on board and put in brine, where the tuna absorbs approximately 1% of salt. At the time of unloading, the quality of the fish is evaluated, in health and organoleptical terms. This procedure aims to maximise the quality of the tuna and to minimise discards of raw material by factories. The fish is then sorted in order to guarantee uniformity in the stages of defrosting and precooking.

Processing begins with defrosting, generally using circulating water. After defrosting, the fish is gutted, has its head removed and is then cooked (except for preparations in brine).

After cooling, the fish is dressed. This essentially manual operation aims to remove the skin and the red muscle from the fish. Discards from dressing are used, after processing, for animal feed.[29]

Canning is usually an automatic process, carried out at very fast rates (in the region of 300 cans/minute or more for the standard format). The product goes through juicing (when the covering product is added). The ingredients traditionally used are salt, lemon, vinegar, spices and vegetable stock. Additives may also be used: sodium monoglutamate and hydrolysed protein. The lid is then put on the can and it is sealed.

---

[28] *Fresh tuna is very rarely used for processing.*

[29] *It should be added that the health regulations of certain countries (such as the EU) do not permit the production of food for human and animal consumption on the same premises*

1.4 Production of tuna processed from raw material and from loins

Figure 68 shows that, at world level, the production of tuna from loins is still marginal in comparison with the production of canned tuna from raw material, but it is on the increase. However, the estimate carried out involves a certain margin of error in view of the tuna loins recorded in other sections by the customs departments.

The principal source for the figure was the FAO FISHSTAT database. However, this database does not make any distinction between imports of tuna for processing and imports for direct consumption, with both being grouped together under the same codes 0302 (fresh tuna) and 0303 (frozen tuna). Nor does it make any distinction between imports of pre-cooked and frozen loins and those of canned tuna, with both being grouped together under the same code 1604 (processed tuna).

However, the EUROSTAT database and national statistics from the United States supply data about the world production of tuna loins. The EU and the United States cover practically the whole of the world market for tuna loins. It is therefore possible to estimate the world market for raw tuna used for processing by deducting United States and EU imports of loins from world production of tuna.

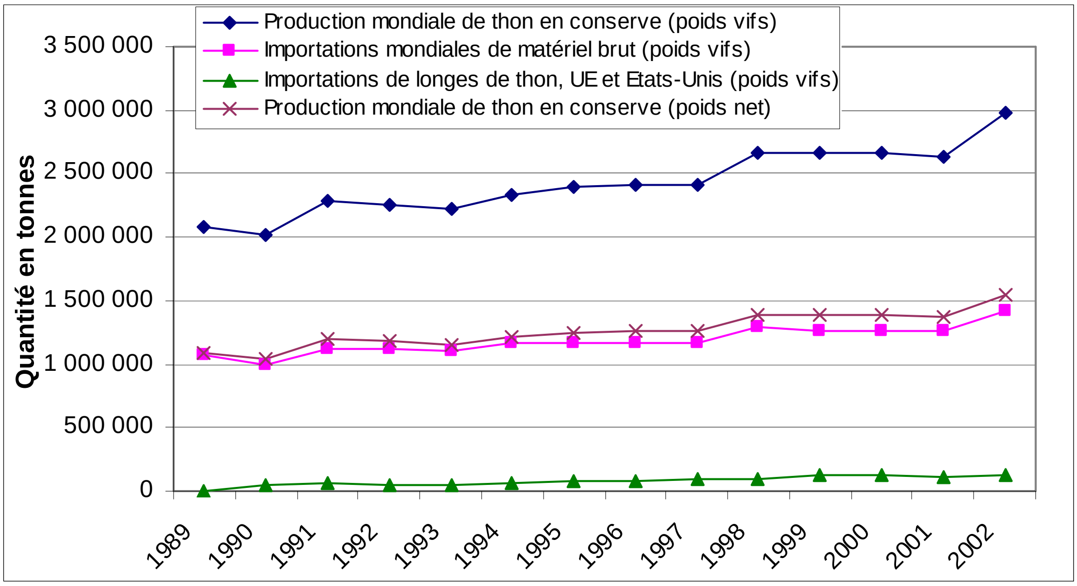


Figure 68: Development of the production of canned tuna from raw tuna and tuna loins, (tonnes), (sources: FISHSTAT, EUROSTAT and national statistics from the United States).

1.5 Type of production

1.5.1 Canned product

Canned tuna may be whole (solid pack), in pieces (chunks) or in flakes. It is preserved in cans or jars, of a standard format in the United States (170 g, net weight) but varying in size in Europe (80, 120, 160, 185, 200, 240, 500 g and 1 to 2 kg family format). The weight of cans for the catering business is generally 2 kg or 5 kg. As a reminder, "traditional" tuna may be in oil (covering juice: vegetable oils - peanut, soya, sunflower, olive, etc.) or natural (covering product: brine).

Figure 69, which is based on FISHSTAT data, shows that in the main tuna fished worldwide is processed into canned goods. Catches of tuna increased from less than 2 million tonnes in 1980 to over 4 million tonnes in 2002, 70% of which is used for canned goods (still by live weight[30]) in the period 1980-2002.

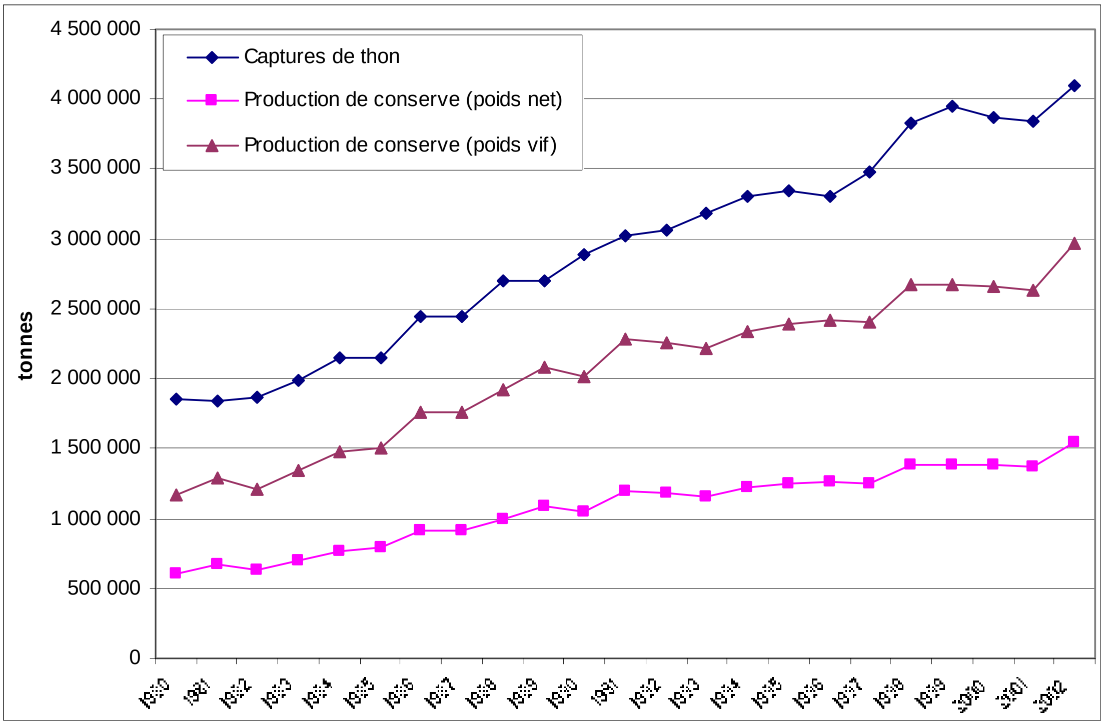


Figure 69: Development in catches of tuna and the production of canned tuna[31] worldwide (source: FISHSTAT).

The principal countries producing canned tuna are Thailand, Spain and the United States.

1.5.2 Products with added value

Products with added value include tuna in olive oil (including extra virgin olive oil) tuna salads, tuna pâté, tuna in sauce, with herbs and spices. Tuna is also used in the preparation of expensive "specialities" which are often based on fillets or ventreche. Generally speaking the term "specialties" covers special recipes corresponding to the gastronomic culture of the country in which these are produced. In this respect, Spain and Italy produce a very high number of specialties.

1.5.3 Products in foil pouches

Tuna in foil pouches made of flexible aluminium is a recent invention, which has been very successful in the United States but only occupies a narrow niche market (eating-out market) in Europe, which is traditionally a more conservative market. The success of tuna in foil pouches is associated with its practicality in preparing tuna sandwiches or salads. According to National statistics from the United States, the domestic market for tuna in foil pouches increased by 120% in one single year, between 2002 and 2003.

[30] *The live weight of canned tuna (and of tuna loins, pre-cooked and frozen) is the net weight multiplied by the conversion factor 1.92 (from canned tuna to whole fish), see Appendix 1.*
[31] *Including pre-cooked and frozen loins.*

Generally tuna in foil pouches is cut into flakes, but the most innovatory canneries have created added value products in foil pouches, such as tuna salad, diced tuna, smoked tuna fillets, tuna in spices, in mayonnaise, in sweet and sour sauce and slices of whole tuna in foil pouches. The net weight of the foil pouches varies: 85, 140, 200, 350 g for domestic consumption, 1 or 2 kg for the catering industry.

2 The processing facilities in the European Community

The European canned tuna industry	
Species caught	Skipjack and yellowfin tuna; albacore and Atlantic bluefin tuna caught locally
Domestic production	379,200 tonnes of tuna processed in 2002, including canned tuna as well as tuna loins produced mainly in Spain in canneries (source FISHSTAT)
Principal producer countries	Spain, Italy, France and Portugal
Sources of raw material and tuna loins	EU purse seiners which export frozen raw material to the canneries in Africa and Spain Tuna loins from Ecuador and Colombia for Spanish, French and Italian canneries

Catches made by the fleet of Community purse seiners are generally sold to:

- Canneries which have been set up using investments of EU origin in ACP countries;
- factories producing loins, and, more recently, canneries which have been set up using investments of EU origin in Latin American countries[32];
- Spanish canneries, particularly in Galicia

2.1 Supplies

2.1.1 Frozen tuna

Imports of whole raw material (essentially frozen) for processing fell by 40% between 1991 and 2003 (Figure 70), because of the greater dependency of Italian and French industries on pre-cooked and frozen tuna loins.

This dependency will continue to increase in the future because of the substitution of whole raw tuna with loins intended for the Spanish industry, following their recent investments in Latin America, which are on the one hand justified by the productivity of factories which have already been established and low labour costs, thus reducing the cost of inputs for Spanish factories.

[32] *The ACP countries and certain Latin American countries benefit from tariff exemptions granted by the EU*

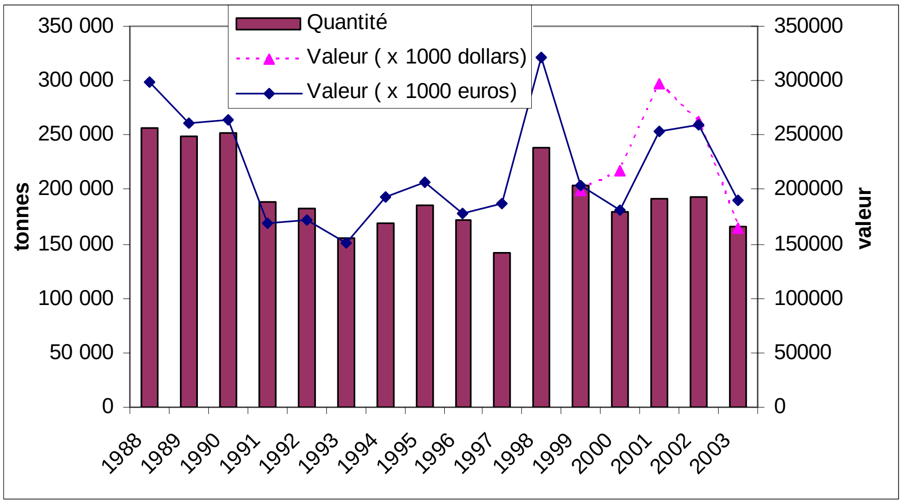


Figure 70: Development in imports of frozen tuna for processing, tonnage and value, 1991-2003 (source: EUROSTAT).

According to EUROSTAT data, the principal countries of origin (non-EU) of European imports of tuna for processing are Mexico, the Chinese province of Taiwan, the Seychelles and the United States. The principal species imported for processing is yellowfin tuna (60% of European imports of tuna for processing in 2003).

2.1.2 Tuna loins

The production of canned goods from imported loins on EU territory is an important factor in reducing end costs for the manufacturer in comparison with production using whole raw tuna. (labour savings over the stages in the process which require the most labour; reduction in transport costs; reduction in cost for disposing of discards). This practice allowed at least some employment to be saved in the processing industries in Europe.

EU imports of tuna loins rose by 200% in less than 10 years (Figure 71). The principal countries of origin of loins are Ecuador and Colombia (Figure 72). Imports of loins from Thailand are also significant, especially for the French industry.

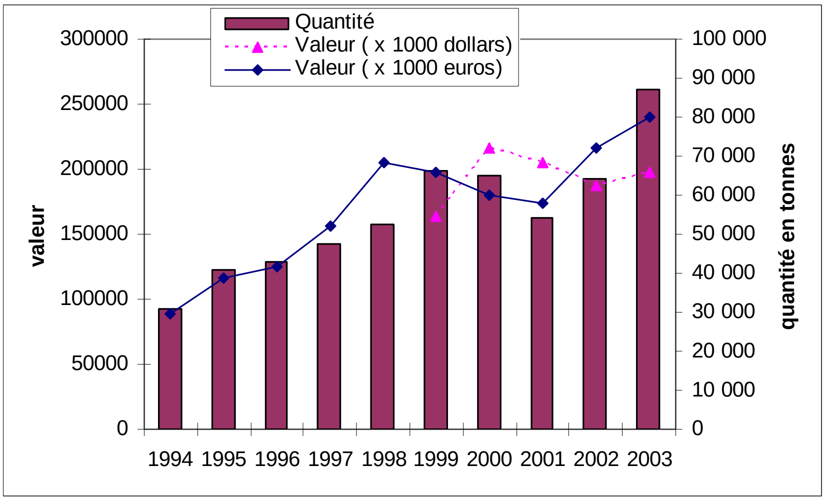


Figure 71: Development in EU imports of pre-cooked and frozen tuna loins (tonnes) and value (euro/dollars), 1994 - 2003 (source: FISHSTAT).

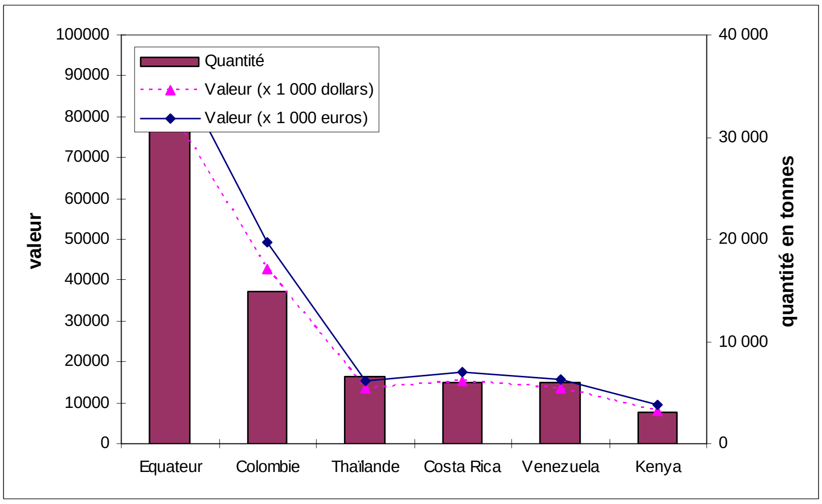


Figure 72: Origin of EU imports of pre-cooked and frozen tuna loins per country, tonnage and value, 2003 (source: EUROSTAT).

The principal countries of destination for EU imports of tuna loins are Italy, Spain, France and Portugal. (Figure 73).[33]

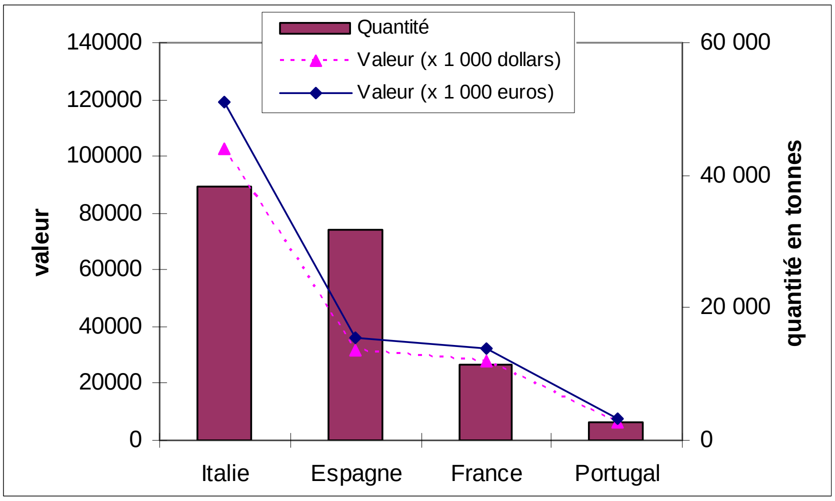


Figure 73: EU countries importing pre-cooked and frozen tuna loins per country, (tonnes) and value (euros/dollars), 2003 (source: EUROSTAT).

2.2 Production of canned tuna

The production of canned tuna by the European industry increased by 120% between 1988 and 2002 (Figure 74). The main producer is Spain, followed by Italy and France. Italy and France produce canned tuna mainly from loins. On the other hand, Spain produces canned tuna mainly from whole raw material. However, the trend is for a growing use of loins, even in Spain, in order to protect competitivity in relation to imports.

[33] *The statistics for the production of pre-cooked and frozen tuna loins in Europe are not supplied by FISHSTAT. However, EUROSTAT data suggests a fall in exports of tuna loins by the 15-Member EU of 13,300 tonnes in 1995 (12,100 of which in the EU, 1,200 outside the EU) to 5,000 tonnes in 2003 (4,900 of which in the EU and 100 outside the EU, essentially of Spanish origin.*

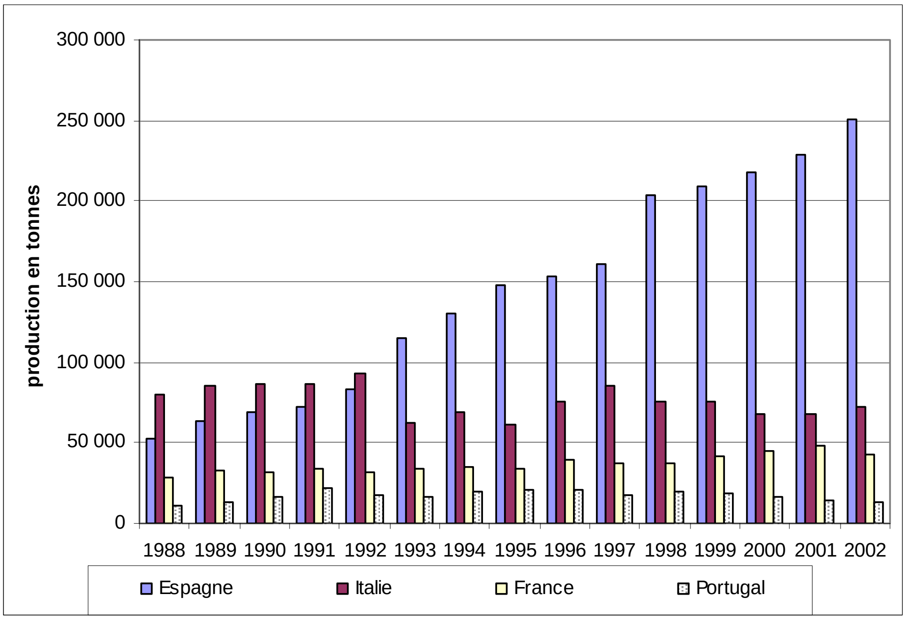


Figure 74: Development of EU production of canned tuna per country, (tonnes), 1988-2002 (source: FISHSTAT).

2.2.1 Spain

2.2.1.1 General information

The Spanish canned tuna industry	
Species caught	Yellowfin and skipjack tuna and albacore
Domestic production	251,000 tonnes of canned tuna in 2002 (source: FISHSTAT)
Brands	Calvo, Jealsa, Isabel-Garavilla, Salica
Sources of raw material and tuna loins	The EU purse seiners which unload tuna in Galicia. Imports from Mexico, Seychelles and the United States. Tuna loins from Ecuador, Venezuela and Costa Rica

As Spanish canneries essentially work with frozen tuna, this is transported by refrigerated cargo boats.

Since, to date, Spain has given priority to domestic processing rather than to relocating canneries, exports of raw tuna by the Spanish fleet are therefore limited in comparison with imports. Nevertheless, the Spanish industry has internationalised itself with canneries being set up in Latin and Central America, and by means of takeovers (Brazil). Spain exports yellowfin tuna to the Seychelles (approximately 10,000 tonnes per annum) and, to a lesser extent, to Italy, the Côte d'Ivoire and Thailand. Spanish boats export between 50 and 70,000 tonnes of skipjack per annum mainly to the Seychelles, Portugal, Ecuador and Madagascar (source: EUROSTAT).

Spanish imports of raw tuna increased by 16% by quantity and 30% by value between 1995 and 2003. The principal supplier countries are Mexico, France, the Seychelles and the United States (Figure 75 and Figure 76).

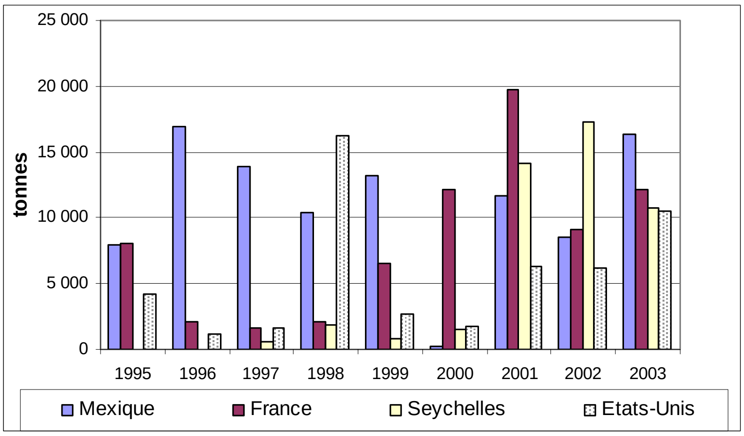


Figure 75: Development and origin of Spanish imports of fresh and frozen tuna for processing, in tonnes, 1995-2003 (sources: EUROSTAT and national statistics).

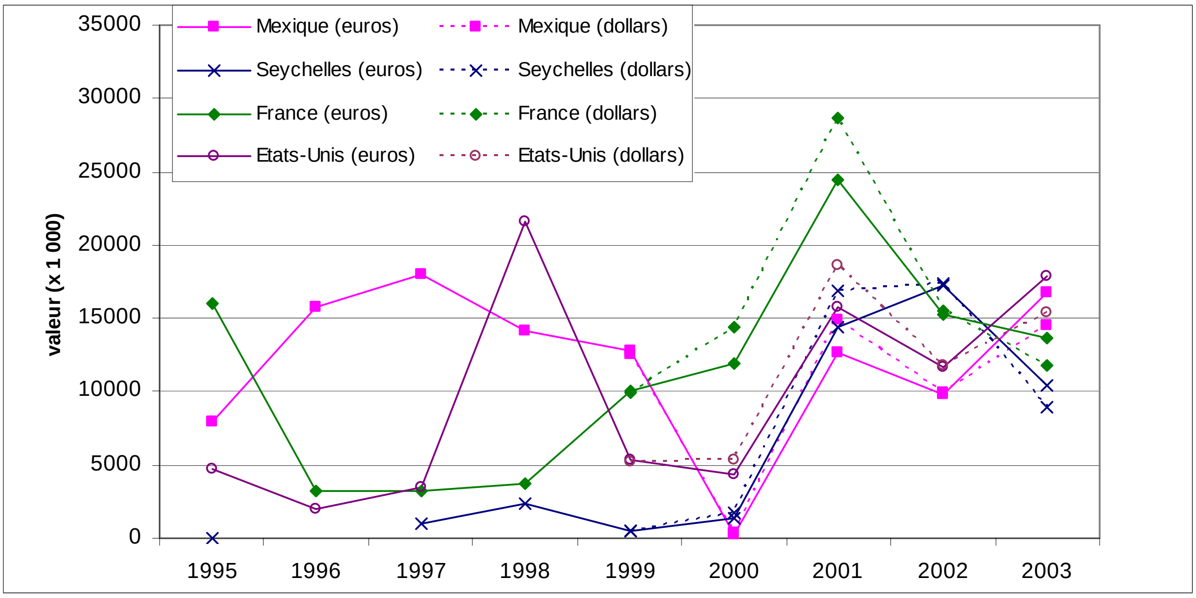


Figure 76: Development and origin of Spanish imports of fresh and frozen tuna for processing, by value, 1995-2003 (sources: EUROSTAT and national statistics).

Yellowfin tuna is the species imported most by Spain (63% of imports of tuna for processing), followed by albacore and skipjack (Figure 77).

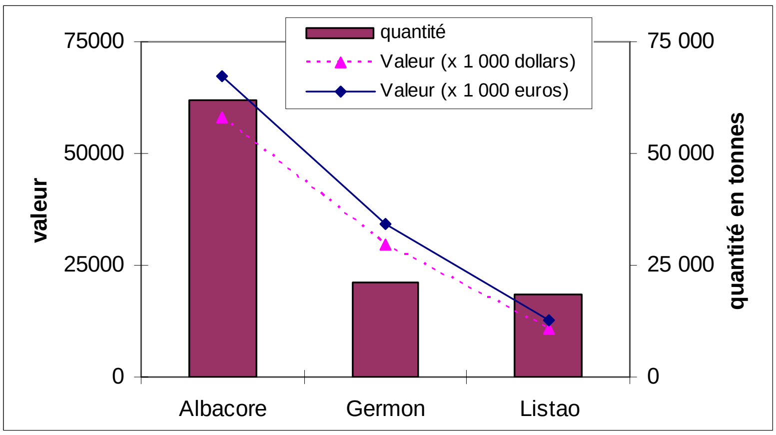


Figure 77: Spanish imports of fresh and frozen tuna for processing, 2003 (source: national statistics).

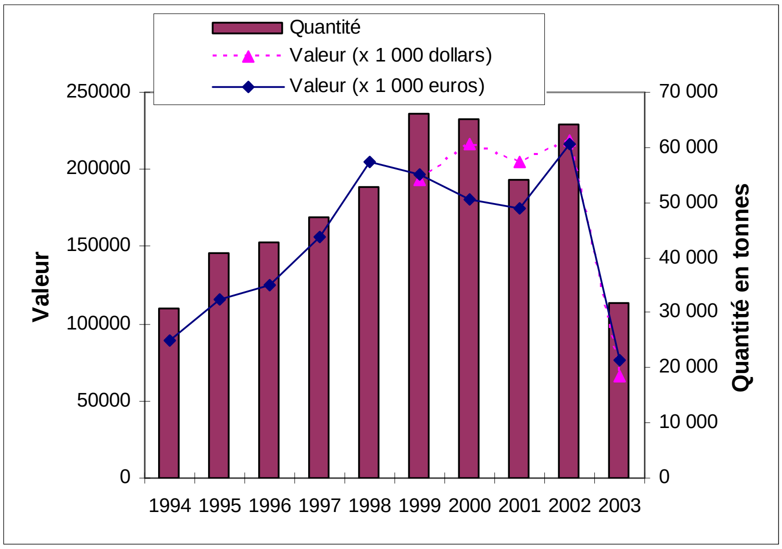


Figure 78: Development in Spanish imports of pre-cooked and frozen tuna loins (tonnes) and value (euros/dollars), 1994-2003 (sources: EUROSTAT and national statistics).

The countries of origin of tuna loins are Ecuador, Venezuela and Costa Rica (Figure 79).

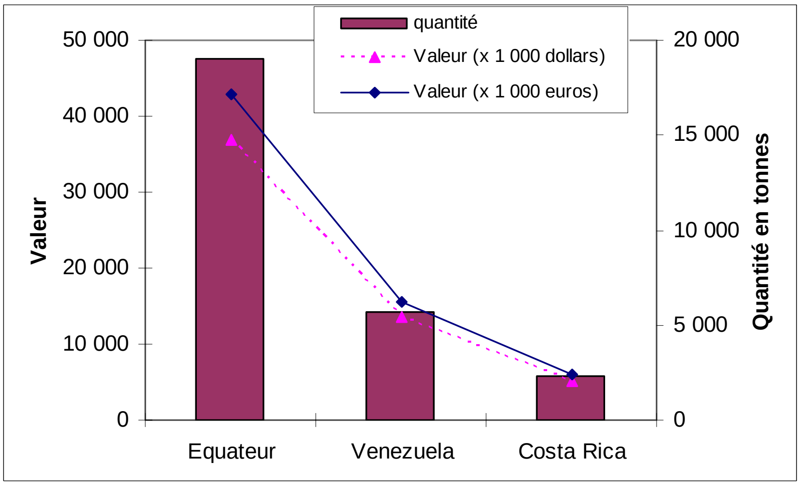


Figure 79: Origin of Spanish imports of pre-cooked and frozen tuna loins per country (tonnes) and value (euros/dollars), 2003 (source: national statistics).

With 251,000 tonnes of canned tuna produced in 2002, Spain is the biggest producer of canned tuna in the EU. The production of canned tuna represents approximately 60% of the total production of canned products of fishing in Spain. Skipjack (as well as other species of lower value) is generally marketed under the name of "*atun*" whereas canned yellowfin tuna is marketed as "*atun claro*" and canned albacore is marketed as "*bonito del Norte*". The most widely available canned goods are tuna in brine and tuna in vegetable oil in packs of 3 cans of 80 g, with tuna in olive oil and added value products (tuna salads, tuna in sauce, tuna in foil pouches) being less common.

The Spanish tuna industry is grouped together within the INTERATUN Association which represents the interests of the industry, including all sectors at all levels (catching, processing and trading).

The two organisations which represent the Spanish canning industry within INTERATUN are the National Association of Fish and Seafood Canners (ANFACO - *Asociacion Nacional de Fabricantes de Conservas de Pescados y Mariscos*) and the Spanish Federation of Fish and Seafood Processors (FEICOPESCA - *Federacion Espanola de Asociaciones de Industrias de Transformacion y Comercializadores de Productos de la Pesca y la Aquaculture*).

2.2.1.2 The companies

Spain has a very high number (over a hundred) of companies specialising in canning fish and seafood, particularly tuna. These companies vary from units of a modest size to groups of international dimensions. Amongst these companies we can quote (source: ANFACO) in particular:

Alfonso García Lopez, S.A.	1.25T/ day
Antonio Alonso, S.A.	50 T/day
Bernardo Alfageme, S.A.	50 T/day
Conservas de Noroeste, S.A.	20,000 T/year
Frinsa de Noroeste, S.A.	80,000 T/year
Friscos, S.A.	75 T/year
Grupo Calvo	600 T/day
Hijos de Carlos Albo, S.A.	60 T/day
Ignacio Gonzalez Montes, S.A.	13,000 T/year
Isabel Garavilla S.L.	120,000 T/year
Jealsa Rianxeira S.A.	111,000 T/year
Ortiz S.A.	8,000 T/year
SALICA – Grupo ALBACORA	95,000 T/year

It is not possible to list all these companies. Some of the most important are described below.

2.2.1.2.1 Calvo

The Calvo SA group is the biggest tuna cannery in Spain. It is also present in Italy (under the Nostromo brand) and in Portugal. Calvo produces yellowfin tuna in brine, in oil (in olive oil for the Italian market), in sauce, tuna salads and tuna in foil pouches. The group also produces canned tuna and tuna in foil pouches for the catering industry. Calvo owns 11 boats, seven of which are purse seiners and four of which are refrigerated boats used for transporting frozen tuna. The canneries in the Calvo group are located in Carballo and Esteiro (Galicia, Spain). The total production of the Galician factories is 45,000 tonnes per annum. Other factories have been set up in Punta Gorda (El Salvador - capacity of 65,000 t) and in Guanta[34] (Venezuela - capacity of 16,000 tonnes). Recently, Calvo bought 80% of the shares in the Brazilian company Gomes da Costa, the biggest producer of canned goods in Latin America, with a capacity of 65,000 tonnes per annum. The construction of a new cannery in Punta Gorda has also been planned.

2.2.1.2.2 Jealsa

Jesus Alonso SA (Jealsa) is another Spanish manufacturer (brands: Jealsa and Escuris) also present in Italy (with the brand Star, as part of Mare Aperto) and in Latin America. Jealsa owns four purse seiners and one aid ship. The Jealsa fleet conducts its operations using boats from the Albacora-Salica group of shipowners. In addition to one unit dedicated to tuna in Boiro (capacity of 400 t/day), Jealsa owns a cannery in Guatemala. Jealsa has planned the construction of other factories in Morocco and Chile. Jealsa probably employs 2,200 employees for a turnover of almost €350 million.

2.2.1.2.3 Isabel-Garavilla

Established in 1887, Isabel-Garavilla is one of the oldest companies on the Spanish fish market. Isabel-Garavilla owns five purse seiners which catch between 35 and 40,000 tonnes of tuna every year and one refrigerated ship. Isabel-Garavilla owns canneries in Spain (Galicia and the Basque country), Ecuador

[34] *The Guanta cannery was destroyed by demonstrators in August 2004, and will be reopened in the course of 2005.*

(Manta) and Morocco (sardine and mackerel). The cannery in Ecuador also produces tuna loins which are then delivered to Spain for final processing. Isabel-Garavilla is present on the Spanish and international market (EU, Tunisia, Algeria, Japan, Australia and New Zealand) with tuna canned in oil, in brine, in cans, in foil pouches, and in the form of tuna salad. Isabel-Garavilla probably employs 2200 employees producing a turnover of €200 million.

2.2.1.2.4 Albacora - Salica

Albacora, a tuna purse seiner shipowner, also produces canned tuna under the name of Salica, Campos and Bachi. It owns factories in Spain, where it produces canned tuna, and in Ecuador, where it produces loins for final processing in Spain.

2.2.2 Italy

The Italian canned tuna industry	
Species caught	Yellowfin tuna
Domestic production	72,000 tonnes of canned tuna in 2002 (source: FISHSTAT)
Brands	Rio Mare, Nostromo, Star, Mareblu and Maruzzella
Sources of raw material and tuna loins	Loins from Ecuador and Colombia. Raw material from the Franco-Spanish and Taiwanese fleet

The Italian canned tuna industry depends on imported material, whole and in loins. It mainly uses yellowfin tuna for its canned goods. Skipjack is essentially used for "top price" products. Unlike France and Spain, Italy does not own a fleet of purse seiners which targets tropical tuna, but a fleet which targets bluefin tuna in the Mediterranean. Most bluefin tuna are exported to Japan for the *sashimi* market, and the rest can be sold locally for direct consumption or processed as luxury canned goods.

In 1992, the Italian industry was fourth in the world, with 93,000 tonnes, behind the United States (273,800 tonnes), Thailand (243,600) and Japan (98,100). Italy used to import over 100,000 tonnes of whole tuna per annum, in particular yellowfin tuna (source: FISHSTAT). However, because of the high prices of yellowfin tuna imported by Italian canneries, and the cost of production factors, the Italian industry began to lose its competitivity. Consequently, the Italian industry rapidly changed its raw materials supply policy, on the initiative of Trinity Alimentary (Bolton). Imports of frozen tuna fell by 60% between 1992 and 2003 (Figure 80) dropping to a level of 34,000 tonnes. The principal zones of origin of imports of whole tuna are the Chinese province of Taiwan, Spain and France (Figure 81).

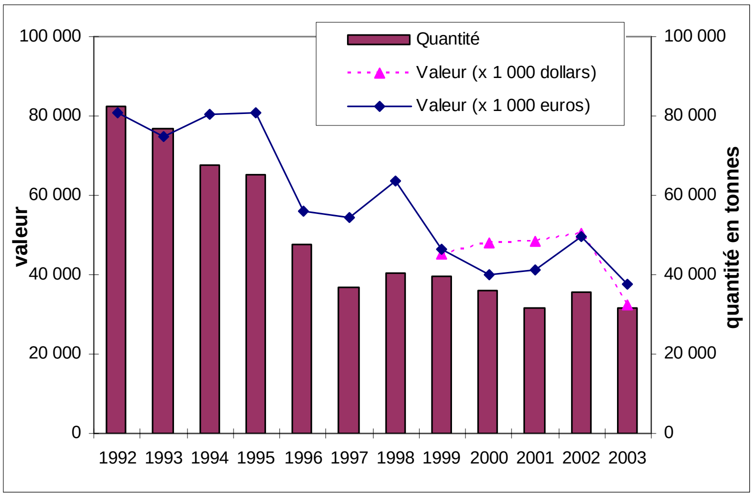


Figure 80: Development in Italian imports of frozen yellowfin tuna for processing (tonnes) and value (euros/dollars), 1994-2003, (sources: EUROSTAT and national statistics).

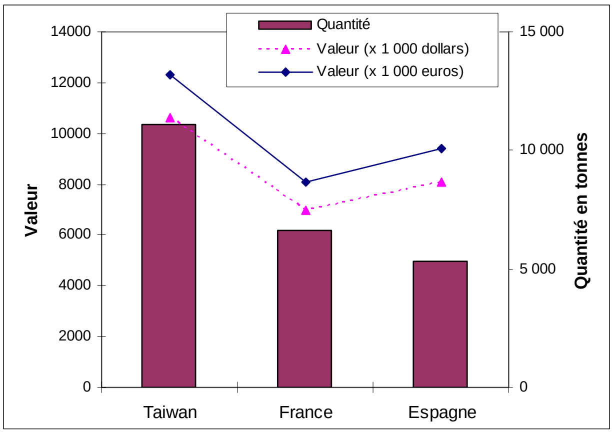


Figure 81: Origin of Italian imports of frozen yellowfin tuna for processing (tonnes) and value (euros/dollars), 1994-2003, (source: national statistics).

Italian imports of tuna loins rose significantly (100% between 1993 and 2003 - Figure 82). The 36,000 tonnes of loins currently imported by Italy represent 86,000 tonnes of whole tuna. 95% of imports of loins consist of yellowfin tuna. The principal countries of origin of Italian imports of loins are Ecuador, Colombia, Kenya and Thailand. In all, the Italian industry mainly imports products which originate in GSP countries (72%) and ACP countries (23%).

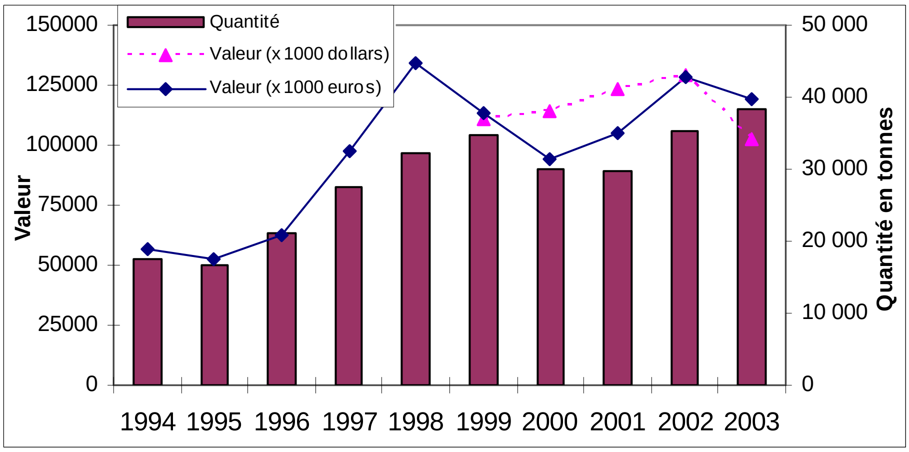


Figure 82: Development in Italian imports of tuna loins (tonnes) and value (euros/dollars), 1994-2003, (sources: EUROSTAT and national statistics).

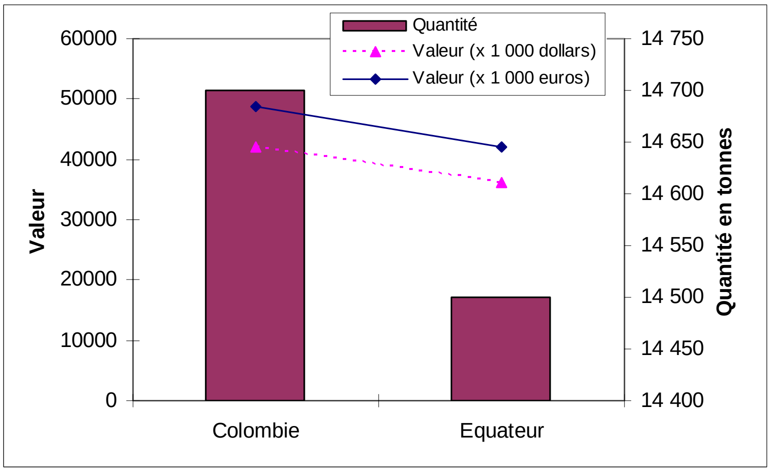


Figure 83: Origin of Italian imports of tuna loins (tonnes) and value (euros/dollars), 2003, (source: national statistics).

The production of canned tuna in Italy fell from 93,000 tonnes in 1992 to 72,000 in 2002 (Figure 74), because of the loss of competitivity of the Italian industry in comparison with developing countries and the purchase of Italian canning factories by international groups which transferred some of the canning activities abroad, while retaining the commercial brands on the Italian market (Nostromo, Mareblu and Star no longer manufacture in Italy). The Italian industry is therefore essentially based on Rio Mare (Trinity - Bolton in Cermenate and Milan; Palmera in Sardinia and Maruzella in Marana Lagunare).

From an industrial point of view Italy has been able to develop products with added value, such as preparations for pasta and tuna pâté. Certain traditional products are also still produced by companies of a modest size: fillets of yellowfin tuna in oil in glass jars, tuna ventreches and canned Atlantic bluefin tuna.

2.2.3 France

2.2.3.1 General information

The French canned tuna industry

Species	Yellowfin tuna and albacore
Domestic production	43,000 tonnes of canned tuna in 2002 (source: FISHSTAT)
Brands	Saupiquet and Petit Navire
Sources of raw material and tuna loins	Canneries in Africa use whole raw material. Domestic canneries use tuna loins from Thailand, Italy and Ecuador.

Most of the catches of yellowfin tuna made by the French fleet are sold in the Côte d'Ivoire, in Italy and in Spain (Figure 84).

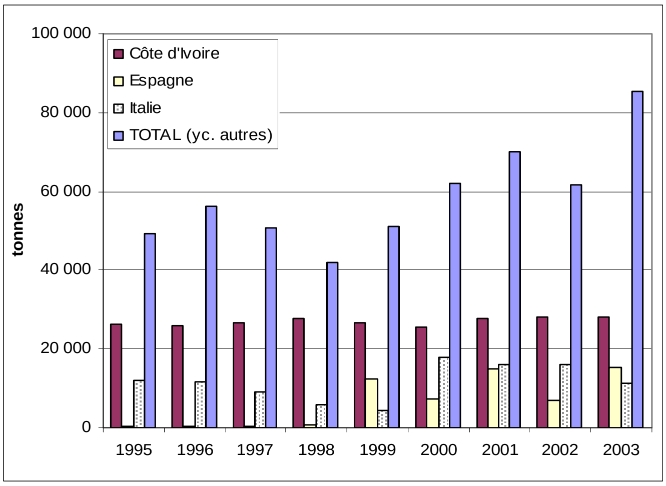


Figure 84: French exports of fresh and frozen yellowfin tuna for processing, (tonnes), 1995-2003 (sources: EUROSTAT and national statistics).

Catches of skipjack are sold to the Seychelles, to the Côte d'Ivoire, to Madagascar, to Thailand, to Spain, Mauritius and the Islamic Republic of Iran, a relatively young tuna industry experiencing rapid development (Figure 85).

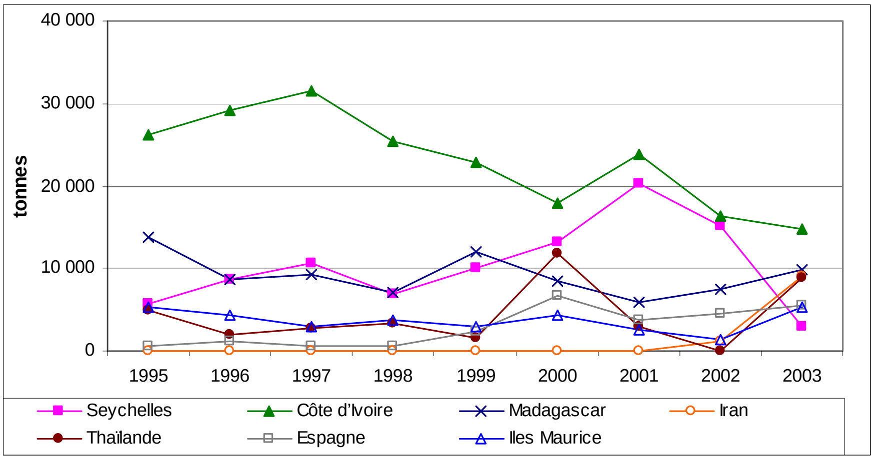


Figure 85: Development of French exports of fresh and frozen skipjack for processing, (tonnes), 1995-2003 (sources: EUROSTAT and national statistics).

The raw material was provided by SOVETCO, except for tuna caught by the shipowner Saupiquet which was sent directly to the SCODI cannery, until it closed in March 2005.

From the early 1990s, France imported tuna loins rather than whole tuna in order to protect, at least in part, its domestic canneries. According to the French Federation for the Canning Industry (FIAC 2004[35]) the use of tuna loins for processing rose from 30% in 1992 to 90% in 2003, with whole tuna no longer being used except for luxury preparations.

French production of canned tuna rose from 28,100 tonnes in 1988 to 43,000 tonnes in 2002 (Figure 74). At the same time, the French canning industry is very concentrated: the number of factories fell from 200 in the 1950s to 17 today, but in only 23 years (1980-2003) turnover has increased from €80 million to €897 million (source: FIAC 2004).

[35] *FIAC 2004. Economic report 2003 – Products of the sea. Paris, ADEPALE*

Tuna production in France is concentrated on tuna salads, whereas the traditional products in brine and oil are manufactured in Africa. The production of "easy peel" tuna salads currently represents 73% of the total production of canned tuna in France (source: FIAC 2004).

The principal French canning industries are Saupiquet and Paul Paulet. Saupiquet owns the Dutch group, Bolton. Paul Paulet, which produces the Petit Navire brand, is owned by the Heinz group. Another "historical" company, Pêche et Froid, is owned by the Moroccan group Omnium Nord Africain (ONA) which no longer has a production site in France after closing the factories in Etel and Boulogne sur Mer. These three companies produce approximately 44% of canned tuna consumed in France.

2.2.3.2 The companies

2.2.3.2.1 Bolton- Saupiquet

The Dutch group Bolton, which produces articles for the home and for personal hygiene, owns Saupiquet and the former Trinity Alimentari, now called Bolton Alimentari Italia, which produces Rio Mare canned tuna.

Saupiquet is a company involved in all phases of the production chain: fishing, processing and distribution. The Saupiquet fleet delivers its catches to the SCODI cannery in Abidjan (closed in March 2005) while the Saupiquet cannery in Vannes (France) processes tuna from pre-cooked and frozen loins.

The principal products are: tuna in vegetable oil and brine, produced in Abidjan. Whole products with added value such as tuna salads, tuna in sauce and tuna in spices are produced in France. Following the lowering of tariffs on canned tuna from Thailand, Saupiquet began to import canned tuna from Thailand, particularly in foil pouches. Products such as tuna pâtés, potted tuna, tuna in sauces and diced tuna are produced by Italian factories owned by the Bolton group.

2.2.3.2.2 Paul Paulet - Petit Navire

Paul Paulet is owned by the Heinz Company, which is present on the market of numerous English-speaking countries, but also in France and Italy. Paul Paulet canned tuna is produced in Douamenez (France), in Ghana, where the Heinz company owns the Pioneer Food Company cannery, and in the Seychelles, where Heinz uses the Indian Ocean Tuna Ltd cannery.

2.2.3.2.3 The others

Pêche et Froid is owned by the Moroccan group Omnium Nord Africain (ONA). The company no longer has any factories in France. Pêche et Froid Océan Indien (Antsiranana, Madagascar) processes whole skipjack. Pêche et Froid Cote d'Ivoire (Abidjan) processes whole yellowfin and skipjack tuna. It should be emphasised that the traditional Pêche et Froid brand ("Pompon rouge") has virtually disappeared and that Pêche et Froid basically works for the own brands.

Other smaller companies, such as Wenceslas Chancerelle and COBRECO, produce high quality canned tuna, particularly albacore, for the French market. The production of canned albacore ("white tuna") in France, from fish caught by Spanish and French fleets operating in the North Eastern Atlantic, is approximately 1,500 - 2,000 tonnes per annum (source: FISHSTAT).

3 The processing facilities on the American continent

The principal tuna producers are the United States, Mexico and certain South American countries such as Ecuador, Colombia and Venezuela. The tuna industry is not integrated at regional level as is the case in the EU and Africa, except with regard to the relationship between the United States and Ecuador, which will be analysed in the following chapter.

The production of canned tuna rose by 36% between 1988 and 2002. The canneries in American Samoa (which produce almost all canned tuna of US origin) remain the principal producers, followed by Ecuador which produces canned tuna as well as pre-cooked and frozen tuna loins for canneries in the United States (Figure 86).

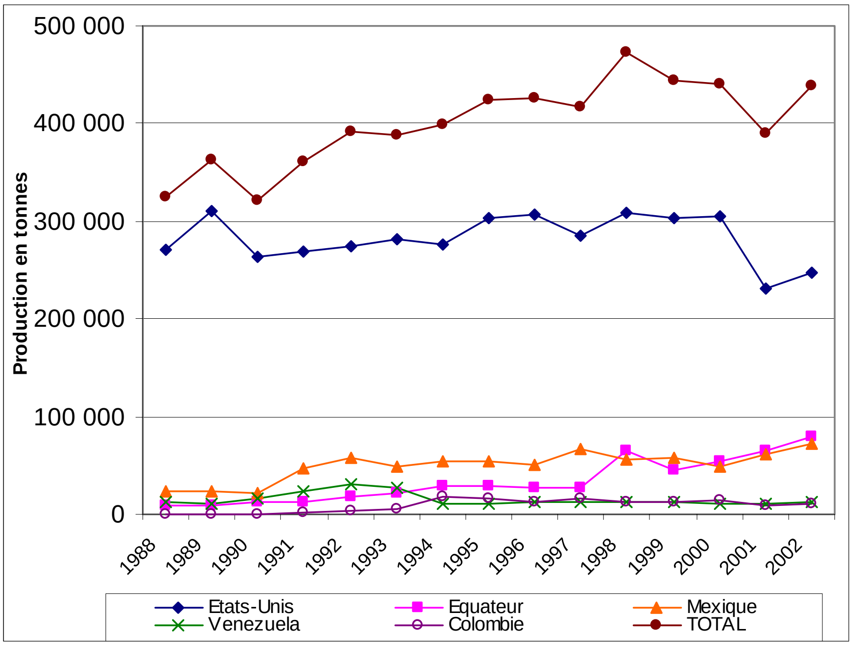


Figure 86: Development of the production of canned tuna[36] from the American continent per principal producing country, (tonnes), 1991 - 2002 (source: FISHSTAT).

3.1 The United States

The US canned tuna industry	
Species caught	Skipjack and yellowfin tuna and albacore
Domestic production	248,100 tonnes of canned tuna in 2002 (source: FISHSTAT)
Sources of raw material and tuna loins	Raw material from the fleet active in the Western Pacific and tuna loins from Fiji, Trinidad, Ecuador and Thailand.

The principal canneries in the United States are in American Samoa, which has the status of an American territory. Almost all the canneries in Puerto Rico, which has the same status as American Samoa, have closed for a number of factors: the high cost of labour, combined with the price of raw material and the shortage of unloadings from the Central Eastern Pacific. Only one cannery remains in Puerto Rico and one in the United States, in California (Table 38:).

[36] *Including pre-cooked and frozen loins*

Table 38: Canneries in the United States (source: Bumble Bee).

Brand name	Canneries	Production capacity (Tonnes/yera)	
		Whole tuna	loins
Bumble Bee	Puerto Rico	9 600	12 000
	California	From loins only	36 000
Chicken of the Sea	American Samoa	84 000	24 000
Starkist	American Samoa	120 000	24 000

The production of canned tuna in the United States (approximately 60% by the Starkist cannery and 40% by the Chicken of the Sea cannery, both in American Samoa) fell by 25% between 1989 and 2003 (Figure 87) because of competition from the Asian countries. In order to alleviate this problem, canneries in American Samoa therefore increased production from tuna loins while certain manufacturers moved production to Asia.

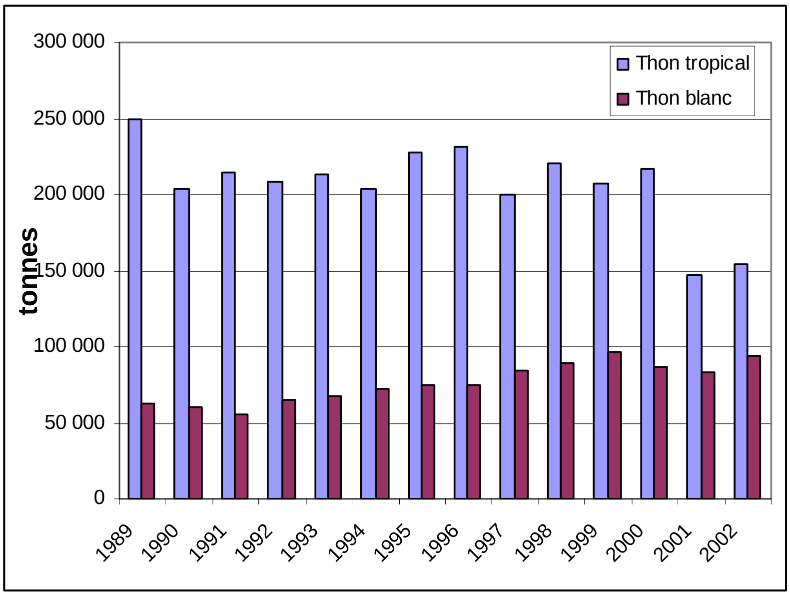


Figure 87: Development in the production of canned tuna in the United States, (tonnes), 1989-2003 (source: FISHSTAT).

Canneries in the United States are making increasing use of pre-cooked frozen loins. Imports of tuna loins to the United States multiplied by 13 in quantity and by 17 in value between 1989 and 2003 (Figure 88).

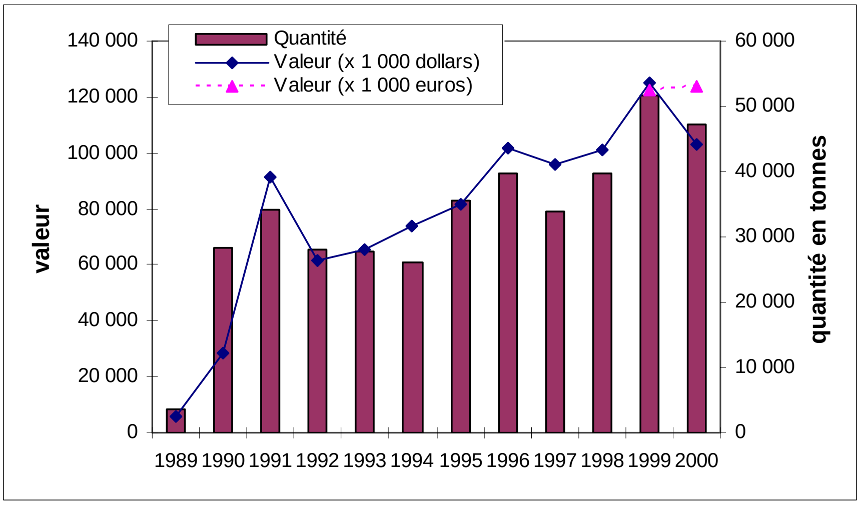


Figure 88: Development of imports of pre-cooked and frozen tuna loins to the United States (tonnes) and value (euros/dollars), 1989-2003 (source: national statistics).

The principal countries of origin of imports of tuna loins are: Fiji, Trinidad and Tobago, Thailand and Ecuador. Since Fiji has begun to export tuna loins, factories in Ecuador and Thailand, which now aim to produce tuna in foil pouches in particular, have lost their dominant position (Figure 89).

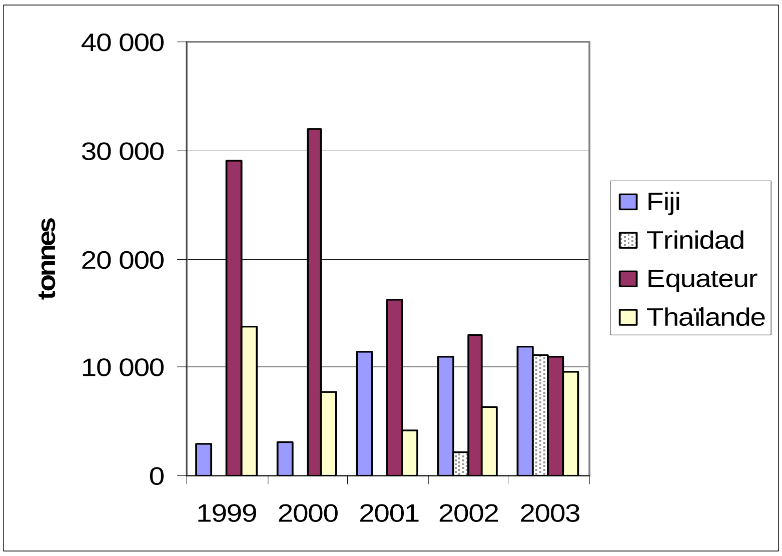


Figure 89: Origin of imports of tuna loins to the United States, 1989-2003 (source: national statistics).

US manufacturers operate canneries in third countries, with low labour costs. The principal countries of origin for imports of canned tuna to the United States are Ecuador and Thailand. The tuna industry in Ecuador had been developed in the 1950s by North American investors for the United States market. On the other hand, the industry in Thailand developed completely independently of American investment.

Starkist carries out processing in Ecuador (leased factory). Bumble Bee processes in Ecuador and Fiji (leased factories), and in Trinidad and Tobago. The brand " Chicken of the Sea", owned by Thai Union, operates in Thailand. Heinz Starkist processes in the Seychelles (leased factory), in Ghana, Portugal and France.

Table 39: United States investment in third countries (source: Bumble Bee).

Canner	Ownership	Location	Production capacity (Tonnes/year)	
			Whole tuna	loins
PAFCO	Pacific Fishing Company (PAFCO)	Fiji	31 200	Production from whole tuna only
Bumble Bee	partly Bumble Bee	Ecuador	36 000	Production from whole tuna only
Bumble Bee	partly Bumble Bee	Trinidad	24 000	Production from whole tuna only
Chicken of the Sea	Thai Union	Thailand (3 plants)	313 000	Production from whole tuna only
Starkist	Leased from M. Augusto Jimenez	Ecuador (2 plants)	72 000	Production from whole tuna only

Canneries in Thailand purchase raw material from the fleet owned by the Chinese province of Taiwan and from Japan. Canneries in Ecuador and Fiji rely on catches from local fleets, whereas canneries in Trinidad rely on catches from the international fleets which operate in the Central Pacific.

Table 40: Origin of raw material used in the Bumble Bee, StarKist and Chicken of the Sea factories in third countries

Canner	Location	Source des matériels bruts
Bumble Bee	Fiji	The fleet based in Fidji (longliners under Taïwanese flag, and commercial agreement with PAFCO) landed 10 400 Tonnes of tuna in 2002, for processing by domestic canning factory or for export
	Ecuador	Ecuatorian fleet landed 114 100 Tonnes of tuna in 2002
	Trinidad and Tobago	Fleet fishing in the Eastern Central Pacific
Chicken of the Sea (Thai Union)	Thaïland (3 plants)	250 000 Tonnes of raw material imported in 2002, of which 117 300 Tonnes from Taïwan
Starkist	Ecuateur (2 plants)	Ecuatorian fleet landed 114 100 Tonnes of tuna in 2002
	Papoua New Guinea	Papua New Guinea fleet landed 121 600 Tonnes of tuna in 2002

3.2 Ecuador

The canned tuna industry in Ecuador	
Species caught	Skipjack
Domestic production	80,300 tonnes of canned tuna in 2002 (source: FISHSTAT)
Sources of raw material and tuna loins	Raw material from the fleet active in the Southeast Pacific (135,400 tonnes in 2002, source: FISHSTAT).

The canned tuna industry in Ecuador was the first to develop in Latin America, thanks to United States investments. The fleet of purse seiners from Ecuador (68 boats) is the most productive in South America, and catches rose by 170% between 1988 and 2002. Almost all catches made by Ecuador fleet are unloaded from the Southeast Pacific.

Catches made by Ecuador fleet and imports from the EU (Figure 98) supply raw material to the twenty or so canneries and factories producing loins in the country, most of which are based in Manta; they have a tuna production capacity of approximately 120,000 tonnes per annum. The Spanish companies Isabel-Garavilla and Salica own factories in Ecuador. The American firms Trimarine, Bumble Bee and Starkist also manage factories in Ecuador. Figure 90 illustrates global production of tuna processed[37] in Ecuador (source: FISHSTAT).

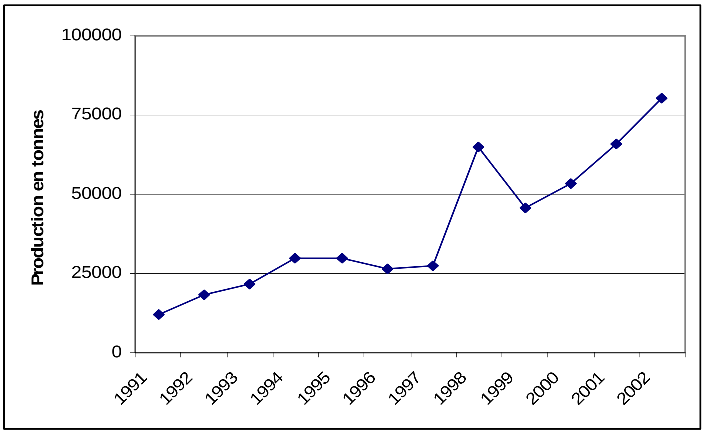


Figure 90: Development in production of canned tuna[38] in Ecuador, 1991-2002 (source: FISHSTAT)

Ecuador benefits from tariff exemptions for its products intended for Europe and the United States. This country is essentially directed towards export.[39]

3.3 Mexico

The Mexican canned tuna industry	
Species caught	Yellowfin tuna
Domestic production	71,800 tonnes of canned tuna in 2002 (source: FISHSTAT)
Sources of raw material and tuna loins	Tuna from the fleet active in the Eastern Pacific (160,200 tonnes in 2002, source: FISHSTAT

Tuna fishing and processing in Mexico began to become an industry in the 1980s, thanks to investments from the public sector which allowed boats to be purchased, particularly in the United States, and several canneries to be set up. Now the tuna industry in Mexico is owned by private investors. Approximately 40 factories are concentrated in the north west part of the country, in the port of Ensenada, in Baja California, in the states of Sonora and Sinaloa, and also in San Carlos, La Paz and Mazatlan. The canneries produce between 60,000 and 70,000 tonnes of canned tuna per annum (Figure 86), operating at full capacity. Pescados Industrializados (PINSA) is the biggest cannery in the country, producing approximately 50% of Mexican canned tuna. The tuna canning industry in Mexico relies on catches from the domestic fleet, with imports being virtually zero in view of the customs barriers imposed by the government on imported tuna for the processing industry.

The Mexican canned tuna industry basically produces for the domestic market, due to lack of access to the two principal world markets for canned tuna: the EU and the United States. In fact, in the United States, there is an informal embargo on tuna caught in the Eastern Pacific on account of the "dolphin tuna" affair which opposed the canneries and distributors.

[37] *FISHSTAT does not make any distinction between the production of frozen and pre-cooked loins and the production of canned tuna*
[38] *See note 24*
[39] *Exports of tuna loins from Ecuador to the European Community increased from 20,700 tonnes in 2000 to 37,500 tonnes in 2003; exports of canned tuna from 21,100 tonnes in 2000 to 37,000 tonnes in 2003.*

In Europe, although Spanish canneries import raw material from Mexico[40], with regard to loins, they prefer to rely on tuna loins produced by countries in Latin America which benefit from tariff exemptions under the generalised system of preferences (Ecuador, Columbia). In addition, certain consumer countries from northern Europe (United Kingdom, Scandinavian countries and Germany) are fairly aware of and sensitive to the problems associated with the environment and the protection of marine mammals; consequently the quantity buyers in these countries only wish to import products which are able to display the label "Dolphin safe".

4 The processing facilities in Asia

4.1 General information

The Asian canned tuna industry	
Species caught	Mainly skipjack
Domestic production	469,500 tonnes of canned tuna and *fushi* in 2002 (source: FISHSTAT)
Principal producer countries	Thailand and Japan
Sources of raw material and tuna loins	Purse seiners from the Chinese province of Taiwan and South Korea which export frozen tuna to canneries in Thailand

The Asian countries are amongst the biggest producers of tuna in the world, even though consumption of canned tuna is fairly limited in this area because of economic and cultural factors. The production of canned tuna in Asia fluctuated around an average of 430,000 tonnes per annum in the period 1988-2002. It is mainly concentrated in Thailand, the biggest producer of canned tuna in the world, followed by Japan, whose production of canned tuna is in decline because of competition from Thailand. Other significant producers are the Philippines, Iran and Indonesia. Iranian production is the most dynamic, increasing by 350% during the period under consideration without any fluctuations (Figure 91). The Chinese province of Taiwan and South Korea consume very little canned tuna and a significant portion of their catches is exported.

[40] *Mexico benefits from an EU quota of 6,000 tonnes of loins (6%) (progressive increase of 1,000 tonnes per annum) and 4,500 tonnes of canned tuna (7.9%) (progressive increase of 500 tonnes per annum) up to 2006.*

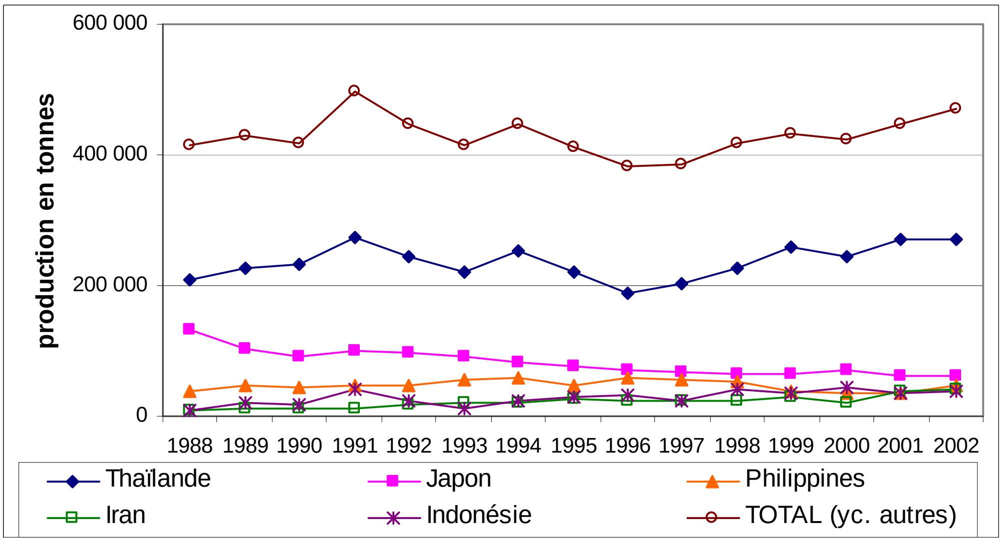


Figure 91: Development of Asian production of canned tuna[41] per country (tonnes), 1988-2002 (source: FISHSTAT).

4.2 Thailand

The Thai canned tuna industry	
Species	Mainly skipjack
Domestic production	269,400 tonnes of canned tuna in 2002 (source: FISHSTAT)
Sources of raw material	Imports, especially from the Chinese province of Taiwan and Japan (between 400 and 500,000 tonnes per annum)
Canneries (number)	22
Total capacity	1 million tonnes of raw materials per annum
Canneries	See Table 41
Location	Especially in the Bangkok region
Production	Skipjack, but also yellowfin tuna and albacore
Destination of products	Mainly for the international markets, but also for the domestic market and for the regional markets

The Thai sector of canned tuna is a fantastic example of an industry which has developed by relying on imports of frozen raw material (especially skipjack) from neighbouring countries and territories (in particular the Chinese province of Taiwan and Japan) and on very competitive labour costs. Thailand had not produced any canned tuna until 1980. In only 10 years, it became one of the most powerful producers of canned tuna in the world, and is currently the biggest world producer of canned tuna.

[41] *Including fushi products (dried and smoked) and pre-cooked and frozen tuna loins*

Thai canneries process between 400,000 and 500,000 tonnes of imported raw materials per annum, except during the period 1996-1998 (Figure 92). In the course of this period, imports of tuna as well as the production of canned tuna dropped significantly (Figure 91) following a serious reduction in catches of skipjack, followed by any increase in the price of frozen skipjack, which forced the Thai cannery UNICORD to close and sell the recently acquired US company Bumble Bee (1989). On the other hand, in subsequent years, excess supply of skipjack was to lead to two serious falls in price at the end of 2000 and from late 2002 to early 2003, which was to justify radical interventions by the WTPO.

Amongst the species imported by Thailand, the increase in imports of albacore between 1991 and 2003 is symptomatic of the demand for canned white tuna from the North American market (Figure 92).

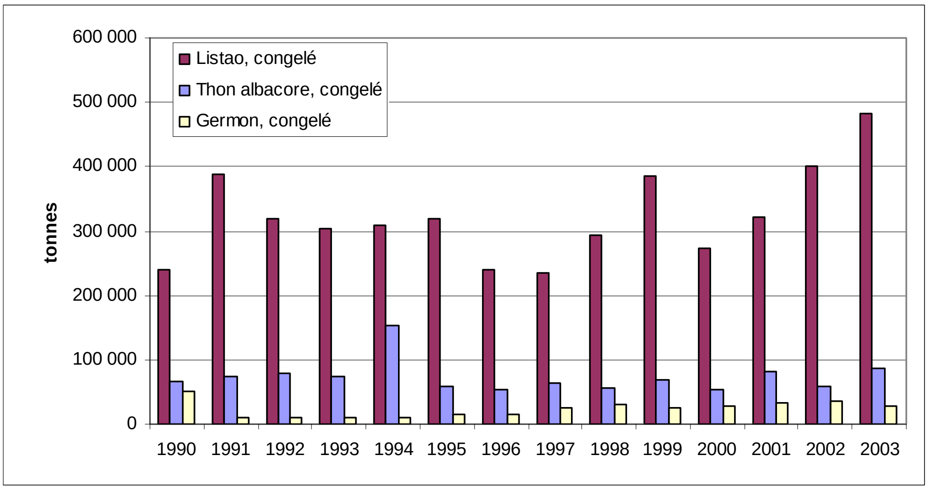


Figure 92: Development of Thai imports of tuna raw materials (tonnes), 1990-2003 (source: FISHSTAT for 1990-2002, national statistics for 2003).

According to national statistics, approximately 50% of Thai imports of tuna is fish caught by purse seiners from the Chinese province of Taiwan in the Central Western Pacific, and 20% of imports are of Japanese origin (source: national statistics).

The Association of Thai Canneries lists 22 tuna canneries. Most of these are small and medium-sized businesses, with the only big businesses being the Thai Union Frozen Products group (Thai Manufacturing Co Ltd and Songkla Canning) which owns the North American company Chicken of the Sea, as well as Narong Canning, Chotiwat Manufacturing Co Ltd, and UNICORD (Table 41). A group of canners amalgamated with Sea Value in order to be able to rival Thai Union. As a result, Thailand has two major operators: Thai Union and Sea Value.

Table 41: Thai canneries (source:www.thaifood.org).

Thai Union Manufacturing Co. Ltd.	International Seafood Associates Co. Ltd.
Unicord Public Co. Ltd.	Chotiwat Manufacturing Co. Ltd.
Tropical Canning (Thailand) Co. Ltd.	Thai Union Frozen Products Public Co. Ltd.
S.K. Foods Co. Ltd.	Premier Canning Industry Co. Ltd.
B&M Products Co. Ltd.	Vivorn Intertrading Co. Ltd.
Pataya Food Industries Co. Ltd.	Mahachai Marine Products Co. Ltd.
Songkla Canning Public Co. Ltd.	Pattani Food Industries Co. Ltd.
R.S. Cannery Co. Ltd.	Samui Foods Co. Ltd.
Southeast Asian Packaging and Canning Ltd.	Golden Prize Canning Co. Ltd.
Thai Agri Foods Public Co. Ltd.	Siam Tin Food Products Co. Ltd.
Narong Canning Co. Ltd.	Overseas Canning Co. Ltd.

Thai canneries process between 400 and 500,000 tonnes of tuna per annum. Thai canneries produce canned tuna, in brine and oil, products with the added value such as tuna salads, tuna in spices, tuna in foil pouches, etc. For the local market and the regional markets of Southeast Asia, the Thai canneries produce products with added value such as tuna pâté, curried tuna, tuna with chilli, *tom-yam* tuna (soup), tuna with ginger and other spices. The principal brands for the domestic market are: Sealect, Nautilus, TC Boy, Rosa.

Thai exports target the markets in the United States (26%), the Middle East (17%), the EU (United Kingdom, Germany) (13%), Australia, New Zealand and the markets of Southeast Asia, whose supermarkets offer a wide range of Thai canned tuna products (Table 42). The growth of exports between 2002 and 2003 is the highest for the United States (40%) and for Australia/New Zealand (25%). In addition, exports to countries in Eastern Europe increased by 26% during the same period.

As shown in Table 42, the production of Thai canned tuna is over 200,000 tonnes (FISHSTAT extracts). According to appendix 5, Thai exports to the European Community (15 members) were 25,206 tonnes of canned tuna and 1,992 tonnes of loins in 2000, 30,589 tonnes of canned tuna and 589 tonnes of loins in 2001 and 40,360 tonnes of canned tuna and 2,743 tonnes of loins in 2002.

It should be pointed out that there are significant discrepancies between the Eurostat data and Thai statistics prior to 2002. Nevertheless, in the case of data for 2002, it is advisable to note a convergence of statistical data. Consequently the FAO estimates the production of canned tuna at 269,400 tonnes, Thai customs records 268,300 tonnes exported (compatible with a weak domestic market) of which 39,100 tonnes were intended for the 15-member EU and Eurostat records approximately 40,400 tonnes imported from Thailand.

Table 42: Thai exports of canned tuna, according to destination (sources: national customs)

	Quantities (Tonnes)			Growth (%)	%
	2001	2002	2003	2002/2003	2003
USA	60 850	59 758	83 849	40,31	25,65
Middle East	63 324	54 674	56 711	3,73	17,35
E.U. (15)	***41 853***	***39 057***	***41 109***	***5,25***	***12,57***
Australia/New Zealand	20 038	23 860	29 853	25,12	9,13
Canada	24 066	23 911	23 676	0,98	7,24
Japan/Taïwan	15 289	17 341	17 480	0,80	5,35
E.U. (10 new Member States.)	***11 272***	***11 780***	***14 805***	***25,68***	***4,53***
South America	12 125	4 844	13 343	175,45	4,08
Others	20 763	33 037	46 113	39,58	14,10
TOTAL	**269 580**	**268 262**	**326 939**	**21,87**	**100,00**

This shows, that beyond any inaccuracies in these statistics, Thai production facilities are essentially directed towards export. (Figure 93 and Figure 91). However, a local market is developing for products with added value, adapted to suit local tastes.

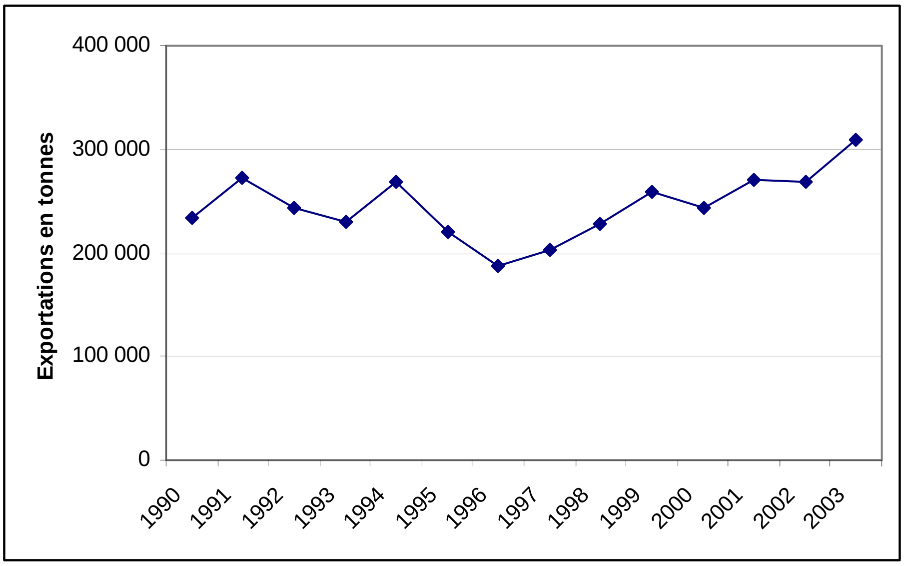


Figure 93: Development of Thai exports of canned tuna (tonnes), 1991-2003 (source: FISHSTAT 1990 - 2002, estimates from national statistics for 2003).

Thailand also produces and exports tuna loins. This activity is also growing very rapidly.

Table 43: Thai exports of tuna loins, according to country of destination (sources: national customs)

	Value (US$M)			Quantity (Tonnes)		
	2001	**2002**	**2003**	**2001**	**2002**	**2003**
USA	28,00	34,00	59,00	10 646	13 877	24 236
Japan	18,00	23,00	26,00	6 099	7 382	8 339
Israel	10,00	13,00	15,00	3 674	5 363	7 111
Italy	2,20	10,20	8,00	842	3 626	2 828
France	0,04	0,07	4,60	12	19	2 281
Spain	na	0,35	1,90	na	168	864
Others	19,00	47,00	48,00	7 621	21 572	23 381
TOTAL	**77,00**	**126,00**	**163,00**	**28 894**	**52 007**	**69 040**

4.3 Japan

The Japanese canned tuna industry	
Species	Skipjack, yellowfin tuna and albacore
Domestic production	62,100 tonnes of canned tuna in 2002 (source: FISHSTAT)
Capacity of canneries	Approximately 200,000 tonnes of raw materials per annum
Use of capacity of canneries	Approximately 120,000 tonnes of raw material per annum
Main industry	Hagoromo Foods Corporation
Location of canneries	Mainly in the prefecture of Shizuoka
Production	Mainly skipjack, but also yellowfin tuna and albacore

Any estimate of Japanese catches for processing into canned tuna is fairly complicated because:

- the skipjack caught by the purse seiners can also be used for *fushi* products;
- the albacore caught using long lines and the pole and line is a species used for both canned tuna and for *sashimi*;
- the *sashimi* market is very selective and gives rise to a high percentage (30 to 40%) of discards of tuna caught using long lines or lines; this tuna is often canned.

In general, it is possible to (under) estimate the tuna caught every year by Japanese purse seiners for canning and *fushi* at 230,000 tonnes, according to FIGIS data.

In an identical way to catches made by the European fleet which are sold to canneries in Africa for processing and export of the processed product to Europe, catches made by the Japanese fleet are exported to canneries in Thailand for processing and export to Japan. In fact, Thailand is the principal destination country for Japanese exports of frozen tuna and the principal country of origin of Japanese imports of canned tuna. Japanese exports to Thailand fluctuated around an average of approximately 50,000 tonnes (equivalent to ¥5.5 billion) between 1988 and 2003 (Figure 94).

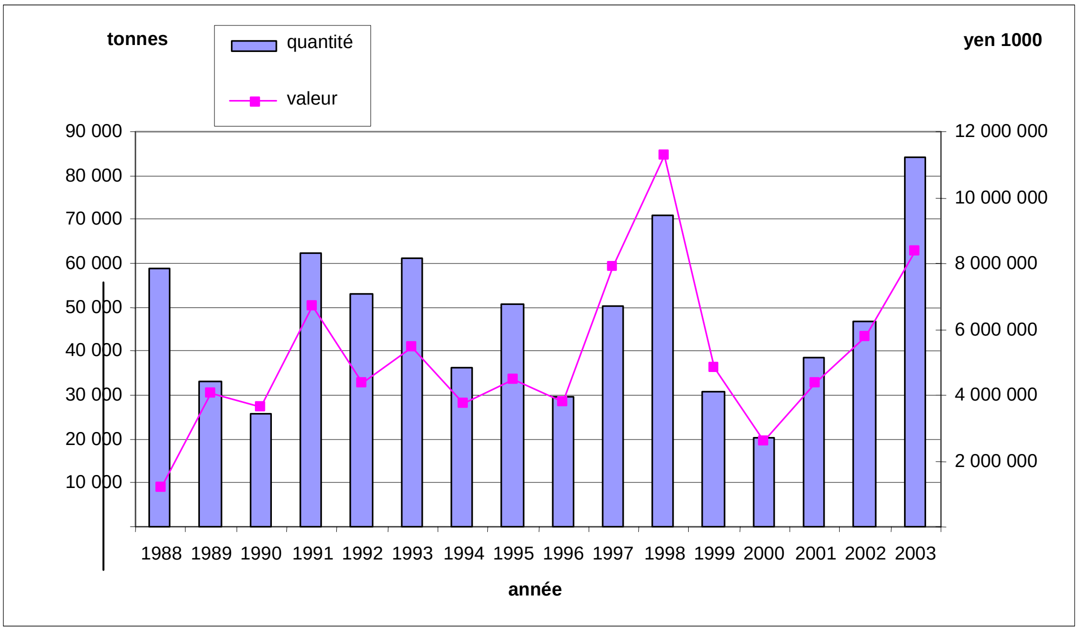


Figure 94: Development of exports of fresh and frozen tuna from Japan to Thailand, quantities (tonnes) and value (thousands of yen), 1988-2003 (source: national statistics).

Imports of fresh and frozen tuna fluctuated around an average of approximately 350,000 tonnes per annum by quantity between 1995 and 2003 (Figure 95).

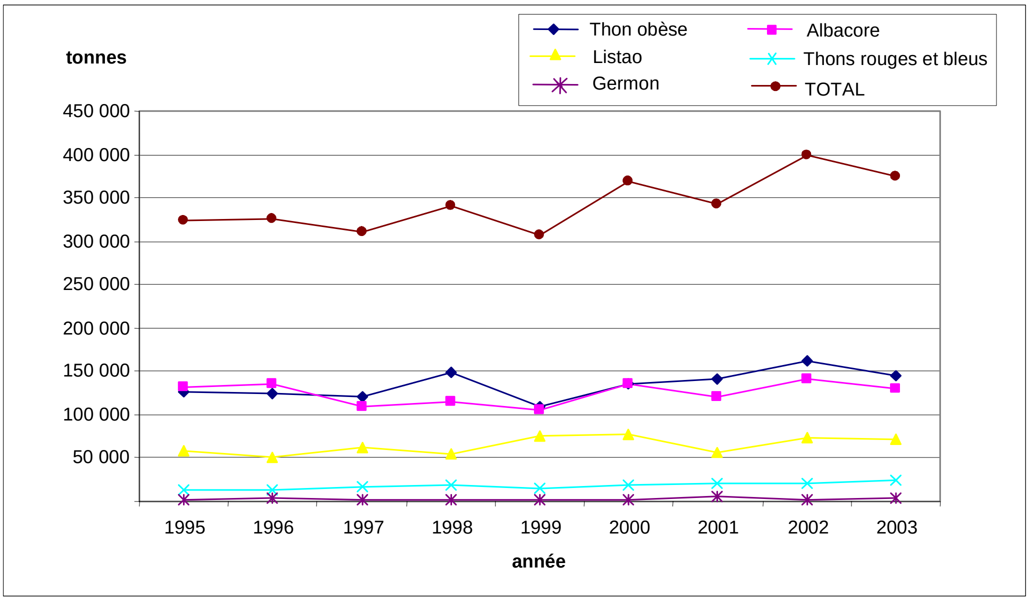


Figure 95: Development of Japanese imports of fresh and frozen tuna per species, 1995-2004 (source: national statistics).

Given the lack of differentiation between the nomenclature for imports of tuna for direct consumption and that for imports of tuna for processing in Japanese trade statistics, an estimate of the Japanese market for tuna intended for canning is fairly difficult.

As a result of the competitivity of imports of canned tuna from Thailand in comparison with domestic production, Japanese production of canned tuna fell by 53% between 1988 and 2002 (Figure 91). The principal Japanese producer of canned tuna is Hagoromo Foods Corporation, which belongs to the Itochu group, which is also a company selling frozen tuna and one of the owners of the Indonesian canning industry Aneka.

4.4 The Philippines

The Philippines canned tuna industry	
Species caught	Mainly skipjack
Domestic production	Approximately 80,000 tonnes of canned tuna per annum (estimate)
Sources of raw material	Catches by the domestic fleet (112,700 tonnes in 2002, source: FIGIS) and imports

The Philippines government implemented a fairly aggressive tuna industry expansion policy by increasing the number of purse seiners from 10 in 1992 to 52 in 2002. The purse seiners unload their catches in the port of General Santos City, the "tuna capital" of the country, where seven canneries process this raw material mainly into canned tuna for the catering industry, in 2 kg cans.

In spite of the expansion of the fleet, catches of tuna by Philippines purse seiners stabilised during the period 1991-2002 at around 105,000 tonnes (Figure 25). The resources targeted most were skipjack and yellowfin tuna in the West and Central Pacific (source: FIGIS).

The tuna industry in the Philippines principally relies on catches rather than on trade in raw materials, even if imports of tuna (principally skipjack) have been quantified by FISHSTAT at between 40,000 and 50,000 tonnes per annum. There are 13 canneries, 7 of which are in General Santos City, but for the time being there are only 9 canneries in operation. The combined production capacity is 400,000 tonnes of raw materials per annum; the use of the aforementioned capacities is partial, considering the average production of canned tuna according to Fishstat (40,000 tonnes per annum; Figure 91). However, if the production estimated by FISHSTAT is compared with exports to the United States and to the EU, we can see a disparity which allows the production of canned tuna by the Philippines to be estimated at approximately 80,000 tonnes per annum (Figure 96), which probably indicates use of the industrial facilities at over 50% of their capacity. Table 44 aims to provide a brief description of the tuna industry in the Philippines.

Table 44: The canned tuna industry in the Philippines (source: INFOFISH).

Canning factories:	13
Factory capacity:	60-150 Tonnes of raw material per factory
Total capacity:	1 325 Tonnes of raw material per day or 400 000 Tonnes per year
Companies :	First Dominion Holdings
	Nautica Canning Corporation
	Maranaw Canning Corporation
	Celebes Canning Corporation
	Clean Water Tuna Corporation
	Sea Trade Development
	R F M Tuna Corporation
	Ocean Canning Corporation
	Mar Fishing
	Permex Export
	Sancanco Canning Corporation
	Century Canning Corporation
	Century Canning Corporation
Canning plants location:	
- General Santos	7
- Zamboanga	3
- Manila	3
Production :	Mainly skipjack, and yellowfin
	2 kg can for catering (80%)
	E.U. and US markets (90-95%)

The tuna industry in the Philippines has begun a process of internationalisation by means of the recent construction of the biggest tuna cannery in Papua New Guinea, RD Tuna Canner (source: ATUNA), in 2002.

Most exports of canned tuna from the Philippines target the EU market (especially the United Kingdom and Germany) and the United States. (Figure 96).

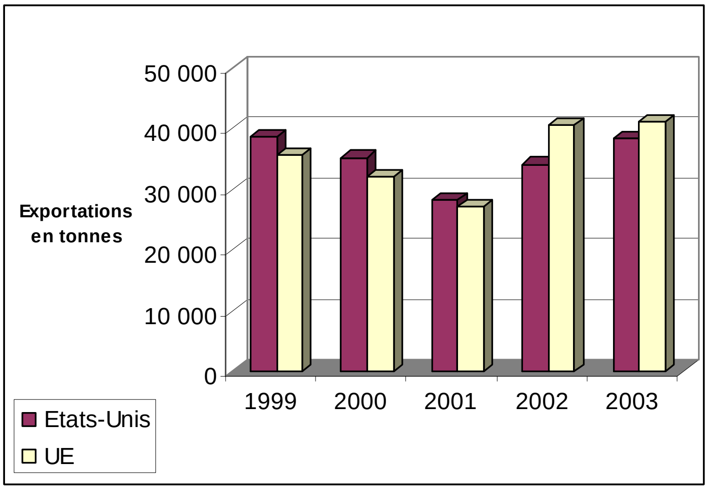


Figure 96: Development of exports of canned tuna from the Philippines to the principal destination countries and territories, (tonnes), 1999-2003 (sources: EUROSTAT and national statistics from the United States).

4.5 The Islamic Republic of Iran

The Iranian canned tuna industry	
Species caught	Skipjack and yellowfin tuna
Domestic production	42,500 tonnes of canned tuna in 2002 (source: FISHSTAT)
Sources of raw material	Catches by the domestic fleet (54,00 tonnes in 2002, source: FIGIS) and imports from the EU

Iranian catches, as well as, in part, imports from the EU fleet (13,100 tonnes, 90% of which consisted of skipjack in 2003, source: EUROSTAT) supply the raw material for the Iranian canneries. The production of canned tuna increased by 350% between 1988 and 2002, producing 42,500 tonnes in 2002 (Figure 91). The tuna produced by Iranian canneries is mainly consumed locally although for the first time in 2002, Iran exported approximately 1,200 tonnes of canned tuna, equivalent to 1/40 of its production (source: FISHSTAT). Table 45 aims to provide a brief outline of the Iranian canned tuna industry.

Table 45: The Iranian canned tuna industry (source : www.sea-ex.com)

Main canners	Behshidhan Food Processing Co.
	Dam and Darya Morvarid Rafsanjan Foodstuffs Sarchin Khazar Food Industrial Co. Tak Ghazvin FCo. (Arvand Tuna)
Canning plant location	Around Teheran, mainly
Production	Skipjack and tongol mainly

4.6 Indonesia

The Indonesian canned tuna industry	
Species	Mainly skipjack
Domestic production	38,300 tonnes of canned tuna and *fushi* in 2002 (source: FISHSTAT)
Sources of raw material	Domestic catches

Fishing for tuna in Indonesia took on the characteristics of an industrial activity in 1972, thanks to investments made by the government. However, it was in the mid-1980s that the industry began to be truly productive, thanks to private investments aimed at improving the fleet and at the start of a partnership with Japan for supplying fresh tuna caught by Indonesian long liners.

One third of Indonesian catches consist of skipjack fished by the fleet of pole and line vessels. The skipjack is processed into canned tuna as well as into dried and smoked products (*fushi*) for the Japanese market.

In 2001, the Ministry of Marine Affairs and Fisheries estimated the presence of 25 tuna processing factories, 16 of which were canneries with 9 factories processing into *fushi*. Approximately 30,000 tonnes of canned tuna is produced per annum, whereas the production of *fushi* products is 7000 tonnes per annum (source: Ministry of Marine Affairs and Fisheries). Table 46 aims to supply a brief description of the Indonesian canned tuna industry.

Table 46: The Indonesian canned tuna industry (source: INFOFISH).

Canning plant:	16
***Fushi* plants**:	9
Canning plants theoritical capacity:	803 tonnes per day or 160 600 tonnes of canned tuna per year
***Fushi* plants theoritical capacity:**	78 tonnes per day or 15 600 tonnes of *fushi* per year
Canning plants effective capacity:	300 tonnes per day or 60 000 tonnes of canned tuna per year
***Fushi* plants effective capacity:**	35 tonnes per day or 7 000 tonnes of *fushi* per year
Main company:	PT Aneka Tuna
Canning plants location:	Bali, Bitun, Surabaya, Biak, Batam
Production	Skipjack mainly, for the international market (USA ; Middle East ; Northern Europe)

However, the canneries have a production capacity of almost 70,000 tonnes per annum. They are working below their production capacity, mainly because of the lack of raw materials, responsibility for which has been attributed to foreign boats fishing in the Indonesian EEZs and unloading their catches abroad.

Indonesian exports of canned tuna dropped by approximately 10% between 1991 and 2002 (Figure 97)

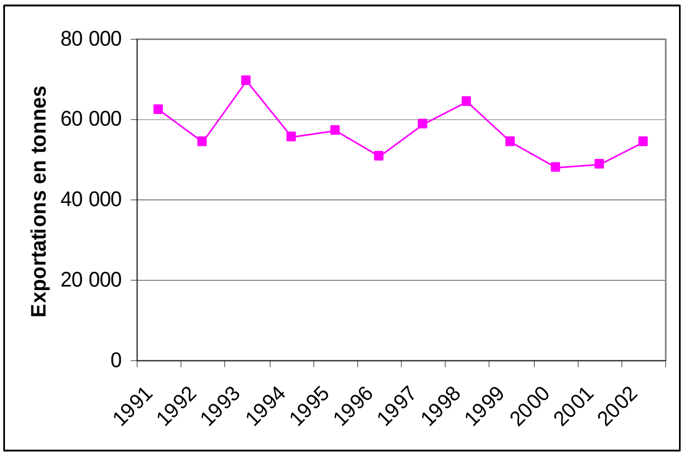


Figure 97: Development of Indonesian exports of canned tuna (tonnes), 1991-2002 (source: FISHSTAT).

Canned tuna from Indonesia is exported mainly to the United States, the Middle East and Northern Europe (United Kingdom and Germany).

5. Africa and the Indian Ocean islands

The EU and certain ACP countries have developed an integrated industry for tropical tuna, whereby the EU fleet catches the tuna (skipjack and yellowfin) and the ACP countries process the raw material into standard products, such as tuna in vegetable oil and tuna in brine. In this way, the principal markets for European exports of frozen tuna are countries in which European companies have set up canneries (Seychelles, Côte d'Ivoire, Mauritius, Ghana, Senegal and Madagascar (Figure 98). The species exported by the EU for processing comprise 50% skipjack and 40% yellowfin tuna (source: EUROSTAT).

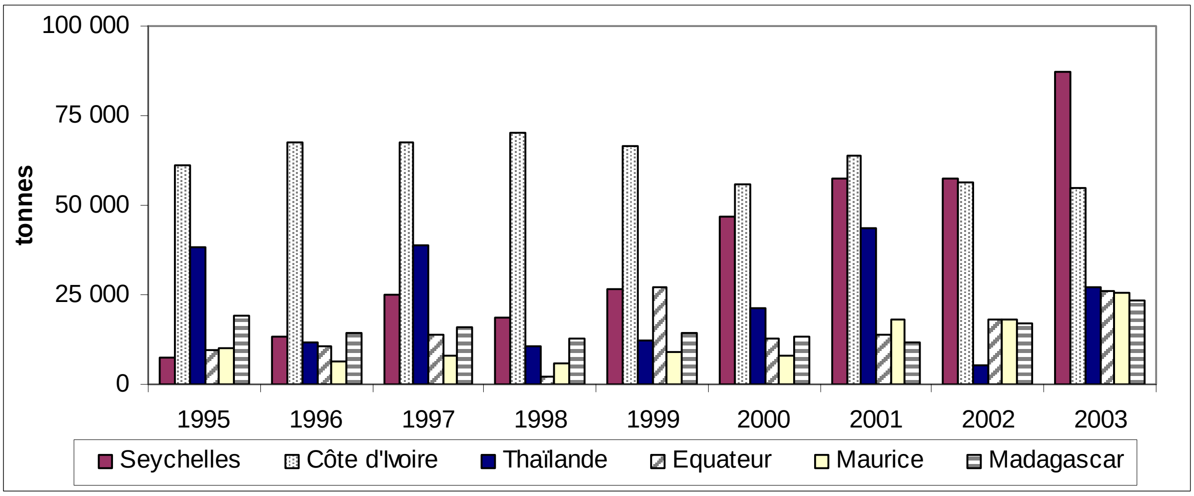


Figure 98: Development of EU exports of fresh and frozen tuna according to country of destination (non-EU), 1995-2003 (source: EUROSTAT)

5.1 Seychelles

The only cannery operational in the Seychelles is Indian Ocean Tuna (Seychelles) Ltd (IOT). Set up in 1987 by French interests (ACF) under the name of Conserverie de l'Ocean Indien, the cannery had a production capacity of 50 tonnes per day, equivalent to 15,000 tonnes per annum. In 1995 Heinz bought out 60% of the shares in the cannery from the Seychelles government and changed the name to IOT.

IOT is the largest cannery in the world after Starkist Samoa. Since 1995, the factory's production capacity has increased continually, up to the current level of 350 tonnes per day. According to the study entitled "Analysis of the Impact on ACP countries of opening up the EU market of canned tuna", commissioned by the Technical Centre of Agricultural and Rural Co-operation ACP-EU and the Commonwealth secretariat from the company IDDRA UK[42], in 2002, IOT appears to have produced 90,000 tonnes of canned tuna, equivalent to 360 million cans (approximately 14% of the canned tuna bought by the European Union).[43]

Mention must be made of the high dependency of the Seychelles economy on the tuna sector. In fact, almost 2,600 direct jobs are linked with the tuna business in the port of Victoria, and over 2,500 direct jobs are generated by the IOT cannery.[44]

5.2 Côte d'Ivoire

The largest Côte d'Ivoire canneries are SCODI (Societe des Conserves de Cote d'Ivoire), PFCI (Pêche et Froid de Côte d'Ivoire) and Castelli. SCODI has a production capacity of 60,000 tonnes of raw material per annum, with the tuna being provided by four purse seiners owned by Bolton-Saupiquet operating in the Atlantic Ocean. In the event of insufficient supply, SOVETCO or the Spanish fleet sell frozen tuna to the cannery.

PFCI has a production capacity of 50,000 tonnes of raw material per annum; with the cannery employing approximately 600 employees. The tuna supply is provided by SOVETCO and by the Spanish fleet.

Castelli has a production capacity of 13,000 tonnes per annum; it produces canned tuna, pre-cooked and frozen tuna loins and canned mackerel.

The total production of canned tuna in the Côte d'Ivoire rose from 47,200 tonnes in 1991 to 121,800 tonnes in 2002 (Figure 99).

[42] *Online: http://agrotrade.cta.int/Tuna_study_30pager_EN.pdf*

[43] *FISHSTAT indicates production of 34,503 tonnes. According to EUROSTAT, the 15-member EU imported approximately 56,500 tonnes of canned tuna and 3,100 tonnes of tuna loin from the Seychelles. We will therefore retain the figures issued by IDDRA UK.*

[44] *"Ex-post evaluation of the outline fishing protocol between the Seychelles and the European Community, and analysis of the impact of the future protocol on durability, including an ex-ante-evaluation" Oceanic Development - Megapesca - Poseidon Ltd - 2004*

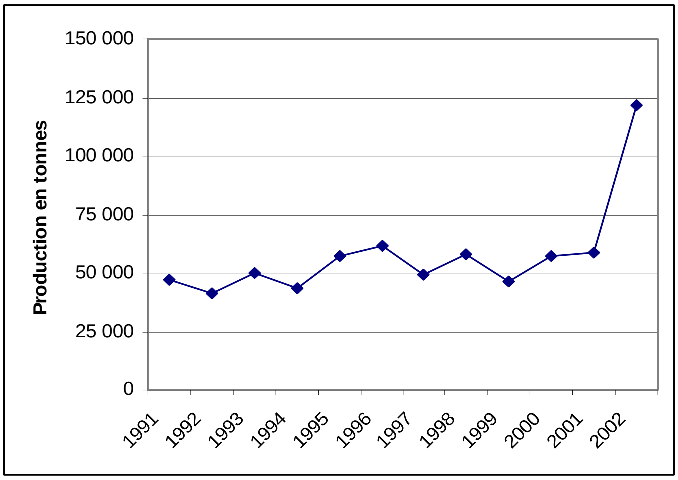


Figure 99: Development of the production of canned tuna from the Côte d'Ivoire, 1991-2002 (source: FISHSTAT).

The closure of SCODI in the first quarter of 2005 will clearly result in a heavy loss of market share for the Côte d'Ivoire and in the substitution of other exporter countries.

5.3 Mauritius

The only cannery[45] is the Mauritius Tuna Fishing Canning Enterprise, owned by Mitsubishi, which produces "Princes Food" tuna for the British market. The cannery processes 182 tonnes of raw material and produces 116 tonnes of canned tuna per day. In 2002, the cannery produced 27,400 tonnes according to FISHSTAT data, 26,600 tonnes of which were for the European market (see appendix 5), in particular the United Kingdom.

5.4 Madagascar

The PFOI (Pêche et Froid Ocean Indien) factory in Madagascar has been operational since 1990, with a production capacity of 40,000 tonnes. The political instability of the island and the health problems at one time compromised the satisfactory functioning of the cannery. Regained political stability encouraged the resumption of processing activities, with production of canned tuna for the European market which has increased from 8,400 tonnes in 1995 to 23,000 tonnes in 2003 (source: EUROSTAT).

5.5 Ghana

Ghana does not feature amongst the principal clients importing tuna for processing from the EU fleet. In fact, the fishing and processing sectors in Ghana are not as integrated as in other African countries. The Heinz Starkist company, a shipowner via TTV and a majority shareholder in the Pioneer Food Company (PFC) cannery is the only example of integration in the country.

Ghana has never signed any fishing agreement the Europeans giving them access to its EEZ. The boats which fish in the EEZ of Ghana (36 pole and line vessels and 10 purse seiners) are owned by shipowners registered in Tema. Except for TTV, with mixed ownership (Heinz and local investors) and World Marine, a mixed South Korean and Ghanaian company, the other shipowners are Ghanaian and their

[45] *It is advisable to note that a new factory manufacturing loins has been started up in the free port of Port Louis*

boats unload catches in Tema, or Abidjan where prices are generally more favourable. Ghanaian purse seiners catch approximately 60,000 tonnes of skipjack and yellowfin tuna per annum (Figure 100).

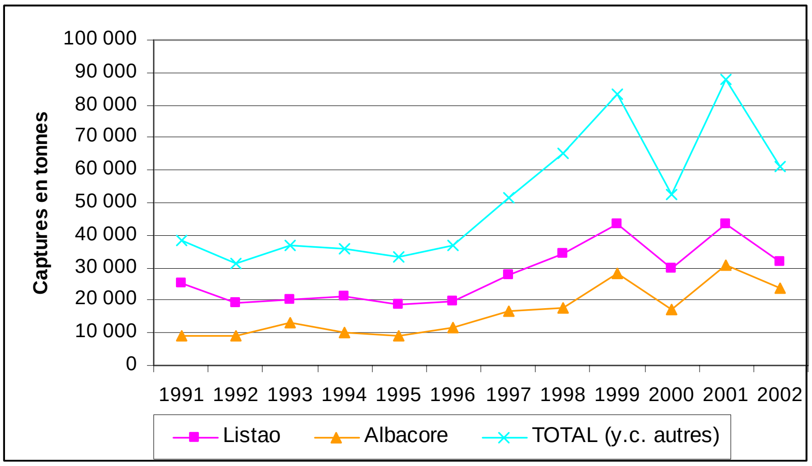


Figure 100: Development of Ghanaian catches of tuna according to species, 1991-2002 (source: FISHSTAT).

Five canneries process tuna in Tema and send their canned goods to Europe. These canneries are: PFC, Ghana Agro-Food Company Ltd (GAFCO), Quality Food Processing, Myroc Food Processing and Tonelli (Table 47).

PFC is the largest cannery in Ghana in terms of production and employment. It was set up in 1976 in order to produce canned tuna for European and local markets. The cannery had to cease its canning production activities in 1990 because of the sustained increase in prices of tuna and the economic crisis in the region. However, PFC continued to process raw material in the form of pre-cooked and frozen loins for the Heinz canneries, a group which owned 50% of the shares in the cannery. Following the acquisition of all the cannery's capital by Heinz, PFC resumed its processing activities for the European market, and the French market in particular, once the acquisition of Paul Paulet by Heinz was finalised. At the same time, the cannery was expanded and now processes 175 tonnes of raw tuna per day.

GAFCO is the second cannery in the country after PFC. It was set up in 1995 by the Ghanaian government. Currently GAFCO capital has mixed ownership, with 75% belonging to a family of Swiss investors and 25% to Ghanaian investors. GAFCO manufactures fish flour and canned tuna. GAFCO exports 92% of its canned tuna production to the EU (80% of which to the United Kingdom, the rest to the Netherlands and Germany) and 8% to other countries in West Africa, in particular Nigeria.

Tonelli is a former meat cannery which was reconverted to process tuna in 1995. At the moment Tonelli delivers 95% of its production to the Morrison supermarkets in the United Kingdom. The rest is sold in West Africa.

Table 47: The canned tuna sector in Ghana (source: IDDRA UK)

Conserverie	GAFCO	PFC	Tonelli
Number of employees		1 802	100
Establishing	1995	1976	1995/1996
Ownership	25 % Ghana and 75 % Swiss	HJ Heinz Ltd	Local investors
Capacity		175 tonnes/day	10-15 tonnes/jday
Commercial contract	-	Heinz	Morrisons (United Kingdom)

6 Markets and products

Canned tuna has always been a cheap and nourishing product, rich in proteins, hence its success with consumers. During the period 1991-2002 alone, world consumption of canned tuna rose from 0.26 kg/inhabitant/year to 0.48 kg/inhabitant (Figure 101).

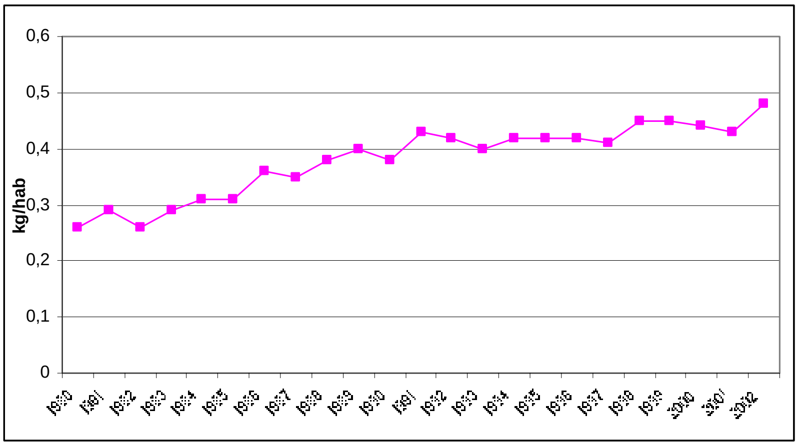


Figure 101: Development of world consumption of canned tuna, 1991-2002 (source: FISHSTAT for production, United Nations for population).

According to FISHSTAT data (2002), the principal consumer countries of canned tuna are the European Community (15 members), the United States, Canada, Japan, Mexico and Iran (Figure 102).

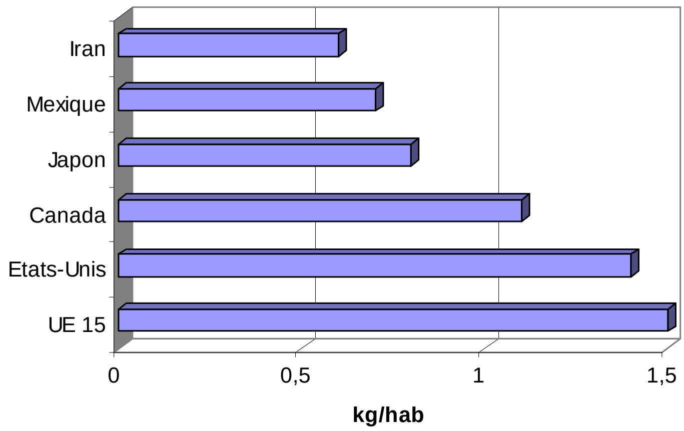


Figure 102: Principal consumer countries of canned tuna in 2002, (source: FISHSTAT for production, United Nations for the population).

Canned tuna is the product of fishing which is most associated with the upward development of consumer trends. Canned tuna is also used by the catering sector, or for consumption outside the home (e.g.: topping for pizzas, salads, sandwiches, catering services).

6.1 The European Community[46]

6.1.1 General Information

In 2002, consumption of canned tuna in the 15 member states of the EU represented approximately 35% of world consumption of canned tuna and made the Community the biggest market for this type of product. According to FIAC data, the EU market for canned tuna rose by 26% between 1996 and 2002 (Figure 103). EU purchases of canned tuna have been estimated by FIAC at 575,000 tonnes (net weight).

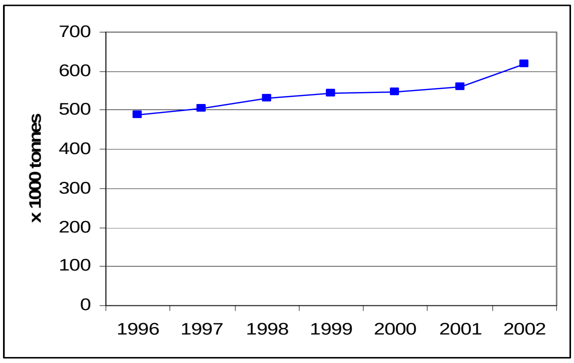


Figure 103: Growth of EU market for canned tuna, (1,000 tonnes), 1996-2002 (source: FIAC).

The principal markets for canned tuna are: Italy (21% of the European market), the United Kingdom (20%), France (18%), Spain (14%) and Germany (10%).

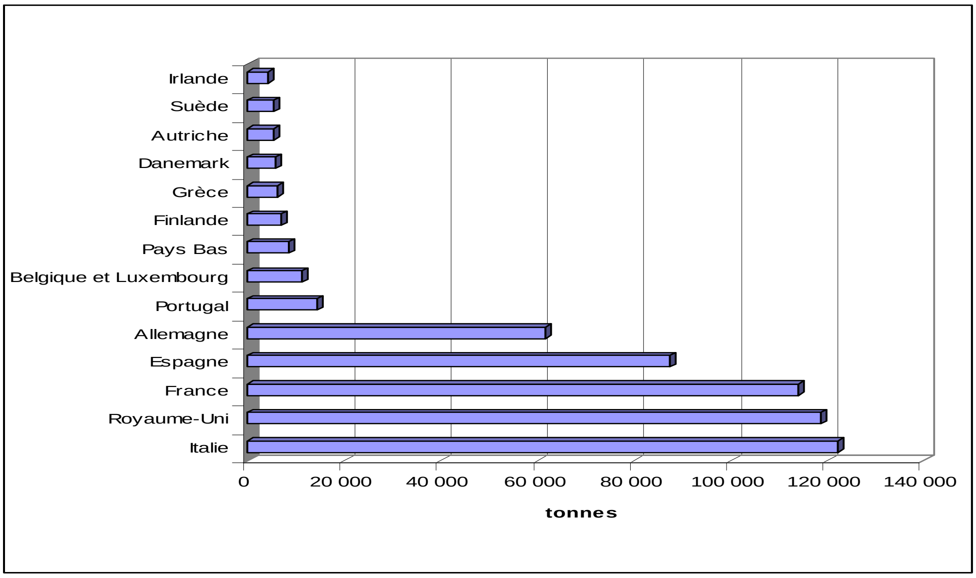


Figure 104: Size of the EU market for canned tuna, quantity (tonnes), average 2000-2002 (source: FIAC)

The principal consumers (above average for the EU) are Spain, Italy, the United Kingdom and France (Figure 105).

[46] *The 15 countries of the EU prior to enlargement; the CEC will be analysed separately*

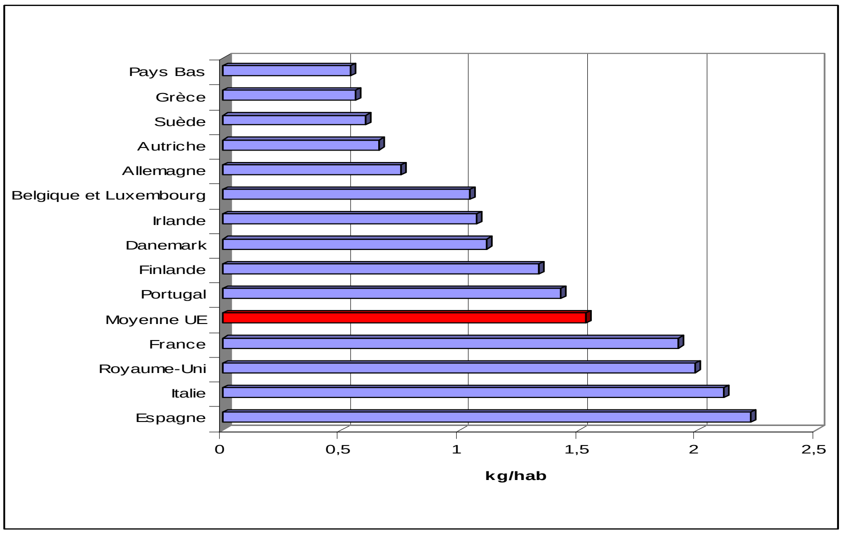


Figure 105: EU consumption of canned tuna per inhabitant, (tonnes), average 2000-2002 (source: FIAC).

According to FISHSTAT data, the production of canned tuna in the 15-member EU in 2000 was 373,417 tonnes. By adding imports (559,090 tonnes) and deducting exports (175,512 tonnes), the canned tuna supply in the EU would have been 756,995 tonnes in 2002. The country with the highest consumption of canned tuna is Spain, followed by France, Italy, the United Kingdom and Germany (see Table 48).

Country	Production	Exports	Imports	Apparent consumption
Spain	250.985	76.267	23.242	197.960
France	43.005	19.199	128.915	152.721
Italy	66.185	19.141	96.167	143.211
United Kingdom	-	4.347	138.545	134.198
Germany	-	21.044	82.130	61.086
Portugal	13.189	2.862	6.440	16.767
Belgium	-	2.101	13.987	11.886
Austria	-	117	6.858	6.741
Greece	53	53	6.709	6.709
Denmark	-	420	6.432	6.012
Sweden	-	61	6.001	5.940
Finland	-	19	5.109	5.090
Ireland	-	150	5.007	4.857
Netherlands	-	29.724	32.999	3.275
Luxemburg	-	7	549	542
Total	373.417	175.512	559.090	756.995

Table 48: Consumption of canned tuna in the 15-member EU (source: FISHSTAT 2002).

Large-scale distribution (supermarkets and hypermarkets) is the principal place for purchasing canned tuna for consumption at home. European distribution benefits from a high level of concentration, especially in Northern Europe. The principal supermarket chains in Europe are listed in Figure 106.

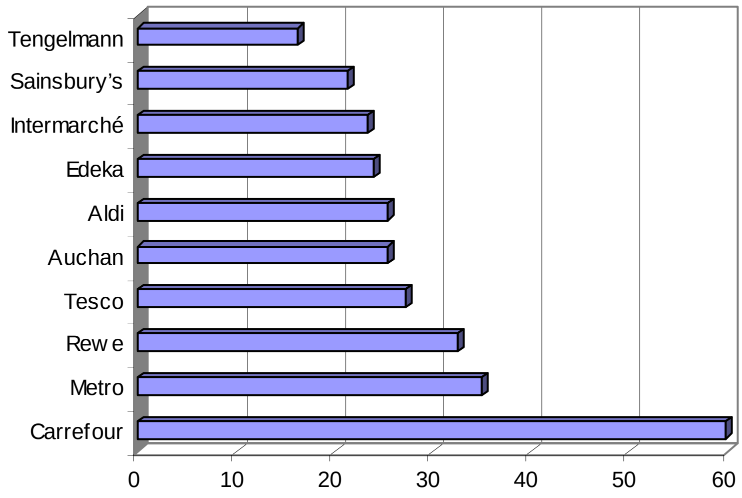


Figure 106: Turnover (billions of euro) of principal supermarket chains in Europe (source: M+M Eurodata)

With regard to catering outside the home, Northern Europe mainly relies on producers from Southeast Asia (Philippines and Thailand). On the other hand, in Southern Europe, manufacturers who produce canned tuna for consumption at home also offer can sizes suitable for catering outside the home.

The European market is highly diversified. However, it is possible to identify skipjack as the preferred species in Northern Europe and yellowfin tuna as the preferred species in Southern Europe. However, yellowfin tuna has recently been successfully introduced in countries with a high consumption of skipjack such as Germany and the United Kingdom, because of its superior quality. Skipjack is also eaten in countries which mainly consume yellowfin tuna, such as Spain and France. The niche for "luxury" species is mainly occupied by albacore, although canned Atlantic bluefin tuna has begun to come out of specialist shops and now features amongst other canned products in supermarkets, especially in Italy.

6.1.2 Spain

With 2.22 kg of tuna consumed per inhabitant each year over the period 2000-2002, Spain is the country with the highest consumption of canned tuna per inhabitant in Europe, and possibly worldwide (we must remember that although consumption of tuna in Japan is higher, it is mainly because of *sashimi* tuna).

The three top brands of canned tuna (Calvo, Jealsa and Isabel-Garavilla) dominate the sectors of consumption in the home (especially supermarkets) and outside the home, but supermarket brands and those of other small producers are beginning to win ground to the detriment of the major producers (source: Jealsa).

The favourite canned tuna in Spain is in vegetable oil (including olive oil) or in brine in packs of 380 g cans, with other products with added value being less common. Spanish consumers prefer whole yellowfin tuna, sold under the name of "*atun claro*". Canned albacore is generally a high-quality product, sold under the name of "*atun blanco*" or "*bonito del Norte*". The other tunas are sold under the name of "*atun*".

The Spanish market for canned tuna is fairly self-sufficient, with limited imports associated with domestic production. Imports, especially from Ecuador, are very limited, representing 7% of national production and 20% of the domestic market, but are growing, seemingly because of investments made in Latin America.

6.1.3 Italy

In the past, the Italian market for canned tuna relied solely on domestic production. Over the last ten years, following the purchase of Italian canneries by international groups (Nostromo by Calvo, Star by Jealsa, Mareblu by Heinz) imports have increased, in parallel with the decline in national production of canned tuna.

Italian imports increased by 130% in quantity and 170% in value between 1992 and 2003. The principal countries of origin are: Spain for Nostromo and Star, the Côte d'Ivoire for Rio Mare and the Seychelles for Mareblu (Figure 107).

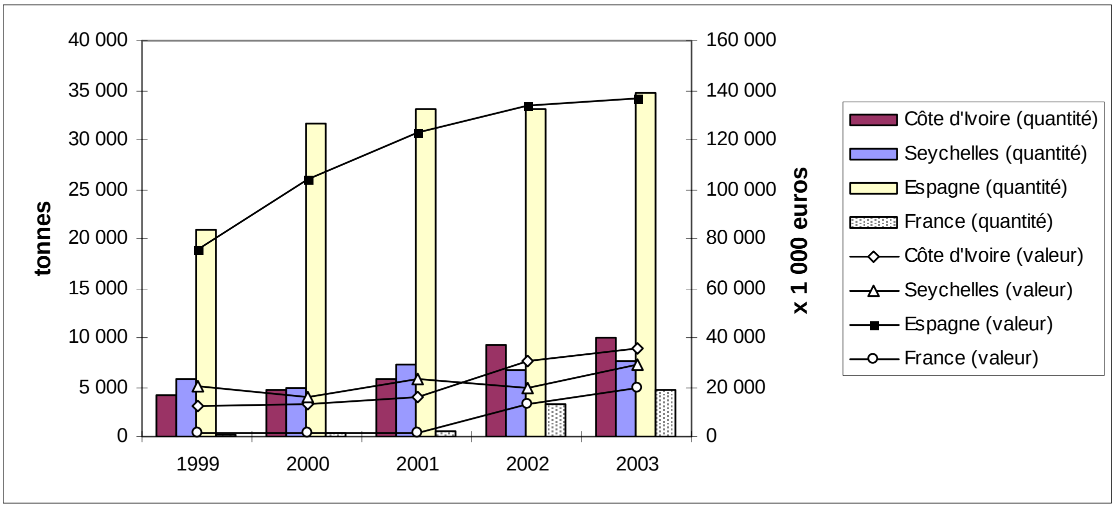


Figure 107: Development of Italian imports of canned tuna according to principal country of origin, (tonnes and value), 1992-2003.

Historically, the Italian consumer has always preferred tuna produced by the national industry to tuna produced abroad (24% of the market for extra-community products). However, Figure 107 shows an increasing acceptance of foreign products. In addition to this, Italy has always been a market traditionally closed to canned tuna from Asia; however, with the lowering of tariffs in 2003, Rio Mare began to rely on Thai production for its new lines of tuna fillets in olive oil and tuna in foil pouches.

The Italian market (Figure 108) is dominated by whole yellowfin tuna in oil, in packs of 2 - 4 cans of net weight 80 g (49% of the market), 120 g (6%), 160 g (39%) and 240 g (6%). Family format cans of between 1 and 2 kg also exist. The format of cans for the catering business is between 2 and 5 kg.

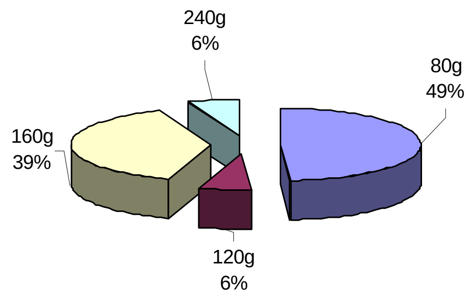


Figure 108: Percentage of the Italian market according to canned tuna formats (source: Bolton Alimentari).

Tuna in brine, tuna salads, tune in sauce, with spices and tuna pâté are beginning to gain in importance, but tuna in oil continues to occupy between 80 and 85% of the Italian market.

Top-of-the-range products include tuna fillets (yellowfin or Atlantic bluefin tuna) in glass jars, ventreche of yellowfin or Atlantic bluefin tuna, canned Atlantic bluefin tuna in 300 g cans.

The most important brands on the Italian tuna market are: Rio Mare, Nostromo, Star, Palmera and Maruzzella. Own brands and small producers occupy 25% of the market (Table 49).

Brand name	Ownership	Market shares (%)
Rio Mare	Bolton Group	38
Nostromo	Calvo	10
Star (Mareaperto)	Jealsa-Rianxeira	5
Palmera – Alco - Esmeralda	Investisseurs Italyns	7
Mareblu	Heinz	5
Marruzzella	Investisseurs Italyns	5
Autres	NA	30

Table 49: Principal brands of canned tuna on the Italian market (source: Bolton Alimentari)

In Italy tuna is mainly purchased in hypermarkets (Carrefour, Auchan, Coop Italia, Esselunga, Conad, GS., etc.) and eaten at home. Canned tuna is only used marginally by the catering business, for preparing sandwiches, pizzas and salads.

Italy is the principal consumer of canned tuna in the EU in terms of purchases. However, the consumption of tuna is very seasonal in this country, with canned tuna mainly being purchased in summer, and eaten alone, with salad, or in pasta salads. In winter, tuna is mainly used as an ingredient for pasta with tuna. Italian consumers prefer tuna of a pink colour, with lean flesh, compact but tender, and with a fairly neutral flavour, hence the preference for yellowfin tuna.

6.1.4 United Kingdom

The United Kingdom is the largest importer of tuna in the EU. This market is dominated by canned skipjack, coming from ACP countries and Southeast Asia. However, consumption of yellowfin tuna is currently increasing.

Imports of canned tuna to the United Kingdom (Figure 109) increased by 25% by quantity between 1999 and 2003. Amongst the principal countries of origin, Thailand has lost its dominant position in favour of the Seychelles and Ghana, where the Heinz canneries have been set up. In fact, towards the mid-1990s, Heinz bought out the principal brand of tuna in the United Kingdom, John West. In Mauritius, the

Mitsubishi cannery produces canned tuna for the brand Princes Food, which has a very significant market share. Canned tuna from Thailand is mainly imported in the form of tuna salads, tuna in sauce, tuna with spices and other products with added value. Traditional canned goods in brine and vegetable oil are produced in the ACP countries.

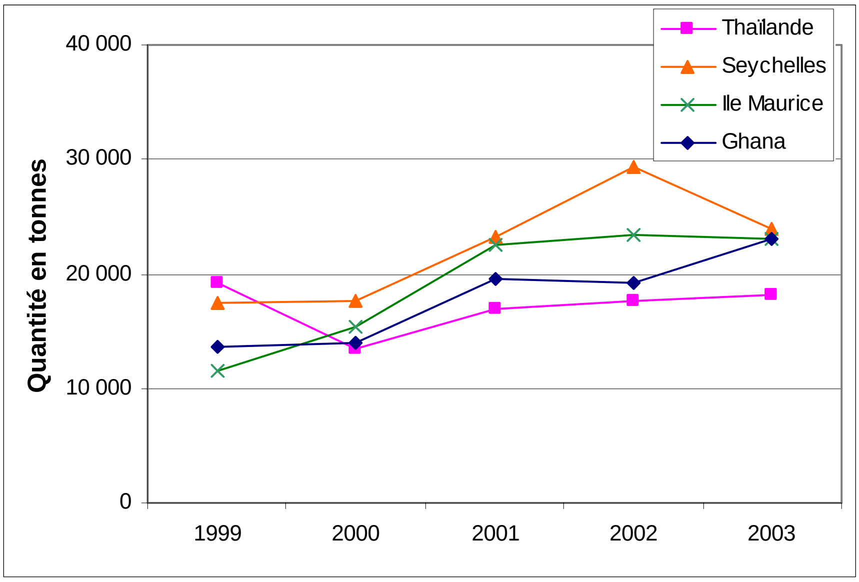


Figure 109: Development of British imports of canned tuna according to principal country of origin, (tonnes), 1999-2003 (source: EUROSTAT).

The British canned tuna market is dominated by large-scale distribution (70%), with catering occupying 30% of the market. The two principal brands are John West and Princes food, the former with 23% of the market and the latter with 17% of the market. The own brands (Sainsbury's, Tesco) cover 44% of the market. The other minor brands, such as Gerber Pride, Osprey, Statesmen and Glenryck only occupy 16% of the market (Table 50).

Table 50: The principal canned tuna brands on the British market (source: United Kingdom Food Standards Agency).

Brand name	Ownership	Market shares (%)
John West	Heinz	23
Princes Food	Mitsubishi	17
Supermarket	N/A	44
Others (Gerber Pride, Osprey, Statesman, Glenryck etc.)	N/A	16

As in Germany, the consumer is very concerned about environmental aspects and long-lasting development. All cans sold in British supermarkets are labelled "dolphin safe". Recently, several British newspapers have begun to make consumers aware of other problems associated with tuna fishing, such as exploitation of resources and the by-catches of sharks (source: ATUNA)

Canned tuna (whole, in chunks of flakes) may be purchased in a supermarket in brine, in vegetable or, in mayonnaise, in lemon and garlic, with spices, or packed in various sauces ("Thousand Island" and "Mediterranean"), in cans of 185 or 200 g net weight. The consumption of tuna in foil pouches is increasing, as well as consumption of tuna sandwiches, ready meals with tuna and tuna pâté. Tuna is used in the United Kingdom mainly to prepare sandwiches, and industrial "ready to eat" tuna sandwiches cover a large portion of the British market. Even so, tuna is mainly purchased in cans (Figure 110).

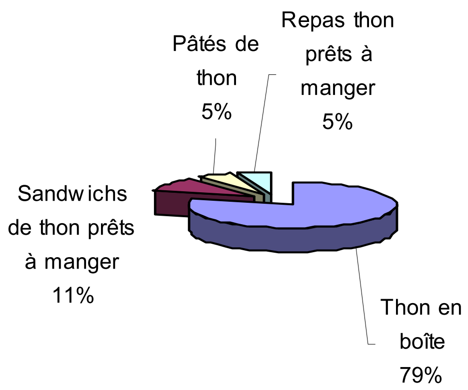


Figure 110: The British canned tuna market according to product (source: Princes food)

6.1.5 France

The French tuna market relies on imports of products in brine and oil, and on the domestic production of canned goods with added value. The canned tuna market in France is saturated, very concentrated and internationalised.

French imports of canned tuna rose by 90% by quantity and 100% by value between 1988 and 2003 (Figure 111). They are positioned at a level of 110,000 tonnes.

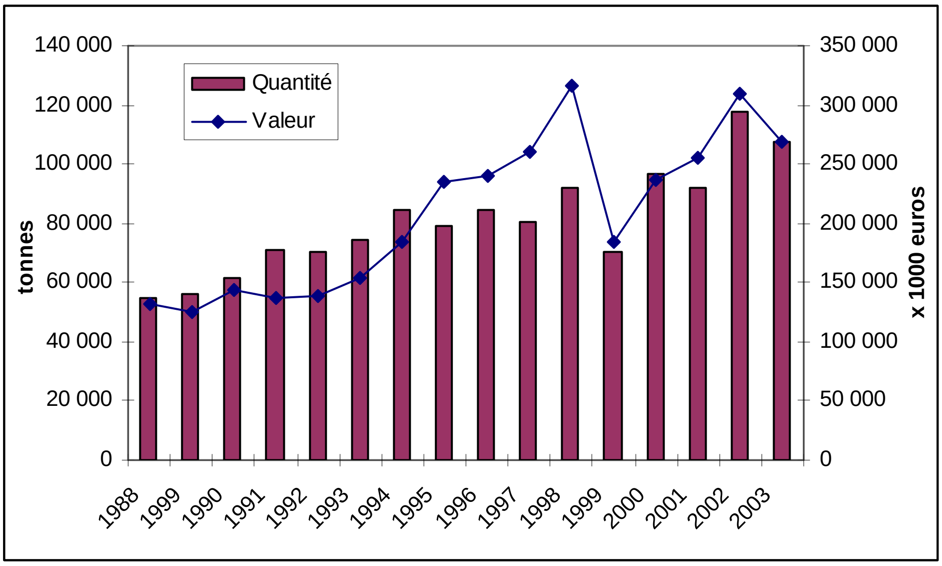


Figure 111: Development of French imports of canned tuna, (tonnes) and value (EURO 1000), 1988-2003 (sources: EUROSTAT and national statistics).

The principal countries of origin of French imports of canned tuna are: Côte d'Ivoire, Spain, Seychelles, Madagascar and Italy, following the purchase of Saupiquet by the Bolton group, the owner of Trinity Alimentari which produces Rio Mare tuna (Figure 112).

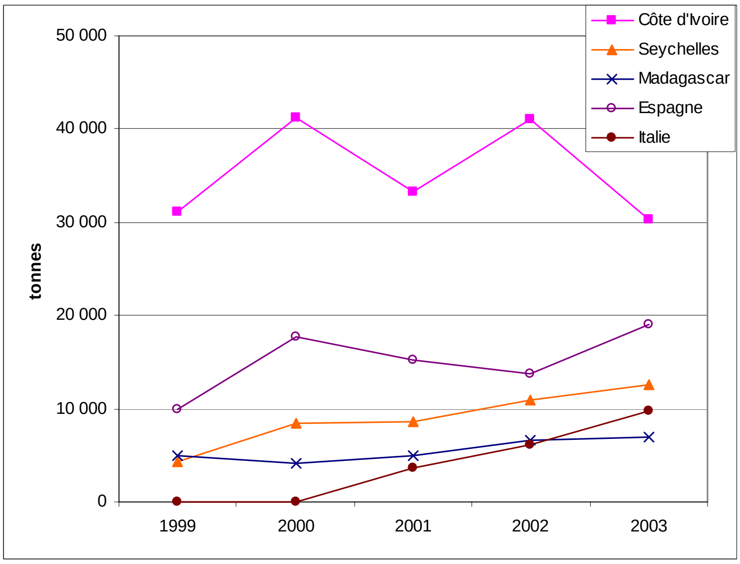


Figure 112: French imports of canned tuna according to principal country of origin, (tonnes), 1999-2003 (source: EUROSTAT and national statistics).

The French market is dominated by whole tuna in brine which occupies approximately 56% of the market, followed by tuna salad (23%), tuna in source (11%) and tuna in oil (7%). (Source: Pêche et Froid) (Figure 86).

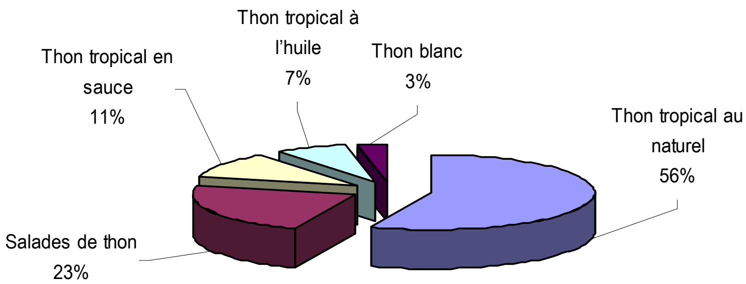


Figure 113: The French canned tuna market according to product (source: Pêche et Froid)

The French canned tuna industry is very concentrated and internationalised. The principal brands (Saupiquet, Petit Navire) cover 44% of the market, with own brands also covering 44% of the market, imported brands taking 10% of the market and discount brands covering 2% of the market (source: Pêche et Froid).

Large-scale distribution covers approximately 90% of the tuna market in front (source: Pêche et Froid).

The catering sector covers approximately 10% of the tuna market in France. Saupiquet and Petit Navire produce 85% of canned tuna purchased by the catering trade. Restaurants and fast-food outlets are the establishments which require the most canned tuna.

In France, yellowfin and skipjack tuna are sold under the name of "tropical tuna". Canned yellowfin tuna dominates the market (with 80% of the canned tuna market in France). The French market offers one particular specialty in comparison with other markets, which is that of yellowfin tuna in brine, canned raw.

Albacore, marketed under the name of "white tuna", is a luxury product which occupies a niche market (3%).

6.1.6 Germany

Traditionally, German consumers have always seen tuna as a cheap food, without considering quality too much. German imports increased by 500% between 1988 and 2003, following unification which increased the number of consumers and after a series of publicity campaigns focused on the excellent value for money (and nutritional value) of canned tuna. Although skipjack tuna from Southeast Asia has always dominated the German market, we should point out that over recent years, the country has opened up its market to products based on good quality higher-priced yellowfin tuna.

The principal countries of origin of German imports of tuna are: France (3% in 1988 - 32% in 2003) and the Philippines (40% in 1988 - 14% in 2003) (Figure 114).

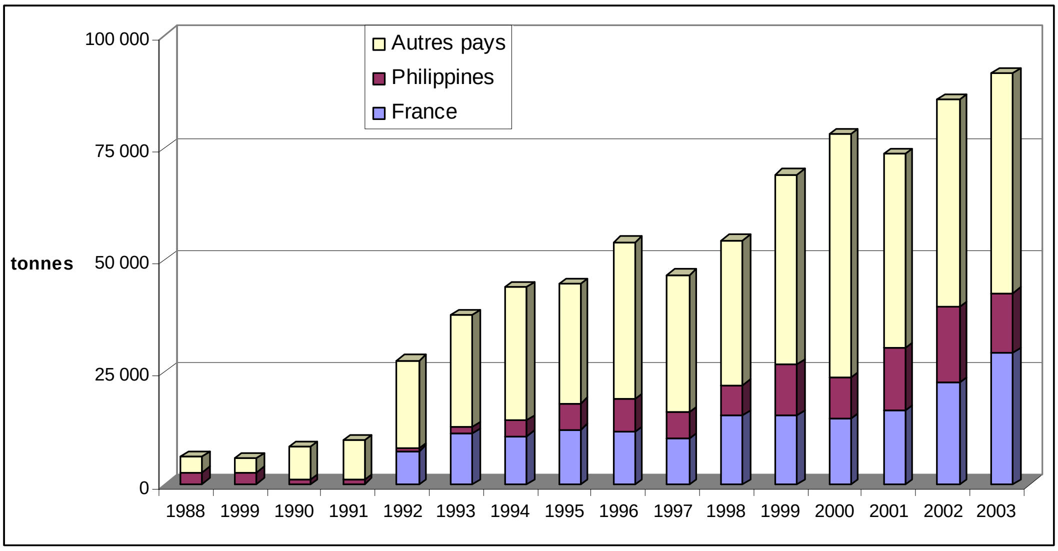


Figure 114: German imports of canned tuna, (tonnes), and market shares-1988-2003 (sources: EUROSTAT and National statistics).

Tuna for consumption at home is traditionally sold in cans of 185 g (net weight), even though canned goods of superior quality in a smaller format (100g net weight) are also marketed. Discounters dominating the German market (Aldi, Lidl) are not interested in the origin of the tuna (ACP or Asia) or in the brand but in the "price" aspect, under own brands. Tuna for consumption outside the home is sold in 2 kg cans.

The most common canned tuna in Germany is skipjack in chunks (with approximately 30% flakes), in vegetable oil in 185 g cans, with 15% brine. The tuna is generally mixed with mayonnaise in salads or used for pizza. German cuisine does not have any traditional recipes based on tuna.

The Germans, like most North European consumers, are very concerned about environmental aspects and sustainable development, consequently they prefer to purchase "dolphin safe" tuna in particular.

Germany is the only major market in Europe which does not have any traditional tuna brands. In fact, canned tuna had been introduced as a cheap food, without taking into consideration the aspect of the "brand". However, in the 1980s, Saupiquet set up a distributor in Germany. Thanks to a generous budget, significant advertising effort and quality products, Saupiquet developed the yellowfin tuna market in Germany.

The consumption of canned tuna in Germany is very limited (0.75 kg per inhabitant in 2000-2002) in relation to a population of 82 million inhabitants. Consequently Germany is undoubtedly the community market with the highest potential for development.

6.1.7 The new Member States

EUROSTAT cannot yet supply any statistics for these countries, but FISHSTAT statistics show a canned tuna market in rapid development, which increased by approximately 600% between 1992 and 2002 (Figure 115).

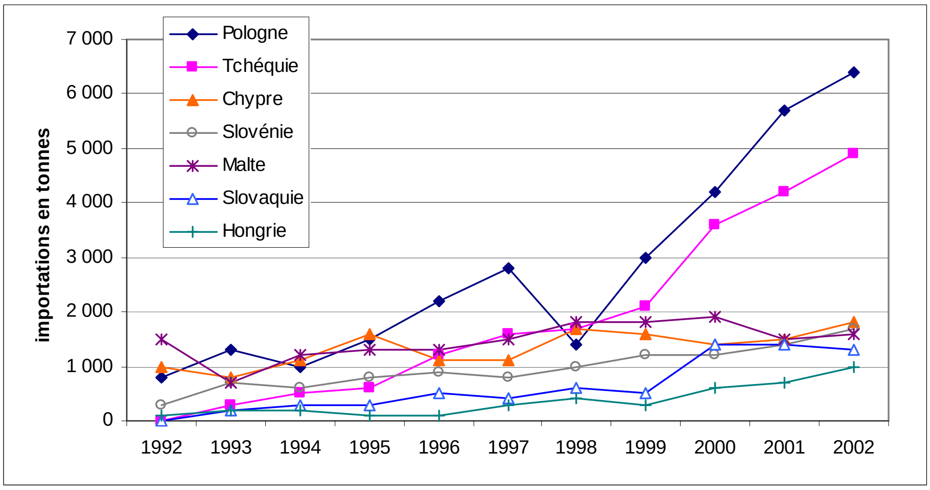


Figure 115: Development of imports of canned tuna according to principal country of destination (tonnes), 1992-2002 (source: FISHSTAT).

The biggest importer is Poland followed by the Czech Republic. The major chains of supermarkets and hypermarkets have developed rapidly in these two countries and they play a fundamental role in the canned tuna market.

Thailand is an important supplier country for these countries (c.f. table 42).

6.2 The American continent

The biggest markets for canned tuna on the American continent are the United States and Canada.

6.2.1 The United States

The United States is the biggest importer of tuna worldwide, after the European Community. Its imports come mainly from Southeast Asia and Ecuador.

Imports of canned tuna (excluding tuna in foil pouches) to the United States declined rapidly after 1991 and up to 1996, before rising again. They represented 157,900 tonnes in 1989 and 167,500 tonnes in 2003. (Figure 116)

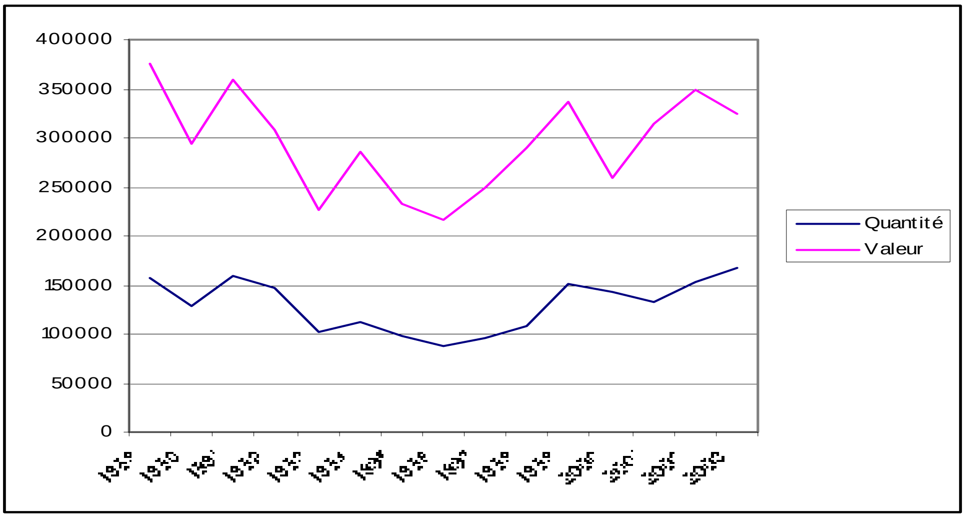


Figure 116: Development of imports of canned tuna to the United States, quantity (tonnes) and value (1000 $US), 1989 – 2003 (sources: national statistics)

The principal countries of origin are Thailand, the Philippines, Ecuador and Indonesia (Figure 117 and Figure 118).

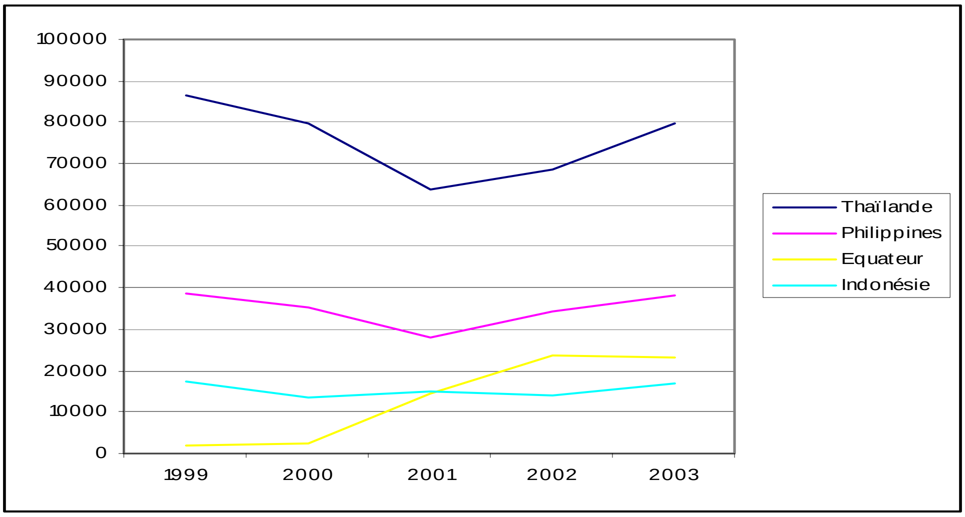


Figure 117: Development of imports of canned tuna to the United States according to principal country of origin, quantity (tonnes), 1989 – 2003 (sources: national statistics)

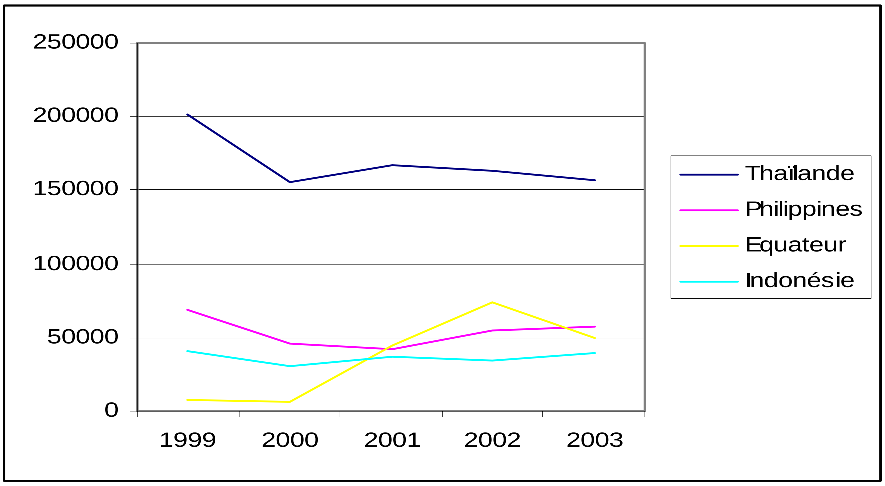


Figure 118: Development of imports of canned tuna to the United States according to principal country of origin, value (1000 USD), 1989 – 2003 (sources: national statistics

Although products in foil pouches are relatively new on the world canned tuna market, they are experiencing a major success in the United States. This success is linked with the ease of preparing sandwiches or salad with this type of product. Imports of tuna in foil pouches to the United States have increased from 18,600 tonnes in 2002, for a value of 49 million USD, to 40,700 tonnes in 2003, for a value of 132 million USD (Figure 119). The principal countries of origin are Ecuador (Bumble Bee and Starkist canneries) and Thailand (Thai Union - Chicken of the Sea canneries).

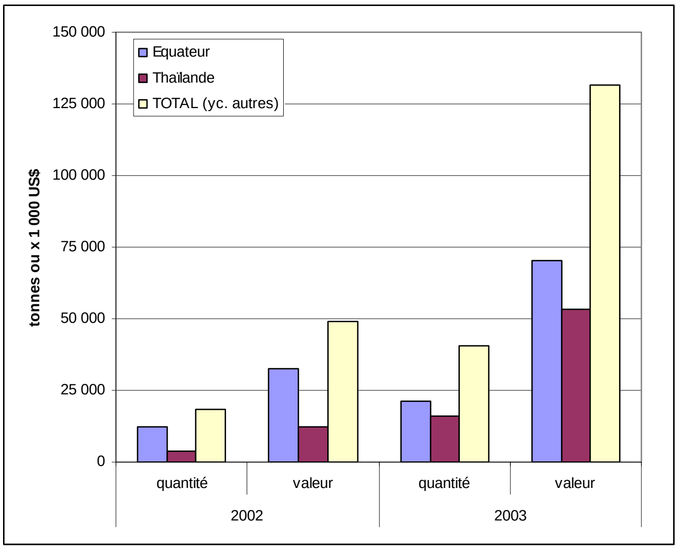


Figure 119: Imports of tuna in foil pouches to the United States according to principal country of origin (tonnes) and value (1000 USD), 1989 – 2003 (sources: national statistics

The "standard" format of canned tuna in the United States has dropped from 7 ounces (200 g), net weight to 6 ounces (170 g) in the last 20 years. On the other hand, the net weight of foil pouches varies: 85, 140, 200, 350 g for domestic consumption, 1 or 2 kg for the catering business. Canned tuna (including foil pouches) to the United States may be in brine, in oil, in spices, in salad, in mayonnaise, in lemon, or with low sodium levels.

The canned tuna market in the United States is dominated by three major national brands, Starkist, Bumble Bee and Chicken of the Sea, which total 80% of the market. The quality of certain products marketed is probably at the origin of the consumers' waning interest in canned tuna.

Table 51: The principal brands of canned tuna on the American market (source: ATUNA)

Brand name	Market shares (%)
Starkist	40
Bumble Bee Seafoods LLC	24
Chicken of the Sea	17
Others	19

Approximately 75% of canned tuna in the United States is purchased in hypermarkets. The catering industry accounts for the remaining 25%. Large-scale distribution mainly distributes tuna produced by the three major national brands, unlike the catering business.

Tropical tuna represents 70% of the market under the name of "light meat tuna". This mainly concerns skipjack tuna. White tuna, known as "white meat tuna", basically albacore, occupies 30% of the market.

6.2.2 Canada

Unlike the United States, Canada does not have any production of canned tuna. However, the consumption of canned tuna in Canada is very high, with a wide variety of products.

Canadian imports of canned tuna increased by 30% in quantity between 1989 and 2003 (Figure 120).

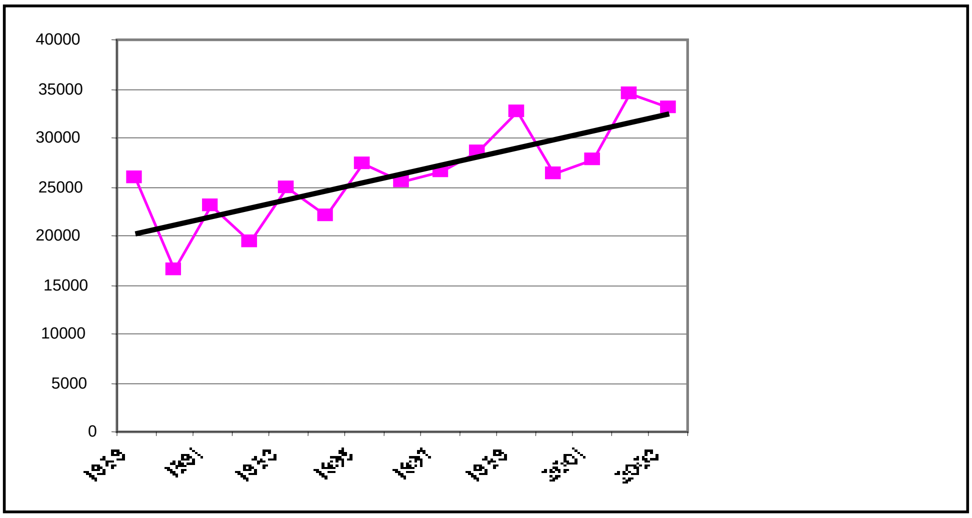


Figure 120: Development of Canadian imports of canned tuna, quantity (tonnes) 1994 – 2003 (sources: FISHSTAT for 1989 – 2002 and national statistics estimate for 2003)

The principal countries of origin of Canadian imports are Thailand and the Philippines (Figure 121).

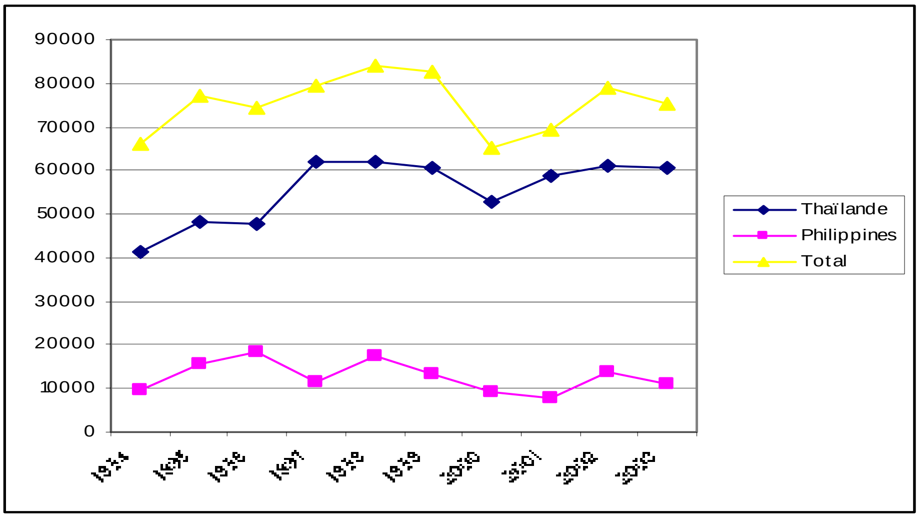


Figure 121: Development of Canadian imports of canned tuna according to principal country of origin, value (1000 CDN$), 1994 – 2003 (sources: national statistics

The Canadian canned tuna market represents an extension of the United States market. The two principal brands, Clover Leaf (which represents 42% of the Canadian market for appertised products of fishing) and Paramount, are owned by Bumble Bee.

Products from the Clover Leaf range include: canned skipjack tuna, yellowfin tuna and albacore, whole, in chunks and in flakes, in vegetable oil or in brine. Other products include tuna salads and tuna in sauce. Recently, Clover Leaf has introduced tuna in foil pouches and a new range of products in olive oil.

6.3 Asia

The principal canned tuna market in Asia is Japan, as the other countries are producers rather than consumers, even if a small market is starting to develop in Southeast Asia for canned goods with added value produced in Thailand.

6.3.1 Japan

The total volume of imports has risen from 4,100 tonnes in 1989 to 37,700 tonnes in 2003. Imports from Thailand multiplied by 10 between 1989 and 2004 (Figure 122), going from 2,400 tonnes in 1989 to 25,000 tonnes in 2003, mainly because of the competitivity of Thai products in comparison with domestic production. Thailand has therefore succeeded in maintaining, and even reinforcing its position as principal exporter of canned tuna to Japan.

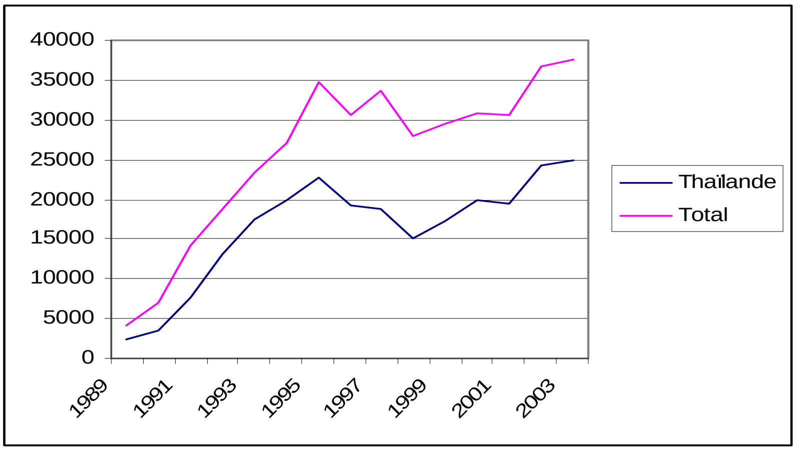


Figure 122: Development of Japanese imports of canned tuna (tonnes), 1989-2004

In 2002, the Japanese consumed 0.8 kg of canned tuna per inhabitant. The Japanese consumer's favourite species are skipjack and albacore.

6.3.2 The Middle East

Because of the tradition of canned tuna in Mediterranean cuisine, the Middle Eastern countries are amongst the few developing countries which consume canned tuna. In fact, in Africa, canned tuna is mainly produced for export; in Asia (except in Japan) there is a certain degree of mistrust for canned products.

Imports of canned tuna to the Middle East increased by approximately 200% between 1994 and 2002, with the principal countries of destination being Egypt and Saudi Arabia (Figure 123).

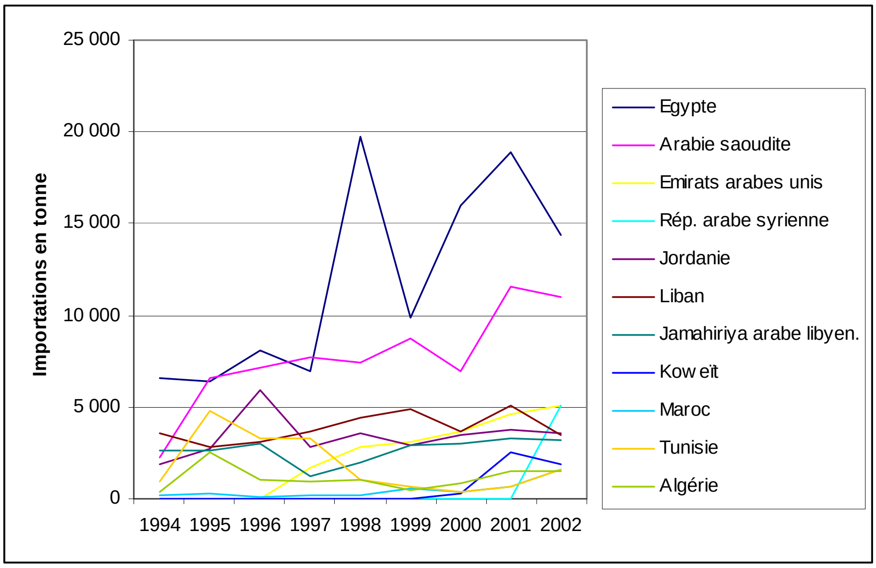


Figure 123: Development of imports of canned tuna by the Middle Eastern countries, (tonnes), 1994-2002 (source : FISHSTAT)

CHAPTER 15 - INTERNATIONAL FLOWS OF TUNA RAW MATERIAL AND END PRODUCTS

1 Growth of international trade in tuna products

The multilateral framework for regulating international trade in tuna products illustrates the desire of the major nations producing canned tuna to protect their own processing industry in two ways, firstly by providing it with supply facilities resulting from the freedom of circulation of frozen tropical tuna, and secondly by using tariff barriers to limit the permeability of their domestic market to imports of canned tuna (see chapter 9). In spite of the increased number of players involved in tuna production, final consumption markets still remain the developed countries with a high level of revenue: United States, Japan and Europe. This change in the world tuna industry has led to an intensification of international flows of tuna products.

Between 1976 and 2003, the volumes involved in international trade experienced an average annual growth rate higher than that of volumes produced worldwide, both for tuna raw material and for tuna-based canned goods and preparations. The share of production involved in trade therefore increased in the course of the same period. In the case of tuna raw material, the share of production involved in trade rose from approximately 30% in the 1970s to 40% at the moment. With regard to canned tuna, the share of production involved in trade experienced strong and continuous growth: below 20% at the beginning of the period, it exceeded 25% in 1987, 40% in 1992, then 50% in 1997, to ultimately reach 70% in 2003. In spite of suspending customs duties on tuna raw material and maintaining high customs tariffs on processed products, the flow of canned tuna has been proportionally higher than that of tuna raw material since 1992.

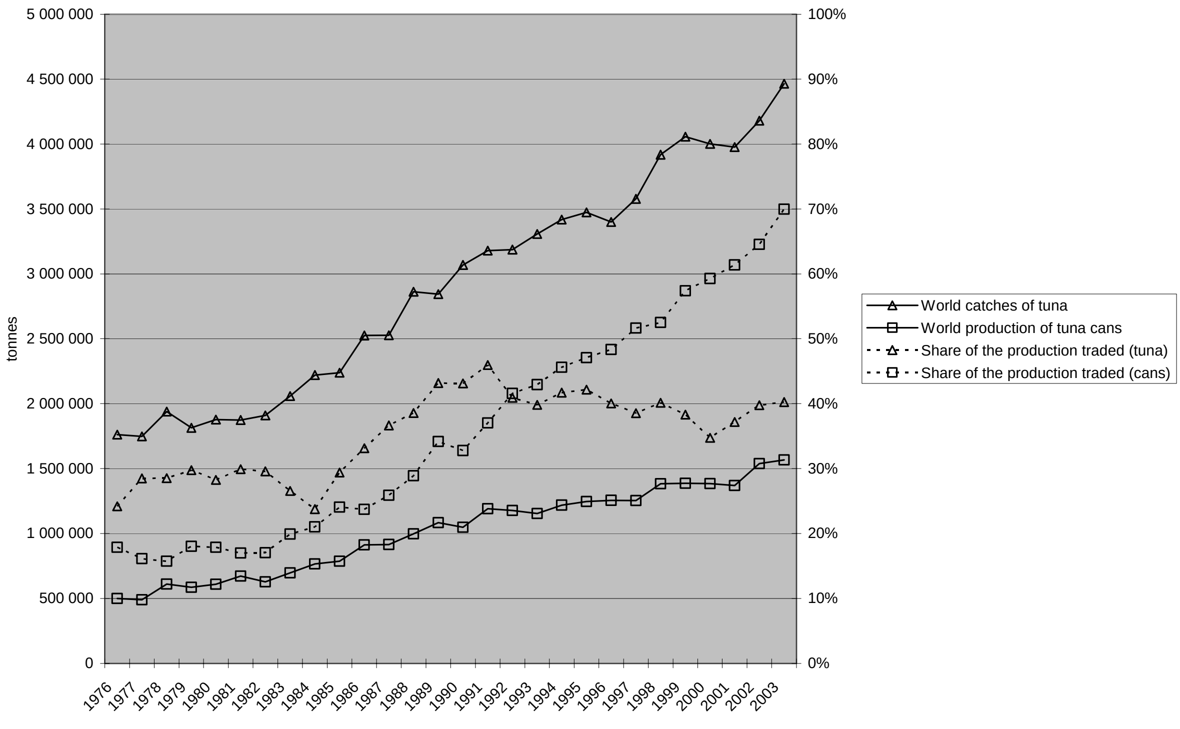


Figure 124. Development of world trade in the tuna products, 1976-2003. Source: according to Fishstat+ FAO

2 Identification of principal flows of tuna products

Three countries dominated world exports of tuna raw material up to the beginning of the 1980s: Japan, South Korea and Taiwan. Since then the principal world exporters of tuna raw material have been Taiwan, Spain and France. Exports by the two major European producers have increased regularly to reach 360,000 tonnes in 2003. For around ten years, the EU has been producing between 20 and 25% of total world exports of tuna raw material, mainly intended for its processing facilities relocated to Africa or South America, as well as to the canneries owned by the European partners (see Figure 125 and Figure 126).

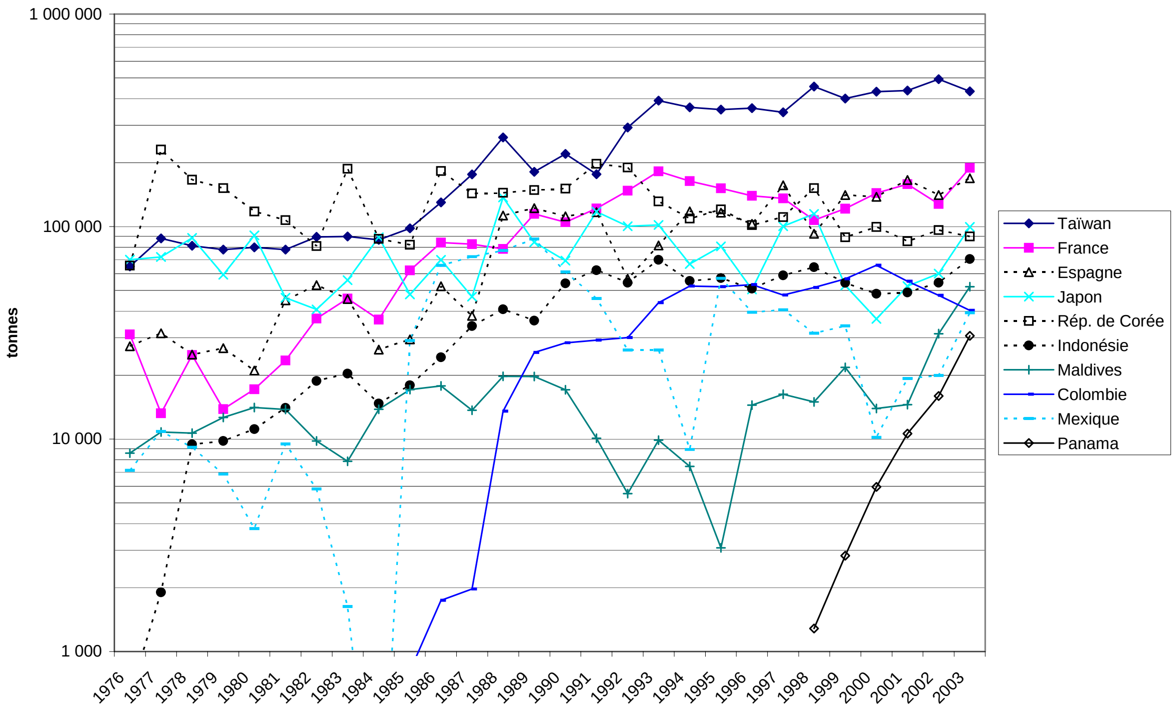


Figure 125. Principal countries exporting tuna raw material, 1976-2003. Source: according to Fishstat+, FAO

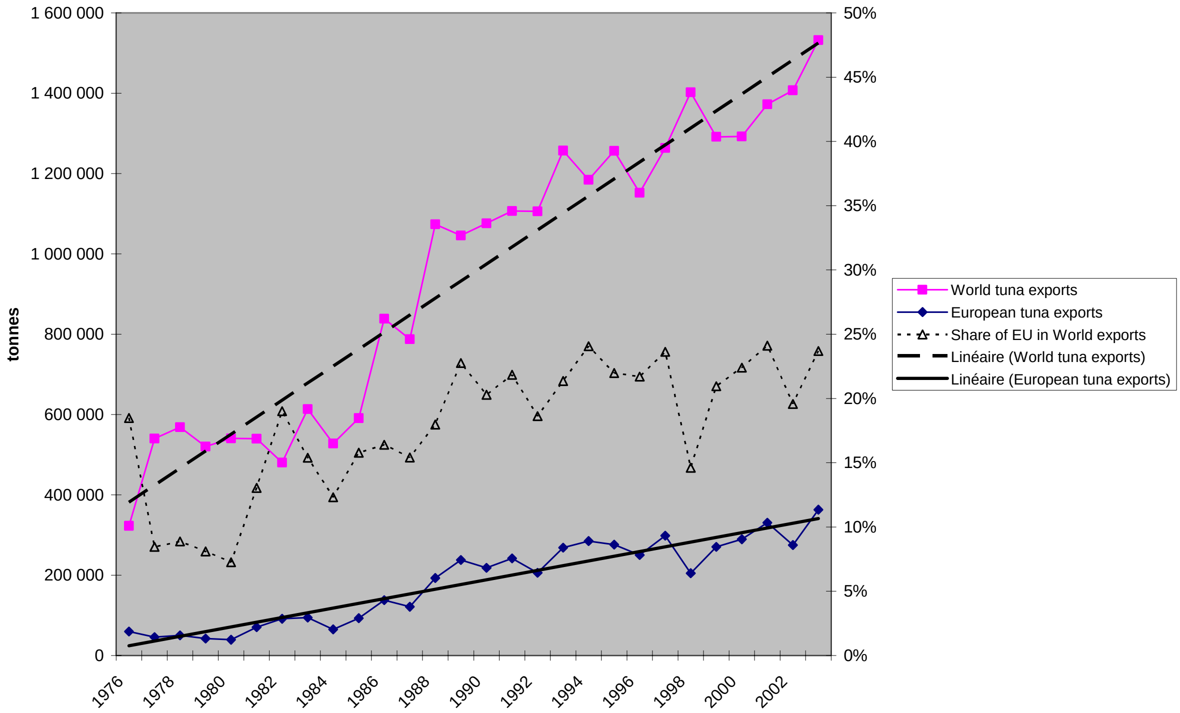


Figure 126. World exports of tuna raw material and position of the EU, 1976-2003. Source: according to Fishstat +, FAO

From the mid-1970s to the mid-1980s, world imports of tuna raw material were almost exclusively carried out by the United States, Japan and Italy. The outstanding event at the end of the 1980s was the sudden emergence of Thailand, which became the top world importer as long ago as 1988, a position it would abandon only once subsequently, conceding its place to Japan in 1996. In 2003, in addition to Thailand, the leading world producer of canned tuna, and Japan, top world consumer of tuna products, the principal world importers of tuna raw material have been Spain, the Seychelles, the Côte d'Ivoire, the Philippines, the United States and Italy. On the basis of statistics supplied by the FAO, it seems that the EU was probably responsible for between 15 and 20% of world imports of tuna raw material (see Figure 127 and Figure 128). However, the presence of Spain ranked as third world importer with foreign supplies in the region of 200,000 tonnes, suggests that tuna loins constitute a significant portion of these imports (see paragraph below for breakdown of European imports of tuna raw material).

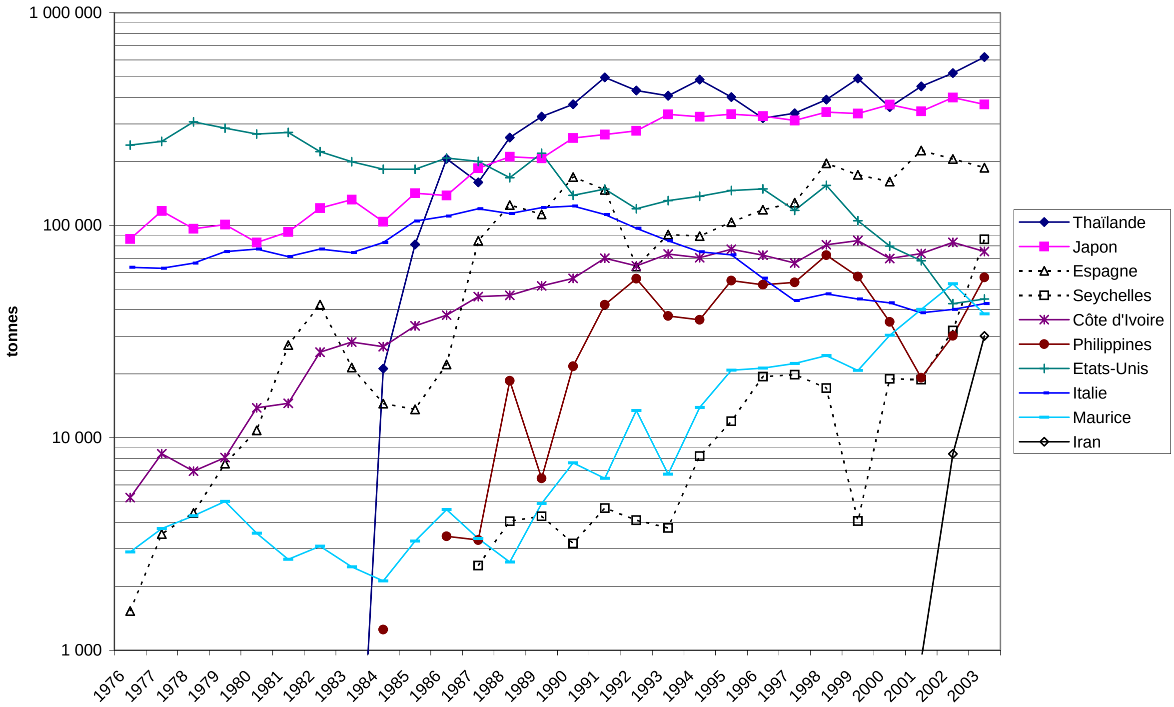


Figure 127. Principal countries importing tuna raw material, 1976-2003. Source: according to Fishstat+, FAO

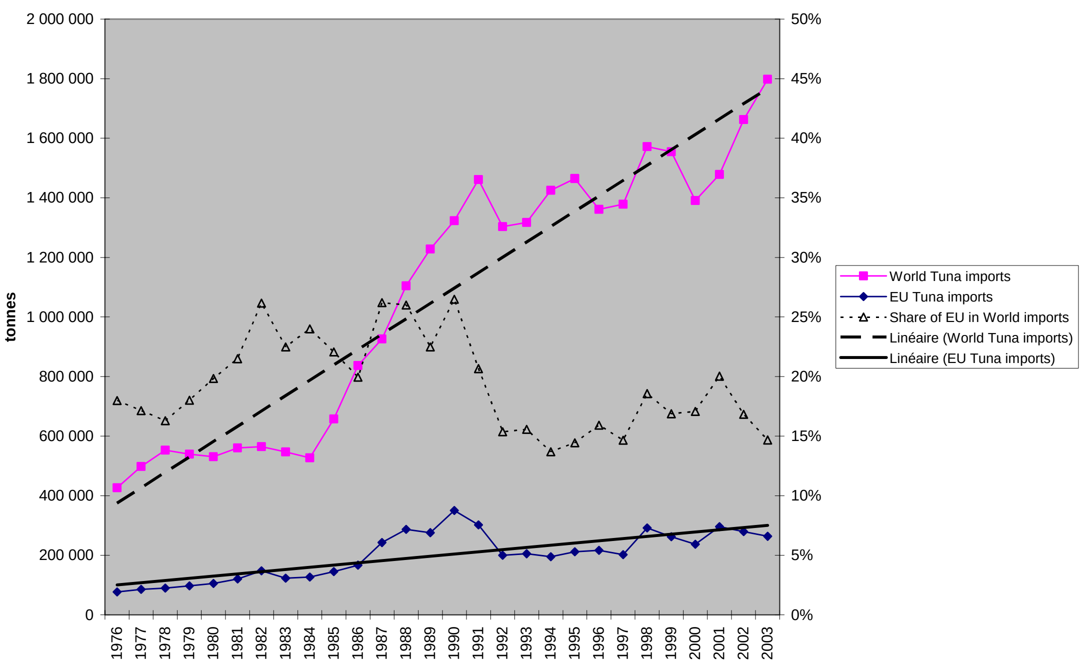


Figure 128. World imports of tuna raw material and position of the EU, 1976-2003. Source: according to Fishstat+, FAO

At the end of the 1970s, international trade in canned tuna, still at a very early stage, was dominated by exports from Japan, mainly intended for the United States, and to a lesser extent by those from the Côte d'Ivoire and Senegal, intended for Europe and more particularly France. As long ago as 1981, while Japan was still the leading world exporter, the Philippines achieved the same level of exports as the Côte d'Ivoire and in 1985, Thailand became the top world exporter. These two countries targeted the United States and also Europe. In 2003, the principal countries exporting canned tuna and tuna-based preparations after Thailand were Ecuador, half of whose exports consisted of loins, Spain, the Philippines, Indonesia, the Côte d'Ivoire, the Seychelles, Ghana and Mauritius). Considerable flows from Germany and the Netherlands appear to correspond to re-exports (see Figure 129 and Figure 130). The share of EU exports in world trade was henceforth in the region of 20%, but these significant flows mainly correspond to intra-community exchanges.

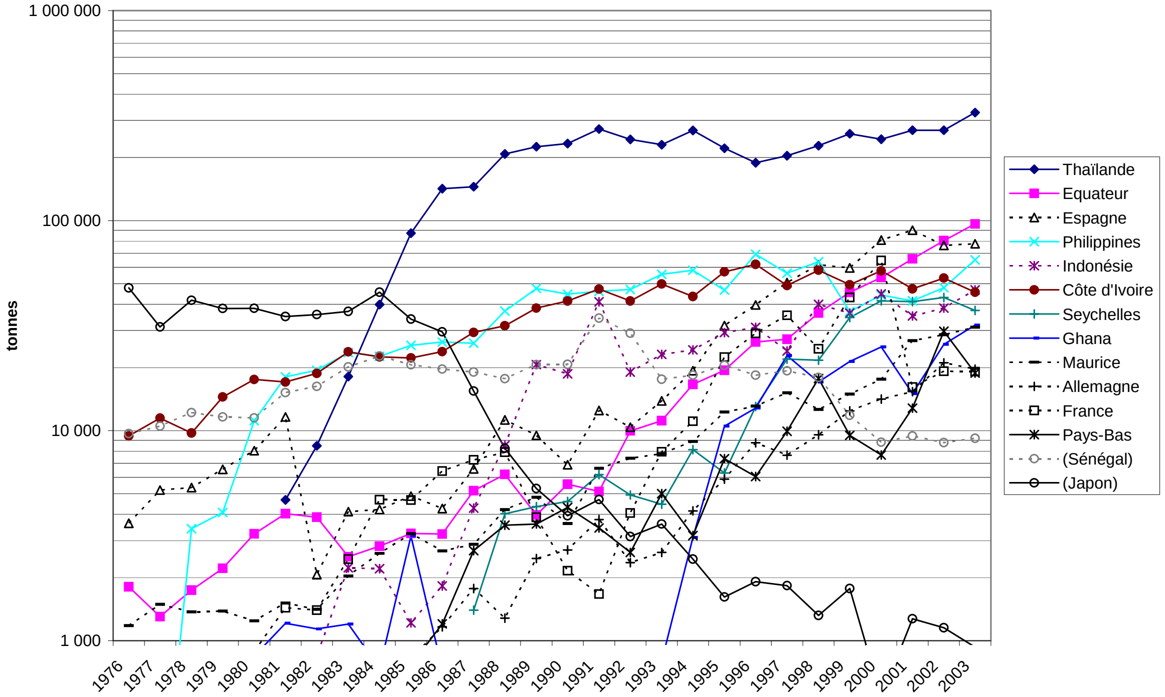


Figure 129. Principal countries exporting canned tuna, 1976-2003. Source: according to Fishstat+, FAO

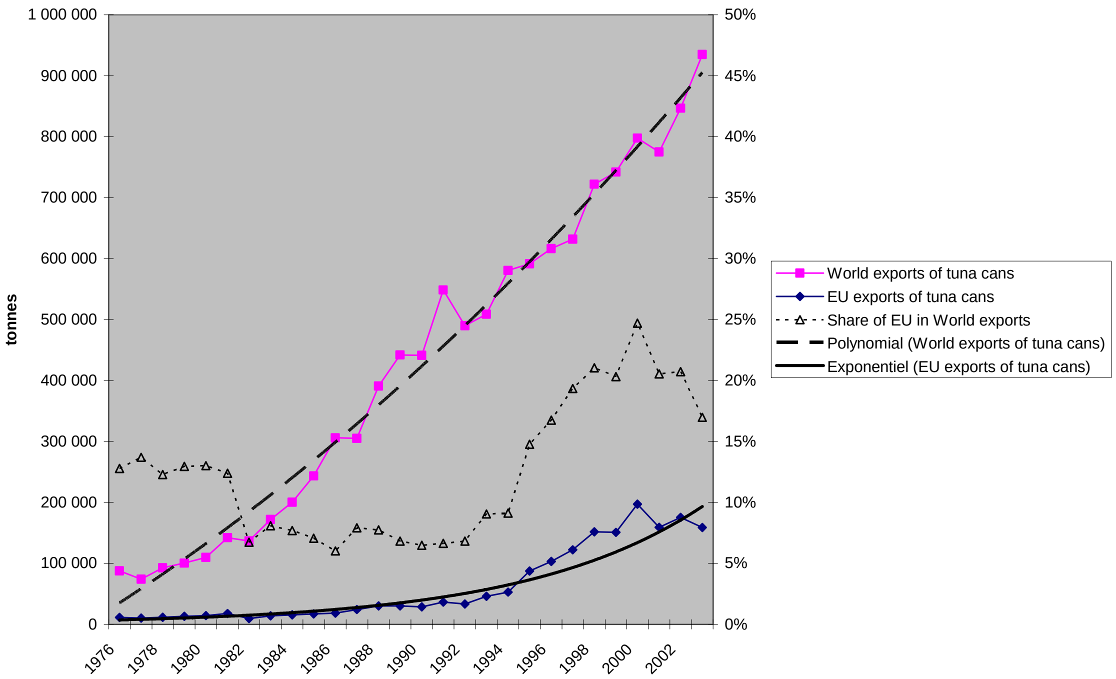


Figure 130. World exports of canned tuna and position of the EU, the 1976-2003. Source: according to Fishstat+, FAO

The destinations of exports of canned tuna have constituted the sole focus of stability in the development of international trade in of tuna products in the course of the last 25 years. In 1976, the leading world importers of canned tuna were the United States, France, Germany, Canada and the United Kingdom. In 2003, canned tuna and tuna-based preparations were imported by the United States, United Kingdom, France, Italy, Germany and Spain. Italian and Spanish imports seemingly accounted for a significant share of loins as we will see subsequently on examining Eurostat data. Over the whole of the period under consideration, Europe appears as the leading world focus for importing canned tuna; in the course of the period 1994 - 2003, the European Union' share in world imports was positioned on average at around 55% (see Figure 131 and Figure 132).

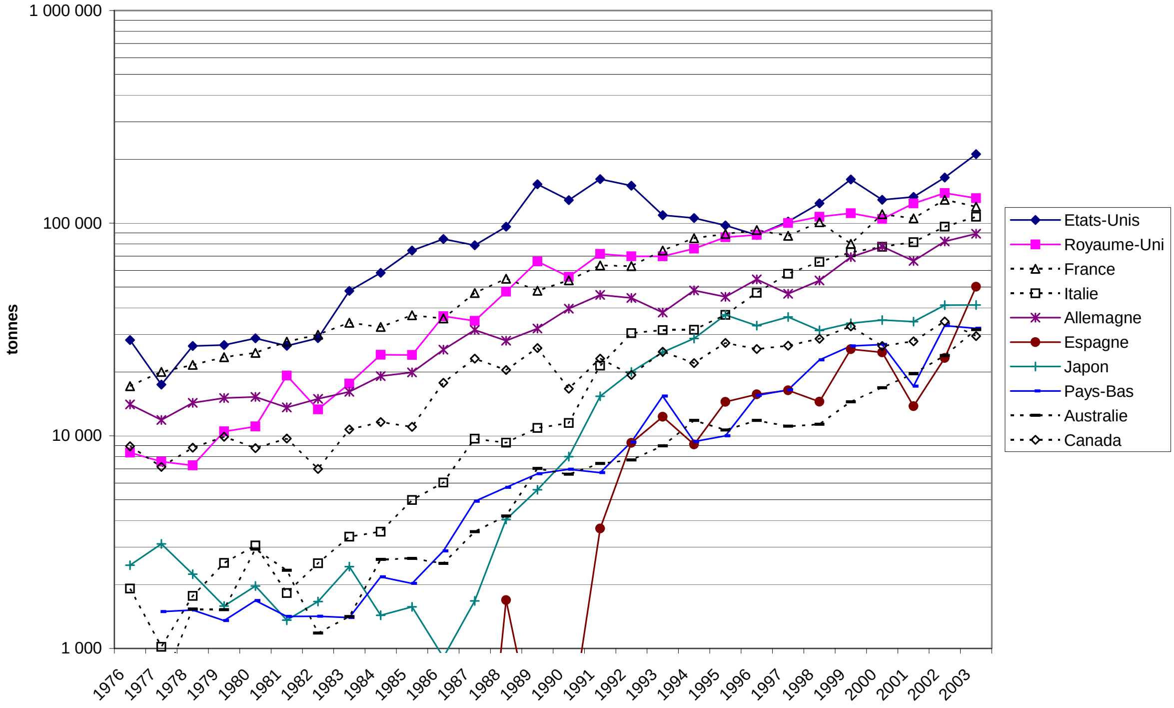


Figure 131. Principal countries importing canned tuna, 1976-2003. Source: according to Fishstat+, FAO

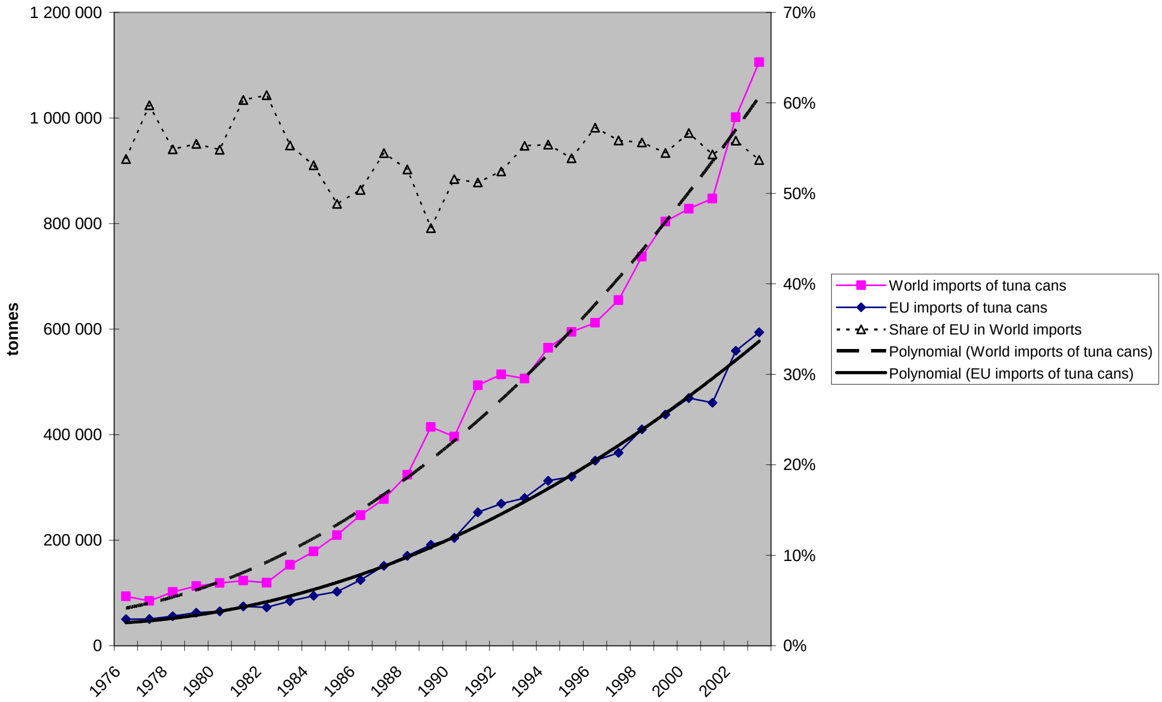


Figure 132. World imports of canned tuna and position of the EU, 1976-2003. Source: according to Fishstat+, FAO

On average, in the course of the last three years (2001-2003), world trade in tuna raw material represented an annual turnover of 3.2 billion USD (for a traded volume in the region of 1.6 million tonnes) and world trade in canned tuna and tuna-based preparations represented an annual turnover of 2.5 billion USD (for a traded volume in the region of 980,000 tonnes).

3 Current structures and trends of extra- and intra-community trade in tuna products

Note on methodology: for each type of flow considered, the time series used in this paragraph indicate trade carried out by the principal declarants or commercial partners classified in decreasing order of importance at the end of the period, followed by the total extra or intra-community trade. The line for "other countries" is never shown in order to avoid making the table difficult to read.

3.1 *The marketing of frozen tuna*

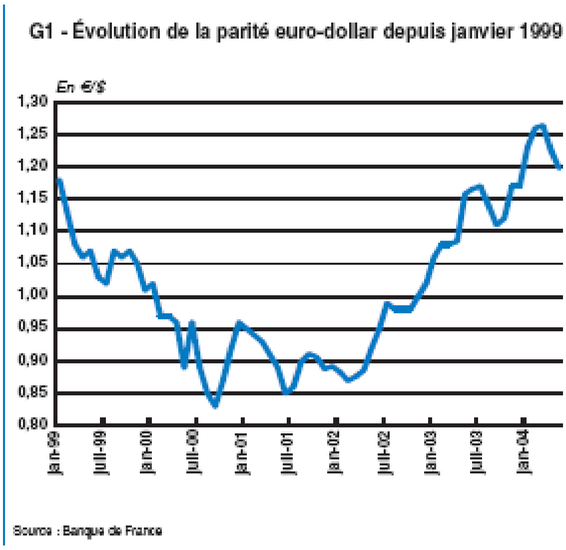
3.1.1 Marketing methods

Contracts of supply are entered into between canners and sales corporations, or the ship owners directly. They can be drawn up as supply-based or "spot" contracts, or on a time basis ("term" contracts). As an example, in April 2001 Del Monte negotiated a spot contract with the company Tri-Marine for an annual supply of tropical tuna (equivalent to 14 million USD per annum) over a 10-year period. On the other hand, contracts for supplying albacore are negotiated on a case by case basis with the shipowners who operate their boats in the Atlantic Ocean and the Indian Ocean.

3.1.2 Price of frozen tuna

3.1.2.1 Variation in the Euro/USD parity

The euro/dollar parity has experienced a great deal of movement over the last six years[47], firstly with the appreciation of the dollar at the end of the 1990s, followed by appreciation of the euro from the beginning of the year 2002. This significant variability in euro/dollar parity is a determining factor for the European tuna industry as certain important items in its operating accounts are denominated either in dollars (fuel; sale/purchase of fish for example), or in euro (salary costs; depreciation)



Within the framework of this study a decision was made to take into account these variations in exchange rate on the basis of an average annual rate. On the basis of data supplied by the Banque de France, the rates maintained as of the year 2000 are as follows: year 2000/ 0.83; year 2001/ 0.85; year 2002/ 0.99; year 2003/ 1.16; year 2004/ 1.21.

3.1.2.2 Skipjack tuna

Thailand is the leading world importer of skipjack, whose price for skipjack on the Bangkok market can be considered as the "barometer" of the world price for skipjack tuna.

The prices of whole skipjack tuna for processing in Bangkok (Figure 133) were relatively high up to 1998 as the strong demand from the canneries was not totally covered by supply. The three periods when the price dropped (1992, as well as the drop in price from 1994 to 1995-1996) were caused by a temporary drop in demand for canned tuna. The particularly severe fall in 1995 sent the Thai canned tuna sector into crisis for a year (source: GLOBEFISH database).

During the 1980s and almost the whole of the decade of the 90s, the high levels of demand for canned tuna resulted in the simultaneous growth in demand from canneries and therefore led to a rise in price of frozen tuna, generating new entrants in terms of fleets of boats. Prices of frozen tuna remained high until the canneries, having increased their production capacities, were able to absorb the supply of frozen tuna. Nevertheless, since 1998, a vicious circle of excess supply/drop in prices of frozen tuna followed by an

[47] *Historical reminder: 01/0 1999-launch of the monetary Union and irrevocable fixing of conversion rates for national currencies which from then on were simply a subdivision of the euro.*

increase in catches to regain turnover lost as a result of the drop in prices was created. Consequently prices fell progressively down to the historical minimum of 502 USD/tonne in 2000.

In December 2000, the recently established WPTO (World Tuna Purse Seine Organisation) decided on a drastic reduction in catches: each member organisation had to halt its fishing operations for 30 days over the following 60 days, or reduce its fishing effort by 35% (source: GLOBEFISH database). This measure mainly affected Asian shipowners. Following the intervention of the WTPO, the market stabilised in 2001 and 2002. However, towards the end of 2002, a second cut in prices, caused by a concentration of unloadings in Bangkok, even by boats which previously used other ports (Seychelles, Madagascar, etc), justified a new intervention by the WTPO, this time associated with reducing the number of days during which the boats could operate. In April 2003, the WTPO system was reinforced by setting up financial fines. These measures, as well as a prolonged reduction in levels of catches throughout 2004, took the prices for skipjack tuna to over 900 USD/tonne, a level comparable with that for 1998.

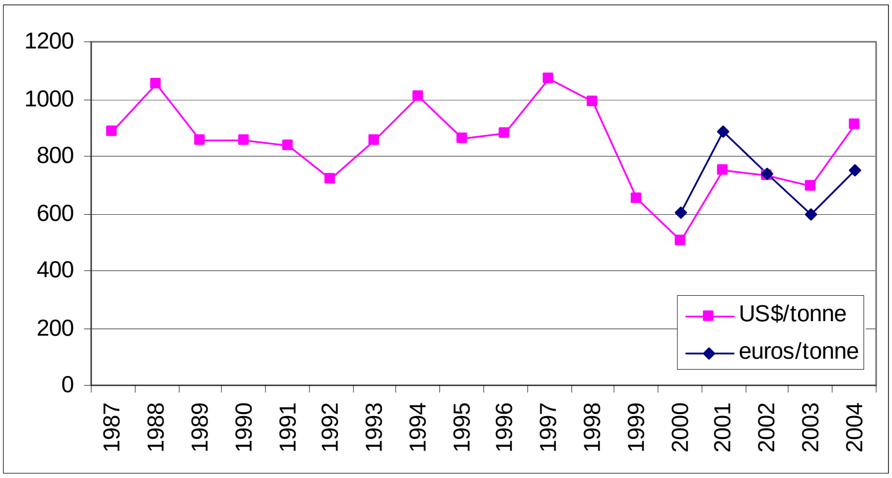


Figure 133: Development of the price of whole frozen skipjack for processing on the Bangkok market (source: INFOFISH Trade News).

3.1.2.3 Yellowfin tuna

The price of yellowfin tuna is steadier than that for skipjack but, even in this case, we can see that prices fell after the record of 1,828 USD/tonne in 1998. This drop was caused by excess supply of yellowfin tuna, in parallel with excess supply of skipjack tuna.

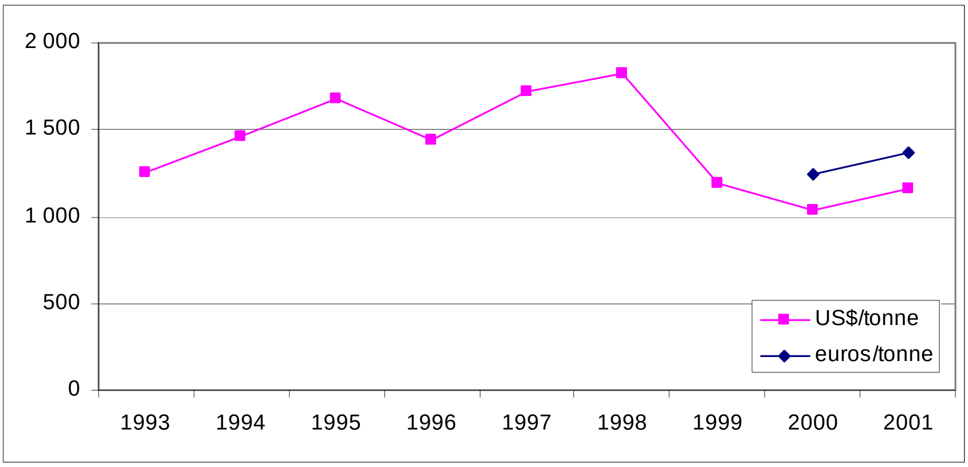


Figure 134: Development of the price of whole frozen yellowfin tuna for processing on the Spanish market (euro and USD/tonne), source: European Price Report.

The drop in prices, expressed in euro, for frozen yellowfin tuna between 2002 and 2004 was essentially caused by the increase in the exchange rate for the euro in relation to the US dollar over this period.

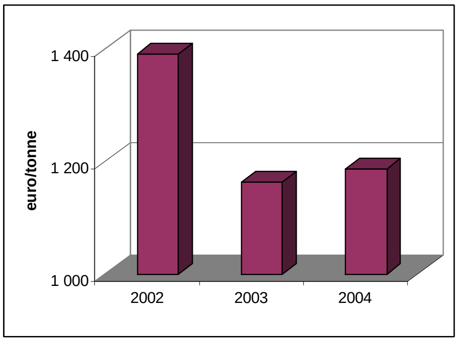


Figure 135: Development of the price of whole frozen yellowfin tuna for processing on the Spanish market (EUR/tonne), 2002-2004 (source: European Price Report).

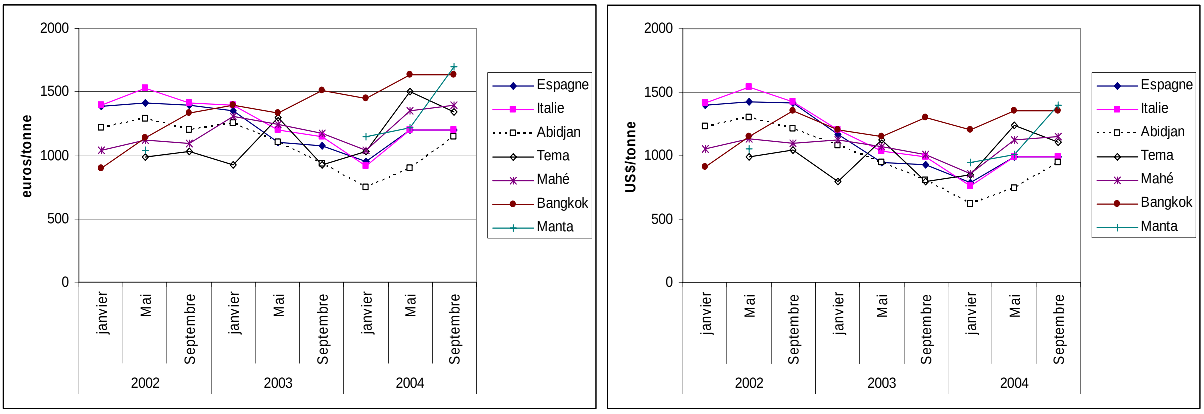


Figure 136: Monthly reports on prices (in euro and dollars per tonne) on tuna markets of importance for the European tuna sector: yellowfin tuna weighing over 10 kg (YF+10)

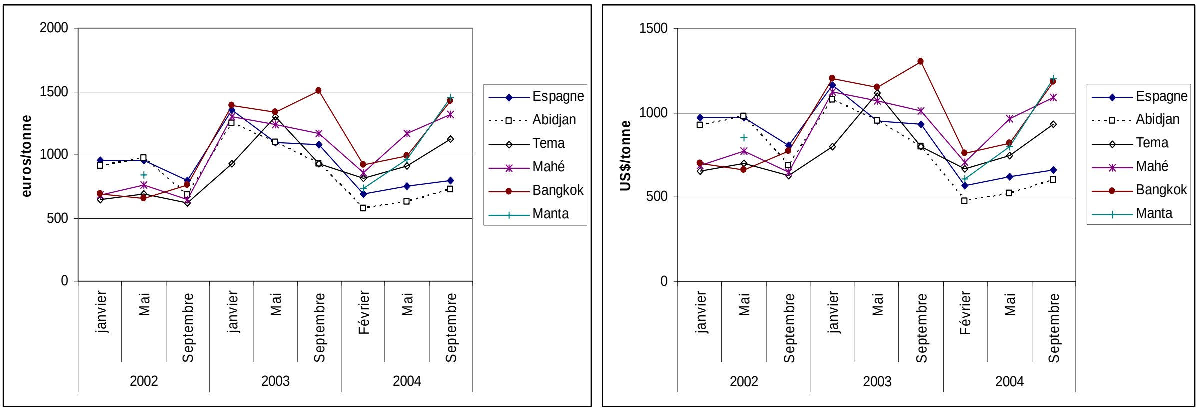


Figure 137: Monthly reports of prices on tuna markets of importance for the European tuna sector: skipjack tuna weighing over 1.8 kg (SK+1.8)

Tuna is subject to extremely strong variations which can be explained on the one hand by seasonal variations in catches but also by speculative action, particularly of canners given the absence of any buffer stocks kept by shipowners. They are forced to deliver their product within a relatively short period, and are consequently subjected to fairly concentrated pressures applied by processors. This phenomenon is amplified by exchange effects for shipowners and processors who are not totally "dollarised".

3.1.3 Interface between producers-processors

Although canneries produce canned tuna from raw tuna, they generally buy the tuna (normally frozen) from tuna sales companies. The principal sales companies are FCF (Taiwanese),Itochu (Japanese), Tri-Marine (United States, a trader but also a producer of loins and operator of purse seiners) and SOVETCO (France).

Figure 138 shows the network of distribution for frozen tuna in a simplified way.

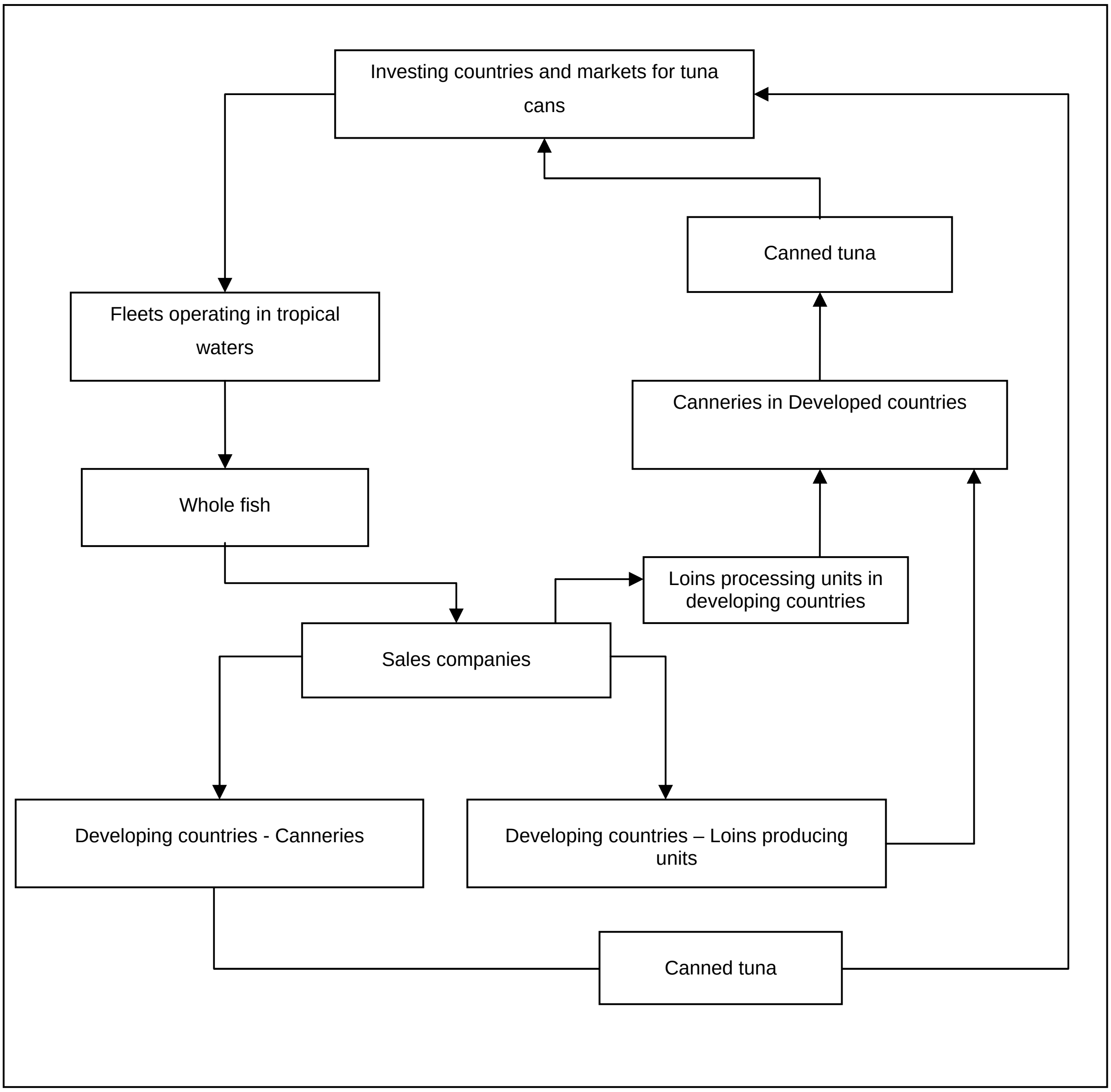


Figure 138: Network of distribution for frozen tuna

Most canned tuna is purchased by the large-scale distribution sector for consumption at home, with the sector of consumption outside the home being a less important player on the canned tuna market.

A limited number of powerful purchasers from large-scale distribution (supermarkets, hypermarkets) thus exercise the powers of an oligopoly over an equally limited number of producers, who are, however, more fragmented. Consequently supermarkets purchase canned tuna directly from producers, without an intermediary, asking them for payment in the form of a lump sum referred to as a "slotting fee". This sum varies according to the number of products and the position of the products on the shelves. In addition, large-scale distribution requires a minimum number of sales by volume. Finally, a number of distributors are involved in the sale of products to their commercial brands (own brands), with the canners then carrying out a simple filling activity. Figure 139 explains in a simplified form the distribution networks for the European canned tuna market.

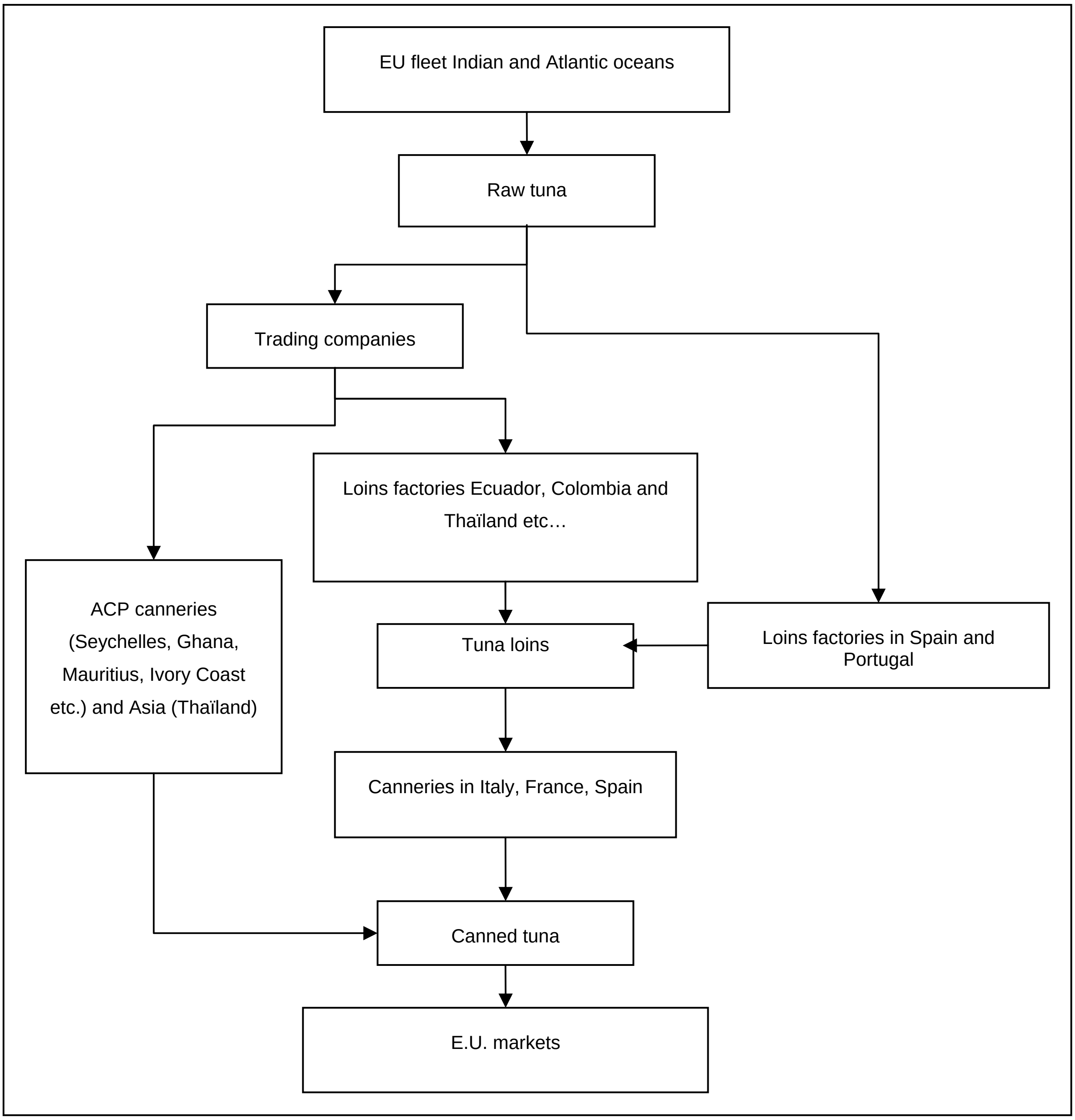


Figure 139: EU distribution networks

Figure 140 provides a simplified explanation of the distribution networks for tuna on the Asian market.

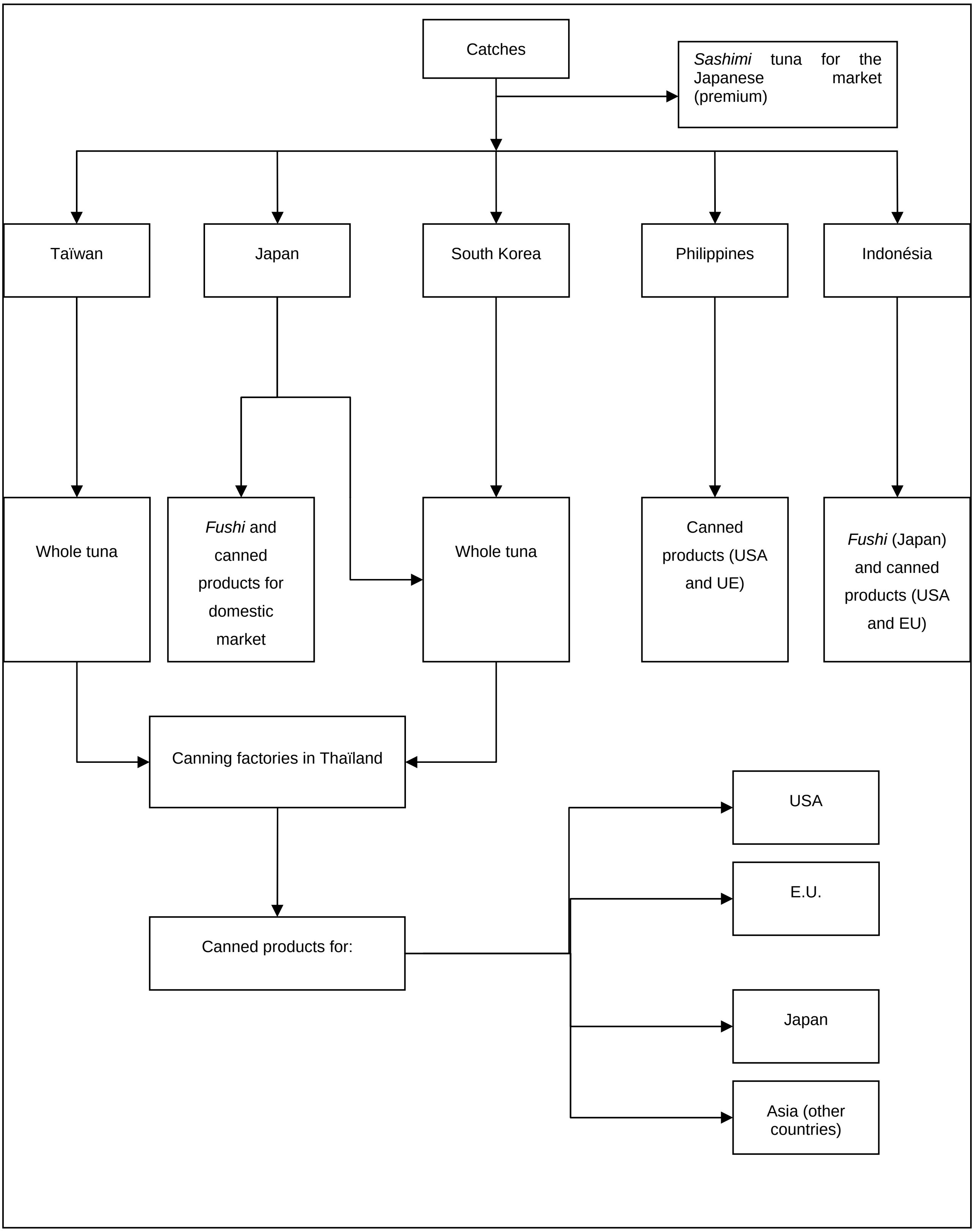


Figure 140: Tuna distribution network in Asia

Figure 141 provides a simplified explanation of the distribution networks for the United States canned tuna market.

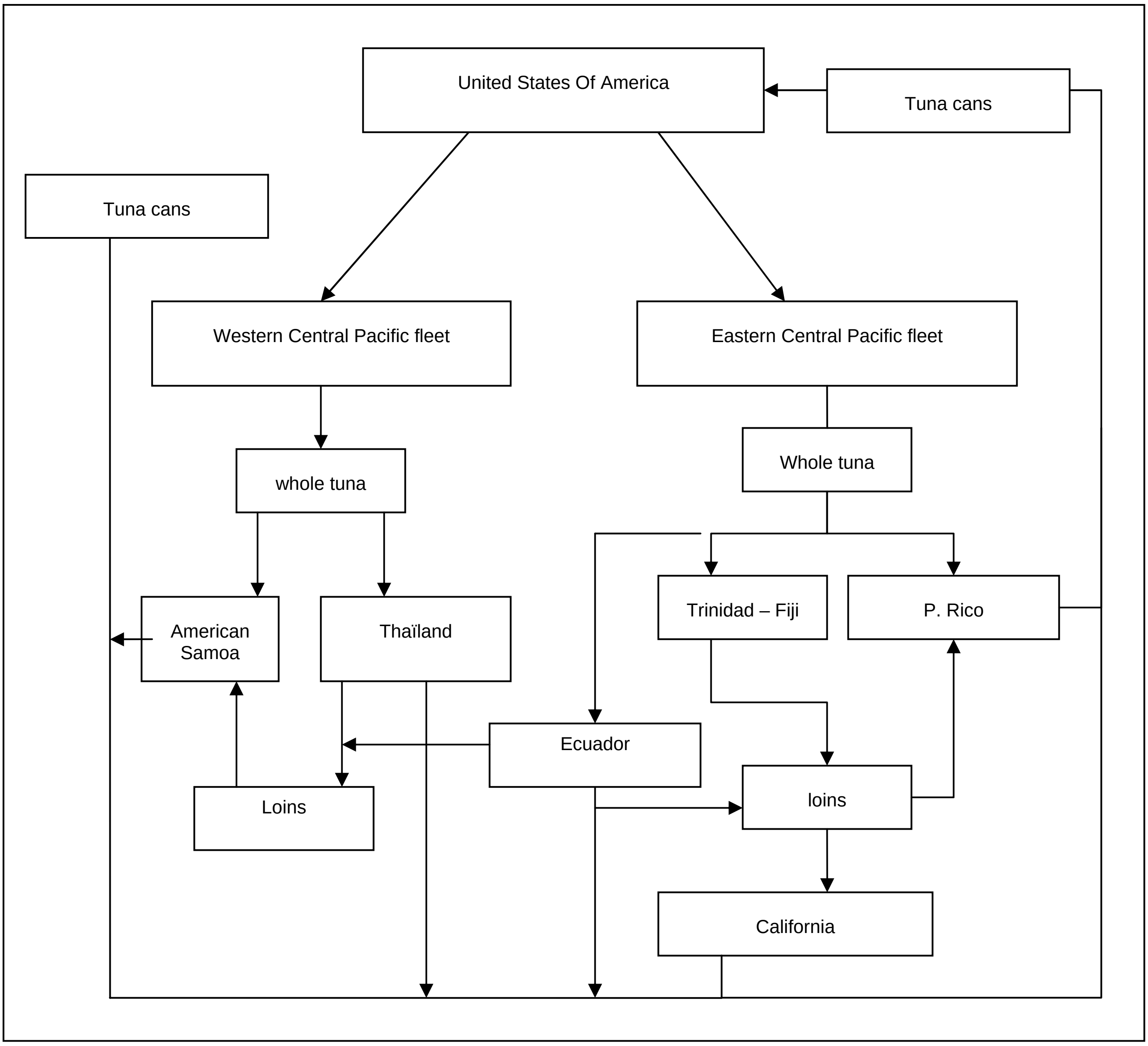


Figure 141: Tuna distribution networks in the United States

3.2 Extra-community trade in frozen tuna

3.2.1 European exports of frozen tuna

European exports of frozen tuna are made out almost exclusively by France and Spain. These exports have been following an upward trend since 1999 (see Table 52 and Figure 142).

Table 52. Origin of European exports of frozen tuna, 1994-2003 (Source: Eurostat).

Exportations de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France	143 076	127 680	118 449	119 179	94 486	95 439	103 397	114 383	89 195	151 672
Espagne	63 426	61 161	47 371	120 139	58 145	107 620	105 730	132 203	108 187	137 732
Italie	253	541	392	244	257	299	818	1 013	463	225
UE	208 500	193 166	169 219	239 695	153 133	203 482	210 055	247 768	198 102	289 707

Exportations de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France	109 610	90 781	83 977	106 741	110 001	76 924	62 940	88 883	86 693	112 193
Espagne	41 113	40 922	34 498	102 433	64 568	69 216	63 272	104 185	97 433	89 133
Italie	1 993	4 982	3 712	2 638	2 661	3 139	4 321	2 925	2 984	831
UE	156 324	143 870	127 632	213 293	177 714	149 636	131 018	196 517	187 661	202 441

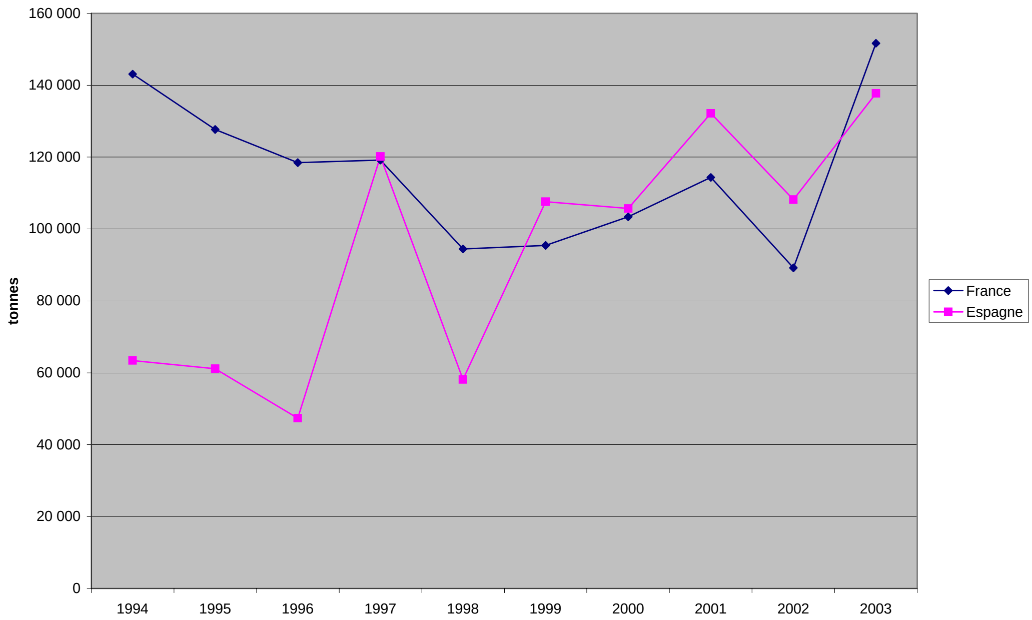


Figure 142. Development of European exports of frozen tuna according to origin (Source: Eurostat).

The destinations of European exports of frozen tuna are very diversified. European exports of frozen tuna are mainly intended for the ACP countries (Seychelles, Côte d'Ivoire, Mauritius, Madagascar and Ghana), for Ecuador, Thailand and Iran.

Table 53 Destination of European exports of frozen tuna, 1994-2003 (Source: Eurostat).

Exportations de l'UE en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Seychelles	5 455	7 356	13 266	25 103	18 760	26 754	46 564	57 478	57 655	86 975
Côte d'Ivoire	66 438	60 841	67 380	67 803	70 380	66 460	56 394	63 660	56 382	54 609
Equateur	1 367	9 674	10 676	13 764	2 326	26 931	12 767	13 808	18 327	27 764
Thaïlande	63 088	38 518	11 768	38 720	10 401	12 425	21 282	43 674	5 401	27 187
Maurice	8 753	9 853	6 213	8 114	6 047	9 331	8 179	18 213	17 968	25 421
Madagascar	12 161	19 004	14 268	15 763	12 811	14 405	13 403	11 569	17 086	23 553
Iran								0	1 199	12 513
Ghana		1 486	6 144	3 994	104	1 077	4 035	859	1 265	5 887
Tunisie	38	740	274		1 725	2 228	3 767	3 952	2 019	4 448
Extra-UE	208 500	193 166	169 219	239 695	153 133	203 482	210 055	247 768	198 102	289 707

Exportations de l'UE en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Seychelles	3 813	4 341	8 910	22 680	18 553	16 272	27 586	46 886	48 818	57 737
Côte d'Ivoire	53 956	49 945	49 843	61 589	88 225	57 239	39 806	54 236	59 036	47 388
Thaïlande	40 013	25 611	9 314	31 643	9 677	7 203	10 202	29 626	4 757	19 184
Maurice	5 885	5 476	3 896	6 529	6 184	6 174	4 911	12 914	14 090	15 450
Equateur	625	4 927	6 387	9 474	2 213	17 864	6 529	11 228	13 109	14 998
Madagascar	8 585	11 593	9 434	11 373	13 788	9 775	6 815	8 160	13 674	14 976
Iran								9	815	7 356
Ghana		1 309	4 807	3 471	25	661	2 051	577	1 298	5 046
Extra-UE	156 324	143 870	127 632	213 293	177 714	149 636	131 018	196 517	187 661	202 441

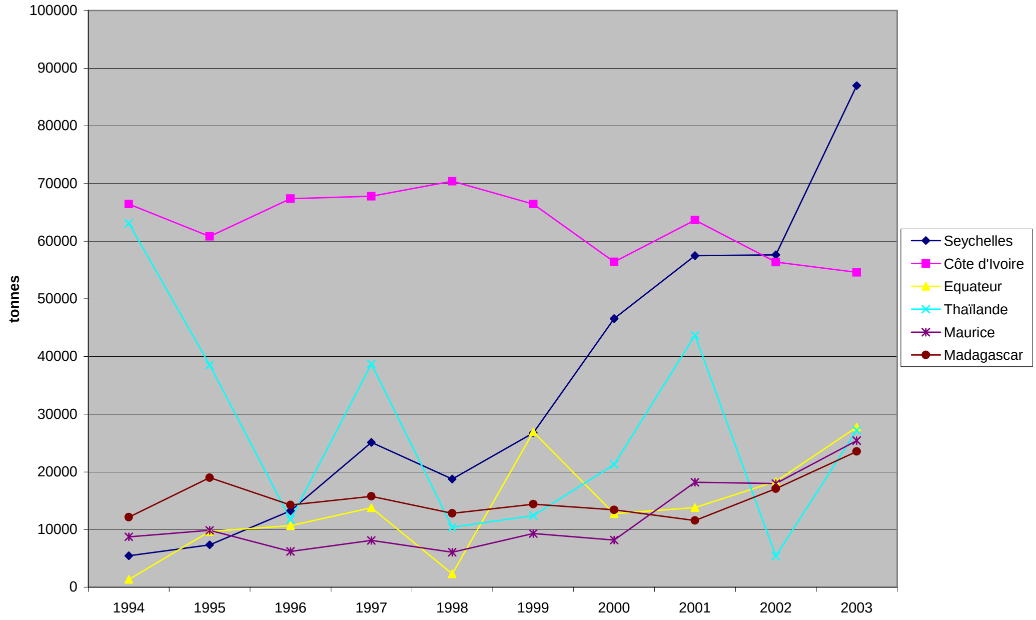


Figure 143. Development of European exports of frozen tuna according to destination (Source: Eurostat).

At the end of the period, the annual volume of European exports of frozen tuna rises on average to 245,000 tonnes, which probably represents approximately 15% of world trade, for an average total value of €196 million (to be compared with the total annual value of world trade, estimated at 3.2 billion USD).

The trends of European exports of frozen tuna are shown in Figure 143. European exports of frozen tuna intended for the Seychelles are growing very strongly, those intended for Ecuador, Mauritius and Madagascar are experiencing more moderate growth. Exports intended for the Côte d'Ivoire are displaying a downward trend. Exports intended for Thailand, from time to time very high, as in 1994 or in 2001, fluctuate a great deal, undoubtedly placing it in the position of a marginal supplier for European producers on this market.

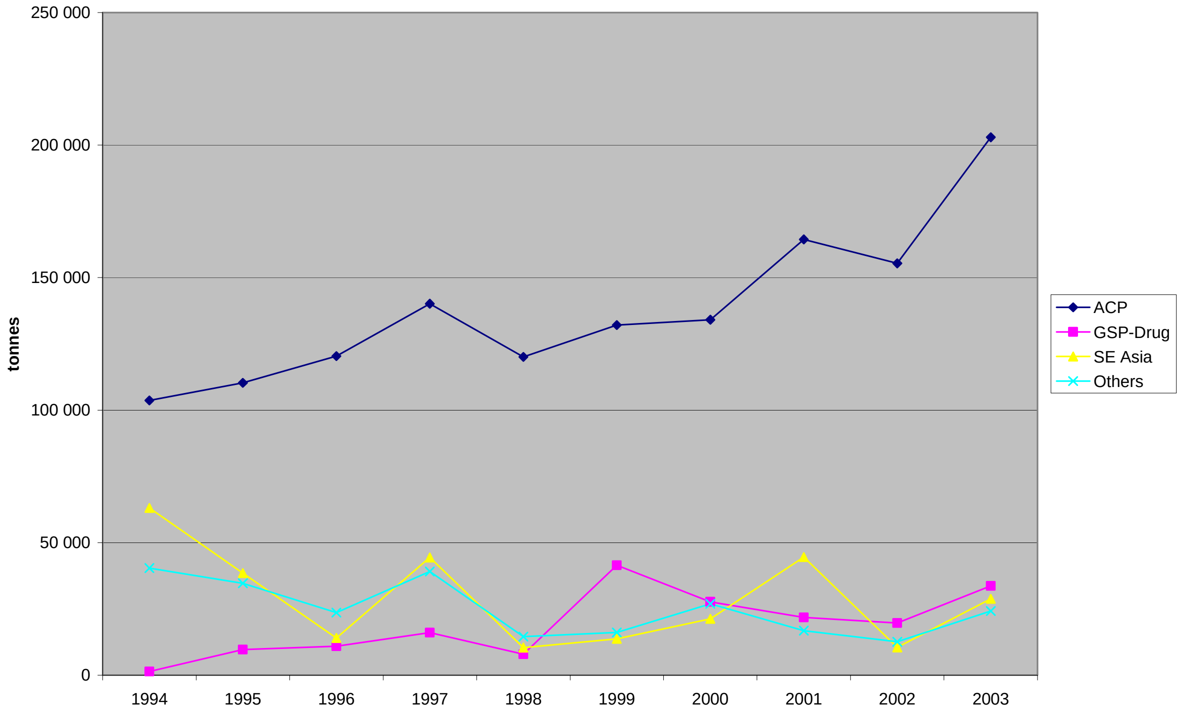


Figure 144. European exports of frozen tuna per groups of country of destination, 1994-2003.

In terms of groups of countries, the destinations of European exports of frozen tuna clearly favour the ACP countries, whose European supplies rose from 100,000 to 200,000 tonnes between 1994 and 2003 (see Figure 144). Exports intended for countries benefiting from the GSP-drug arrangement are stabilising after the leap recorded in 1999.

Although France, like Spain, sends its exports of frozen tuna as a priority to the ACP countries, the destinations of exports from Spain appear to be more diversified (see Figure 145). In fact France sends over 80% of its exports to the Côte d'Ivoire, to the Seychelles, to Madagascar and to Mauritius, but these destinations only represent approximately 50% of exports from Spain. After the Seychelles, the principal destinations of exports from Spain are Thailand and Ecuador.

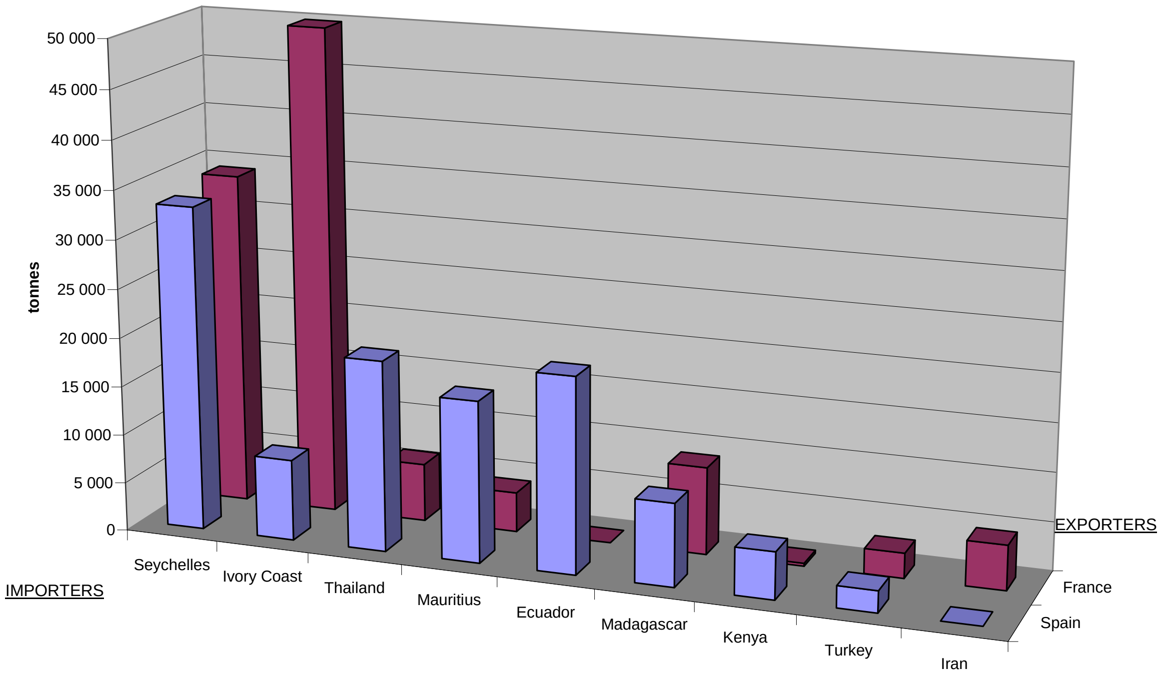


Figure 145: French and Spanish exports of frozen tuna according to destination, average for 2001-2003 (Source: Eurostat).

3.2.2 European imports of frozen tuna

European imports of frozen tuna are carried out by the four countries which produce canned tuna: Spain, Italy, France and Portugal (see Table 54).

Table 54. Destination of European imports of frozen tuna, 1994-2003 (Source: Eurostat).

Importations de l'UE en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	79 066	91 663	108 006	117 972	183 507	149 772	140 911	194 169	183 049	161 358
Italie	36 269	34 595	27 483	30 269	35 470	30 095	20 817	15 031	21 240	20 000
France	6 502	5 127	4 102	3 051	9 122	9 210	3 829	5 085	6 546	8 455
Portugal	10 281	8 672	9 759	8 713	14 183	6 740	10 115	3 857	5 634	850
Allemagne	141	242	278	186	157	202	176	117	277	283
Pays-Bas	27	125	131	63	211	164	64	123	24	86
Royaume-Uni	285	358	636	627	734	654	441	223	202	67
UE	132 734	141 251	150 698	161 319	243 832	197 321	176 491	218 773	217 173	191 198

Importations de l'UE en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	78 751	83 611	95 130	141 087	228 377	126 138	114 544	220 830	217 625	162 627
Italie	44 300	43 059	31 917	44 514	54 027	35 084	23 551	19 495	28 391	23 377
France	7 727	6 472	4 968	5 226	16 051	12 015	5 464	8 564	10 127	11 897
Portugal	9 944	8 134	8 724	9 147	17 769	5 793	5 796	4 746	5 926	791
Allemagne	176	307	501	305	259	297	276	219	572	434
Pays-Bas	43	158	127	101	349	333	125	336	69	159
Royaume-Uni	425	545	1 138	1 299	1 720	1 456	1 274	401	355	109
UE	141 612	143 080	143 222	202 604	319 264	181 930	151 329	255 062	263 595	199 583

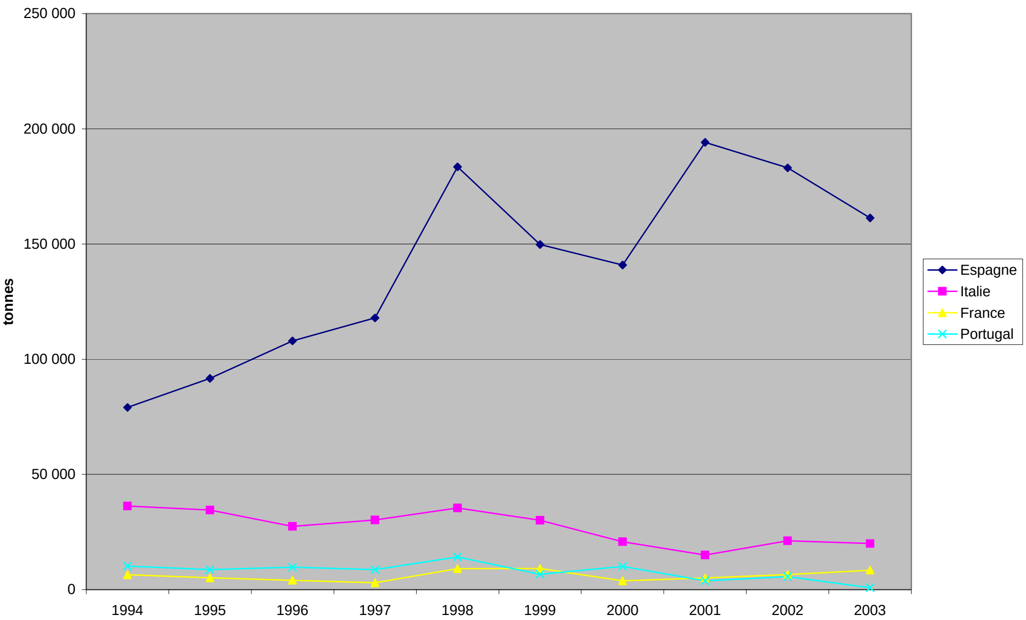


Figure 146. Development of European imports of frozen tuna according to destination (Source: Eurostat).

Table 55. Origin of European imports of frozen tuna, 1994-2003 (Source: Eurostat).

Importations de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Antilles Nd		26	7 190	23 424	15 797	25 227	21 260	23 109	21 595	28 935
Panama	36 935	44 957	36 028	15 336	12 730	14 511	14 813	18 655	18 702	25 154
Seychelles	866	51	1	2 795	3 180	3 576	4 410	15 696	19 253	20 742
Mexique		17 561	30 170	21 633	16 648	20 271	1 404	11 879	12 383	18 203
Taïwan	8 337	2 925	4 103	490	34 701	10 643	7 594	18 264	15 722	15 855
Guatemala						1 351	27 525	26 542	17 558	13 527
Etats-Unis	15 478	9 330	2 526	2 598	17 926	3 794	2 175	7 318	7 348	11 777
Vénézuela	8 624	6 286	8 346	9 153	2 268	4 577	7 498	27 736	28 828	9 495
El Salvador								1 639	8 449	8 804
Ghana	1 025	1 038	2 708	9 081	13 687	15 423	14 206	10 952	13 246	7 211
Extra-UE	132 734	141 251	150 698	161 319	243 832	197 321	176 491	218 773	217 173	191 198

Importations de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Antilles Nd		21	5 663	34 169	20 978	21 326	14 798	21 026	22 525	26 115
Panama	38 146	41 870	32 270	17 087	14 839	7 256	11 056	18 448	20 438	22 725
Seychelles	928	60	3	3 889	4 512	3 839	4 829	16 386	20 323	21 692
Etats-Unis	20 103	11 311	3 436	4 886	24 124	6 592	5 139	16 993	13 716	20 150
Mexique		19 763	30 811	30 406	23 668	20 858	1 860	13 024	14 706	18 367
Taïwan	11 011	3 952	4 453	828	46 650	10 888	8 354	22 921	19 654	16 953
Guatemala						861	18 927	25 080	17 522	11 104
Vénézuela	9 620	6 412	8 379	10 367	2 825	4 310	7 839	29 158	33 634	9 316
El Salvador								1 802	8 633	7 707
Extra-UE	141 612	143 080	143 222	202 604	319 264	181 930	151 329	255 062	263 595	199 583

European imports of frozen tuna are marked by strong growth in demand from Spain, which in the course of the last three years, has absorbed volumes in the region of 180,000 tonnes, representing 86% of European imports on average. After a clear drop between 1998 and 2001, Italian imports seem to be stabilising at around 20,000 tonnes per annum.

The origins of European imports of frozen tuna are diversified and fairly unstable. These imports now seem to be coming in the first instance from countries able to fly flags of convenience (Netherlands Antilles, Panama). Then they come from third country producers of tuna raw material such as the Seychelles, Mexico and Taiwan.

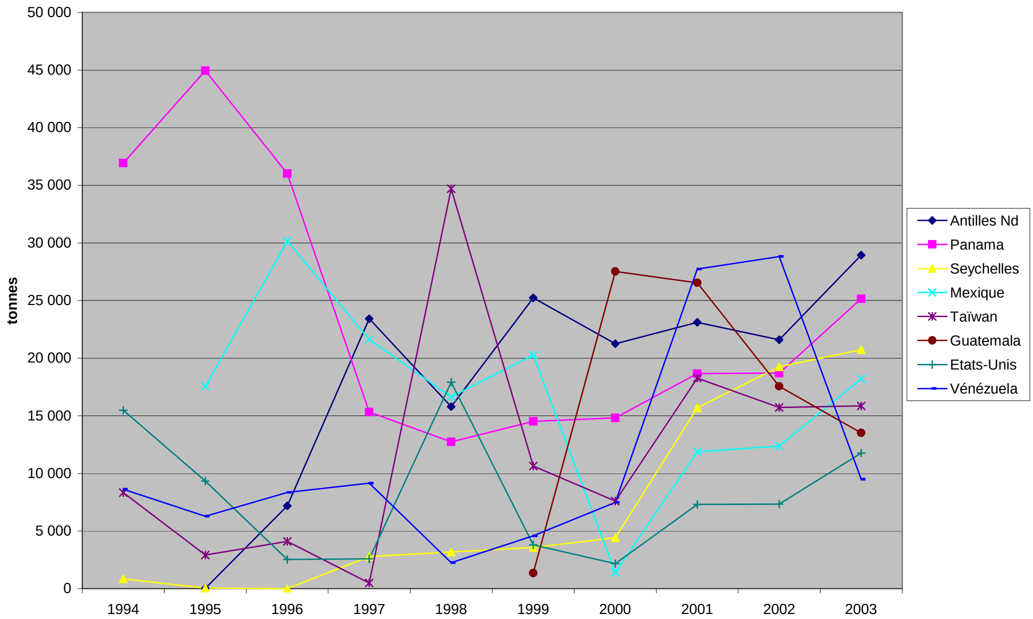


Figure 147. Instability of origins of European supplies of frozen tuna, 1994-2003. Source: according to Eurostat.

The cross-flows, expressed as an annual average of quantities over the period 2001-2003 essentially show the predominance of Spain in import relations with South America (see Figure 148). Spain's imports come first of all from the Netherlands Antilles and from Panama, which undoubtedly corresponds to the repatriation of the production of the fleet flying a foreign flag, then countries benefiting from the GSP-drug arrangement such as Venezuela, Guatemala (and to a lesser extent Mexico and Ecuador), followed by the Seychelles and Taiwan. Italian imports come from Taiwan, Korea, the Seychelles and Mexico. France's imports come principally from Taiwan and the Seychelles. Portugal's imports mainly come from Ghana.

Between 1994 and 2003, European imports of frozen tuna rose from 130 to 190,000 tonnes as a result of Spain doubling its imports, which now account for over four fifths of the European total. At the same time Italy saw its imports reduce by almost half, stabilising at around 20,000 tonnes.

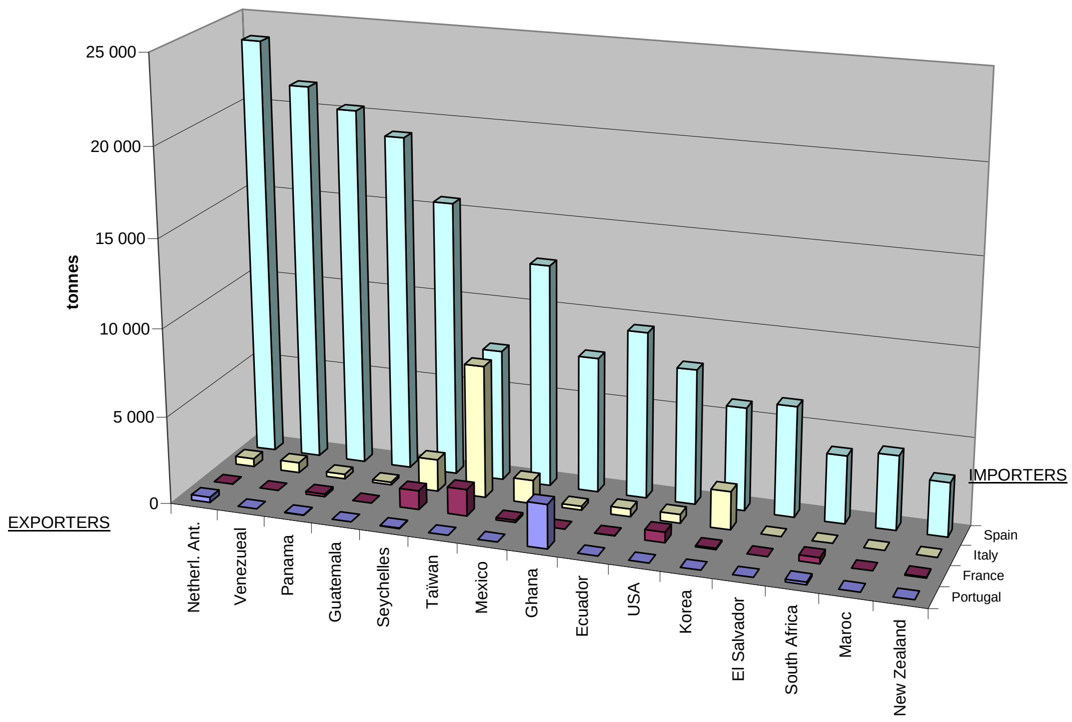


Figure 148 European imports of frozen tuna according to origin and destination, average 2001-2003. Source: according to Eurostat

3.3 Intra-community trade in frozen tuna

Intra-community trade in frozen tuna is dominated by sales made by France and Spain. Sales made by Spain were the highest up to 1998, although by this date they had already virtually reduced by half in comparison with their 1994 level. Since then, sales made by Spain, located at around 25,000 tonnes, have been overtaken by those made by France which, after having undergone strong progression between 1998 and 2000, have now risen to 35,000 tonnes.

Table 56. Origin of intra-community sales of frozen tuna, 1994-2003 (Source: Eurostat).

Ventes de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France	14 708	17 799	14 812	10 500	8 425	19 767	33 890	37 199	28 756	33 532
Espagne	44 358	44 846	41 920	24 164	21 506	22 950	24 253	21 479	21 119	25 303
Italie	238	460	381	208	364	651	542	87	44	236
Portugal	583	1 202	706	433	80	1 692	642	344	289	154
Pays-Bas	27	62	89	37	143	149	133	63	60	133
EU	59 987	64 437	58 157	35 548	30 667	45 300	60 098	59 613	50 832	59 538

Ventes de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France	14 833	17 690	15 536	12 972	11 551	19 718	25 468	39 457	32 934	31 487
Espagne	47 559	47 440	40 978	29 019	28 724	18 871	25 738	27 621	26 565	27 863
Italie	700	1 123	1 051	855	1 145	1 572	1 319	327	239	1 467
Pays-Bas	87	195	294	185	478	217	161	184	200	326
Portugal	1 230	2 116	1 263	1 334	355	1 431	1 045	412	409	300
EU	64 648	68 697	59 568	44 770	42 863	42 045	56 187	69 392	61 268	61 853

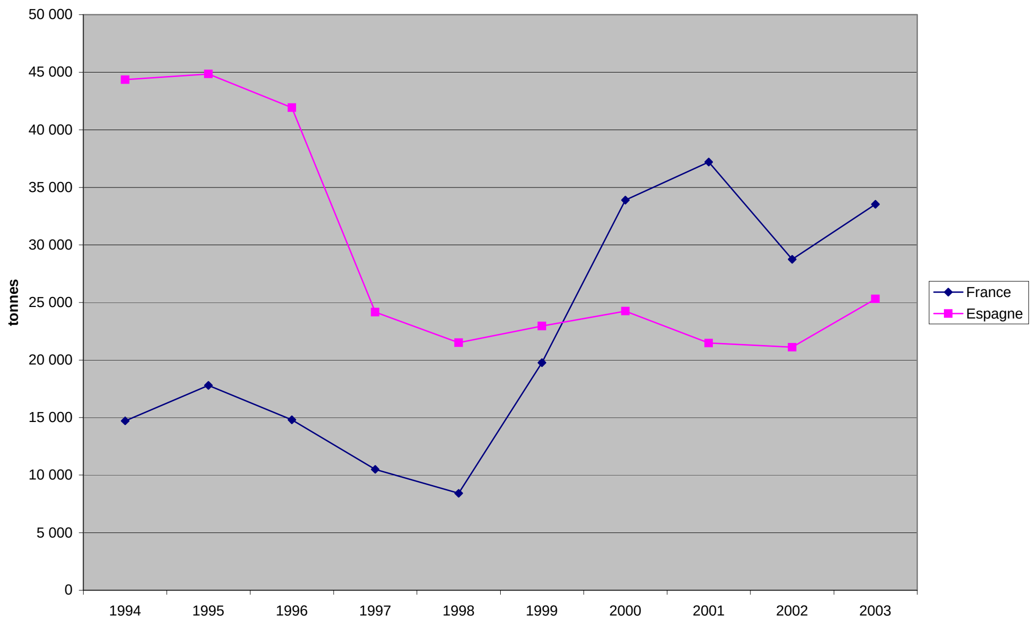


Figure 149. Development of intra-community sales of frozen tuna according to origin (Source: Eurostat)

The destinations of intra-community sales of frozen tuna are Spain, Italy, Portugal and to a much lesser extent, France, whose intra-community supplies, in excess of 10,000 tonnes up to 1997, have now plummeted to approximately 2,000 tonnes. Italy reduced its intra-community supplies by half between 1994 and 2003, but remains the second purchaser behind Spain, whose intra-community purchases increased significantly after 1999. Intra-community supplies from Portugal have been progressing moderately but constantly since 1998, and have now reached a level comparable to that of supplies from Italy.

Table 57. Destination of intra-community sales of frozen tuna, 1994-2003 (Source: Eurostat).

Ventes de l'UE en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	2 206	2 705	3 168	1 734	2 383	8 841	16 352	20 264	13 237	22 041
Italie	39 325	35 070	27 745	17 769	9 388	17 948	26 604	23 185	20 284	17 685
Portugal	6 203	13 653	11 413	4 438	11 326	12 030	11 061	13 342	14 868	17 297
France	11 983	12 836	15 277	11 327	7 187	6 229	5 727	2 231	1 581	2 069
Intra-UE	59 987	64 437	58 157	35 548	30 667	45 300	60 098	59 613	50 832	59 538

Ventes de l'UE en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	2 924	3 230	3 620	3 409	3 711	9 557	12 763	21 344	13 346	20 769
Italie	41 961	39 289	30 301	23 296	13 922	16 912	24 075	25 746	26 982	20 156
Portugal	6 102	11 855	10 075	4 477	14 220	9 700	11 286	15 950	15 868	15 032
France	13 054	13 996	14 001	12 818	9 914	5 437	7 145	4 886	3 374	4 452
Intra-UE	64 648	68 697	59 568	44 770	42 863	42 045	56 187	69 392	61 268	61 853

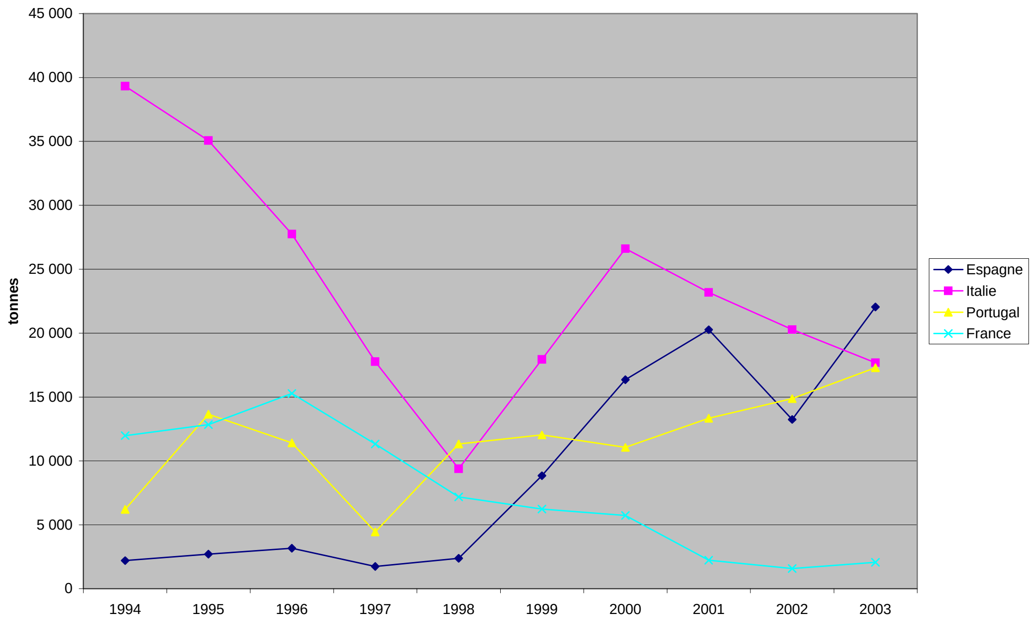


Figure 150. Development of intra-community sales of frozen tuna according to destination (Source: Eurostat).

The analysis of cross-flows shows that Spain's intra-community supplies come almost exclusively from France, that three quarters of Italy's supplies come from France (with Spain making up the difference), and that, conversely, Portugal and France's intra-community supplies come almost exclusively from Spain.

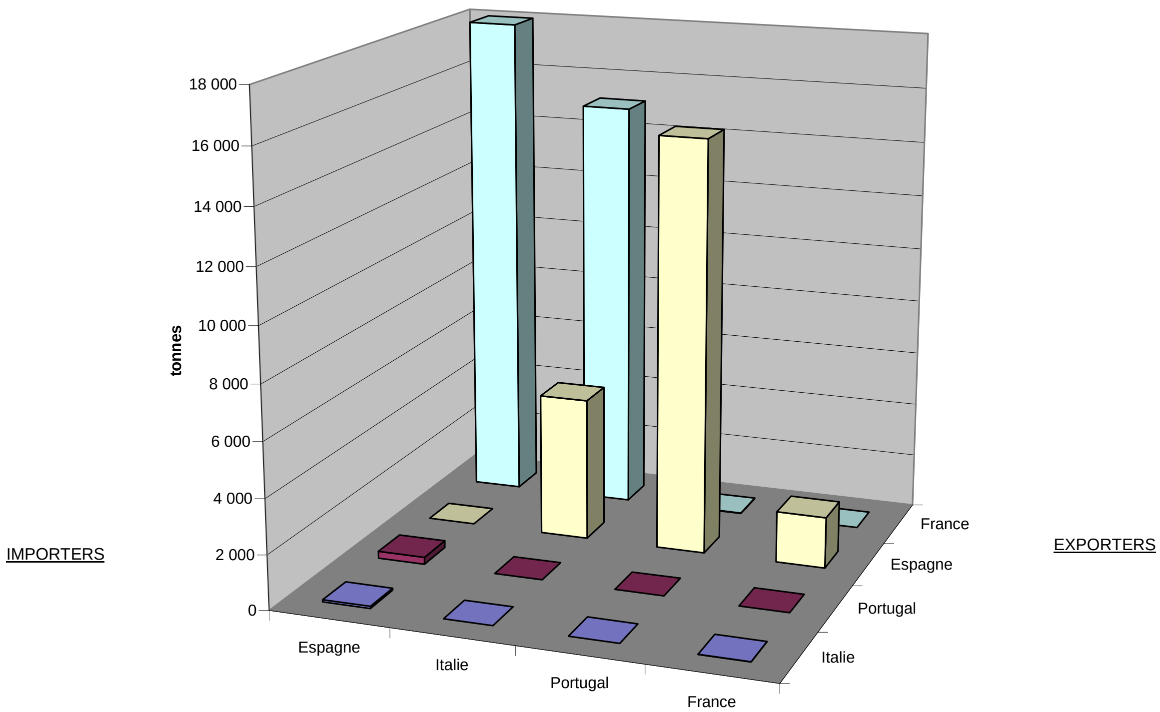


Figure 151. Intra-community trade in frozen tuna according to origin and destination, average for 2001 - 2003 (Source: Eurostat).

3.4 Extra-community trade in tuna loins

3.4.1 European imports of tuna loins

European imports of tuna loins are intended for Italy, Spain, France and Portugal, the only European countries which produce canned tuna.

Table 58. Destination of European imports of tuna loins, 1994-2003 (Source: Eurostat).

Importations de l'UE en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Italie	14 473	8 289	13 384	21 331	30 293	26 701	24 895	27 813	32 729	36 345
Espagne	6 179	12 088	11 069	10 940	9 079	18 239	18 619	6 074	12 774	30 290
France	61	8 075	7 146	5 914	7 754	7 101	6 750	8 683	8 535	8 568
Portugal	568	121	312	135	360	524	1 030	2 391	1 875	2 594
EU	30 110	32 255	36 075	38 978	47 560	52 747	51 476	45 365	56 288	78 361

Importations de l'UE en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Italie	46 389	24 585	39 123	75 589	126 503	89 311	81 604	98 858	120 593	114 603
Espagne	15 563	31 681	28 762	29 216	27 905	43 631	40 751	16 018	37 808	72 050
France	129	26 729	24 285	20 548	30 124	24 620	18 237	24 745	26 874	22 125
Portugal	1 682	315	829	406	1 241	1 469	2 484	6 473	5 705	6 727
EU	83 442	90 836	102 163	127 569	185 985	159 524	143 441	146 987	192 049	216 627

Table 59. Origin of European imports of tuna loins, 1994-2003 (Source: Eurostat).

Importations de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Equateur	7 877	8 728	7 857	13 980	17 808	21 088	20 716	16 568	22 994	35 993
Colombie	9 802	6 845	8 165	12 285	14 647	15 560	18 165	13 270	12 769	14 889
Thaïlande	3 857	3 464	2 341	513	1 726	1 250	1 992	589	2 743	6 244
Costa Rica	1 664	916	2 151	1 674	1 595	894	630	1 460	3 134	5 971
Vénézuela	635	397	3 534	919	1 120	3 783			3 978	5 697
Kenya			565	1 703	3 102	3 151	4 731	6 937	2 484	3 042
Côte d'Ivoire	273	7 839	6 729	5 842	6 504	6 513	3 062	2 611	2 408	1 603
Seychelles	745	243	807			73	1 787	2 526	3 094	1 536
Ghana		679	1 922	1 207	636	216	158	120	504	847
Extra-UE	30 110	32 255	36 075	38 978	47 560	52 747	51 476	45 365	56 288	78 361

Importations de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Equateur	22 985	22 802	20 708	40 006	63 030	56 450	50 286	51 780	75 690	91 608
Colombie	30 144	19 046	23 653	43 436	62 143	49 484	56 933	46 025	49 296	49 388
Costa Rica	5 149	2 720	6 065	5 984	7 018	2 596	1 890	4 507	10 875	17 730
Vénézuela	1 590	1 099	9 671	3 286	4 403	11 786			13 065	15 613
Thaïlande	8 604	7 670	5 207	1 916	7 077	4 428	6 057	1 870	9 156	14 815
Kenya			1 467	6 315	12 660	10 349	13 709	23 658	8 767	9 353
Côte d'Ivoire	650	26 282	23 241	20 065	25 845	22 977	8 960	8 163	8 228	5 075
Seychelles	2 192	587	1 878			191	4 828	6 660	9 631	4 717
Ghana		1 507	5 280	3 930	2 301	661	307	346	1 529	2 309
Extra-UE	83 442	90 836	102 163	127 569	185 985	159 524	143 441	146 987	192 049	216 627

European imports of tuna loins more than doubled between 1994 and 2003: they rose from 30,000 to 78,000 tonnes, i.e. from 57,800 to 149,800 tonnes in equivalent live weight. Moreover, imports of frozen tuna rose from 130,000 to 190,000 tonnes: this means that the share of tuna loins in imports of tuna raw material has risen from 30% to 44% by volume.

European imports of tuna loins mainly come from countries which benefit from the GSP-drug arrangement: Ecuador, Colombia, Costa Rica and Venezuela. Thailand and Kenya are also important suppliers.

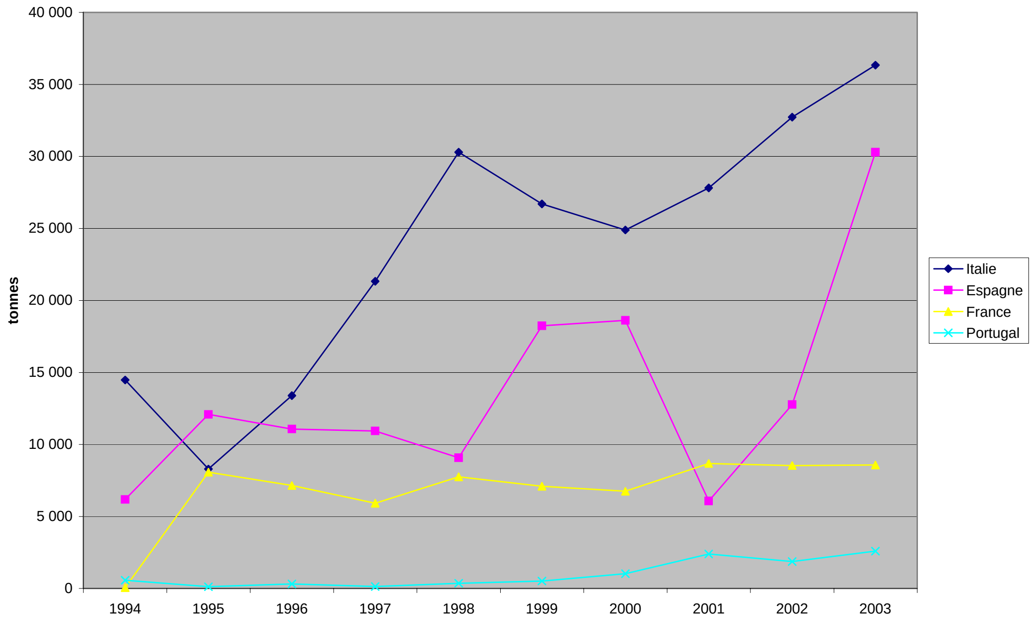


Figure 152. Trend of European imports according to principal destinations (Source: Eurostat).

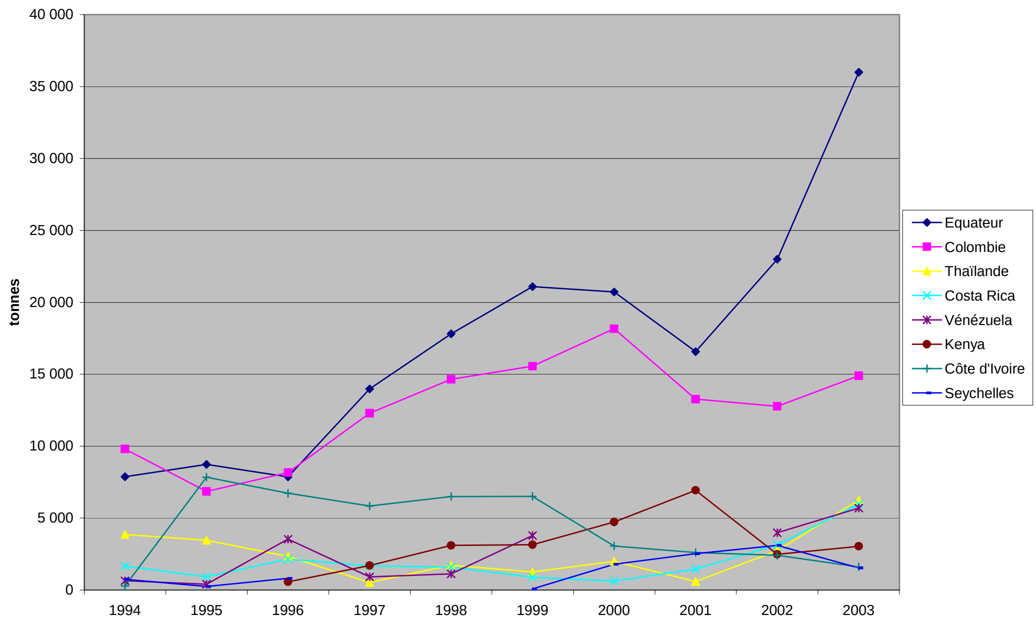


Figure 153. Trend of European imports according to principal origins (source Eurostat).

Imports of tuna loins from Italy and Spain are in a state of fairly clear growth: each of these two countries imported over 30,000 tonnes of loins in 2003. Imports from France are stagnating at around 8,500 tonnes. Exports from Ecuador have almost doubled twice in eight years between 1996 and 2003, rising from under 10,000 tonnes to over 35,000 tonnes. Supplies from Colombia are experiencing more moderate growth, rising from 10,000 to 15,000 tonnes. In 2003, over 80% of European imports of tuna loins came from the group of countries covered by the GSP-drug arrangement, whereas the group of countries in Southeast Asia and the group of ACP countries accounted for only 9% each.

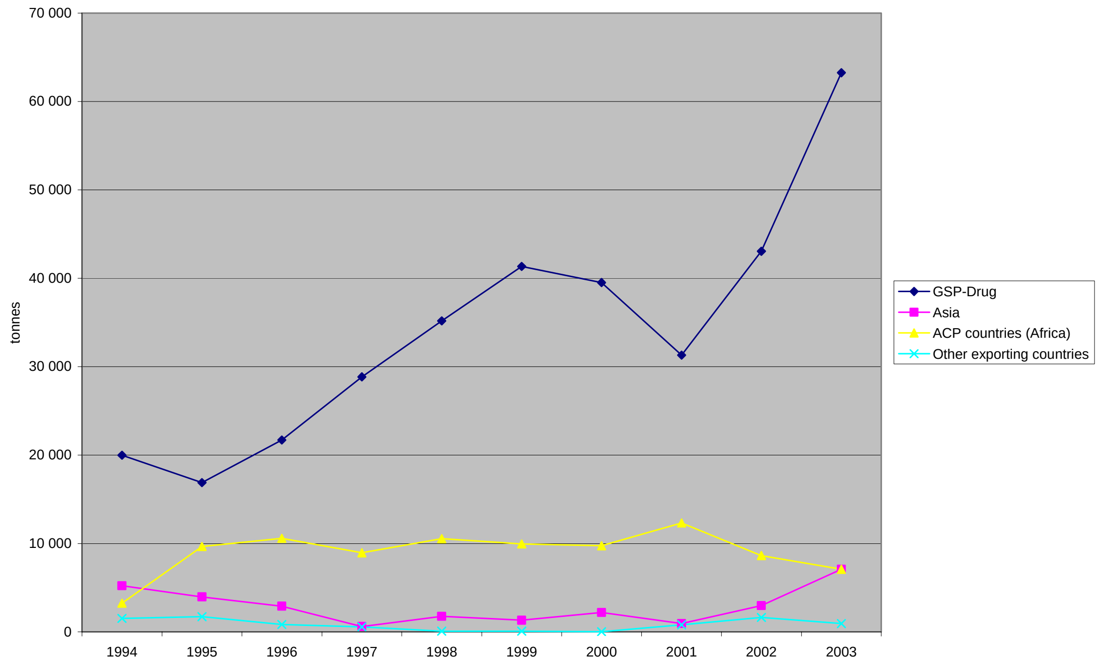


Figure 154. European imports of tuna loins according to groups of country of origin, 1994-2003. Source: according to Eurostat.

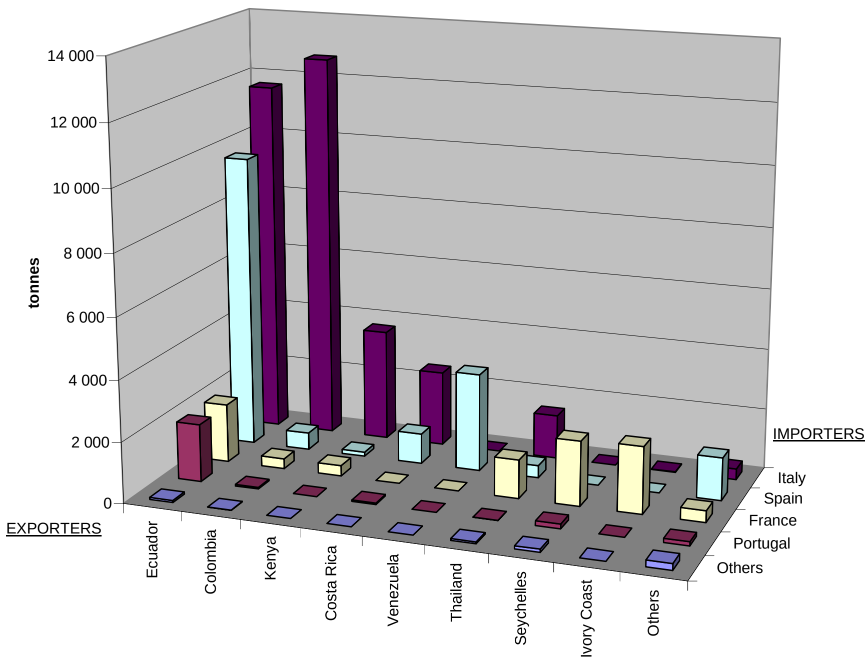


Figure 155. Extra-community trade in tuna loins according to origin and destination, average 2001-2003. Source: according to Eurostat.

European imports of tuna loins, expressed as an average of annual quantities in the course of the period 2001-2003, were characterised by the following flows (see Figure 155):

- Italian imports from Colombia, Ecuador, Kenya, Costa Rica and Thailand;
- Spanish imports from Ecuador, Venezuela and Costa Rica;
- French imports from the Côte d'Ivoire, the Seychelles, Ecuador and Thailand;
- Portuguese imports from Ecuador.

There is a strong trend, essential for the community industry, since this is a condition for maintaining production facilities on community territory, to increase production using loins.

3.4.2 European exports of tuna loins (for the record)

Since 1997, European exports of tuna loins have represented negligible volumes (around a hundred tonnes on average since 2003).

Table 60. Origin of European exports of tuna loins, 1994-2003 (Source: Eurostat).

Exportations de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	2 894	5 064	4 193	381	9	73	351	40	87	60
France	69	157	166		10	19	1	3	14	46
Italie	178	332	121	29	98	3	47	34	36	7
EU	3 279	5 722	4 677	422	124	283	419	101	149	117

Exportations de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	7 051	14 487	12 243	1 305	24	166	684	147	312	203
France	182	382	344		33	48	3	14	77	116
Italie	695	1 600	610	113	418	13	148	146	112	23
EU	8 344	17 061	13 855	1 458	505	828	858	464	608	359

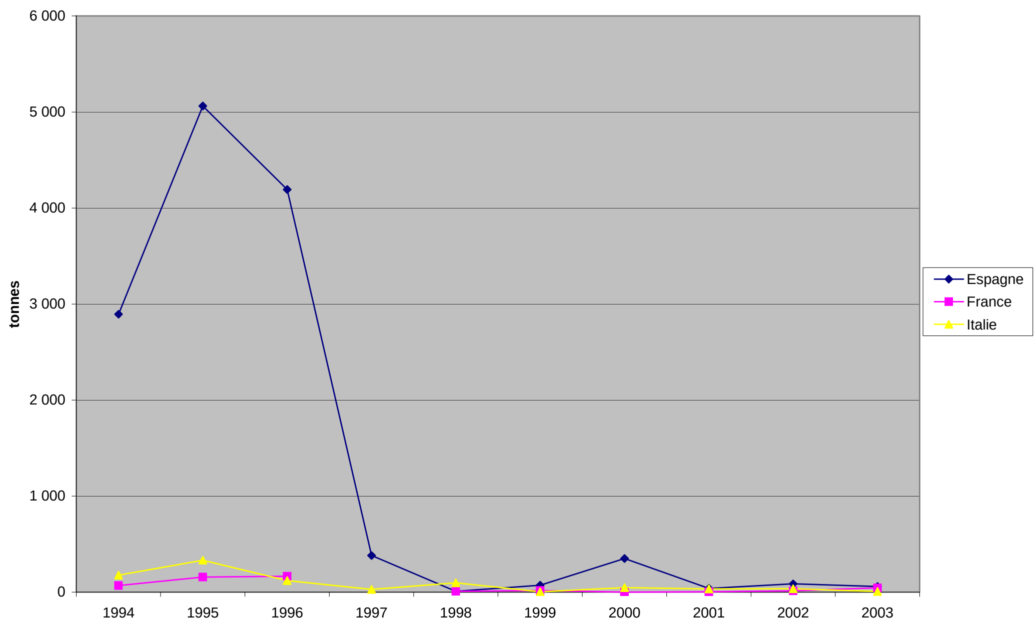


Figure 156. European exports of tuna loins according to origin, 1994-2003. Source: according to Eurostat

3.5 Intra-community trade in tuna loins

Intra-community sales of tuna loins are made almost exclusively by Spain and Italy, but currently represent fairly low volumes, in the region of 5,000 tonnes. These sales only achieved significant levels during the period 1995-1996[48], probably because of the tariff for a quota of tuna loins of 4,000 tonnes/year being lowered to 6% since 1999.

Table 61. Origin of intra-community sales of tuna loins, 1994-2003 (Source: Eurostat).

Achats de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	7 280	18 345	14 988	8 390	5 108	8 454	8 348	5 361	2 890	2 118
Italie	66	71	253	3	122	186	2 041	396	2 515	2 056
Allemagne	4	2	25	18	183		7	26	333	238
Portugal	178	255	149	315	200	307	108	66	54	188
France	770	8	673	595	244	199	493	425	192	108
EU	9 233	19 577	17 325	9 411	5 964	9 211	11 058	6 332	6 065	4 739

Achats de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	28 306	62 703	51 708	29 987	21 452	24 095	21 350	30 758	9 906	7 049
Italie	408	401	941	39	516	563	5 180	1 436	8 768	6 951
Portugal	603	679	594	1 529	1 335	1 415	660	401	348	1 068
Allemagne	11	4	65	58	477		16	94	1 018	662
France	1 850	36	1 963	2 072	926	541	888	1 392	650	340
EU	33 328	66 332	58 667	34 069	25 221	26 862	28 332	34 296	21 051	16 243

Table 62. Destination of intra-community sales of tuna loins, 1994-2003 (Source: Eurostat).

Ventes de l'UE en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France	753	1 261	2 359	1 926	2 100	4 041	6 388	3 271	3 884	3 349
Portugal	599	1 122	905	974	504	2 206	1 966	2 166	1 350	433
Italie	6 039	16 004	11 376	5 949	3 067	2 522	1 971	651	285	424
Royaume-Uni	266	65	960	111	19	32	6	22	164	229
Autriche	4	4	21	2	94	3	3	6	9	118
Finlande		10	3	0			0	22	103	76
Allemagne	1 023	705	849	6	3	57	57	36	35	50
Intra-UE	9 233	19 577	17 325	9 411	5 964	9 211	11 058	6 332	6 065	4 739

Ventes de l'UE en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
France	2 393	3 565	6 616	6 713	8 301	11 173	15 477	9 922	13 154	10 943
Italie	24 373	56 102	41 419	21 814	13 979	8 735	6 664	2 900	1 629	2 318
Portugal	1 702	2 855	2 530	3 298	1 874	5 534	4 190	20 532	4 415	1 252
Royaume-Uni	633	209	2 919	432	87	126	20	89	556	691
Autriche	19	11	66	14	316	15	14	23	40	288
Finlande		26	7	0			0	84	390	285
Allemagne	2 579	2 151	2 623	34	26	234	240	168	159	236
Intra-UE	33 328	66 332	58 667	34 069	25 221	26 862	28 332	34 296	21 051	16 243

[48] *At the time this concerned trade which came almost exclusively from Spain and was intended almost exclusively for Italy.*

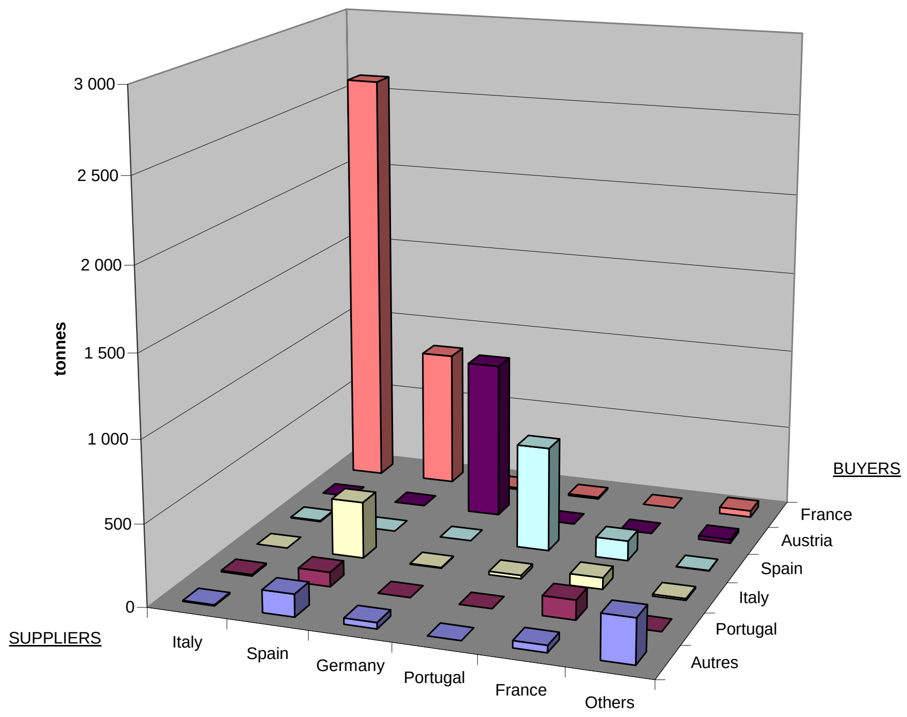


Figure 157. Intra-community trade in tuna loins according to origin and destination, average for 2001-2003. Source: according to Eurostat

From then on France was the destination of the large majority of intra-community sales of tuna loins. At the moment, intra-community trade in tuna loins, expressed as an average of annual quantities in the course of the period 2001-2003, is characterised by the following flows (see Figure 157):

- sales (of re-exports) from Italy intended for France;
- sales from Spain intended for France and Italy;
- sales (of re-exports) from Germany intended for Austria;
- sales from Portugal to Spain.

3.6 *Extra-community trade in canned tuna*

3.6.1 Destination and origin of European imports

European imports of canned tuna are experiencing continuous growth: they rose from 200,000 tonnes in 1994 to almost 340,000 tonnes in 2003. Their destination is, in decreasing order of volume: the United Kingdom, France, Germany, the Netherlands, Italy, Spain and Denmark. With regard to purchases expressed in terms of value, these destinations are classified in the same order, with the exception of Italian imports which represent a value higher than those for the Netherlands.

Table 63. Destination of European imports of canned tuna, 1994-2003 (Source: Eurostat)

Importations en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Royaume-Uni	71 040	77 820	73 278	84 132	93 321	94 508	85 695	105 354	115 054	113 645
France	72 075	66 688	69 706	67 545	74 380	49 802	64 957	60 869	72 697	73 292
Allemagne	31 514	33 044	37 666	35 814	39 359	48 230	51 291	41 280	45 679	55 556
Pays-Bas	10 631	8 098	12 483	15 847	22 262	25 569	26 921	14 131	31 435	28 064
Italie	2 954	7 414	9 486	8 351	9 388	14 098	12 033	15 052	20 348	23 879
Espagne	753	859	2 490	3 596	4 004	6 541	4 638	6 590	8 639	15 455
Danemark	3 624	3 120	2 960	5 182	4 204	5 092	5 051	5 413	5 423	6 372
Suède		2 061	2 814	4 417	4 710	5 101	4 923	5 001	5 771	5 955
Finlande		1 713	3 848	3 794	4 414	3 573	4 029	4 448	4 488	5 145
Belgique-Lux	5 679	5 434	6 396	6 076	7 260	6 591	4 407	4 974	4 558	4 270
Autriche		1 373	2 751	2 113	2 223	2 071	1 944	2 197	2 877	3 402
Grèce	550	447	607	1 149	1 460	1 811	1 620	1 850	2 526	2 358
Irlande	114	440	615	673	1 419	620	659	802	939	1 037
Portugal	3 569	2 314	192	50	540	677	731	148	229	303
EU	202 501	210 824	225 293	238 737	268 944	264 284	268 897	268 110	320 662	338 732

Importations en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Royaume-Uni	159 066	160 622	158 616	215 502	255 534	223 952	203 337	253 171	282 084	238 868
France	150 425	199 888	203 342	219 148	253 947	126 147	154 337	167 357	211 477	193 630
Allemagne	66 396	62 078	71 776	82 603	97 404	99 995	96 620	81 464	94 039	96 737
Italie	7 885	20 081	29 083	30 572	32 188	42 935	35 119	44 715	64 838	82 012
Pays-Bas	21 942	16 442	25 522	41 562	61 958	58 743	53 219	35 629	74 993	59 253
Espagne	1 396	1 741	5 588	9 230	13 231	13 559	9 672	18 804	24 742	37 342
Danemark	7 760	6 409	6 272	13 391	11 834	11 722	11 203	12 659	13 339	12 802
Suède		3 876	5 402	10 349	10 993	10 501	9 578	10 898	11 373	10 116
Finlande		3 043	8 012	9 484	11 292	7 785	8 351	10 430	10 192	9 784
Belgique-Lux	13 809	11 416	13 673	15 090	20 054	14 655	9 490	11 477	13 132	9 094
Autriche		3 360	6 807	5 395	6 582	5 628	4 846	6 007	8 154	8 561
Grèce	1 434	1 076	1 500	3 181	3 994	4 189	3 618	4 541	6 750	5 307
Irlande	305	1 053	1 300	1 577	3 469	1 354	1 488	1 598	2 114	2 126
Portugal	9 779	5 978	507	121	1 780	1 872	1 619	320	595	697
EU	440 197	497 063	537 400	657 205	784 262	623 039	602 498	659 073	817 822	766 330

European imports of canned tuna come from the following countries, in decreasing order of volume: Seychelles, Thailand, Côte d'Ivoire, Philippines, Ecuador, Mauritius, Ghana, Madagascar and Papua New Guinea. Expressed in terms of value, European imports mainly come from the Seychelles and the Côte d'Ivoire; Thailand is now only in third position and the Philippines in seventh place.

Table 64. Origin of European imports of canned tuna, 1994-2003 (Source: Eurostat)

Importations de l'UE en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Seychelles	5 436	6 209	7 982	15 301	19 196	31 805	44 435	44 862	56 472	51 484
Thaïlande	49 670	46 821	39 940	36 231	41 328	34 257	25 204	30 571	40 360	44 091
Côte d'Ivoire	49 996	46 247	52 058	44 651	49 839	39 232	47 915	40 309	52 387	41 866
Philippines	18 166	24 000	24 889	23 124	33 940	35 315	31 746	26 682	39 241	38 852
Equateur	5 553	2 271	4 416	12 904	13 068	19 977	21 073	22 947	27 376	34 030
Maurice	6 662	10 277	10 846	10 927	12 272	14 707	17 096	26 300	26 640	28 498
Ghana	2 911	9 222	10 646	20 873	21 826	23 087	24 420	26 380	22 620	28 465
Madagascar	10 786	8 304	16 669	10 766	12 922	11 273	10 617	11 202	15 390	22 951
Papouasie NG				110	1 491	2 366	2 403	2 787	5 689	12 436
Extra-UE	202 501	210 824	225 293	238 737	268 944	264 284	268 897	268 110	320 662	338 732

Importations de l'UE en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Seychelles	12 384	12 507	21 312	56 526	66 603	94 335	125 607	142 289	173 823	161 428
Côte d'Ivoire	98 099	159 410	167 339	151 892	175 891	97 462	105 177	94 762	145 079	113 227
Thaïlande	99 112	86 451	77 801	84 073	103 923	75 268	54 604	67 626	90 791	82 735
Equateur	13 192	5 341	9 928	35 124	41 523	46 116	44 691	55 886	69 843	72 983
Ghana	7 202	21 060	27 498	62 971	67 025	59 223	65 770	72 171	61 837	65 805
Maurice	19 206	24 866	26 493	29 737	35 282	38 119	40 560	67 086	69 859	59 889
Philippines	36 079	41 113	41 785	47 378	75 935	65 976	53 149	48 844	76 506	59 780
Madagascar	23 203	15 395	36 090	24 821	33 651	24 658	19 856	24 894	37 195	48 187
Papouasie NG				300	3 746	4 722	4 395	6 296	13 030	23 754
Extra-UE	440 197	497 063	537 400	657 205	784 262	623 039	602 498	659 073	817 822	766 330

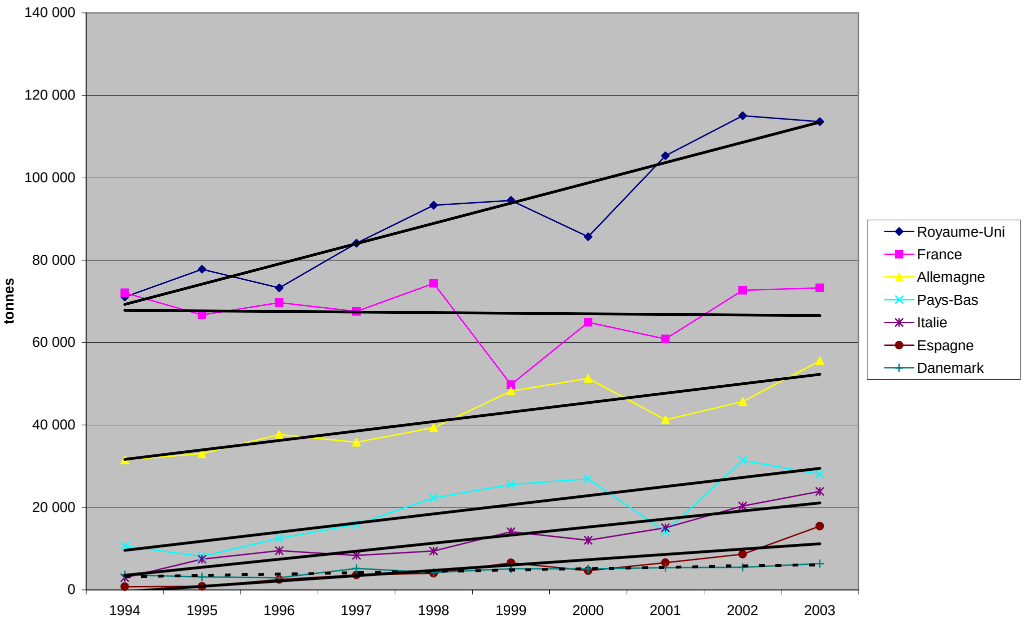


Figure 158. Trend of European imports of canned tuna according to principal destinations (Source: Eurostat).

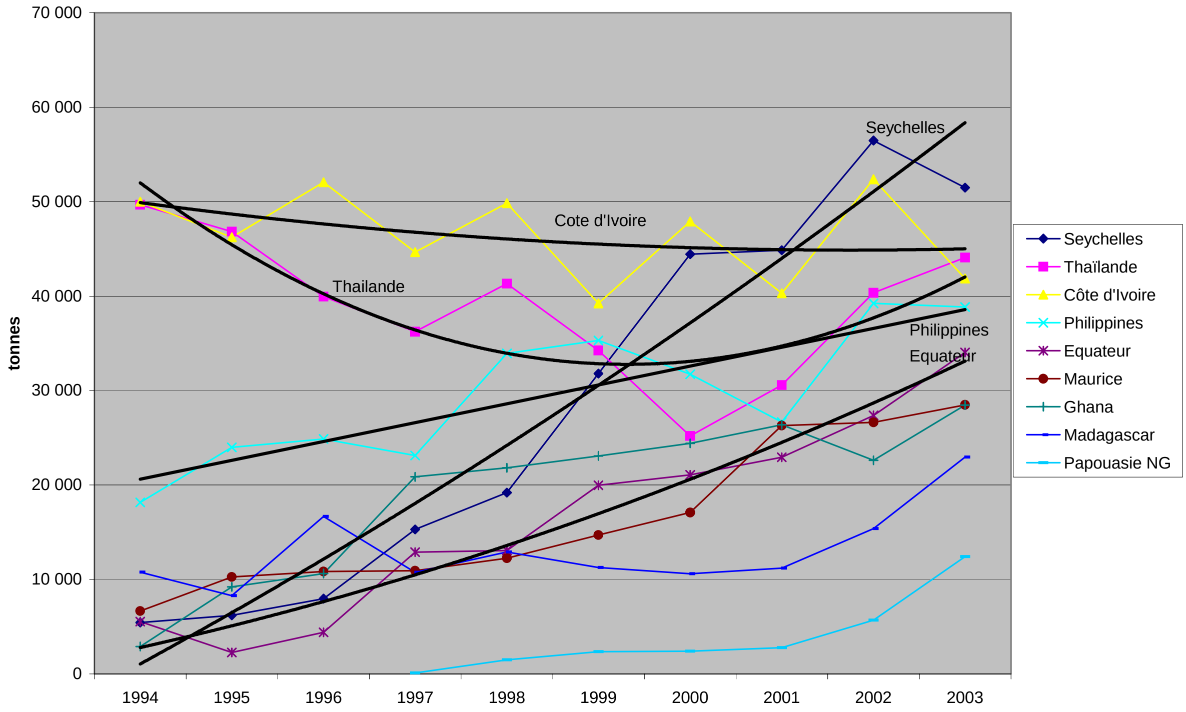


Figure 159.Trend of European imports of canned tuna according to principal origins (Source: Eurostat).

All the markets for which the European imports are intended are showing rising trends, with the exception of France. The highest growth rates are observed first of all in the United Kingdom, then in Germany, the Netherlands and Italy. With regard to country of origin, trends are more diverse: the Seychelles present the highest growth rate, Ecuador is in clear progression, the Philippines are experiencing a more moderate growth, Thailand appears to be in a recovery phase after a period of decline and finally the Côte d'Ivoire seems to be in regression.

3.6.2 Origin-destination cross-flows of European imports

Figure 160 first of all shows the development of European imports of canned tuna according to groups of country of origin since 1988. The ACP countries (Africa alone) saw their exports for the European market rise from 60,000 to 180,000 tonnes. Imports from countries in Southeast Asia had become the highest at the end of the 1980s, almost doubling between 1988 and 1992 to exceed 110,000 tonnes. They subsequently stabilised at around 80,000 tonnes, only to increase again at the end of the period to approach 100,000 tonnes. Imports from countries benefiting from the GSP-drug arrangement, with a significant presence after 1992, have been progressing relatively moderately since then, reaching approximately 40,000 tonnes in 2003. Finally, the other ACP countries, successively represented in the course of the period by the Solomon Islands, Fiji and now Papua New Guinea, remain at fairly low export levels in the region of 6 to 12,000 tonnes per annum.

Taking an average of quantities in the course of the period 2001-2003, 56% of European imports of canned tuna came from the ACP countries (Africa alone), 29% from Southeast Asia and 12% from the countries covered by the GSP-drug arrangement.

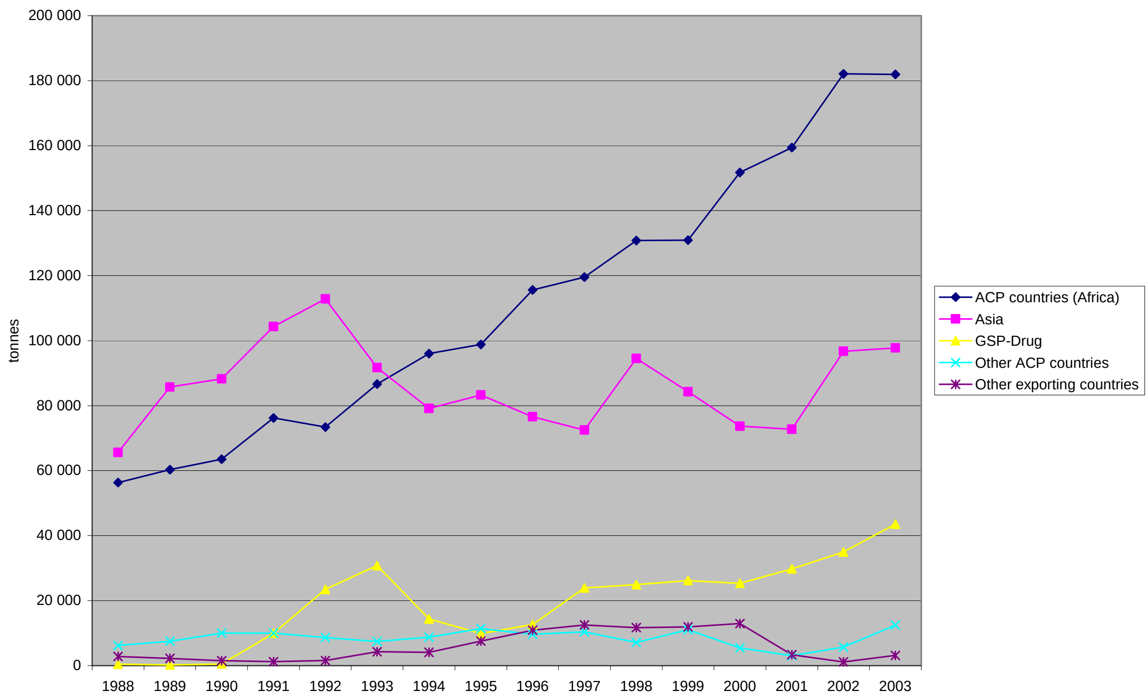


Figure 160. European imports of canned tuna according to groups of country of origin, 1998-1994. Source: according to Eurostat

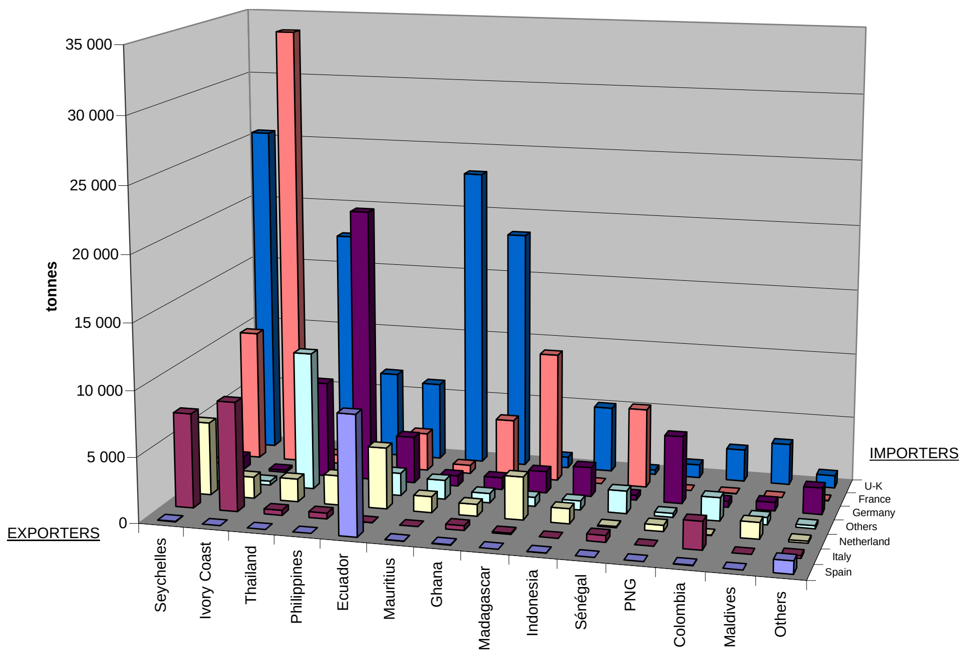


Figure 161. Origin and destination of European exports of canned tuna: average 2001-2003. Source: according to Eurostat

In the course of the period 2001-2003, imports of canned tuna by Member States of the EU consisted of the following principal flows (in accordance with average quantities):

- United Kingdom imports from the Seychelles, Mauritius, Ghana, Thailand and the Philippines;

- French imports from the Côte d'Ivoire the Seychelles, Madagascar, Senegal and Ghana;
- German imports from the Philippines, Thailand, Papua and New Guinea and Ecuador;
- Netherlands imports from the Seychelles, Ecuador and Madagascar;
- Italian imports from the Seychelles, the Côte d'Ivoire and Colombia;
- Spanish imports from Ecuador.

3.6.3 European exports of canned tuna

European exports of canned tuna come in the main from Spain, Italy, France and Portugal, but also from Germany and the United Kingdom (see Table 65). The corresponding volumes are marginal: they represent approximately 2% of world trade in canned tuna.

Table 65. Origin of European exports of canned tuna, 1994-2003. Source: Eurostat.

Exportations en quantité (tonnes)

ORIGINE	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Espagne	6 561	9 298	7 547	4 950	13 381	8 354	8 984	12 757	10 694	9 898
Italie	1 039	1 049	1 440	2 017	2 758	2 265	3 146	4 352	4 670	5 116
France	1 781	1 774	1 882	667	646	643	682	463	536	624
Portugal	122	282	626	447	674	666	770	990	637	580
Allemagne	76	114	109	95	300	447	665	412	455	560
Royaume-Uni	283	149	218	531	307	165	428	282	985	289
EU	9 945	12 823	12 012	8 947	18 405	12 759	15 028	19 616	18 205	17 403

Exportations en valeur (1000 €)

ORIGINE	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Espagne	24 745	31 794	26 080	16 987	44 874	26 840	27 244	38 411	37 079	33 156
Italie	5 026	4 568	7 464	10 141	12 656	11 439	15 375	22 398	24 075	23 045
Allemagne	184	237	270	327	1 302	2 717	3 628	2 926	3 129	3 326
France	5 525	4 976	4 693	1 798	2 053	1 935	2 081	1 960	2 015	2 132
Portugal	437	1 024	1 736	1 637	2 070	2 411	2 176	3 132	2 435	1 894
Royaume-Uni	877	395	656	1 312	963	589	1 209	1 040	2 209	1 105
EU	37 020	43 353	41 415	32 893	64 941	46 604	52 832	70 999	71 632	65 675

The only really significant volumes are exported by Spain (10 to 12,000 tonnes) and to a lesser extent by Italy (around 5,000 tonnes). Over the period under consideration, these exports are growing overall. The development of exports from Italy is steady, but that of exports from Spain is much more fluctuating. The destinations of these exports mainly concern countries around the Mediterranean as well as States involved in the latest expansion of the European Union. The principal destinations are as follows: Libya, Melilla, Morocco, Slovenia, Switzerland, Algeria and Saudi Arabia.

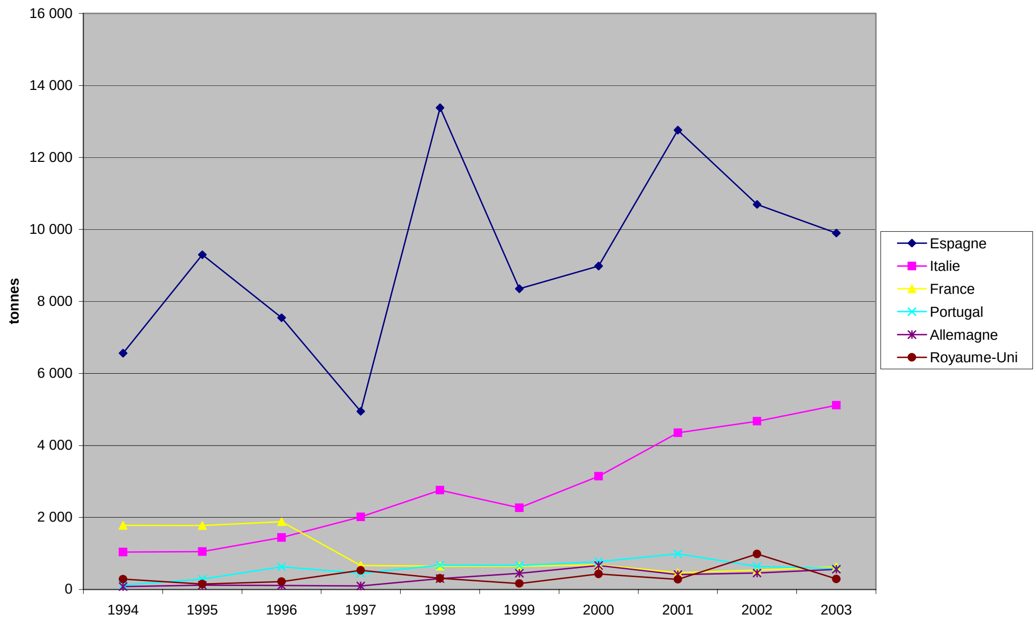


Figure 162 Trend of European exports in accordance with principal origins (Source: Eurostat).

Table 66. Destination of European exports of canned tuna, 1994-2003.

Exportations en quantité (tonnes)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Libye	33	45	58	210	7 527	2 274	913	1 275	1 811	2 617
Melilla						2 019	2 282	3 127	3 273	2 154
Maroc	9	0	21	112	191	672	268	690	1 373	1 472
Slovénie	132	117	465	444	646	710	739	909	1 122	1 158
Suisse		625	449	466	727	823	1 125	943	950	1 074
Algérie	138	1 684	133	586	1 294	534	1 002	1 773	565	1 034
Arabie Saoud.	435	408	424	598	539	489	589	980	800	755
Canaries	4 684	5 302	5 821			1 044	1 479	1 221	919	714
Rép. Tchèque	92	85	65	224	254	309	553	687	663	609
Etats-Unis	125	186	143	254	274	273	431	546	641	517
Croatie	40	37	68	113	169	118	249	346	384	391
Extra-UE	9 945	12 823	12 012	8 947	18 405	12 759	15 028	19 616	18 205	17 403

Exportations en valeur (1000 €)

DESTINATION	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Libye	125	119	308	641	24 181	8 025	2 965	3 704	6 372	8 111
Suisse		4 119	3 343	3 404	4 847	5 491	6 954	6 900	7 589	7 340
Melilla						4 758	5 255	7 244	8 066	5 352
Slovénie	611	507	2 379	2 453	3 420	3 687	3 604	4 432	5 997	4 893
Arabie Saoud.	2 222	1 938	2 283	3 261	2 796	2 399	3 358	5 146	5 115	4 195
Maroc	13	2	40	341	448	1 683	730	2 107	4 577	4 126
Algérie	363	4 376	400	1 705	4 282	1 313	2 783	5 452	1 958	3 112
Etats-Unis	618	936	793	1 096	1 520	1 512	2 203	2 913	3 350	2 663
Rép. Tchèque	244	229	195	792	926	1 094	2 069	3 171	2 590	2 274
Croatie	175	167	355	605	765	615	1 063	1 675	1 840	2 065
Extra-UE	37 020	43 353	41 415	32 893	64 941	46 604	52 832	70 999	71 632	65 675

3.7 Intra-community exchanges of canned tuna

Intra-community exchanges of canned tuna multiplied by 4 between 1994 and 2003, rising from 30,000 to 120,000 tonnes. The origin of these sales, in decreasing order of volume, is as follows: Spain, the Netherlands, Germany, France and Italy.

Table 67. Origin of intra-community sales of canned tuna, 1994-2003

Ventes en quantité (tonnes)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	5 574	2 975	9 151	24 825	30 973	30 529	42 029	52 756	49 071	50 076
Pays-Bas	3 057	7 875	13 183	19 875	83 056	9 435	9 422	17 832	29 882	18 948
Allemagne	4 034	5 784	8 786	7 582	10 412	13 083	14 428	17 542	20 692	18 767
France	7 780	18 837	24 437	32 239	21 996	39 991	61 200	12 698	15 248	16 510
Italie	3 023	3 550	3 346	4 067	3 809	4 730	7 821	9 359	12 026	6 700
Royaume-Uni	2 142	2 045	2 122	3 761	20 224	9 323	2 541	3 175	3 255	3 482
Portugal	4 989	5 249	5 475	3 104	3 570	2 799	4 429	3 041	2 266	2 536
Belgique-Lux.	1 074	2 141	1 107	1 670	2 328	3 178	1 743	2 011	1 672	1 835
EU	31 813	50 024	68 106	97 814	177 472	113 580	143 918	118 607	134 870	119 730

Ventes en valeur (1000 €)

ORIGINE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Espagne	18 268	10 056	32 959	86 176	118 283	98 265	133 053	185 488	182 205	170 926
Allemagne	10 157	15 695	20 837	20 127	32 159	37 911	38 637	50 600	57 921	55 764
France	18 801	40 081	58 960	95 724	62 519	101 896	163 041	30 753	42 941	50 603
Pays-Bas	6 836	15 788	27 964	54 547	65 950	23 995	11 955	56 299	71 962	42 642
Italie	12 946	15 666	16 405	19 500	19 636	23 474	31 718	41 383	55 188	31 869
Portugal	16 382	19 890	20 465	12 304	15 847	10 641	19 550	14 463	11 352	13 993
Royaume-Uni	5 645	4 806	5 282	9 845	71 914	32 010	9 136	11 110	12 356	11 381
Belgique-Lux.	2 481	4 384	2 538	5 164	6 721	8 761	5 043	5 898	5 873	6 432
EU	91 939	131 532	186 687	305 395	395 884	338 438	412 954	396 673	441 794	386 063

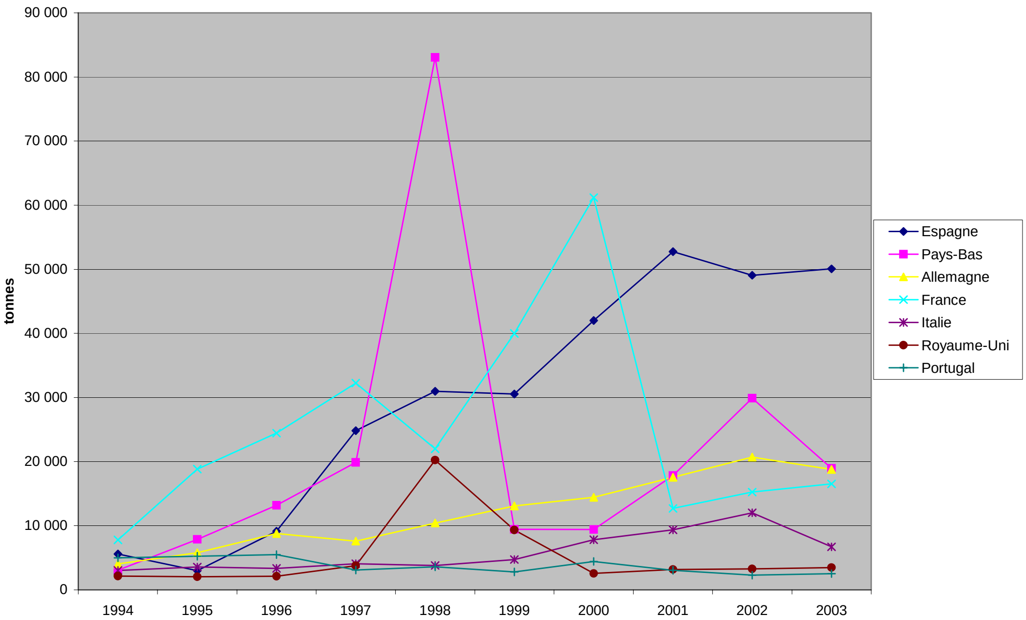


Figure 163. Trend of intra-community sales of canned tuna in accordance with principal origins. Source: Eurostat.

In terms of trend, the significant factors are the sustained progression of sales from Spain, which stabilised at around 50,000 tonnes at the end of the period, and the fall in French sales from 2001 onwards. Sales for Italy increased moderately, exceeding 10,000 tonnes in 2002. The growing and significant sales made by Germany and the Netherlands, assumed to be re-exports, are more difficult to interpret. The irregularity noted in 1998 in the case of the Netherlands corresponds to the supply of 79,800 tonnes intended for Germany.

European sales of canned tuna are intended first of all for Italy, then Germany and France, and finally the United Kingdom and Belgium. The discrepancy between Italy and the other destinations is even clearer if we take into consideration sales in terms of value. The analysis of trends confirms the continued progression of Italy, whereas France which was a destination which was as much, or even more, in demand up to 2002, fell back abruptly in 2003. Excluding the irregularity in 1998, Germany has been progressing at the same rate as Italy since 1998, at a slightly lower level. Finally, the United Kingdom, a destination more in demand in 1999 and 2000, fell back into fourth position after 2001.

Intra-European trade is influenced by the industrial strategies of the major groups within the canning industry which are attempting to optimise the efficiency of their various operations on European territory. The specialisation of production sites is leading manufacturers to distribute products over the whole of the community market, thus generating an intra-community flow.

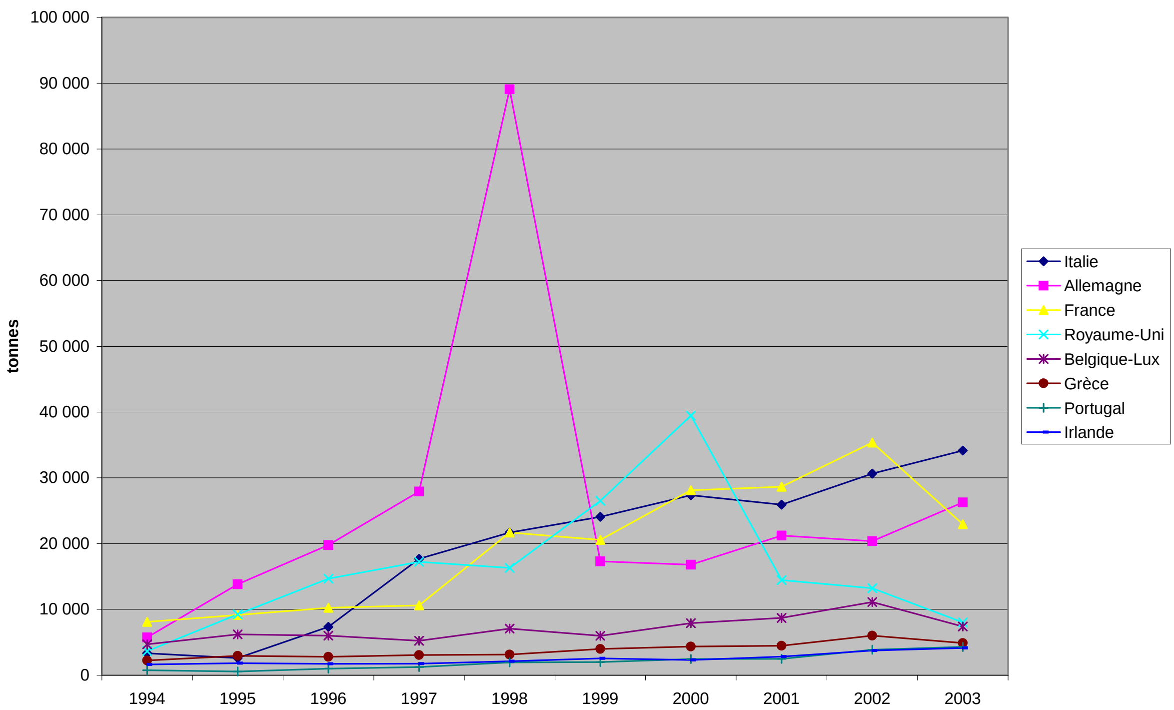


Figure 164. Trend of intra-community sales of canned tuna according to principal destinations (source: Eurostat).

In the course of the period 2001-2003, intra-community trade consisted of the following principal flows (according to average quantities):

- Spanish sales in tended for Italy, France, the United Kingdom and Portugal;
- French sales intended for Germany, Belgium and Italy;
- Italian sales intended for France and Greece;
- flows (re-exports?) from the Netherlands to Germany.

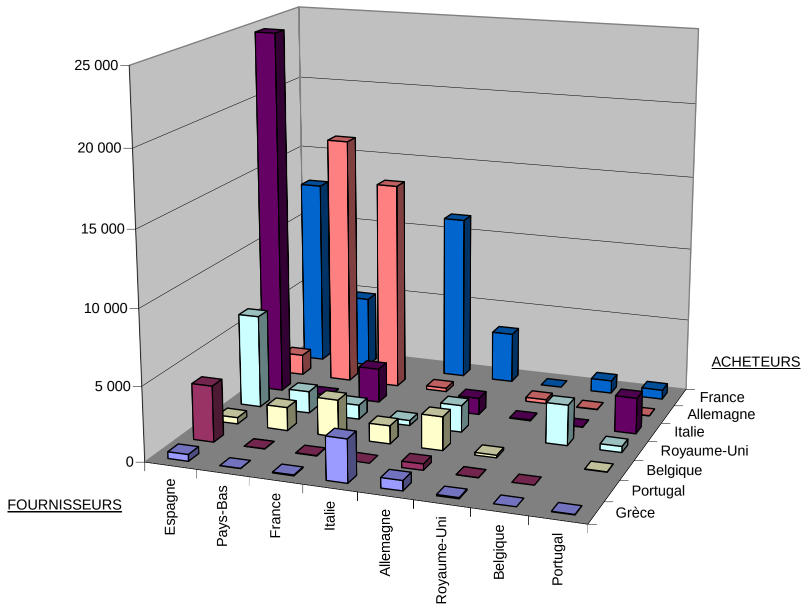


Figure 165. Intra-community trade in canned tuna: average 2001-2003 (Source: Eurostat).

3.8 Evaluation of the analysis of extra- and intra-community trade in tuna products

France and Spain are responsible for between 12 and 13% of world exports of frozen tuna excluding intra-community trade. The vast majority of exports are intended for the ACP countries. European processing facilities are obtaining their supplies in a growing proportion, in excess of 40%, in the form of tuna loins mainly coming from the countries benefiting from the GSP-drug arrangement.

The European market for canned tuna is establishing itself as the biggest in the world. For the last two years of available data, extra-community imports rose to approximately 330,000 tonnes and intra-community purchases to 150,000 tonnes. If we evaluate the total world trade at approximately 980,000 tonnes, total European supplies represent approximately half of these. If we take into consideration world trade excluding intra-community trade, European imports (strictly extra-community trade) still represent 40% of this. In terms of value, European imports are located at around €800 million and intra-community purchases at around €450 million. As total world trade represents an estimated turnover of 1.6 million USD, it appears clear that European supplies of canned tuna represent a share of international trade whose value is much higher than that represented by volume.

The European canned tuna market is now supplied by diverse and relatively balanced sources; the ACP countries supplied over 50% of extra-community imports in 2003, and have therefore been clearly outstripping the Asian countries over the recent period. In relation to all European supplies of canned tuna, Spain still occupies a dominant role and has become a supplier country of the same importance as the Seychelles, Thailand or the Côte d'Ivoire.

4 Degree of opening of the industry and European markets for tuna products

In addition to the analysis of flows, an analysis of the degree of opening of the industry and the European markets for tuna products has been carried out on the basis of two simple indicators, which allow an insight into the productive segment and the market: the export ratios for the industries and the market penetration ratio. These two indicators are constructed in the following way:

where: $Q_{i,k}$ the production of goods *i* by country *k*

$X_{i,k}$ the exports of goods *i* by country *k*

$M_{i,k}$ the imports of goods *i* by country *k*

The export ratio, which is expressed as $TE_{i,k} = X_{i,k} / Q_{i,k}$, measures the share of exports in production: the higher this share, the more the industry for the goods *k* from the country *i* is directed abroad;

The penetration ratio, which is expressed as $TP_{i,k} = \frac{M_{i,k}}{Q_{i,k} + M_{i,k} - X_{i,k}}$, measures the share of imports in requirements: the larger this share the more the country *i* is dependent on foreign supplies. The penetration ratio can be interpreted as the inverse of the cover ratio.

The opening of the tuna sector is analysed here on a European scale: for each product considered, we will examine the export ratio and the penetration ratio for the whole of the European Union (*I* = EU), that is to say the degree of opening of the industries and markets is considered exclusively in terms of extra-community trade.

4.1 Degree of opening of the frozen tuna segment

The degree of opening of the European frozen tuna industry is high: in the course of the last three years, the export ratio has been situated at between 0.54 and 0.71. Over the last ten years, the export ratio has only fallen under the bar of 50% twice, by very little, in 1995 and 1996. Nevertheless, the European frozen tuna industry's propensity for extra-community exports can be largely explained by the presence of numerous establishments of community interest outside the EU territory, in particular in the ACP countries. This destination actually absorbed 71% of extra-community exports on average over the period 2001-2003. The balance was distributed in the proportion of 10% in favour of the countries benefiting from the GSP-drug arrangement, 10% for the countries in Southeast Asia and 9% for the others. In terms of species, it should be pointed out that the export trends are higher for skipjack tuna, in comparison with yellowfin tuna, which is more valued by the European processing industry.

Following the same lines, the European frozen tuna market also has a high penetration ratio: in the course of the last three years, it has been situated at between 0.52 and 0.69. In terms of species, the penetration ratio is higher in the case of yellowfin tuna, which is consistent with the preference of the European industry for this species: the EU produces more skipjack than yellowfin tuna, but its demand for the yellowfin is much higher than its demand for skipjack. High in volumes, exports and imports then involve partial substitution between species: this factor, which explains the cross-trade, can be added to the need to supply production units of community interest located outside Europe. The principal EU suppliers of frozen tuna are the Netherlands Antilles, Venezuela, Panama, Guatemala, the Seychelles and Taiwan.

Table 68. Characteristics and degree of opening of the European frozen tuna industry. Source: according to Fishstat and Eurostat

(tonnes)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PRODUCTION										
Yellowfin	144 151	156 999	148 300	135 578	118 883	128 667	145 390	147 903	146 570	187 484
Skipjack	200 028	197 411	174 000	161 407	146 736	183 151	176 442	146 066	169 884	224 856
Bigeye	37 980	39 991	37 000	37 120	30 530	49 100	49 500	31 500	34 993	33 004
Other	6 485	9 913	8 594	2 621	7 968	9 854	26 263	21 252	13 410	17 736
Total	388 644	404 314	367 894	336 726	304 117	370 772	397 595	346 721	364 857	463 080
EXPORTS										
Yellowfin	86 132	75 501	61 778	104 303	65 046	70 558	74 761	112 054	67 626	89 856
Skipjack	106 735	98 410	86 512	119 048	75 739	110 837	103 013	103 302	93 076	157 709
Bigeye	0	0	0	0	0	0	0	0	10 925	17 064
Other	15 633	19 255	20 929	16 344	12 347	22 088	32 281	32 412	26 475	25 078
Total	208 500	193 166	169 219	239 695	153 133	203 482	210 055	247 768	198 102	289 707
IMPORTS										
Yellowfin	88 243	91 303	97 144	93 716	139 044	111 431	86 070	117 598	129 936	118 457
Skipjack	34 130	37 814	41 859	49 769	75 634	62 970	60 902	64 368	56 577	45 044
Bigeye	0	0	0	0	0	0	0	0	1 617	1 738
Other	10 362	12 134	11 696	17 834	29 154	22 920	29 519	36 807	29 044	25 959
Total	132 734	141 251	150 698	161 319	243 832	197 321	176 491	218 773	217 173	191 198
APPARENT CONSUMPTION										
Yellowfin	146 262	172 801	183 665	124 991	192 881	169 540	156 699	153 448	208 879	216 084
Skipjack	127 423	136 815	129 347	92 129	146 631	135 284	134 331	107 132	133 385	112 192
Bigeye	37 980	39 991	37 000	37 120	30 530	49 100	49 500	31 500	25 685	17 678
Other	1 214	2 792	-639	4 111	24 775	10 687	23 502	25 647	15 979	18 617
Total	312 878	352 399	349 373	258 350	394 816	364 611	364 032	317 726	383 928	364 571
EXPORT RATE (TE)										
Yellowfin	0.60	0.48	0.42	0.77	0.55	0.55	0.51	0.76	0.46	0.48
Skipjack	0.53	0.50	0.50	0.74	0.52	0.61	0.58	0.71	0.55	0.70
Bigeye	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.52
Other	2.41	1.94	2.44	6.24	1.55	2.24	1.23	1.53	1.97	1.41
Total	0.54	0.48	0.46	0.71	0.50	0.55	0.53	0.71	0.54	0.63
Penetration rate (TP)										
Yellowfin	0.60	0.53	0.53	0.75	0.72	0.66	0.55	0.77	0.62	0.55
Skipjack	0.27	0.28	0.32	0.54	0.52	0.47	0.45	0.60	0.42	0.40
Bigeye	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.10
Other	8.54	4.35	-18.30	4.34	1.18	2.14	1.26	1.44	1.82	1.39
Total	0.42	0.40	0.43	0.62	0.62	0.54	0.48	0.69	0.57	0.52

4.2 EU supplies of tuna raw material

There are no official statistics relating to European production of tuna loins. Consequently, in this document we have simply included the loin segment in some considerations about the overall EU supplies of tuna raw material. In fact, European production of tuna loins does not change anything in the EU's balance sheet for supplies insofar as this comes from European production or from imports of frozen tuna. A balance sheet for supplies for the European tuna raw material market can therefore be established on the basis of the following values:

Q = European production of frozen tuna
X = exports of frozen tuna and tuna loins in equivalent live weight
M = imports of frozen tuna and tuna loins in equivalent live weight

The conversion of quantities of imported and exported loins into equivalent live weight of raw material is carried out using the conversion coefficient of 1.92 (see appendix).

Table 69. EU supplies of tuna raw material. Source: according to Fishstat and Eurostat

(tonnes)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PRODUCTION										
Frozen tuna	388 644	404 314	367 894	336 726	304 117	370 772	397 595	346 721	364 857	463 080
Total raw material	388 644	404 314	367 894	336 726	304 117	370 772	397 595	346 721	364 857	463 080
EXPORTS										
Frozen tuna	208 500	193 166	169 219	239 695	153 133	203 482	210 055	247 768	198 102	289 707
Tuna loins	3 279	5 722	4 677	422	124	283	419	101	149	117
Tuna loins (live weight)	6 296	10 986	8 979	811	239	544	805	194	286	225
Total raw material	214 796	204 153	178 198	240 506	153 372	204 026	210 859	247 962	198 387	289 932
IMPORTS										
Frozen tuna	132 734	141 251	150 698	161 319	243 832	197 321	176 491	218 773	217 173	191 198
Tuna loins	30 110	32 255	36 075	38 978	47 560	52 747	51 476	45 365	56 288	78 361
Tuna loins (live weight)	57 812	61 929	69 264	74 838	91 315	101 274	98 834	87 101	108 073	150 454
Total raw material	190 546	203 180	219 962	236 156	335 147	298 595	275 325	305 874	325 246	341 652
APPARENT CONSUMPTION	364 394	403 342	409 658	332 377	485 892	465 341	462 060	404 633	491 716	514 800
Penetration rate (TP)	0.52	0.50	0.54	0.71	0.69	0.64	0.60	0.76	0.66	0.66

For 10 years, over half of the total EU supplies of tuna raw material has come from imports; this proportion of foreign supplies seems to be growing and is now consistently located at around two thirds. In equivalent live weight, the portion of loins in extra-community supplies is growing significantly since it has risen from 30% in 1994 to 44% in 2003.

4.3 Degree of opening of the European canned tuna market

As extra-community exports by the European canned tuna industry concern marginal volumes, its propensity to export is established at under 5%. On the other hand, in terms of supply, the European canned tuna market has presented a penetration ratio by extra-community imports in excess of 0.44 over the last ten years, and is approaching 50% by the end of the period. However, the EU privileged partner countries occupy a predominant position in this trade: between 1993 and 2003, the share of the ACP countries in extra-European imports of canned tuna rose from 39% to 54%. At the same time, Asia's share dropped from 42% to 29%. Exports from the countries benefiting from the GSP-drug arrangement, which only really started up in 1992, now constitute approximately 13% of extra-community imports.

Table 70. Characteristics and degree of opening of the European canned tuna industry. Source: according to Fishstat and Eurostat

(tonnes)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PRODUCTION	270 089	278 292	289 854	300 930	335 811	344 759	346 429	358 549	373 417	360 909
EXPORTS	9 945	12 823	12 012	8 947	18 405	12 759	15 028	19 616	18 205	17 403
IMPORTS	202 501	210 824	225 293	238 737	268 944	264 284	268 897	268 110	320 662	338 732
APPARENT CONSUMPTION	462 645	476 293	503 134	530 720	586 350	596 284	600 298	607 044	675 874	682 238
Export Rate (TE)	0.04	0.05	0.04	0.03	0.05	0.04	0.04	0.05	0.05	0.05
Penetration rate (TP)	0.44	0.44	0.45	0.45	0.46	0.44	0.45	0.44	0.47	0.50

5 Commercial performances of suppliers of canned tuna and tuna loins on the European market

5.1 Method: constant market share analysis

The constant market share analysis is a method which allows an approximation to be made about the competitivity of an exporting country on the basis of its observed commercial performances. In this global analysis, the relative competitivity of an exporting country can be gauged by considering its differences in comparison with its competitors in terms of its provision of production factors, technologies, public policies or domestic market structures, and in terms of its conditions for accessing export markets. In order to overcome the difficulty in examining these factors simultaneously, the method is based on the hypothesis in accordance with which the market shares of the exporting country depend not only on its competitivity, but also on global demand and the demand of the various national markets.

Finally three effects can be singled out to explain a country's export fluctuations:

- the first effect corresponds to the effect of the overall size of the market, which plays the same role for all the exporting countries;
- the second effect corresponds to the distribution effect, which is positive when the export structure of the country under consideration has a distribution which is more directed towards markets with strongly growing demand than the world export structure;
- finally, the third effect corresponds to the effect of competition, which is positive when the country under consideration succeeds in winning market shares from competitor exporting countries.

Consequently it is advantageous for the constant market share analysis to reveal the type of factor which can explain the development of the market shares of the exporting country under consideration. The effect of competition is entirely due to intrinsic factors: it reflects the competitivity of the companies in the exporting country, which is the result, in particular, of their strategies for supplying raw materials, their productivity, and the national economic environment (labour costs, taxation system, etc). The distribution effect is due to both intrinsic and extrinsic factors: it reflects the ability of the exporting country to position itself on the most buoyant markets. The size effect is solely due to extrinsic factors: it reflects the fact that the exporting country is benefiting from growth in demand over the whole market, or, on the other hand, that it is suffering a decline in this demand.

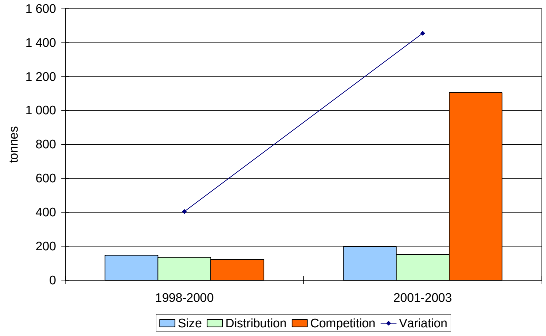
5.2 Results

The method is used to analyse the commercial performances of the principal third countries exporting canned tuna as well as the European countries involved in intra-community trade over the period 1989-2003, in comparison with averages over three year periods: the performances for the period 1992-1994 are measured in relation to the period 1989-1991, those of the period 1995-1997 are measured in comparison with the period 1992-1994, and so on, up to the period 2001-2003. For each supplier country of canned tuna examined we therefore have a series of 4 observations, each providing the value of four indicators: average variation in the volume of exports in tonnes for the period under consideration in comparison with the average for the preceding three year period, and respective contributions to this variation from the effect of the size of the European market, the effect of distribution between the markets of the Member States of the European Union and the effect of competitivity of the supplier country under consideration. The results are shown in Figure 166 and Figure 167.

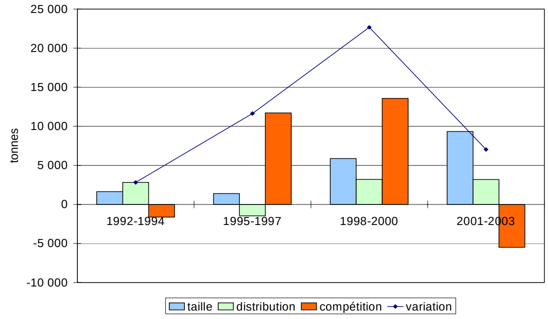
The commercial performances of the principal third countries exporting tuna loins intended for the EU are also analysed. As tuna loins have only been identified in the "products" nomenclature of commercial statistics since 1994, average exports are calculated here over three periods of three years (1995-1997, 1998-2000 and 2001-2003), which restricts the results of the comparisons between periods to two observations per country. The results are shown in Figure 168.

Figure 166. Determining factors of fluctuations in volumes of sales on the European market for the principal countries supplying canned tuna. Source: according to Eurostat

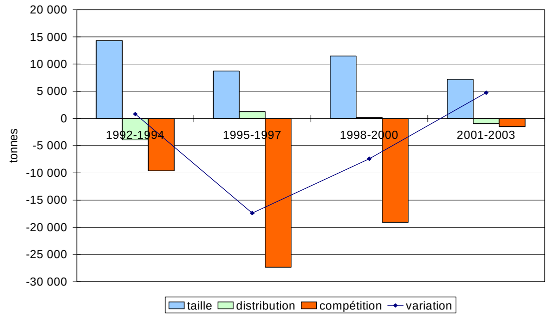
Seychelles (sales 2003 : 51 484 tonnes)



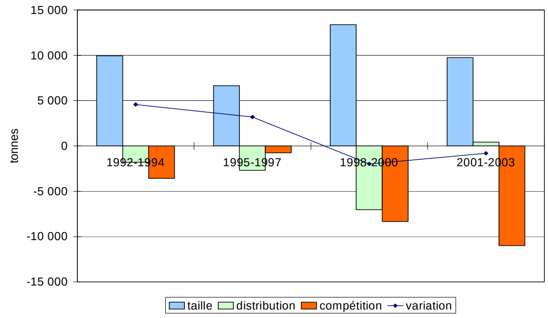
Spain (sales 2003 : 49 633 tonnes)



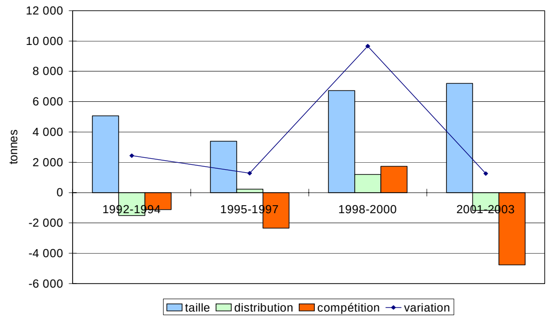
Thaïland (sales 2003 : 44 091 tonnes)



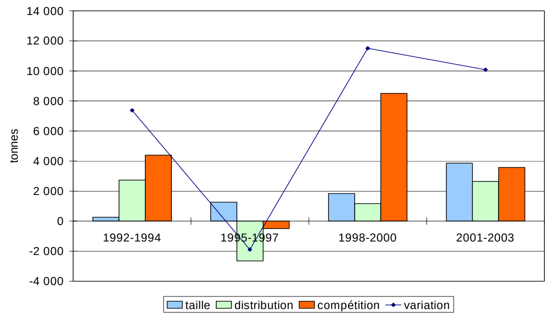
Ivory Coast (sales 2003 : 41 866 tonnes)



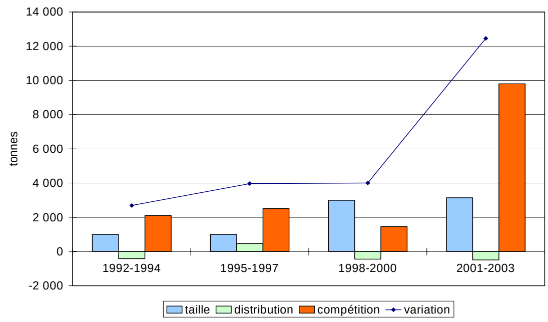
Philippines (sales 2003 : 38 852 tonnes)



Ecuador (sales 2003 : 34 030 tonnes)



Mauritius (sales 2003 : 28 498 tonnes)



Ghana (sales 2003 : 28 465 tonnes)

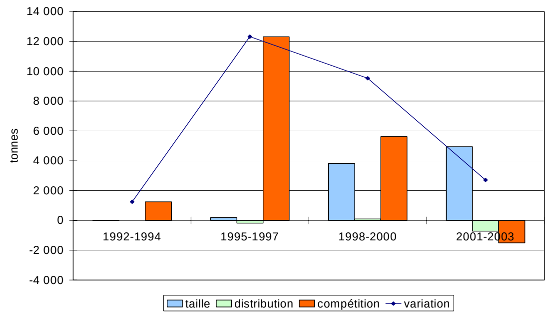
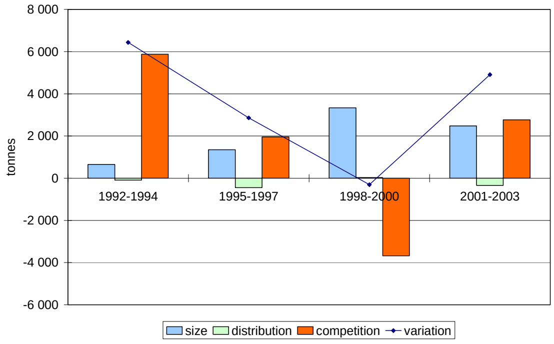
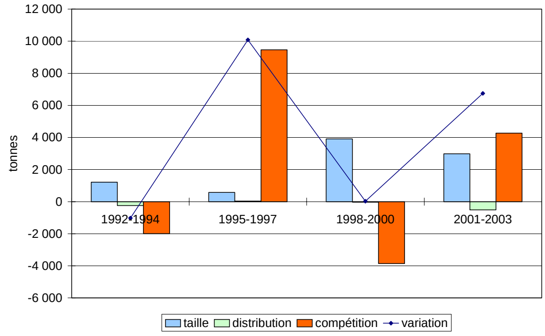


Figure 167. Determining factors of fluctuations in volumes of sales on the European market for the principal countries supplying canned tuna (cont.). Source: according to Eurostat

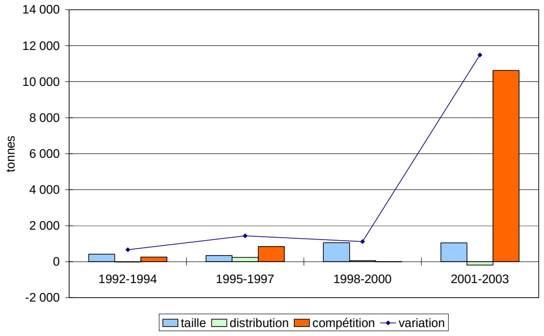
Madagascar (sales 2003 : 22 951 tonnes)



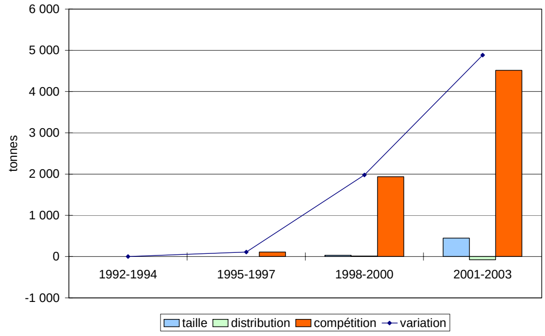
France (sales 2003 : 21 220 tonnes)



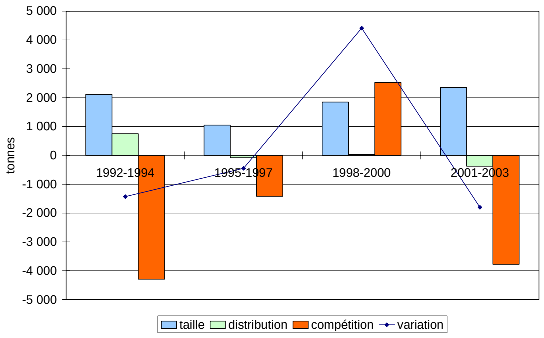
Italy (sales 2003 : 15 779 tonnes)



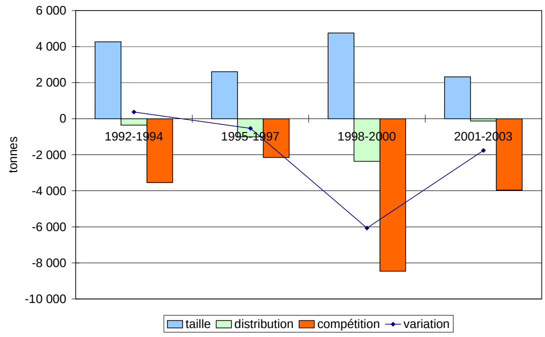
Papoua New Guinea (sales 2003 : 12 436 t.)



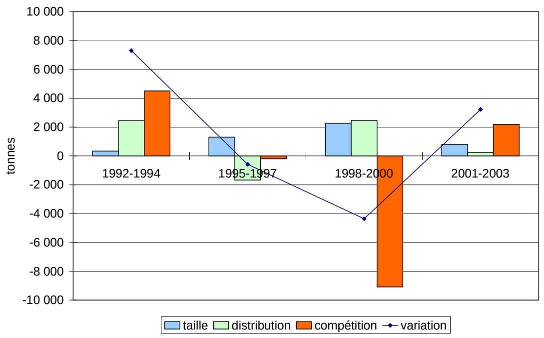
Indonesia (sales 2003 : 8 656 tonnes)



Senegal (sales 2003 : 8 596 tonnes)



Colombia (sales 2003 : 7 723 tonnes)



Maldives (sales 2003 : 5 370 tonnes)

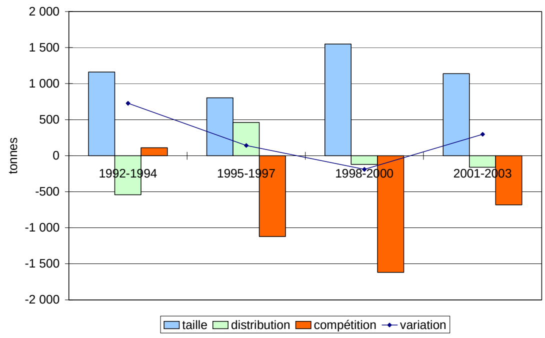
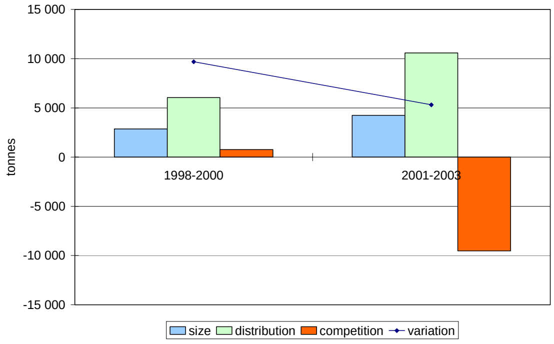
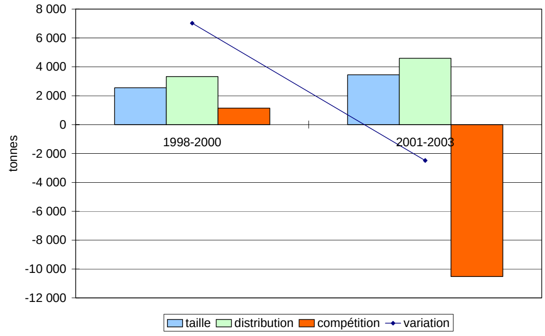


Figure 168. Determining factors of variations in volumes of sales on the European market for the principal countries supplying tuna loins. Source: according to Eurostat

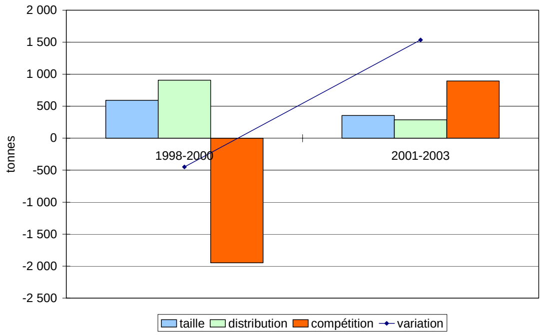
Ecuador (sales 2003 : 35 993 tonnes)



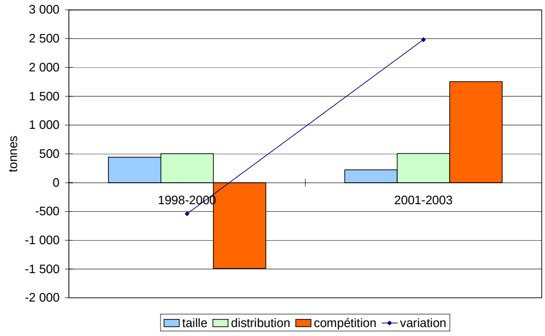
Colombie (sales 2003 : 14 889 tonnes)



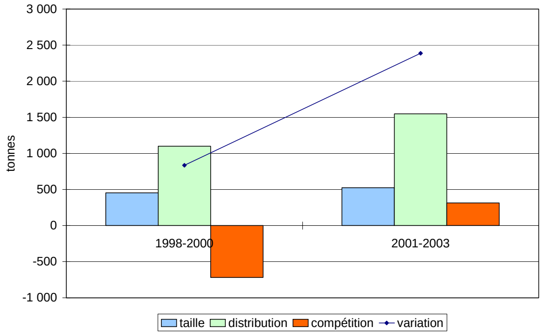
Thaïland (sales 2003 : 6 244 tonnes)



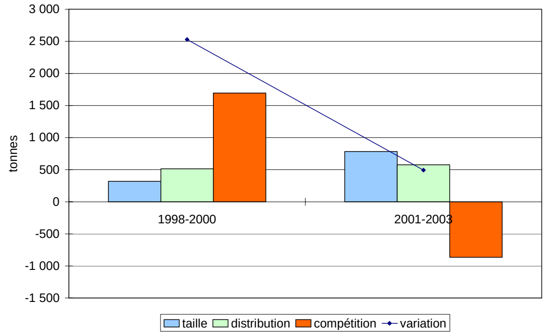
Costa Rica (sales 2003 : 5 971 tonnes)



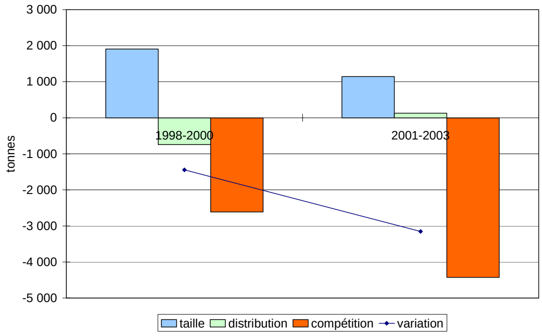
Venezuela (sales 2003 : 5 697 tonnes)



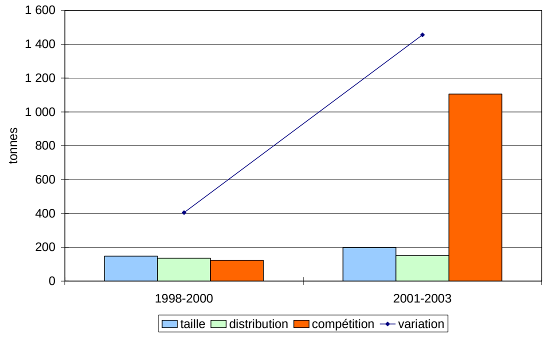
Kenya (sales 2003 : 3 042 tonnes)



Ivory Coast (sales 2003 : 1 603 tonnes)



Seychelles (sales 2003 : 1 536 tonnes)



Three major countries supplying the European market with canned tuna show negative results in terms of competitivity: these are Thailand, the Côte d'Ivoire and the Philippines. These countries are maintaining a relatively high level of exports because of the dynamism of the whole European market, but they do not seem able to win over market shares if conditions remain unchanged. In the case of the Asian countries, this means that their level of competitivity was sufficiently high during the 1980s to allow them to increase their exports in spite of customs barriers preventing entry to the European market, but this competitive difference has been eroded in comparison with certain competitors who benefited from tariff suspensions during the 1990s, to the point of becoming unfavourable. These changes reveal that it would be beneficial for the Asian countries to question the tariff preferences of their competitors. It should be noted that in the case of Thailand[49], the effect of competition, extremely unfavourable between 1992 and 2000, returned to close to average in the course of the period 2001-2003. In the case of the Côte d'Ivoire, on the other hand, the deterioration of competitivity is tending to accelerate.

These results relating to the competitivity of the major Asian supplier countries are consistent with the marked drop in this region's share in the EU's extra-community supplies, now established at 29% as opposed to 54% for the ACP countries. As the analysis includes the effects of the various systems for accessing the European market, it can therefore be seen that the commercial preferences granted to the ACP countries do not prevent the Asian countries from being more competitive than a country such as the Côte d'Ivoire but, on the other hand, they do allow a country like the Seychelles to be more competitive than the Asian countries. This situation explains why the Asian countries are insistent about re-negotiating these preferences.

Now a principal supplier of the European market, the Seychelles actually produced the best results in terms of competitivity in the course of the last 6 years. Even if this is no longer true for the most recent period, the Seychelles have also been able to benefit from the diversification of outlets (as illustrated by a significant distribution effect in 1998-2000): in addition to the United Kingdom which is their principal partner, the Seychelles also supply France, Italy and the Netherlands. On a smaller scale, Mauritius has a similar profile in terms of competitivity. Few countries produce performances comparable to those of these two countries in the Indian Ocean, except for Ecuador and, although only up to 2000, Ghana. Bearing in mind the results of Madagascar, which experienced difficulties during the period 1998-2000[50], but which won back market shares in 2001-2003, and those of Senegal, systematically negative in terms of competitivity, it seems that the competition effect is rather favourable to the ACP countries in the Indian Ocean and very unfavourable to the ACP countries in West Africa.

As the sixth country supplying the European market with canned tuna, Ecuador won over significant market shares between 1998 and 2003, thanks to the competition effect, but also thanks to a distribution effect, undoubtedly limited, but which is one of the most significant amongst all those observed. This shows Ecuador's ability to position itself on differentiated markets: in addition to Spain, which is its principal partner, Ecuador exports to the United Kingdom, the Netherlands, Germany and France.

Spain is the principal player in the intra-European canned tuna trade, with sales which are now at the same levels as those of the Seychelles, the Côte d'Ivoire or Thailand. Spain established this position over the period 1995-1997 then 1998-2000 with a high level of competitivity. Over the most recent period the effect of competition, on the other hand, became unfavourable to Spain, but was more than compensated for by the overall dynamics of the market and by the relative diversification of the destinations of sales by Spain, which supplies Italy and France, but also the United Kingdom and Portugal. Spain's dynamism partly reflects the significant increase in its production capacity over recent years. Spain's production share involved in deliveries intended for its European partners initially increased rapidly from 4% to 15% between 1994 and 1997, then experienced a more moderate rate of increase and is now positioned at around 22%.

---

[49] *It should be pointed out that at this time Thailand was affected by a massive transfer of production by one client to its factory in the Seychelles.*

[50] *Problems associated with an uncertain political situation and closures for health reasons. Generally speaking, closures for health reasons affect commercial performances in accordance with the method of analysis used in this document. Likewise, the rate of using industrial tools has a very direct impact on the industrial competitivity of countries.*

The two main suppliers of tuna loins on the European market have an identical profile: in the case of Ecuador and Colombia, the competition effect, very slightly positive in 1998-2000, became clearly negative in 2001-2003. These two countries are losing market shares, but in the face of competitors whose size is very modest at the moment, and in a market which, overall, is experiencing sustained growth. The overall volume of exports of tuna loins from Ecuador and Colombia has therefore been maintained thanks to a good position on the main markets for importing tuna loins in the European Union: Italy, Spain and France.

Faced with these two principal exporters, Thailand, Costa Rica, Venezuelan and, to a lesser extent, the Seychelles, have shown their ability to take up a position on the European market by relying on the competition effect (for Thailand, Costa Rica and the Seychelles) or the distribution effect (for Venezuela). However, the very low level of volumes of tuna loin exported by these countries and the fact that the development of this trade is fairly recent, prevents us from reaching any conclusion about the ability of these countries to establish a long-lasting position as major suppliers of tuna loins for the European industry.

SECTION 5 - ECONOMIC ANALYSIS OF THE SECTOR

CHAPTER 16 - The notion of production structures of Community interest

The economic analysis of the sector has been established on the basis of the way in which "production structures of Community interest" function: it is therefore necessary to define this notion in the case of the tuna sector, in order to define the perimeter of the tuna sector involved in the field of economic analysis.

The European tuna industry is strongly internationalised, firstly because of the spatial extension of fishing zones, then because of the relocation of a some of the processing facilities to areas close to the fishing zones, in the ACP countries and in the GSP zone. Consequently a large number of production structures of community origin now have subsidiaries abroad, but are established in zones with which the EU has special links, resulting, in particular, in a differentiated trade policy. On the other hand, at least two leader multinational companies[51] from the American tuna industry have become shareholders or owners of certain fishing and processing companies established either on European Union territory itself, or in countries with which the European Union has preferential trade relations. As a result, an initial method of identifying production structures of community interest would consist of classifying companies within the sector in accordance with two criteria: the "nationality" of the company and its geographical location. The intersection of these two criteria would result in proposing the classification of production structures of community interest.. When applying these two criteria, the zones of geographical preference are, in decreasing order, 1) the European Union, 2) the ACP countries and the countries benefiting from the GSP arrangement and 3) the rest of the world.

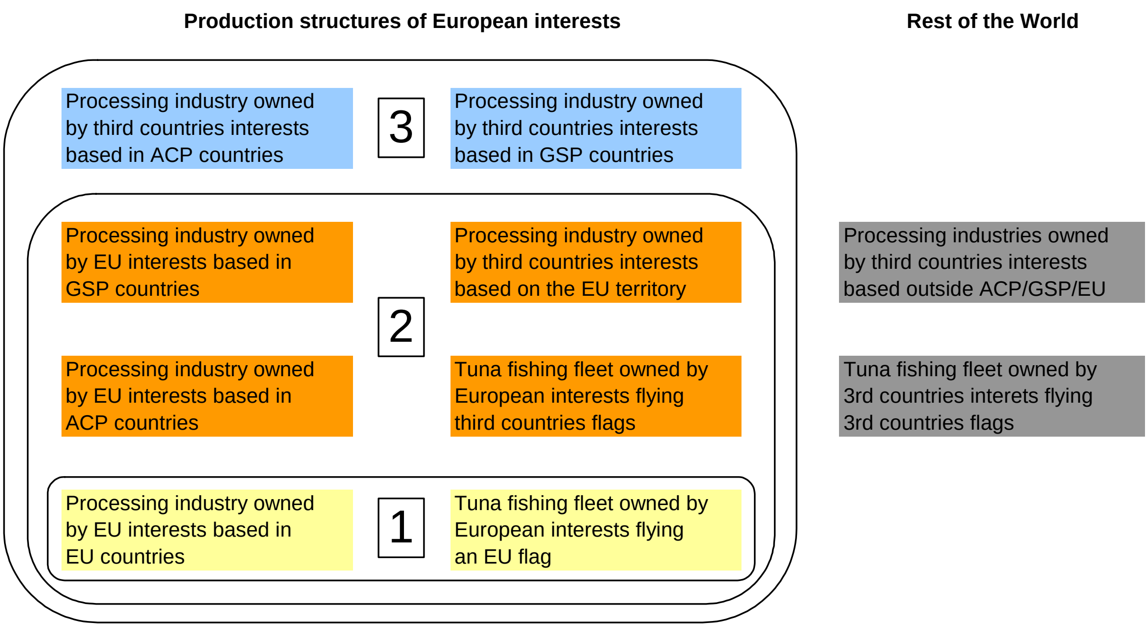


Figure 169: Classification of companies with tuna subsidiaries in decreasing order of community interest

Beyond the link of association of each tuna establishment with these circles of decreasing interest, it is finally the effective contribution of the various sectors of the world tuna economy to European policy aims which ought to determine the actual benefit of each production structure and each sector for the EU. Companies within the tuna sector operate within the system of internationalised sectors, from the point of view of fishing zones, sources of supply, location of processing activity and final outlets. Consequently, this

---

[51] *Starkist (Ghana, Seychelles, Ecuador in particular) and Bumble Bee (Ecuador in particular)*

generates, directly or indirectly, economic, social and environmental effects which may have an impact on territories and populations responding to different orders of priority from the EU's point of view, and contributing in a more or less adequate way to Community policy targets. This is why it seems useful to clarify the links in existence between the production structures identified and the conditions for achieving European policy objectives relating to the tuna sector. The aims of these policies, defined in consistency with the general aims of the Treaty, may be presented in the following way:

- access to resources in the waters of third countries and conservation of these resources;
- supply of the processing industry based on EU territory;
- contribution to maintaining employment in the European regions dependent on fishing;
- contribution to the development of the ACP countries which have signed fishing agreements with the EU;
- contribution to the reconversion of the economy of countries benefiting from the "GSP-drug" arrangement;
- supply of the European canned tuna market at the best possible price for the consumer.

These aims reveal two criteria for defining production structures and sectors of community interest: the criterion of geographical location, where we find zones of decreasing preference resulting from the European Union customs arrangement, and a new criterion, that of supplying the EU's processing industry and final consumption markets. The criterion of supplying the European market will therefore replace the criterion of nationality of companies: by starting from this point, it is therefore a matter of defining the perimeter of the sector of Community interest by following the logic of activity rather than structure. This ultimately leads to retaining three major categories of production units for the economic analysis of the sector :

- the tuna fleet operating under a European flag
- the processing industry based in Europe
- the processing industry of the ACP and GSP countries with regard to the share of their activity aimed at supplying the European industry and market with canned tuna and tuna loins.

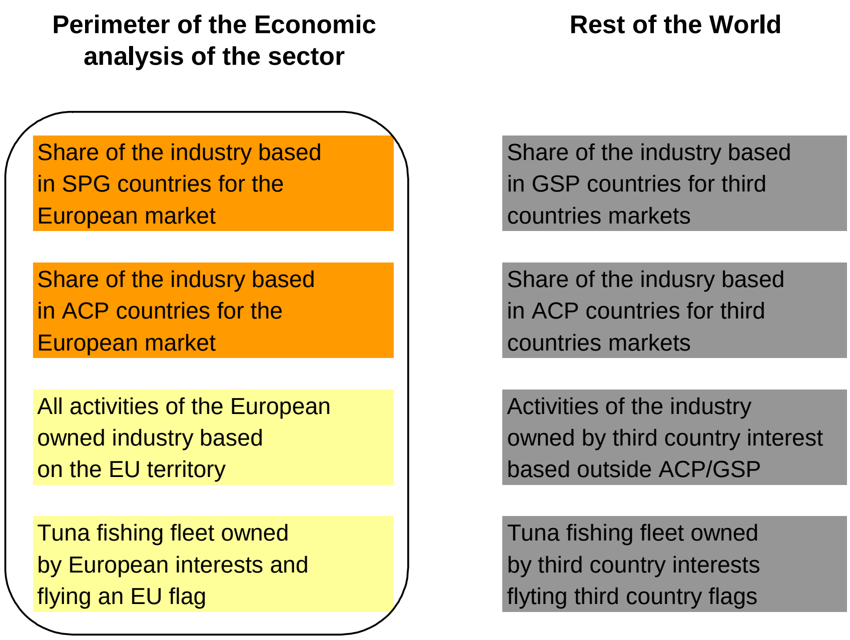


Figure 170: Definition of the perimeter of the economic analysis of the sector

Presented in the following way the first five objectives allow us to classify the companies in the tuna sector in decreasing "circles of interest" for the EU, in accordance with involvement in the production structures established in Europe, then in the ACP countries, in South America, and finally in the rest of the world; the last objective would undoubtedly be capable of overturning this definition. However, this geographical criterion resulting from the traditional hierarchy of trade privileges granted by the EU can be retained and intersected by a criterion taking into account vertically integrated links which these production structures, of initial processing, second stage processing and distribution, maintain between each other, insofar as these links define the consistency of the way in which the sectors of Community interest function.

Establishments of Community interest can therefore be identified and classified on the basis of a criterion of geographical establishment and a criterion of structural relations, in particular via capital interest. Beyond the link of association of the tuna establishments with these circles of decreasing interest, ultimately it is the actual contribution of the various sectors within the world tuna economy to European policy objectives which ought to determine the "true" benefits offered by each production structure and each sector to the EU.

CHAPTER 17 - CURRENT ECONOMIC SITUATION, REFERRED TO AS THE REFERENCE SITUATION

The reference economic situation only takes into account the economic activity relating first of all to the processing industry associated with major tropical tunas and secondly to the European tuna fleet fishing for major tropical tunas. Fishing for major temperature tunas (bluefin tuna, albacore) is an activity carried out by other specialised fisheries which only represent 6% of the European fleet's total catches.

Even if the first sale value of products unloaded by these specific fisheries is probably significant (it may be close to 15% of the total value of European tuna catches), the nature of the products and commercial destinations (fresh tuna for direct consumption and niche markets for canned tuna) makes them in principle not very, or not at all, sensitive to the impact of variations in market conditions on canned major tropical tunas.

The perimeter of the reference economic situation is relatively complex (c.f. diagram of structures of community interest), and it is therefore necessary to establish a multifaceted economic evaluation. In order to do this, we need to use structural accounts per link in the sector multiplied by the appropriate flows in terms of volume and price.

Establishing the reference economic situation ideally includes all the following elements:

- ➢ account per link in the sector;
- economic values of the tuna fleet flying a European flag
- economic values of processing industries based in Europe
- economic values of processing industries based in ACP countries
- economic values of processing industries based in GSP South American countries
- economic values of the tuna fleet flying the flag of ACP and GSP countries, supported by European or third country capital, fishing and unloading and/or transhipping in ACP and GSP regions,
- the economic values of trade and brokerage players involved in importation, and generally speaking economic values of all economic agents involved in the intra-community trade in tuna and tuna-based products.
- The study has not been able to collect data about these economic agents. Consequently the margins on sales they produce, which form part of economic wealth in Europe, and the economic effects they produce, particularly in relation to transport, are not taken into account in the economic analysis. The following calculations therefore correspond to a minimum evaluation of economic wealth created in Europe by the tuna sector.

- ➢ The calculation of the economic effects produced by the various links in the different geographical zones

These secondary effects must be established in accordance with the distribution of direct added value and indirect added value per geographical zone to be calculated by recoveries in the chain of local intermediate consumption in the fishing and processing structural accounts.

- The comparative data on competitor countries within the community field on the subject of shipowning relating to tuna fishing and processing units for tuna-based products.

In addition, the reference economic situation cannot be described for any given trading year, given the multiplicity of databases consulted for the purpose of the study. In addition they do not always cover the same data log.

Consequently the reference economic situation will be established as a weighted average of the data obtained over the three years for which the most recent data is available. Overall the economic analysis relies on data from the period 2000 to 2002/2003 in so far as the statistical data collected for this period is consistent with the structural accounts gathered.

Insofar as the aim of the economic analysis is to measure the economic variances of scenarios in comparison with the reference situation, it is of limited interest, from an economic point of view at least, to aim to use the most recent statistics. This is all the more true if there is a partial rupture in consistency with the structural accounts used.

1 The European tuna fleet fishing for major tropical tunas under a European flag.

1.1 Establishing the turnover

Establishing the turnover requires reconstructing the difference between volumes according to species and the market places on which these volumes were sold, within overall catches.

1.1.1 Establishing catches and their first sale destination

Price listings for major tropical tunas take into account the species and size of individuals. The statistics available on catches do not provide any breakdown according to size. Over the most recent period available, 2000/2002, overall catches and catches per ocean made by the European tuna fleet fishing for major tropical tunas are established at the values indicated in the table provided below.

Table 71: Catches for 2000/2002 made by the European tuna fleet (source: Fishstat)

						Breakdown by ocean		
Species	**Area**	**2000**	**2001**	**2002**	**Average**	**Indian O.**	**Atlantic O.**	**Others**
Skipjack	Western Indian Ocean	117 000	102 100	148 100	122 400	54%		
	Eastern Central Atlantic	55 700	48 000	42 900	48 867		39%	
	Others	24 000	24 400	25 700	24 700			52%
Total Sikjack		**196 600**	**174 600**	**216 700**	**195 967**			
Yellowfin	Western Indian Ocean	89 800	80 700	90 500	87 000	39%		
	Eastern Central Atlantic	54 400	63 200	64 000	60 533		48%	
	Others	9 320	11 600	5 100	8 673			18%
Total Yellowfin		**153 600**	**155 400**	**159 600**	**156 200**			
Bigeye	Western Indian Ocean	17 500	13 200	19 000	16 567	7%		
	Eastern Central Atlantic	16 800	15 500	15 200	15 833		13%	
	Others	23 000	8 700	10 600	14 100			30%
Total Bigeye		**57 300**	**37 400**	**44 700**	**46 467**			
Total main tropical tuna		**407 500**	**367 400**	**421 000**	**398 633**			

As is logical, unloadings from the European tuna fleet in countries other than those of the European Union are assimilated with exports outside the EU of fresh and frozen tuna. These are established for the period 2001/2003 at the tonnages and values indicated in the table below.

Table 72: Exports outside the EU which can be assimilated with unloadings outside the EU made by the European tuna fleet (source: Fishstat)

Countries	**2001**	**2002**	**2003**	**Average**
Seychelles				
quantity	57500	57700	87 100	67 433
value	46900	48800	57 800	51 167
Ivory Coast				
quantity	63 700	56 400	54 600	58 233
value	54 200	59 000	47 400	53 533
Thailand				
quantity	43 700	5 400	27 200	25 433
value	29 600	4 800	19 200	17 867
Ecuador				
quantity	13 800	18 300	26 300	19 467
value	11 200	13 100	15 000	13 100
Mauritius				
quantity	18 200	18 000	25 400	20 533
value	12 900	14 100	15 400	14 133
Madagascar				
quantity	11 600	17 100	23 600	17 433
value	8 200	13 700	15 000	12 300
TOTAL (with others countries)				
quantity	337100	274000	364 000	325 033
value	492700	441300	397 300	443 767

By cross-referencing this table with the table of annual prices per tuna market over the period 2002/2003 provided below, and by making the rough estimate that the prices of bigeye tuna caught using seines and unloaded for the canneries have a price listing close to that of skipjack (naturally this is not the case for those caught using long lines), it should be possible to then establish the unloadings made by the European tuna fleet of species in ports outside the European Union.

Table 73: Weighted average annual prices in Euro for 2002 - 2003 on different tuna markets52 (source: private sector)

YF+10							
Years	Spain	Italy	ABIDJAN	TEMA	SEYCH	BKK	MANTA
2002	1414	1422	1260	933	1093	1077	1008
2003	1144	1198	1044	829	930	1068	813
Average	1279	1310	1152	881	1011	1073	910
SK+1.8							
Years	Spain	Abidjan	Tema	Sey	BKK	Manta	
2002	891	811	694	741	767	886	
2003	703	583	593	581	608	577	
Average	797	697	643	661	688	731	

The cross-referencing of this available data means that unloadings in these countries are probably mainly composed of skipjack, which is true in relation to the Indian Ocean and the Pacific Ocean (Ecuador), but not in such proportions (90 to 95%), and untrue for the Central Eastern Atlantic: data from the West Africa tuna observatory (evaluation for 2003 Abidjan/ Dakar/ Tema) show that the species of yellowfin tuna and bigeye tuna represent 60% of unloadings, whereas this calculation produces 46%.

Secondly, the EUROSTAT statistical series gives rise to some questions: whereas the values registered on the tuna market quoted seem rather low in comparison with the prices listings collected, the recalculation of the average price obtained globally over all the other markets not quoted is clearly higher, €2,420/tonne on average over the 3 years 2001/2003.

Table 74: Exports outside the EU ≅ unloadings outside the EU made by the European tuna fleet + calculation for other countries

Countries	2001	2002	2003	Average
Seychelles				
quantity	57500	57700	87 100	67 433
value	46900	48800	57 800	51 167
Ivory Coast				
quantity	63 700	56 400	54 600	58 233
value	54 200	59 000	47 400	53 533
Thailand				
quantity	43 700	5 400	27 200	25 433
value	29 600	4 800	19 200	17 867
Ecuador				
quantity	13 800	18 300	26 300	19 467
value	11 200	13 100	15 000	13 100
Mauritius				
quantity	18 200	18 000	25 400	20 533
value	12 900	14 100	15 400	14 133
Madagascar				
quantity	11 600	17 100	23 600	17 433
value	8 200	13 700	15 000	12 300
Other countries out of E.U.				
quantity	**128 600**	**101 100**	**119 800**	**116 500**
value	**329 700**	**287 800**	**227 500**	**281 667**
TOTAL (with others countries)				
quantity	337100	274000	364 000	325 033
value	492700	441300	397 300	443 767

Consequently this data, which probably incorporates sales of bigeye tuna for purposes other than canning, and possibly the sale of other species apart from the major tropical tunas, cannot be used directly, and simpler hypotheses must therefore be used.

In the case of the major tropical tunas, we therefore reason in a global way by considering that unloadings

[52] *Listings in dollars from certain tuna markets have been recalculated in Euro since the initial versions of the report were produced.*

per species, carried out on tuna markets located on a particular ocean, are in proportion with the catches and representativeness of the species in the catches made in this ocean.

With regard to tunas from temperate waters we know the volumes exported outside the European Union: consequently only the coefficients of representativeness per ocean will be applied.

Table 75: Calculation of unloadings per ocean (source: FISHSTAT)

		Catches	Ocean representativeness			calculated exp./unload.
Species	**Areas**	**Average 2000/2002**	**Indian O.**	**Atlantic O.**	**Others**	
Skipjack	West Indian Ocean	122 400	54%			94 695
	Center East Atlantic	48 867		39%		37 806
	Others	24 700			52%	19 109
Skipjack sum		**195 967**				**151 609**
Yellowfin tuna	West Indian Ocean	87 000	39%			67 307
	Center East Atlantic	60 533		48%		46 832
	Others	8 673			18%	6 710
Yellowfin sum		**156 207**				**120 849**
Bigeye tuna	West Indian Ocean	16 567	7%			12 817
	Center East Atlantic	15 833		13%		12 249
	Others	14 100			30%	10 908
Bigeye sum		**46 500**				**35 975**
Major tropical tunas sum		**398 673**				**308 433**
Albacore	North East Atlantic	18 400				2 350
	Mediterranean	5 367				686
	Others	3 633				464
Albacore sum		**27 400**				**3 500**
Bluefin tuna	Mediterranean	13 467				9 693
	Others	4 733				3 407
Atlantic bluefin tuna sum		**18 200**				**13 100**
TOTAL		***444 233***				**325 033**

The total unloadings calculated for the Central Eastern Atlantic, 96,887 tonnes, exceed figures given in the data from the tuna Observatory which indicates an average of 8,000 tonnes for Dakar (tuna pole and line vessels), 5,000 tonnes for Tema and 74,000 tonnes for Abidjan, namely 89,000 tonnes in total. Consequently there would be 7,887 tonnes to be reallocated to the Indian Ocean, probably in relation to skipjack. This results in the table presented on the next page showing adjusted unloadings, and transhipments per fishing zone.

On a basis of this and the previous tables, we can therefore deduce that the breakdown of unloadings made by the European tuna fleet in relation to major tropical tunas is as follows:

- Exports which can be assimilated with unloadings in countries outside the EU: 308,433 tonnes
- Unloadings within the European Union, after transhipments relating to different tuna markets: 44,358 tonnes of skipjack, 35,358 tonnes of yellowfin tuna and 10,525 tonnes of bigeye tuna.

Table 76: Adjustments of calculations for unloadings and transhipments per ocean in comparison with Fishstat data

		Catches	Ocean representativeness			calculated exp./unload.	adjusted exp./unload.	Unloaded in European Union after transshipments in			
Species	**Areas**	**Average 2000/2002**	**Indian O.**	**Atlantic O.**	**Others**			**Seychelles**	**Ivory Coast**	**Thailand**	**Ecuador**
Skipjack	West Indian Ocean	122 400	54%			94 695	102 582	14 864		4 955	
	Center East Atlantic	48 867		39%		37 806	29 919		18 948		
	Others	24 700			52%	19 109	19 109				5 591
Skipjack sum		**195 967**				**151 609**	**151 609**				
Yellowfin tuna	West Indian Ocean	87 000	39%			67 307	67 307	14 769		4 923	
	Center East Atlantic	60 533		48%		46 832	46 832		13 702		
	Others	8 673			18%	6 710	6 710				1 963
Yellowfin sum		**156 207**				**120 849**	**120 849**				
Bigeye tuna	West Indian Ocean	16 567	7%			12 817	12 817	2 812		937	
	Center East Atlantic	15 833		13%		12 249	12 249		3 584		
	Others	14 100			30%	10 908	10 908				3 192
Bigeye sum		**46 500**				**35 975**	**35 975**				
Major tropical tunas sum		**398 673**				**308 433**	**308 433**	**32 446**	**36 234**	**10 815**	**10 746**

1.1.2 Establishing the turnover

In order to calculate the average weighted turnover produced by the European tuna fleet in relation to major tropical tunas, an average weighted price is applied to unloadings, all countries included. The major tuna markets on which the exports were recorded represent on average 208,532 tonnes out of a total of 308,433 tonnes, namely representativeness of 68%. The average weighted price obtained on these markets is €777/tonne, according to Eurostat. When applied to the total exported/unloaded, this would represent a turnover of €239, 652 million. We would then have:

- exports which can be assimilated with unloadings in countries outside the EU: 308,433 tonnes including all species for €239,658 million
- unloadings in the European Union on the basis of the following considerations: i) the equivalence of prices between canned skipjack and bigeye tuna[53] ii) the application of prices recorded in Spain of [54] 35,358 tonnes of yellowfin tuna at €1279, namely €45,223 million and 54,883 tonnes of skipjack + bigeye tuna at €797/kilograms, namely €43,742 million.

The average weighted overall turnover for the most recent three year period therefore would be €328,617 million for the European tuna fleet fishing for major tropical tunas. In the documents and reports produced by the profession, the figure of €360 million is fairly frequently quoted: this difference of 10% could be partly explained by the volume of catches of minor tunas and accessory catches, estimated at 10% of catches.

1.2 Establishment of the charges account

The number of units in the fleet of purse seiners flying the European flag listed for the reference years is 65 boats. In the awareness that on average[55] a European tuna purse seiner, including all categories of boat and all oceans, produced catches in the region of between 5,000 and 5,500 tonnes of major tropical tuna per annum over the period 2000/2002, catches made by the European tuna seiner fleet therefore represent approximately 325,000 to 357,500 tonnes per annum. In comparison with the total catches of major tropical tunas made on average for the whole European fleet, 398,673 tonnes[56], the representativeness of the purse seiners is in the region of 82% to 90%. We can therefore accept as a working hypothesis that this level of representativeness is sufficiently high for it to be possible to apply the structure of the tuna purse seiner account to the whole European fleet. In view of the very slight difference existing at global level between the structure of the Spanish and French accounts, we can also accept that the weighting at 40/60 is representative of the total analysed.

These working hypotheses produce percentages per item of expenditure which therefore constitute the structure of this account: it is applied to the overall turnover for the European fleet. Naturally, only the proportional share of the structure of the account should be applied to the turnover calculated previously. Once again, it is not possible, given the approximations made, to calculate charges fixed on the basis of the number of boats and their technical characteristics.

---

[53] *Less than a decade ago a percentage of bigeye tuna in pre-cooked canned yellowfin tuna was tolerated (not in yellowfin tuna canned raw which had to be 100% yellowfin tuna). This is no longer the case today and prices for bigeye tuna intended for canning are therefore close to those for skipjack tuna.*

[54] *The weighted averages of prices for imports of frozen tuna recorded for the European Union over the period 2000/2002 for tuna for processing, c.f. are lower for yellowfin tuna (€1214/tonne as opposed to €1279/tonne for Spain) but practically identical for skipjack (€795/tonne as opposed to €797/tonne here), which is logical given the price premium granted to good quality yellowfin tuna.*

55 *We are also obliged to adopt simple hypotheses at this level. Expert opinion has available recent expense accounts for French and Spanish purse seiners, but does not have the equivalent available for fleets of pole and line vessels and long liners flying the European flag.*

56 The difference in tonnage existing in relation to production data for the European fleet should also probably be added in part to the calculation of the volume of minor tunas and accessory catches.

Table 77: Structure of the operating account of a European tuna purse seiner and application to the global turnover of the European fleet (structure from private source)

	%	Millions €
PROPORTIONAL COSTS		
Salaries (fixed and variable shares)	18.0%	59.151
Payroll taxes	6.4%	21.031
Fish insurance	0.3%	0.986
Handling (unloading and transhipment)	1.0%	3.286
Port transit tax for fish	0.5%	1.643
Sea freight from transhipment zones	4.5%	14.788
Salt	0.7%	2.300
TOTAL PROPORTIONAL COSTS	**31.4%**	
FIXED CHARGES		
CONSUMABLES		
Water	0.1%	0.329
Oil	1.4%	4.601
Provisions	2.4%	7.887
Miscellaneous consumables, NH3, office supplies	0.2%	0.657
Fuel consumption	20.9%	68.681
EXTERNAL SERVICES		
Marine insurance	2.6%	8.626
Consignment	0.2%	0.493
Transport for crew and travel	1.1%	3.450
Tel, radio, Inmarsat, Argos, buoys	5.4%	17.745
Security, destruction of discards	0.1%	0.246
Other external services	2.3%	7.394
Maintenance Repair	8.1%	26.618
TOTAL FIXED CHARGES	**44.8%**	**146.727**
DUTIES AND TAXES (excl. bus. profits)		
Port taxes applied to the boat	0.5%	1.643
Fishing licence	2.3%	7.558
TOTAL DUTIES AND TAXES (excl. bus. profits)	**2.8%**	**9.201**
TOTAL COSTS	**78.9%**	**259.115**
GROSS MARGIN	**21.2%**	**69.502**

1.3 Distribution of economic wealth[57] created by the European fleet

We should remember that this economic analysis is focused on measuring economic wealth. This economic wealth is equal to the Primary Added Value (PAV). This PAV is itself equal to the sum of two components, Direct Added Value (DAV) and Indirect Added Value (IAV).

DAV is equal to the balance of the difference between the turnover and Intermediate Consumption (IC) and therefore groups together the following items: salaries, payroll taxes, state deductions, financial costs on borrowing, depreciation, net operating income.

The IAV is equal to the added value included in intermediate consumption, pro rata for the values consumed. Here, the economic analysis only takes into account the indirect added value of first iteration[58].

In order to measure the distribution of economic wealth created by the European tuna fleet between the European Union and countries outside the European Union (mainly in the ACP and GSP countries), we have calculated the level of primary added value corresponding to the various expense items. Depending on the nature of the expense item, either the rate of primary added value is 100% when this concerns a factor

[57] *Refer to the economic appendix relating to added value calculated using the method of effects*
[58] *Normal term used in the method of effects but which can be understood as "first generation".*

constituting direct added value, or the rate corresponds to the rate of added value included in intermediate consumption, namely the direct added value of the supplier of the tuna sector.

We will note that generally speaking the supply of consumables yields little IAV (15%). Among these, a special distinction must be made for the consumption of oil and fuel: because of its flag, the European fleet benefits from diesel at the offshore rate, therefore totally without tax and on which IAV can only, therefore, be virtually zero.

Moreover the distribution of primary added value between EU and non-EU countries of a certain number of items is also worthy of a few remarks:

- the existence of non-EU employees on board purse seiners is chiefly the outcome of obligations for employing on-board personnel resulting from fishing agreements
- as purse seiners permanently remain in their fishing zones, almost all consumables are purchased locally
- virtually the whole of port handling and transit of the fish also takes place in the fishing zones and therefore outside the European Union. The same is naturally true for consignment and security.
- tariffs in €/tonne, applied on the subject of handling and port taxes applied by the various tuna markets are not fundamentally different except in relation to Thailand.

Table 78: Costs of ports charges (private source)

	Harbour dues per tonne of tuna			
	Handlingt	**Unloading**	**Transhipping**	**Vessel**
Bangkok	2,50	0,22	0,22	2,50
Abidjan	7,50	6,12	0,44	5,32
Seychelles	8,31	nd	3,08	nd
Union Européenne	13,5	1,5	1,5	5

- ocean freight has been calculated on the basis of average data collected, for volumes per zone of transhipment,
- fishing licences (mainly consisting of an inclusive deduction per tonne) also benefit countries outside the European Union which have signed fishing agreements.
- repairs and maintenance is an item 3/4 of whose value corresponds to the cost for major overhaul: this major overhaul is not carried out nowadays in European shipyards but in the large shipyards present in the three oceans where fishing is carried out. On the other hand these major overhauls carried out outside the European Union may require specialist European labour to relocate to the site of the major overhaul and the supply of special equipment. We can therefore consider that 3/4 of the added value included in the maintenance/repairs item can be allocated outside the European Union as opposed to 1/4 for the EU.

We then obtain the results shown in the following table.

Table 79: Calculation of primary added value generated by the European fleet and distribution between the European Union and non-EU countries

				Primary added value	
	%	millions €	Included Added Value rate	E.U.	Countries out of EU
COSTS IN PROPORTION					
Wages (fixed and variable parts)	18,0%	59,151	100%		
Including wages of staff from countries out of E.U.	*2,1%*	*6,901*	*100%*		*6,901*
Including wages of staff from E.U.	*15,9%*	*52,250*	*100%*	*52,250*	
Social contributions	6,4%	21,031	100%		
Including social contributions of staff from countries out of E.U.	*0,2%*	*0,657*	*100%*		*0,657*
Including social contributions of staff from E.U.	*6,2%*	*20,374*	*100%*	*20,374*	
Supplies	2,4%	7,887	15%		1,183
Fish insurance	0,3%	0,986	40%	0,394	
Handling (unloading and transshipment)	1,0%	3,286	100%		
Including countries out of E.U.	*0,7%*	*2,136*	*100%*		*2,136*
Including E.U.	*0,4%*	*1,150*	*100%*	*1,150*	
Fish port transit tax	0,5%	1,643	100%		
Including countries out of E.U.	*0,4%*	*1,314*	*100%*		*1,314*
Including E.U.	*0,1%*	*0,329*	*100%*	*0,329*	
Seaborne freight from transshipment areas	4,5%	14,788	25%	3,697	
TOTAL COSTS IN PROPORTION	**33,1%**	**108,772**			
FIXED COSTS					
GOODS					
Water	0,1%	0,329	15%		0,049
Oil	1,4%	4,601	15%	0,690	
Salt	0,7%	2,300	15%	0,345	
Other goods (NH3, office supplies...)	0,2%	0,657	15%		0,099
Fuel	20,9%	68,681	1%		0,687
PERFORMANCES OF SERVICEES					
Marine insurance	2,6%	8,626	40%	3,450	
Consignment	0,2%	0,493	80%		0,394
Crew transports and moves	1,1%	3,450	25%	0,863	
Phone, radio,Inmarsat, Argos	5,4%	17,745	25%	4,436	
Watching and waste destruction	0,1%	0,246	75%		0,185
Other performances of services	2,3%	7,394	40%	2,958	
Repair and maintenance	8,1%	26,618	40%	2,662	7,985
TOTAL FIXED COSTS	**43,0%**	**141,141**			
TAXES (except company tax)					
Port taxes on ship	0,5%	1,643	100%		
Including countries out of E.U.	*0,5%*	*1,479*	*100%*		*1,479*
Including E.U.	*0,1%*	*0,164*	*100%*	*0,164*	
Fishing right	2,3%	7,558	100%		7,558
TOTAL TAXES	**2,8%**	**9,201**			
TOTAL COSTS	**78,9%**	**259,115**			
GROSS OPERATING SURPLUS	**21,2%**	**69,502**	**100%**	69,502	
TOTAL PRIMARY ADDED VALUE				**232,768**	**30,628**

We can therefore see that for a turnover of €328,617 million, the European tuna fleet created €163,816 million of direct added value (DAV), namely 49% of DAV as opposed to 51% of Intermediate Consumption (IC). This rate is normal for the food processing sectors which fall within the band 40/60. Going into more detail we can see that the distribution of DAV is 87.7% (€143,770 million) in the European Union as opposed to 12.3% in the countries outside the EU.

On the basis of the information collected and the working hypotheses retained, Primary Added Value (Direct Added Value + Indirect Added Value of the first iteration) would be €193,893 million: this is distributed in proportions equivalent to that of the DAV in spite of a differential distribution of Intermediate Consumption between the EU and non-EU countries: 84.2% as opposed to 15.8% respectively.

1.4 Other economic aspects of the European tuna sector

1.4.1 The secondary sector of false tuna

The term "false tuna" is a normal description in the tuna profession, used to designate all the following catches:

- the by-catches of tuna fishing
- damaged tuna

This is a very informal sector, since from its origins the sale of false tuna constituted, and still constitutes, the share in kind for the crew[59], and therefore there is no recording of commercial transactions either in the fishing boat owners' accounts, or elsewhere. This activity at the margins of the sector referred to as tuna for canning has developed significantly over two decades in Abidjan, then for 10 years in Diego Suarez (Madagascar). It is generally widespread in all ACP and GSP countries in which significant unloadings of tuna boats for local processing industries take place, with the exception of the Seychelles.

The figures collected in relation to Abidjan and Diego Suarez show that the volume of false tuna is established at approximately 4% of total catches. This secondary sector has not really been studied from an economic point of view except in Abidjan and the proposal is to extrapolate the values collected on this tuna market place to the whole of the tuna sector. On average the first transaction price (between the boat and the wholesale fish trade) is established at €0.42/kilogram, and in view of the number of intermediaries up to final consumption in existence in the secondary sector, the added value included in the marketing margins downstream is established at €0.30/kilogram. The rate for creating employment in this very informal secondary sector is estimated at one job (direct and indirect) per 4.5 tonnes.

If we apply these figures to the whole of the European tuna sector we would then have approximately 16,000 tonnes of false tuna generating a direct turnover for crews of €6.72 million, an added value in the ACP and GSP countries of €4.8 million, namely an overall economic wealth of €11.52 million, and 3,560 direct and indirect jobs.

1.4.2 Direct and indirect jobs in the European tuna fleet fishing for major tropical tunas

In fishing we can calculate an average of 20 to 24 crewmen on a French tuna purse seiner and 24 on a Spanish tuna purse seiner. Given the rotation of crews in thirds, one complete crew comprises between 33 and 36 men, mainly consisting of non-European personnel (compliance with fishing agreements, but also quality of local human resources), namely 21 to 22 men.

With regard to the 65 purse seiners fishing under European law with European capital working under a European flag this would therefore be equivalent, solely for the European fleet of purse seiners, to:

- 780 to 910 direct jobs in the European Union
- 1365 to 1430 direct jobs in non-EU countries

Mention was made above that purse seiners only represent 82% of the catches of the total European fleet. In comparison with long liners and pole and line vessels, purse seiners constitute the units which unload the biggest volumes, so they have the lowest ratio of jobs per tonne: it is therefore logical to consider that the

---

[59] *This portion in kind is referred to as "stocker". The current trend of tuna ship owners is to limit this more and more.*

number of direct jobs created in the European Union and outside the European Union by the whole of the European tuna fleet, including all techniques, is at least equal to 1.5 times the previous figures relating solely to the fleet of purse seiners, namely a total of:

- 1,170 to 1,365 direct jobs in the European Union
- 2,050 to 2,150 direct jobs in non-EU countries

Fisheries publications often give the ratio of 3 indirect jobs on land for one job at sea: this ratio is applicable in relation to the non-European Union countries in which the tuna fleet works continuously: 2.5 to 3 indirect jobs seem relevant figures for taking into consideration dockers, security agents, victualling agents, maintenance and repair workers, port services and consignment agents. It seems more reasonable to adopt the figure of between 1 and 1.5 indirect jobs for the EU (essentially land jobs for shipowners, spare parts, fishing equipment and a small amount of maintenance/repairs), which provides the following total:

- 1,170 to 2,050 indirect jobs in the European Union
- 5,125 to 6,450 indirect jobs in non-European Union countries

1.5 Summary of values and economic effects corresponding to the European tuna fleet

Table 80: summary of values and economic effects of the European tuna fleet fishing for major tropical tuna

€ Millions	TOTAL	European Union		ACP or GSP countries	
	Value	Value	%	Value	%
	EUROPEAN TUNA FLEET				
Turnover for major tunas	328.6				
Primary Added Value	193.9	163.3	*84.2%*	30.6	*15.8%*
	FALSE TUNA SECONDARY SECTOR				
Turnover for minor tunas and accessory catches	31.4				
Primary Added Value	11.52	6.72	*58.3%*	4.8	*41.7%*

Number of jobs	TOTAL	European Union		Non-EU countries	
	Number	Number	%	Number	%
	EUROPEAN TUNA FLEET				
Direct jobs	3 370	1 270	*37.6*	2 100	*62.4*
Indirect jobs	7 400	1 610	*21.7*	5 790	*78.3*
TOTAL	**10 770**	**2 880**	***26.7***	**7 890**	***73.3***
	FALSE THON SECONDARY SECTOR				
Directs & indirect jobs	**3 560**			**3 560**	***100.0***
GENERAL TOTAL	**14 330**	**2 880**	***20.0***	**11 450**	***80.0***

2 Processing industries

We must remember that these processing industries roughly supply three categories of products: tuna loins, canned tuna and tuna-based preparations with a higher added value such as tuna salads and starters. Up until now this third category has only concerned the European and American industry, but it is now booming in Asia (Thailand for example). On the other hand, it does not yet concern, or to a very minor degree, the ACP countries and the C&S American countries benefiting from the GSP arrangement (referred to as GSP C&S American countries in the text).

Given the differences in volume and structure of accounts for the processing industry between the ACP countries, together with those of the GSP C&S American countries and those of the processing industry based in the European Union, we need to separately identify firstly the volumes of end products produced by the ACP and GSP countries and secondly the volumes of raw material processed by the European

Union.

We will therefore consider that the ACP and GSP C&S American countries in practice only process two products: loins and canned tuna. With regard to the European Union, the statistical documents collected by experts from the professional organisations of processors show that 2nd and 3rd generation processed products (salads, starters and other preparations based on tuna) only represented approximately 10% of the end product market of consumption in the European Union over the reference period. This is a figure we will retain for the economic analysis in Europe.

2.1 Identification according to ACP and GSP C&S American countries origin of imports of canned tuna and tuna loins

As indicated in the definition of the field of community interest, the reconstruction of the economic aggregates of processing activities in the ACP and GSP C&S American countries is only carried out for the portion of products intended for the European Union.

This working hypothesis has little impact on the ACP countries with very few commercial destinations outside the EU. On the other hand, certain countries in Central and South America have a great deal of trade with the United States. In order to simplify the analysis relating to these countries we will use as a hypothesis the fact that economic activities intended for the EU and outside the EU are independent and that there is no interference or impact between the two.

We will also take as a working hypothesis the fact that there is no, or a negligible quantity of canned tuna manufactured from loins locally in the ACP and GSP countries, whereas this is very significant in Europe. We will therefore apply to the physical flows of exports of canned tuna and tuna loins intended for Europe, identified by volume and value, the structural accounts for processing into canned tuna or tuna loins.

The structure and distribution of the economic wealth created differs according to the region in which the processing was carried out (EU, ACP country, GSP C&S American country). This requires identifying the breakdown of physical flows by volume and by value of imports of tuna loins and canned tuna according to region of origin (ACP country and GSP C&S American country). This identification has been carried out on the basis of the three most recent years available, 2000 to 2002, on the basis of Eurostat data shown in the appendices.

2.2 Processing industries based in the ACP countries

2.2.1 Volumes and values exported to Europe

The processing industries based in the ACP countries supplied the member countries of the European Union with the following volumes of finished and semi-finished products:

Table 81: Annual volumes and values of end products of ACP origin intended for Europe (source Eurostat)

	2000	2001	2002	Average 2000/2002
Volume (tonnes)				
Cans	163 655	168 654	193 192	175 167
Loins	9 792	12 323	8 623	10 246
Value (1000 €)				
Cans	398 174	447 319	535 525	460 339
Loins	27 900	39 220	28 695	31 938
Average price (€/tonne)				
Cans	2 433	2 652	2 772	2 628
Loins	2 849	3 183	3 328	3 117

The study collected the first sale prices per species on the three tuna market places of the ACP countries which are the most important in terms of processing: Abidjan (Côte d'Ivoire),Tema (Ghana) and the Seychelles. We can consider that the average weighted price for these three tuna market places is representative of the average price for raw material for the ACP countries.

In fact, on average over the three years observed, in relation to the total volume of exports from ACP countries of finished and semi-finished products intended for the European Union, these three countries represented: 27% for the Côte d'Ivoire, 28% for the Seychelles and 13% for Ghana, respectively, that is to say 68% of the total volume of exports from ACP countries.

The establishment of the average weighted price for tuna unloaded in ACP countries, including all commercial categories, is shown in the table below. It is essential to establish the distinction between yellowfin and skipjack tuna, bearing in mind the importance of price differences relating to the raw material and the resulting variances in the structural accounts for processing.

Table 82: Calculation of the average price in Euro weighted according to species from ACP countries in the years 2002/2003 (private source)

	Côte d'Ivoire	Seychelles	Ghana
Share of country in total imported in the EU	27 %	28 %	13 %
Recalculated share in the sample	40 %	41 %	19 %
Yellowfin			
Yellowfin +10	1152	1011	881
Yellowfin -10 (80 % of yellowfin +10)	921	809	705
Average weighted price all sizes included (10% yellowfin less than 10)	1129	991	863
Average Weighted price yellowfin		**1022**	
Skipjack			
Skipjack + 1,8	697	661	643
Average skipjack -1,8 and skipjack -1,5 (150 € per tonne)	547	511	493
Average weighted price all sizes included (20 % skipjack -1,8 et -1,5)	667	631	613
Average weighted price skipjack		**642**	

2.2.2 The structural accounts of the processing industry in the ACP countries

The application of these average weighted purchase prices for raw material to the structural accounts of the processing industries in the ACP countries, in which it has been used as a working hypothesis equal brine and oil production, produces the results shown in Table 84.

In order to establish these values we have taken into account a hypothesis of equal manufactured volumes of products in water and in oil, and a calculation of the cost of raw material based on a material yield of 42% for yellowfin tuna and 38% for skipjack tuna. The commercial margin was evaluated at 10% of the cost price, namely 9% of the market price delivered.

Table 83: Average structural accounts in € for the manufacture of canned tuna by ACP countries in relation to yellowfin and skipjack tuna using whole tuna for the years 2000/2002 (various sources[60])

YELLOWFIN TUNA			ACP	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			130	5%
variable overhead	labour		160	6%
	utilities		84	3%
	marketing		86	3%
Cost of fish	1022		1 359	48%
Cans			486	17%
Oil filling (50% cans)	0,5	3,36 kg by case	120	4%
Brine (50 % cans)	0,08	3,57 Kg by case	16	1%
Salt	0,02	20 kg by ton	0,4	0%
Cardboard sleeve (3 cans)	0,016	32 by case	14	1%
Case (outer)	0,38		43	2%
Freight in Europe			135	5%
Less by-product revenues	0,36	by case	-47	-2%
TOTAL COST PRICE			**2 587**	**91%**
Commercial margin	**10% cost price**		**259**	**9%**
MARKET PRICE			**2 846**	

SKIPJACK			ACP	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			134	6%
variable overhead	labour		184	8%
	utilities		84	3%
	marketing		86	4%
Cost of fish	642		944	39%
Cans			486	20%
Oil filling (50% cans)	0,5	3,36 kg by case	120	5%
Brine (50 % cans)	0,08	3,57 Kg by case	16	1%
Salt	0,02	20 kg by ton	0,4	0%
Cardboard sleeve (3 cans)	0,016	32 by case	14	1%
Case (outer)	0,38		43	2%
Freight in Europe			135	6%
Less by-product revenues	0,36	by case	-47	-2%
TOTAL COST PRICE			**2 200**	**91%**
Commercial margin	**10% cost price**		**220**	**9%**
MARKET PRICE			**2 420**	

In the first instance, we can see that the market price delivered per species, calculated on the basis of the structural accounts, is compatible with the weighted average for 2000/2002 of the import price for canned tuna of ACP origin: €2,628/tonne. However an import value weighting between skipjack and yellowfin tuna must still be established in order to determine this figure. The calculations result in a distribution of value at a ratio of 49% for canned tuna from yellowfin and 51% from skipjack.

The situation is not quite the same for the manufacture of loins in ACP countries. In fact, given the average price of European imports of loins at €3117 per tonne, and the results of calculations presented in the Table, the representativeness of skipjack is more important. The calculation of the weighting between yellowfin and skipjack tuna results in a distribution of value at a ratio of 63% skipjack, 37% yellowfin tuna.

[60] *Sources: private operators from the Côte d'Ivoire, Senegal, Madagascar + data from the Department of Applied Economics at the University of Vigo*

Table 84: Average structural accounts in € for the manufacture of loins by ACP countries in relation to yellowfin and skipjack tuna for the years 2000/2002 (various sources61)

YELLOWFIN TUNA			ACP	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			138	4%
variable overhead	labour		320	9%
	utilities		126	3%
	marketing		0	0%
Cost of fish	1022		2 433	67%
Polythene packaging	0,1	by loin	28	1%
Freezing cost	100	by ton	100	3%
Salt	0		0	0%
Labels	0		0	0%
Case (outer)	0,38	by case	43	1%
Freight in Europe			200	6%
Less by-product revenues	47	by ton	-84	-2%
TOTAL COST PRICE			**3 303**	91%
Commercial margin	**10% cost price**		**330**	9%
MARKET PRICE			**3 634**	
SKIPJACK			**ACP**	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			138	5%
variable overhead	labour		320	11%
	utilities		126	4%
	marketing		0	0%
Cost of fish	642		1 689	60%
Polythene packaging	0,1	by loin	28	1%
Freezing cost	100	by ton	100	4%
Salt	0		0	0%
Labels	0		0	0%
Case (outer)	0,38	by case	43	2%
Freight in Europe			200	7%
Less by-product revenues	47	by ton	-84	-3%
TOTAL COST PRICE			**2 560**	91%
Commercial margin	**10% cost price**		**256**	9%
MARKET PRICE			**2 816**	

On the basis of the information collected, the distribution between yellowfin/skipjack tuna of the volumes and values exported by the ACP countries to the European Union would therefore be as follows, on average, for the years 2000/2002:

- 49% by value of canned yellowfin tuna at €2,846 per tonne namely a value of €225.57 million representing 79,258 tonnes of products, i.e. 45% of tonnages of canned tuna of this origin imported by the EU.
- 51% by value of canned skipjack tuna at €2,420 per tonne namely a value of €234.77 million representing 95,909 tonnes, i.e. 55% of tonnages of canned tuna of this origin imported by the EU.
- 37% by value of loins of yellowfin tuna at 3,634 euro per tonne namely a value of €11.8 million representing 3,252 tonnes, i.e. 32% of the tonnage of loins of this origin imported by the EU
- 63% by value of skipjack loins at €2816 per tonne namely a value of €20.1 million representing 6,991 tonnes, i.e. 68% of the tonnage of loins of this origin imported by the EU.

[61] *refer to the note at the bottom of page 91*

By establishing these volumes and values on the one hand and the structural accounts on the other hand, we can produce the following evaluation:

i) first of all the values per item of the economic aggregate corresponding to the share of economic activity of the processing industry in the ACP countries intended for Europe,
ii) then within this aggregate we can evaluate the formation of wealth created and its distribution between ACP and EU countries.

2.2.3 Economic aggregates corresponding to the activity of the processing industry in the ACP countries intended for Europe

The values of these economic aggregates are the result of multiplying the physical flows previously identified by the structural accounts. As previously for the aggregate for the European tuna fleet the study retains for each item either an added value ratio of 100% when the item is a constituent of DAV, or an Indirect Added-Value (IAV) ratio, a ratio usually known and used for the nature of the costs for the item concerned (services 40 to 50%, non-food manufactured products 40%, food products 15% to 25%). Primary added value (PAV) is the sum of the two added values, direct and indirect.

Table 85: Calculation of the economic values (in millions of €), of added value and its distribution for the economic aggregates of canned yellowfin and skipjack tuna manufactured in ACP countries and intended for Europe

			Primary Added Value	
YELLOWFIN TUNA	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	10,3	50%		5,2
labour	12,7	100%		12,7
utilities	6,7	40%		2,7
marketing	6,8	50%	3,4	
Cost of fish	107,7	yet accounted		
Cans	38,5	40%	7,7	7,7
Oil filling (50% cans)	9,5	25%	2,4	
Brine (50 % cans)	1,3	15%		0,2
Salt	0,0	15%		0,0
Cardboard sleeve (3 cans)	1,1	40%	0,5	
Case (outer)	3,4	40%		1,4
Freight in Europe	10,7	40%	4,3	
Less by-product revenues	-3,7			
Commercial margin	20,5	100%	10,3	10,3
TOTAL VALUE	**226**		**28,5**	**40,0**

			Primary Added Value	
SKIPJACK	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	13,0	50%		6,5
labour	17,8	100%		17,8
utilities	8,1	40%		3,3
marketing	8,3	50%	4,2	
Cost of fish	91,6	yet accounted		
Cans	47,1	40%	9,4	9,4
Oil filling (50% cans)	11,6	25%	1,5	
Brine (50 % cans)	1,6	10%		0,2
Salt	0,0	15%		0,0
Cardboard sleeve (3 cans)	1,4	40%	0,6	
Case (outer)	4,2	40%		1,7
Freight in Europe	13,1	40%	5,2	
Less by-product revenues	-4,5			
Commercial margin	21,3	100%	10,7	10,7
TOTAL VALUE	**235**		**31,5**	**49,6**

As the added value included in the raw material has already been evaluated for the European tuna fleet, the calculations presented for canned tuna results in the creation of global wealth of €68.5 million for yellowfin tuna and €81.1 million for skipjack tuna, namely €149.6 million overall for both species. This value represents a PAV of 32.5% of the total turnover, excluding IAV for raw materials.

The distribution of economic wealth between the European Union and the ACP countries is based on the ratios and the local or imported nature of the expense.

The fixed charges (overheads, depreciation of fixed assets), labour, production factors (water, energy, financial charges), brine for the cans, cardboard boxes, are exclusively, or mainly, items of expense relating to the country in which the industry is established.

The marketing function (directed from the registered offices of the parent companies in Europe), oil (the characteristics of local production do not always have the specific attributes required for processing), plastic sheeting (whose manufacturing technologies are often specific) and the freight function (provided by the large European companies) are exclusively or in the vast majority, expenses or imported services.

The purchase of the cans for canned goods (there are two types of cans, basic ones which can be manufactured locally and high technology cans, lithographed or with special types of opening) is shared between local purchases and imports. The return on sales also has to be distributed between the parent company and the local factory.

Overall, for the two species, the distribution of the wealth resulting from manufacturing canned tuna in ACP countries is probably established between the European Union and the ACP countries in the ratio of 60 million for the former and 89.6 for the latter, namely 40% for the EU and 60% for countries outside the EU.

The formation of wealth is not the same in the economic aggregates relating to the manufacture of yellowfin and skipjack loins in the ACP countries, given the weight of the item for raw materials when manufacturing this product. The results show that the representativeness of Primary Added Value on the global turnover for loins, including all species, is lower: less significant: €9 million on a total turnover of €31.9 million, namely 28%.

Given the weight of the item for labour, an item which is also important in this industrial process and is a constituent element of the DAV (rate of 100%) and entirely local, the distribution of this economic wealth between ACP countries and the EU is more asymmetrical. The distribution of Primary Added Value between the ACP countries and the European Union is established at 26% for the European Union and 74% for the ACP countries.

Table 86: Calculation of the economic values (in millions of €) of added value and its distribution for the economic aggregates for loins of yellowfin and skipjack tuna manufactured in ACP countries and intended for Europe

			Primary Added Value	
YELLOWFIN TUNA	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	0,4	50%		0,22
labour	1,0	100%		1,04
utilities	0,4	40%		0,16
marketing	0,0	50%	0,00	
Cost of fish	7,9	yet accounted		
Polythene packaging	0,1	25%	0,02	
Freezing cost	0,3	40%		0,13
Salt	0,0	15%		0,00
Labels	0,0	50%	0,00	
Case (outer)	0,1	40%		0,06
Freight in Europe	0,6	40%	0,26	
Less by-product revenues	-0,3			
Commercial margin	1,1	100%	0,54	0,54
TOTAL VALUE	**11,8**		**0,82**	**2,15**
			Primary Added Value	
SKIPJACK	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	1,0	50%		0,49
labour	2,3	100%		2,28
utilities	0,9	40%		0,36
marketing	0,0	50%	0,00	
Cost of fish	12,1	yet accounted		
Polythene packaging	0,2	25%	0,05	
Freezing cost	0,7	40%		0,29
Salt	0,0	15%		0,00
Labels	0,0	50%	0,00	
Case (outer)	0,3	40%		0,12
Freight in Europe	1,4	40%	0,57	
Less by-product revenues	-0,6	0%		0,00
Commercial margin	1,8	100%	0,91	0,91
TOTAL VALUE	**20,1**		**1,53**	**4,46**

2.3 Processing industries based in countries benefiting from the GSP arrangement

2.3.1 Volumes and values exported to Europe

The calculations made in this chapter follow the same procedure as in the previous chapter, but they are applied to processing industries based in the GSP C&S American countries. These countries have supplied the member countries of the European Union with the following volumes of finished and semi-finished products:

Table 87: Annual volumes and values of the end products of GSP C&S American origin (Source: Eurostat)

	2000	2001	2002	Average 2000/2002
Volume (tonnes)				
Cans	25 305	29 771	34 950	30 009
Loins	39 512	31 302	43 060	37 958
Value (1000 €)				
Cans	54 741	72 545	89 587	72 291
Loins	109 109	102 324	149 503	120 312
Average Price (€/tonne)				
Cans	2 163	2 437	2 563	2 409
Loins	2 761	3 269	3 472	3 170

The price listings on unloading relate to the major market place for unloading tuna in the GSP C&S American countries, namely Manta in Ecuador.

Table 88: Calculation of the average price in weighted € per species from the GSP C&S American countries, years 2002/2003 (private source)

	Manta
Yellowfin	
Yellowfin +10	910
Yellowfin -10 (80 % of Yellowfin + 10)	728
Average weighted price all sizes included (10 % Yellowfin – 10)	892
Skipjack	
Skipjack + 1,8	731
Average Skipjack -1,8 and Skipjack -1,5 (150 € per tonne)	581
Average weighted price all size included (20 % skipjack -1,8 et -1,5)	701

Subsequently the approach to the calculations is the same: we apply these average weighted purchase prices to the structural accounts of the processing industries in the GSP C&S American countries. We also retained equal volumes of products manufactured using water and oil.

2.3.2 The structural accounts of the processing industry in the GSP C&S American countries.

The structural accounts for canned goods are shown in the following table. We can see that the market price delivered for canned yellowfin and skipjack tuna, calculated from the structural accounts, does not seem to be compatible with the weighted average for 2000/2002 of the import price for canned goods of GSP C&S American origin: €2,409/tonne. Excluding possible errors relating to the structural accounts collected, one of the possible explanations is that the return on sales for canned tuna, estimated here at 10% as in the case for the ACP countries, is produced by companies based in Europe and not by canneries based in the GSP countries of Central and South America.

In fact we often find that the GSP canneries are either subsidiaries of parent companies in Europe, parent companies which often locate the margins in the registered office, or companies which manufacture own brand products with very low margins. This is not a neutral observation within the framework of evaluating the distribution of wealth created between the EU and GSP countries, as it results in the return on sales being entered in full in the accounts for canned goods in the GSP C&S American countries out of the wealth remaining in Europe.

Table 89: Average structural accounts in € for the manufacture of canned goods by the GSP countries in Central and South America for yellowfin and skipjack tuna from whole tuna for the years 2000/2002 (source: Department of Applied Economics of the University of Vigo)

YELLOWFIN TUNA			SPG C&S América	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			129	5%
variable overhead	labour		237	9%
	utilities		92	3%
	marketing		86	3%
Cost of fish	892		1 186	44%
Cans			456	17%
Oil filling (50% cans)	0,5	3,36 kg by case	120	4%
Brine (50 % cans)	0,08	3,57 Kg by case	16	1%
Salt	0,02	20 kg by ton	0,4	0%
Cardboard sleeve (3 cans)	0,016	32 by case	14	1%
Case (outer)	0,38		43	2%
Freight in Europe			135	5%
Less by-product revenues	0,36	by case	-47	-2%
TOTAL COST PRICE			**2 468**	**91%**
Commercial margin	**10% cost price**		**247**	**9%**
MARKET PRICE			**2 715**	

SKIPJACK			SPG C&S América	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			129	5%
variable overhead	labour		273	11%
	utilities		92	4%
	marketing		86	3%
Cost of fish	701		1 030	40%
Cans			456	18%
Oil filling (50% cans)	0,5	3,36 kg by case	120	5%
Brine (50 % cans)	0,08	3,57 Kg by case	16	1%
Salt	0,02	20 kg by ton	0	0%
Cardboard sleeve (3 cans)	0,016	32 by case	14	1%
Case (outer)	0,38		43	2%
Freight in Europe			135	5%
Less by-product revenues	0,36	by case	-47	-2%
TOTAL COST PRICE			**2 348**	**91%**
Commercial margin	**10% cost price**		**235**	**9%**
MARKET PRICE			**2 583**	

If we retain this working hypothesis, the calculation based on cost prices for the distribution of canned goods per species, produces a value of 57% of canned skipjack as opposed to 43% of canned yellowfin tuna, which we know to be consistent with the dominance of skipjack in European imports from GSP C&S American countries. The same situation does not apply with regard to tuna loins as will be seen below.

The market prices delivered for yellowfin and skipjack tuna loins are compatible with the average weighted price of all species of imports: €3,170/tonne. The calculation of the weighting between the two species results in a representativeness in terms of value in European imports of loins of 40% for yellowfin tuna and 60% for skipjack tuna.

Table 90: Average structural accounts in € for the manufacture of loins by GSP Central and South American countries in relation to yellowfin and skipjack tuna from whole tuna for the years 2000/2002 (source: Department of Applied Economics of the University of Vigo).

YELLOWFIN TUNA			SPG C&S América	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			179	5%
variable overhead	labour		317	9%
	utilities		138	4%
	marketing		0	0%
Cost of fish	892		2 124	63%
Polythene packaging	0,1	by loin	28	1%
Freezing cost	100	by ton	100	3%
Salt	0		0	0%
Labels	0		0	0%
Case (outer)	0,38	by case	43	1%
Freight in Europe			200	6%
Less by-product revenues	47	by ton	-84	-3%
TOTAL COST PRICE			**3 044**	91%
Commercial margin	**10% cost price**		**304**	9%
MARKET PRICE			**3 349**	

SKIPJACK			SPG C&S América	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			179	6%
variable overhead	labour		317	10%
	utilities		138	5%
	marketing		0	0%
Cost of fish	701		1 845	61%
Polythene packaging	0,1	by loin	28	1%
Freezing cost	100	by ton	100	3%
Salt	0		0	0%
Labels	0		0	0%
Case (outer)	0,38	by case	43	1%
Freight in Europe			200	7%
Less by-product revenues	47	by ton	-84	-3%
TOTAL COST PRICE			**2 765**	91%
Commercial margin	**10% cost price**		**277**	9%
MARKET PRICE			**3 042**	

In comparison with the data collected, the distribution between yellowfin and skipjack tuna of the volumes and values exported by the GSP C&S American countries to the European Union on average for the years 2000/2002 is as follows:

- 43% by value of canned yellowfin tuna at €2,468 cost price per tonne namely a value of €31.08 million representing 12,595 tonnes of products, i.e. 42% of the tonnages of canned goods of this origin imported by the EU.
- 57% by value of canned skipjack at €2,348 cost price per tonne namely a value of €41.21 million representing 17,414 tonnes i.e. 58% of tonnages of canned goods of this origin imported by the EU
- 40% by value of yellowfin tuna loins at €3,349 per tonne, namely a value of €48.12 million representing 14,370 tonnes i.e. 38% of the tonnage of loins of this origin imported by the EU.
- 60% by value of skipjack tuna loins at €3042 per tonne namely a value of €72.2 million representing 23,588 tonnes i.e. 62% of the tonnage of loins of this origin imported by the EU.

2.3.3 Economic aggregates corresponding to the activities of the processing industry in the GSP C&S American countries intended for Europe

Table 91: Calculation of the economic values (in millions of €), of added value and its distribution for the economic aggregates of canned yellowfin and skipjack tuna manufactured in GSP C&S American countries, intended for Europe

			Primary Added Value	
YELLOWFIN TUNA	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	1,5	50%		0,7
labour	2,7	100%		2,7
utilities	1,1	40%		0,4
marketing	1,0	50%	0,5	
Cost of fish	13,6	yet accounted		
Cans	5,2	40%	1,0	1,0
Oil filling (50% cans)	1,4	25%	0,3	
Brine (50 % cans)	0,2	15%		0,0
Salt	0,0	15%		0,0
Cardboard sleeve (3 cans)	0,2	40%	0,1	
Case (outer)	0,5	40%		0,2
Freight in Europe	1,5	40%	0,6	
Less by-product revenues	-0,5			
Commercial margin	2,8	100%	2,8	
TOTAL VALUE	**31**	**VAP**	**5,4**	**5,1**
			Primary Added Value	
SKIPJACK	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	2,1	50%		1,0
labour	4,3	100%		4,3
utilities	1,5	40%		0,6
marketing	1,4	50%	0,7	
Cost of fish	16,4	yet accounted		
Cans	7,3	40%	1,5	1,5
Oil filling (50% cans)	1,9	25%	0,2	
Brine (50 % cans)	0,3	10%		0,0
Salt	0,0	15%		0,0
Cardboard sleeve (3 cans)	0,2	40%	0,1	
Case (outer)	0,7	40%		0,3
Freight in Europe	2,2	40%	0,9	
Less by-product revenues	-0,7			
Commercial margin	3,7	100%	3,7	
TOTAL VALUE	**41**	**VAP**	**7,1**	**7,7**

Using the structural accounts and establishment of flows by volume and value collected in the previous chapter, we can now evaluate the values per entry of the economic aggregate corresponding to the portion of economic activity for the processing industry in the GSP C&S American countries intended for Europe. We can then evaluate, within this economic aggregate, the formation of wealth created, then its distribution between ACP countries and the EU.

As the added value included in the raw material has already being evaluated for the tuna fleet, the calculations for canned goods intended for Europe manufactured in the GSP C&S American countries, result in a creation of global wealth of €10.5 million for yellowfin tuna and €14.8 million for skipjack tuna, namely an overall total of €25.3 million for the two species. Compared with the global turnover for canned goods, €72.3 million, this figure represents a PAV rate of 35%, excluding IAV for raw materials.

The Primary Added Value on the global turnover for loins, including all species, is €34.02 million. When compared with the total turnover of €120.3 million this figure means a PAV rate of 20% as can be seen in the next table. We can see the same asymmetry in the distribution of wealth as for the ACP countries: 26% for the European Union and 74% for the GSP C&S American countries.

Table 92: Calculation of economic values (in millions of €), of added value and its distribution for the economic aggregates of yellowfin and skipjack tuna loins manufactured in the GSP C&S American countries and intended for Europe

			Primary Added Value	
YELLOWFIN TUNA	**values**	**Included Added Value rate**	**E.U.**	**Countries out of EU**
Fixed overhead	2,6	50%		1,29
labour	4,6	100%		4,56
utilities	2,0	40%		0,79
marketing	0,0	50%	0,00	
Cost of fish	30,5	yet accounted		
Polythene packaging	0,4	25%	0,10	
Freezing cost	1,4	40%		0,57
Salt	0,0	15%		0,00
Labels	0,0	50%	0,00	
Case (outer)	0,6	40%		0,25
Freight in Europe	2,9	40%	1,15	
Less by-product revenues	-1,2			
Commercial margin	4,4	100%	2,19	2,19
TOTAL VALUE	**48,1**	**VAP**	**3,44**	**9,64**
			Primary Added Value	
SKIPJACK	**values**	**Included Added Value rate**	**E.U.**	**Countries out of EU**
Fixed overhead	4,2	50%		2,12
labour	7,5	100%		7,52
utilities	3,3	40%		1,31
marketing	0,0	50%	0,00	
Cost of fish	43,8	yet accounted		
Polythene packaging	0,7	25%	0,16	
Freezing cost	2,4	40%		0,95
Salt	0,0	15%		0,00
Labels	0,0	50%	0,00	
Case (outer)	1,0	40%		0,41
Freight in Europe	4,7	40%	1,90	
Less by-product revenues	-2,0	0%		0,00
Commercial margin	6,6	100%	3,28	3,28
TOTAL VALUE	**72,2**	**VAP**	**5,34**	**15,60**

2.4 Processing industries based in Europe

2.4.1 Identification of volumes and values processed

The processing industries in Europe deal with two categories of product: whole tuna and tuna loins. Each of these raw materials may be imported or of European origin (manufactured then unloaded in the European Union after transhipment in other regions of the world in the case of whole tuna, or manufactured in Europe in the case of tuna loins). It must be possible to establish the distinction between yellowfin and skipjack tuna for each of these four materials and for each of these origins.

- **Tuna produced in Europe and unloaded in Europe**

The previous chapters established European production of frozen tuna unloaded in Europe by volume and value. We may remember that the calculations produced a figure of 35,358 tonnes of yellowfin tuna at €1,279, namely €45,223 million and 54,883 tonnes of skipjack and bigeye tuna at €797/kilogram, namely €43.742 million.

- **Imported tuna**

In order to establish the statistical data relating to tuna imported for processing, the study only retained the codes from the customs nomenclature which explicitly mention that the product is intended for industrial preparation or canning. This explains why the tonnages given in the table below differ from the values given for the importation of frozen tuna in Europe in Table 55 which includes the imported volumes of frozen tuna intended for preparations for direct consumption. We can see very significant unpredictable variations in the volumes of tuna for preparations for direct consumption, from single to double or even from single to triple. These variations could have originated in erroneous declarations made by operators in terms of customs nomenclature. We may think, although we cannot prove, that this is more likely to be associated with the fact that importers of frozen tuna, at the time of importing the product, are not always fully aware of the final intended use of these products by their clients.

The data available produces the overall volumes and values for European imports indicated in the table below.

Table 93: European imports of frozen tuna for processing (Source: Eurostat)

	Tons	Tons	Tons	Weighted	1000 Euros	1000 Euros	1000 Euros	Weighted	Weighted
	2000	2001	2002	Average	2000	2001	2002	Average	average price
ALBACORE	10095	23704	22433	18744	21859	53766	45708	40444	2,158
YELLOWFIN	92855	108386	119433	106891	98320	130575	153299	127398	1,192
SKIPJACK	53782	42532	41212	45842	32276	38855	37855	36329	0,792
OTHERS	15393	7799	4368	9187	13614	9653	5420	9562	1,041
TOTAL	**172125**	**182421**	**187445**	**180664**	**166069**	**232849**	**242283**	**213734**	1,183

For the two species of major tropical tuna, we will therefore retain for the year 2000/2002, the following average weighted figures for importation: 106,891 tonnes of yellowfin tuna for €127.4 million, namely €1,192/tonne, and 45,842 tonnes for €36.3 million namely €792/tonne.

- **Imported loins**

On the basis of the imports, and as shown in the appendices, the previous chapters established the values of European imports of loins originating in the ACP and GSP C&S American countries. Weighted over the period 2000/2002, the overall figures consist of 51,043 tonnes for a value of €160.8 million namely €3,151 per tonne.

The origin "ACP countries and GSP C&S American countries" represents 94% of these imports. This strong representativeness is sufficient to apply the distribution between yellowfin/skipjack tuna noted in relation to this origin to the overall tonnage. The calculations therefore produce the following volumes and values:

- imported loins of yellowfin tuna: 32% of the value of the imports, namely €51.5 million, namely for a value of €3,421/tonne, 15,041 tonnes of yellowfin tuna loins.
- Imported loins of skipjack tuna: 68% of the value of the imports, namely €109.3 million, namely for a value of €3,040/tonne, 36,002 tonnes of skipjack tuna loins.

❖ **Loins produced in Europe**

There are no overall figures for the tonnage of loins produced in Europe from frozen tuna, whether this frozen tuna is unloaded by European fleets or imported. Given the difference in labour costs between member countries of the EU, the ACP countries and the GSP C&S American countries, European processing industries have every interest in processing imported loins rather than loins produced locally. As a result the manufacture of loins in Europe makes up the quantities imported: it completes the supplies needed for manufacturing more sophisticated products (tuna salad and starters, for example). The percentage most frequently quoted verbally for processing whole tuna into loins in Europe is around 15%.

Applied to the tonnages produced by the European Union and to the tonnages imported, it probably represents consumption of raw material of approximately 14,000 tonnes of yellowfin tuna at €1,212/tonne and 10,000 tonnes of skipjack tuna at €850/tonne. The volumes of loins manufactured locally in Europe would be 5,882 tonnes of yellowfin tuna loins, and 3,802 tonnes of skipjack tuna loins. These quantities must of course be deducted from whole frozen tuna processed directly for canning.

❖ **2nd stage and 3rd stage products of processing**

The distribution in France of these products over the years 2000/2003 is 30,000 tonnes for salads, and 6,500 tonnes for starters (source FIAC). In some other member countries of the European Union, which also produce this type of product, the representativeness of starters is more significant, at a level equal to that of salads. France is the European leader for marketing these 2nd and 3rd stage products of processing and probably represents around 65% of total production. We therefore have a probable overall European consumption of 40,000 tonnes of salads, and 16,000 tonnes of starters. Taking into account a rate of incorporation of tuna according to type of product of 40% and 25% respectively, this correspond to a tuna raw material equivalent of 20,000 tonnes, namely given a utilisation rate of 98% of loins, it corresponds to the equivalent of consumption of 20,500 tonnes of loins, consumption to be distributed pro rata for species representativeness.

This identification of the volumes and values of raw materials consumed by the European tuna processing industry allows us to construct the table below (the flows on which the economic aggregates must be calculated on the basis of the structural accounts are indicated in bold).

Table 94: Volumes and values processed by the European processing industry (weighted for 2000/2002) according to nature and species

	Yellowfin tuna			Skipjack		
	Quantity	Value	Price / ton	Quantity	Value	Price / ton
Total european production of freezed tuna for processing industry	35 358	45	1 279	54 883	44	797
Total imported freezed tuna for processing industry	106 891	127	1 192	45 842	36	792
Total european or imported freezed tuna for processing industry	142 249	173	1 214	100 725	80	795
European or imported freezed tuna for loin production	**14 000**	**17**	**1 214**	**10 000**	**8**	**795**
European or imported freezed tuna for can production	**128 249**	**156**	**1 214**	**90 725**	**72**	**795**
Imported tuna loins	15 041	52	3 421	36 002	109	3 040
European tuna loins	5 882	27	4 653	3 802	15	3 997
Total european or imported tuna loins	20 923	79	3 770	39 804	124	3 128
European or imported tuna loins for 2nd and 3rd processing	7 063	27	3 770	13 437	42	3 128
European or imported tuna loins for can production	**13 860**	**52**	**3 770**	**26 367**	**82**	**3 128**

The information provided in this table produces a weighted European consumption for 2000/2002 of tuna-based appertised products equal to 521,600 tonnes. This total represents the sum of European imports *stricto sensu*, 293,600 tonnes (total of EU imports 442,600 minus intra-community imports of 149,000) and products from the processing industry based in Europe, 228,000 tonnes (canned goods based on whole tuna 158,000 tonnes and 70,000 tonnes of canned goods manufactured from tuna loins). However, for the same period, the FIAC gives a weighted figure of 575,000 tonnes of appertised products, not taking into account the 56,000 tonnes of 2nd and 3rd stage products of processing.

The most probable explanation for this difference lies in the mix of intended use between whole tuna intended for consumption and whole tuna intended for processing, with the mix already having been pointed out in relation to the importation of frozen tuna.

Consequently, we will note that the economic values calculated in the chapters below for the processing industry are likely to be minimum values.

2.4.2 Structural accounts for the European processing industry

Table 95: Average structural accounts in € for the manufacture of loins by member countries of the EU in relation to yellowfin and skipjack tuna from whole tuna for the years 2000/2002 (source: Department of Applied Economics of the University of Vigo)

YELLOWFIN TUNA			EU	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			102	2%
variable overhead	labour		1 010	22%
	utilities		64	1%
	marketing		0	0%
Cost of fish	1214		2 890	62%
Polythene packaging	0,1	by loin	25	1%
Freezing cost	100	by ton	100	2%
Salt	0			0%
Labels	0			0%
Case (outer)	0,38	by case	43	1%
Freight in Europe			80	2%
Less by-product revenues	47	by ton	-84	-2%
TOTAL COST PRICE			**4 230**	91%
Commercial margin	**10% cost price**		**423**	9%
MARKET PRICE			**4 653**	

SKIPJACK			EU	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			102	3%
variable overhead	labour		1 212	30%
	utilities		64	2%
	marketing		0	0%
Cost of fish	795		2 092	52%
Polythene packaging	0,1	by loin	25	1%
Freezing cost	100	by ton	100	3%
Salt	0			0%
Labels	0			0%
Case (outer)	0,38	by case	43	1%
Freight in Europe			80	2%
Less by-product revenues	47	by ton	-84	-2%
TOTAL COST PRICE			**3 634**	91%
Commercial margin	**10% cost price**		**363**	9%
MARKET PRICE			**3 997**	

As is emphasised by the foregoing, the processing in Europe of loins from whole frozen tuna reveals a differential with imported loins in the consequent market price delivered. In the case of yellowfin tuna, the tuna loins manufactured in Europe are delivered at a market price 27% higher than that for the ACP countries and 38% higher than that for the GSP Central and South American countries. In the case of skipjack tuna, the tuna loin manufactured in Europe is delivered at a market price 47% higher than that for the ACP countries and 35% higher than that for the GSP C&S American countries.

This differential in market price delivered is due to two principal factors: the differential in the unit cost for labour, and the cost of raw material delivered to the processing factory: for yellowfin tuna, this cost is 18% higher in comparison with the ACP countries and 36% higher in comparison with the GSP Central and South American countries. In the case of skipjack tuna, this cost is 24% higher in comparison with the ACP countries and 11% higher in comparison with the GSP C&S American countries.

We can therefore see the European processing industry's economic interest in increasing imports of loins in comparison with manufacturing based in Europe.

Table 96: Average structural accounts in € for the manufacture of canned goods by member countries of the EU in relation to yellowfin and skipjack tuna from whole tuna for the year 2000/2002 (source: Department of Applied Economics of the University of Vigo)

YELLOWFIN TUNA			EU	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			96	3%
variable overhead	labour		664	19%
	utilities		42	1%
	marketing		86	2%
Cost of fish	1214		1 615	45%
Cans			540	15%
Oil filling (50% cans)	0,5	3,36 kg by case	95	3%
Brine (50 % cans)	0,08	3,57 Kg by case	16	0%
Salt	0,02	20 kg by ton	0,4	0%
Cardboard sleeve (3 cans)	0,016	32 by case	58	2%
Case (outer)	0,38		43	1%
Freight in Europe			50	1%
Less by-product revenues	0,36	by case	-47	-1%
TOTAL COST PRICE			**3 258**	**91%**
Commercial margin	**10% cost price**		**326**	**9%**
MARKET PRICE			**3 584**	
SKIPJACK			**EU**	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			96	3%
variable overhead	labour		797	25%
	utilities		42	1%
	marketing		86	3%
Cost of fish	795		1 169	36%
Cans			540	17%
Oil filling (50% cans)	0,5	3,36 kg by case	95	3%
Brine (50 % cans)	0,08	3,57 Kg by case	16	0%
Salt	0,02	20 kg by ton	0,4	0%
Cardboard sleeve (3 cans)	0,016	32 by case	58	2%
Case (outer)	0,38		43	1%
Freight in Europe			50	2%
Less by-product revenues	0,36	by case	-47	-1%
TOTAL COST PRICE			**2 945**	**91%**
Commercial margin	**10% cost price**		**294**	**9%**
MARKET PRICE			**3 239**	

On the other hand, in spite of the same competitive disadvantages, the differences in comparison with the ACP countries and the GSP C&S American countries are slightly smaller in relation to canned tuna manufactured in Europe from whole frozen tuna.

We can in fact see that the differential in market price delivered is smaller: in the case of yellowfin tuna, the canning of tuna manufactured in Europe is delivered at a market price only 26% higher in comparison with that from the ACP countries and 32% higher than that from the GSP C&S American countries. In the case of skipjack tuna, the canning of tuna manufactured in Europe is delivered at a market price 34% higher than that from the ACP countries and 24% higher than that from the GSP C&S American countries.

The observation of a lower price differential in relation to canned tuna than in relation to loins naturally has its origin in a lower number of labour units and a volume of raw material 50% lower than that required to manufacture loins.

Finally, as is shown below, we can see that there is very little difference in the market price delivered between canned tuna manufactured from whole frozen tuna and canned tuna manufactured from loins. The prices of the latter are even slightly higher, given a lower price for the incoming raw material: in fact the structural accounts are calculated using a price for loins which is a weighted average between that of European origin and that of imported origin.
Consequently, it is easy to deduce that the possibility of importing loins at low prices means that cans of canned tuna can be marketed at more attractive prices for the consumer.

Table 97: Average structural accounts in € for the years 2000/2002 for the manufacture of canned tuna by member countries of the EU in relation to yellowfin and skipjack tuna from tuna loins, as a weighted average between European and imported manufacture (source: Department of Applied Economics of the University of Vigo)[62]

YELLOWFIN TUNA			UE	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			72	2%
variable overhead	labour		146	4%
	utilities		21	1%
	marketing		43	1%
Cost of fish	3770		2 168	61%
Cans			540	15%
Oil filling (50% cans)	0,5	3,36 kg by case	95	3%
Brine (50 % cans)	0,08	3,57 Kg by case	16	0%
Salt	0,02	20 kg by ton	0	0%
Cardboard sleeve (3 cans)	0,016	32 by case	67	2%
Case (outer)	0,23		30	1%
Freight in Europe	50 / ton		50	1%
Less by-product revenues	0			0%
TOTAL COST PRICE			**3 248**	**91%**
Commercial margin	**10% cost price**		**325**	**9%**
MARKET PRICE			**3 573**	

SKIPJACK			UE	
	Unit cost	kind of cost	cost/ton	%
	Euro	quantity		
Fixed overhead			72	2%
variable overhead	labour		146	5%
	utilities		21	1%
	marketing		43	1%
Cost of fish	3128		1 799	57%
Cans			540	17%
Oil filling (50% cans)	0,5	3,36 kg by case	95	3%
Brine (50 % cans)	0,08	3,57 Kg by case	16	1%
Salt	0,02	20 kg by ton	0	0%
Cardboard sleeve (3 cans)	0,016	32 by case	67	2%
Case (outer)	0,23		30	1%
Freight in Europe	50 / ton		50	2%
Less by-product revenues	0			0%
TOTAL COST PRICE			**2 879**	**91%**
Commercial margin	**10% cost price**		**288**	**9%**
MARKET PRICE			**3 166**	

On the basis of these structural accounts it is now only necessary to establish the economic aggregates pro rata for tonnages which will, depending on the case, either be the tonnage of incoming raw material, or the tonnage of end products from the table of volumes processed by the European industry.

We will see that the structural accounts and the economic aggregates corresponding to products of 2nd and

[62] *We will see that this concerns the average structural account between loins of European manufacture and imported loins. This structural account applied exclusively to imported loins shows the considerable advantage of manufacturing canned tuna from imported loins. They can be produced for at least 10% less than canned tuna manufactured in Europe from whole tuna, whether yellowfin or skipjack.*

3rd stage processing have not been shown: in fact we are at the limit of the analysis because mixed industrial compositions, tuna-based salads and starters, but why not also quiches and pizzas made with tuna, include too many different variables, and therefore do not have any standard structural composition. In addition, the low proportion of tuna in these preparations (40% for salads, 25% for starters, potted tuna and pâtés, between 5% and 15% for tuna pizzas and quiches) makes them clearly less dependent on the variability of costs for tuna raw material, which then becomes only one of the inputs used in their composition, and is therefore less sensitive to the impacts of the scenarios envisaged.

However it must be emphasised that not taking into account these 2nd and 3rd stage processing activities involves an additional minimalisation of the evaluation of economic wealth supplied by the European processing industry.

2.4.3 Economic aggregates corresponding to the activities of the processing industry based in Europe

The corresponding economic aggregates are provided in the next tables, and shown on the following pages.

Table 98: Calculation of economic values (in millions of €), of added value and its distribution for the economic aggregates for the manufacture of tuna loins in Europe

			Primary Added Value	
YELLOWFIN TUNA	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	0,6	50%	0,3	
labour	5,9	100%	5,9	
utilities	0,4	40%	0,2	
marketing	0,0	50%	0,0	
Cost of fish	16,9	yet accounted		
Polythene packaging	0,1	25%	0,0	
Freezing cost	0,6	40%	0,2	
Salt	0,0	15%	0,0	
Labels	0,0	50%	0,0	
Case (outer)	0,3	40%	0,1	
Freight in Europe	0,5	40%	0,2	
Less by-product revenues	-0,5			
Commercial margin	2,5	100%	2,5	
TOTAL VALUE	27,3		9,42	0,00

			Primary Added Value	
SKIPJACK	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	0,4	50%	0,2	
labour	4,6	100%	4,6	
utilities	0,2	40%	0,1	
marketing	0,0	50%	0,0	
Cost of fish	8,5	yet accounted		
Polythene packaging	0,1	25%	0,0	
Freezing cost	0,4	40%	0,2	
Salt	0,0	15%	0,0	
Labels	0,0	50%	0,0	
Case (outer)	0,2	40%	0,1	
Freight in Europe	0,3	40%	0,1	
Less by-product revenues	-0,3	0%		
Commercial margin	1,4	100%	1,4	
TOTAL VALUE	15,8		6,70	0,00

Table 99: Calculation of economic values (in millions of €), of added value and its distribution for the economic aggregates for the manufacture of canned tuna from whole frozen tuna in Europe

			Primary Added Value	
YELLOWFIN TUNA	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	9,3	50%	4,6	
labour	64,0	100%	64,0	
utilities	4,1	40%	1,6	
marketing	8,3	50%	4,1	
Cost of fish	155,7	yet accounted		
Cans	52,1	40%	20,8	
Oil filling (50% cans)	9,2	25%	1,1	
Brine (50 % cans)	1,6	15%	0,1	
Salt	0,0	15%	0,0	
Cardboard sleeve (3 cans)	5,6	40%	1,1	
Case (outer)	4,1	40%	0,8	
Freight in Europe	4,8	40%	1,0	
Less by-product revenues	-4,5			
Commercial margin	31,4	100%	31,4	
TOTAL VALUE	**346**		**130,8**	**0,0**

			Primary Added Value	
SKIPJACK	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	5,9	50%	3,0	
labour	49,2	100%	49,2	
utilities	2,6	40%	1,0	
marketing	5,3	50%	2,7	
Cost of fish	72,1	yet accounted		
Cans	33,3	40%	13,3	
Oil filling (50% cans)	5,9	25%	0,7	
Brine (50 % cans)	1,0	10%	0,0	
Salt	0,0	15%	0,0	
Cardboard sleeve (3 cans)	3,6	40%	0,7	
Case (outer)	2,6	40%	0,5	
Freight in Europe	3,1	40%	0,6	
Less by-product revenues	-2,9			
Commercial margin	18,2	100%	18,2	
TOTAL VALUE	**200**		**90,0**	**0,0**

The overall turnover for the European initial processing industry is established at €724 million, the predominant proportion of which is supplied by the manufacture of canned tuna from whole frozen tuna, €546 million, namely 75%, followed by the manufacture of canned tuna from tuna loins, €135 million, namely 19%, with manufacturing from loins only representing 6% of the total.

The distribution of the primary added value between the three types of manufacture is obviously modelled on that of the turnover. Its total is €269.92 million, namely a rate of 37%, excluding included added value from the community field in relation to whole frozen tuna, a value which has already been evaluated within the framework of the European tuna fleet.

Table 100: Calculation of economic values (in millions of €), of added value and its distribution for the economic aggregates for the manufacture of canned tuna from tuna loins in Europe

			Primary Added Value	
YELLOWFIN TUNA	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	1,0	50%	0,5	
labour	2,0	100%	2,0	
utilities	0,3	40%	0,1	
marketing	0,6	50%	0,3	
Cost of fish	30,3	yet accounted		
Cans	7,6	40%	3,0	
Oil filling (50% cans)	1,3	25%	0,3	
Brine (50 % cans)	0,2	15%	0,0	
Salt	0,0	15%	0,0	
Cardboard sleeve (3 cans)	0,9	40%	0,4	
Case (outer)	0,4	40%	0,2	
Freight in Europe	0,7	40%	0,3	
Less by-product revenues	0,0			
Commercial margin	4,5	100%	4,5	
TOTAL VALUE	**50**		**11,7**	**0,0**

			Primary Added Value	
SKIPJACK	values	Included Added Value rate	E.U.	Countries out of EU
Fixed overhead	1,9	50%	1,0	
labour	3,9	100%	3,9	
utilities	0,6	40%	0,2	
marketing	1,1	50%	0,6	
Cost of fish	48,3	yet accounted		
Cans	14,4	40%	5,8	
Oil filling (50% cans)	2,5	25%	0,3	
Brine (50 % cans)	0,4	10%	0,0	
Salt	0,0	15%	0,0	
Cardboard sleeve (3 cans)	1,8	40%	0,4	
Case (outer)	0,8	40%	0,2	
Freight in Europe	1,3	40%	0,3	
Less by-product revenues	0,0			
Commercial margin	7,7	100%	7,7	
TOTAL VALUE	**85**		**20,3**	**0,0**

2.5 Summary of the values and economic effects corresponding to the tuna processing industry

Consultation of the company balance sheets shows that it is possible to obtain an approximate evaluation of direct employment in the following way: for the processing industry based in Europe we can use a ratio of 1 full-time job (exclusively in relation to processing tuna) for 30 to 45 tonnes of raw material processed per annum, as opposed to 25 tonnes in the ACP and GSP countries.

The processing industry creates fewer secondary jobs than fishing: the other branches of the economy likely to have jobs secondary to its operations are essentially the manufacture of packaging, which is itself very mechanised, a small amount of maintenance and repairs, and services, including, in particular, transport. In the ACP and GSP countries, the handling of the volumes processed, their transport, and services to companies create more secondary jobs (maritime freight forwarders[63], maritime and land freight). In Europe, we can retain a coefficient of one indirect job for one direct job whereas the ratio is probably more in the region of two for the ACP and GSP C&S American countries.

The summary of the values and economic effects of the processing industry would be shown in the following way (primary added value excluding included added value for tuna):

Table 101: Summary of socio-economic values of the processing industry in Europe and in associated third countries

Millions €	TOTAL	European Union		Country ACP or GSP	
	Value	Value	%	Value	%
	Share of processing industry of ACP countries for European market				
Turnover canning	460				
Primary Added Value	149,6	60,0	*40%*	89,6	*60%*
Turnover loining	32				
Primary Added Value	9	2,4	*27%*	6,6	*73%*
Total turnover	**492**				
Primary Added Value	**158,6**	**62,4**	***39%***	**96,2**	***71%***
	Share of processing industry of GSP C&S countries for European market				
Turnover canning	72				
Primary Added Value	25,3	12,5	49%	12,8	51%
Turnover loining	120,3				
Primary Added Value	34	8,8	26%	25,2	74%
Total turnover	**192,3**				
Primary Added Value	**59,3**	**21,3**	***36%***	**38**	***64%***
	European processing industry				
Turnover loining	43,1				
Primary Added Value	16,1	16,1	100%		
Turnover canning (from whole fish)	546				
Primary Added Value	220,8	220,8	100%		
Turnover canning (from loins)	135				
Primary Added Value	32	32	100%		
Total turnover	**724,1**				
Primary Added Value	**268,9**	**268,9**	***100%***		
	Processing industry based in Europe and for European market				
Total turnover	**1408,4**				
Primary Added Value	**486,8**	**352,6**	*72%*	**134,2**	*28%*

Number of jobs	TOTAL	European Union	Third countries
	Number	Number	Number
	Share of processing industry of ACP countries for European market		
Direct jobs	11 000		11 000
Indirect jobs	22 000		22 000
TOTAL	***33 000***		***33 000***
	Share of processing industry of GSP C&S countries for European market		
Direct jobs	5 600		5 600
Indirect jobs	11 200		11 200
TOTAL	***16 800***		***16 800***
	European processing industry		
Direct jobs	8 250 to 12 360	8 250 to 12 360	
Indirect jobs	8 250 to 12 360	8 250 to 12 360	
TOTAL	***16 500 to 24 720***	***16 500 to 24 720***	
GRAND TOTAL	***66 300 to 74 500***	***16 500 to 24 720***	***49 800***

[63] *Profession referred to as "acconier" or stevedorer*

2.6 Global summary of the tuna sector and socio- economic indicators

The socio-economic values of the European tuna sector and European interests in the associated countries are summarised in the table below.

Table 102: Global summary of the socio-economic values of the European tuna sector based in Europe and associated countries

Millions €	TOTAL	European Union		ACP or GSP countries	
	Value	Value	%	Value	%
	European tuna fleet and 'false-tuna'secondary network				
Total turnover	360				
Primary Added Value	205.4	170,0	*83%*	35,4	*17%*
Direct and Indirect jobs	14 330	2880	*20%*	11 450	*80%*
	European Processing Industry				
Total turnover	724,1				
Primary Added Value	268,9	268,9	*100%*		
Direct and Indirect jobs	20 600	20 600	*100%*		
	European Tuna Induistry stricto sensu (based in Europe)				
Total turnover	**1 084,1**				
Primary Added Value	**474,3**	**438,9**	***93%***	**35,4**	***7 %***
Direct and Indirect jobs	**34 930**	**23 480**	***67%***	**11 450**	***33%***
	Share of ACP processing industry for the European market				
Total turnover	492				
Primary Added Value	158,6	62,4	*39%*	96,2	*71%*
Direct and Indirect jobs	33 000		*100%*	33 000	100 %
	Share of processing industry of GSP C&S countries for European market (European interest associated)				
Total turnover	192,3				
Primary Added Value	59,3	21,3	*36%*	38	*64%*
Direct and Indirect jobs	16 800		*100%*	16 800	100 %
	Share of thrird countries for European market				
Total turnover	**684,3**				
Primary Added Value	**217,9**	**83,7**	***38%***	**134,2**	***62 %***
Direct and Indirect jobs	**49 800**			**49 800**	***100%***
	European Tuna Industry (based in Europe and in Third Countries for European market				
Total turnover	**1768,4**				
Primary Added Value	**692,2**	**522,6**	***75%***	**169,6**	***25 %***
Direct and Indirect jobs	**84 730**	**23 480**		**61 250**	***100%***

We will see that in the light of the questions mentioned in the report on the actual final purpose of imported frozen tuna, there is a margin of uncertainty of between 10 and 15% in relation to the actual volume processed by the European processing industry. Moreover, the turnover for the European industry has been evaluated on the basis of manufacturing canned tuna and tuna loins, namely on the basis of processed products with 100% tuna content. If products of 2nd and 3rd stage processing are added (salads, starters and ready-made meals using tuna), we might consider this figure to be positioned at between 15 and 20% higher than the value indicated.

Finally, in relation to the tuna sector, there are, as has been mentioned previously, other sources of intra-community increases in value which have not been taken into account: the economic activity of importers and, generally speaking, that of the economic agents involved in the intra-community trade in tuna and tuna-based products (the importance of the Community trade described in the previous sections, moreover, reflects the importance of their activities).

These remarks mean that it is possible to define the size of the economic activity involved in the tuna sector of European interest as closer to a turnover of €2 billion with a primary added value of approximately €800 million, than to the minimum values resulting from the calculations carried out.

Taking into account an average of 8 people per household in the ACP countries, 7 in the GSP C&S American countries, and 3.5 in Europe, this means a population dependent on tuna activity of 85,000 people in Europe, 360,000 people in the ACP countries and 120,000 in the GSP countries.

Given the fact that it represents 65% of overall tuna activity, particularly in the processing industry, this means that Spain alone represents over 15,000 direct and indirect jobs totally associated with the tuna industry, jobs which are in addition mainly concentrated in Galicia. Over 55,000 people of Spanish nationality therefore live in a way which is dependent on the European tuna industry.

SECTION 6 - IMPACT ON THE EUROPEAN TUNA SECTOR OF THE LIBERALISATION OF TRADE

CHAPTER 18 - THE NEED TO EVALUATE THE CONSEQUENCES OF A LIBERALISATION OF TRADE

1 The position of the Commission's departments on the subject of commercial policy

On the subject of the liberalisation of the European canned tuna market, the position currently adopted by the Commission takes into account WTO negotiations which extend much further than the tuna sector alone. It may be summarised in the following way. The Commission's departments are convinced that it is not possible to maintain the current concessionary advantages granted to the ACP and GSP+ and GSP EBA[64] countries in an indefinite way because of the EU's undertakings in processes such as the "Doha Development Agenda" and the "Millennium Development Goals"[65]. These undertakings reflect the conviction that a liberalisation of tariff structures will stimulate the economy of developing countries. This point of view concerns the tuna sector, particularly because products of fishing do not benefit from the special measures granted to agricultural products, but, rather, are associated with the measures for NAMA (Non Agricultural Market Access) products.

The Commission's services therefore consider that, for the tuna sector, although the medium-term objective is clear, one or several transition periods are necessary, in order to provide a certain amount of assistance in controlling the consequences of this liberalisation. In fact, we need to envisage, amongst the probable consequences, transfers of economic activity (or even complete relocation) with the processing capacities of Europe moving to third countries.

In the view of the Commission's services, problems associated with the fluctuations in competitiveness between producer countries resulting from changes in market access conditions and the reactions of the latter in the face of the arrival of new entrants or the reinforcement of certain players who were already present, may come within the field of accompanying measures under the heading of examining what can be done on the subject of improving governance, training and infrastructures.

2 Methodology for establishing scenarios

The positions of the Commission's services on the subject of commercial policy are moving the general future trend of tuna sector management towards an unavoidable liberalisation of the market. They are also suggesting that margins of manoeuvre should be included in terms of measures of progressiveness and accompaniment. Starting from this observation, we need to construct scenarios to complement that of the complete liberalisation of trade.

---

64 EBA: everything but arms

65 Thailand (as of January 2006 for products of fishing), the Philippines and Indonesia are also included in the group of GSP countries. It is therefore necessary to clearly separate the general GSP from its two special systems: TSA and GSP+ which provides very favourable access for products of fishing. The countries only benefiting from the general GSP arrangement will see their customs duties drop by 3.5%.

The scenarios to be envisaged must take into account two principal variables: first of all, expectations relating to future developments which are expressed by the principal European players in the tuna sectors (consumers, distributors, processors and primary producers) and the privileged partner countries, and secondly, the overall changes in the international legal system managing the fields of intervention of the CFP in relation to the tuna sector, i.e. principally the conditions for accessing the waters of third countries and the system of commercial trade negotiated at the WTO.

2.1 Requirements and expectations of the various categories of players

Given the multiplicity and diversity of the social groups involved, the expectations of the principal players in the sector, whether European or nationals of the privileged partner countries, are frequently contradictory in nature. These potential contradictions are reflected to a certain extent in the application of the CFP's objectives to the management of the tuna sector; but they must always be reconciled at the lowest cost to the community. In order to organise our considerations on the development of policies for supporting and managing the tuna sector, an initial approach consists of identifying the social groups and production structures, the defence of whose interests must be considered to be a priority for the Community. This leads us to make a distinction between the following three major groups of interest:

- the consumers from the Member States,
- the Community production structures (shipowners and canneries),
- the privileged partner countries.

Where applicable, the expectations of a fourth group of players constituted by the organisations of the European civil society which are concerned about the subject of development and the environment could be taken into account in order to gain a better grasp, including in terms of social acceptability, of the scenarios with apparently equivalent effects on the three major groups of interests.

The positions of the various categories of players have been summarised below.

2.1.1 The requirements and expectations of consumers and distributors in the European Union

Generally speaking, the behaviour of the European consumer can be characterised as follows:

- he looks for the best value for money;
- he attaches a certain importance to the ecological or even social "reputation" of the product;
- he is attached to brands, either because they are the only ones offering certain recipes and/or certain quality guarantees, or for the reasons associated with reputation referred to above;
- he is sensitive to the ease of using the product (opening);
- overall, consumers may wish for a diversified offer, that is to say a wide variety of ranges and products and a high rate of renewal.

The position of distributors is variable, depending on the commercial strategies of the brand names:

- for some of these, consumer satisfaction means looking for product quality and signs of complying with ecological standards (ecological certification) or even social standards;
- for others, canned tuna is a simple "appeal product": it is simply a matter of their customers being able to find it (possibly with the required signs of quality); they are indifferent about producing margins on this product;
- for others again, canned tuna may be a competitive argument for attracting consumers with low and medium incomes (hard discounters).

It should be noted that the expectations of consumers from the European Union are taken into account in the general objectives of the Treaty which aims to "supply the European Union market with the best price for the consumer while guaranteeing revenue for producers" (article 33). This aim has two principal implications which appear to be potentially contradictory:

- in order to obtain the "best possible price", consumers must benefit from competition in relation to supply, which may justify complete liberalisation of the European market;
- the necessary competition relating to the supply segment must nevertheless guarantee the income of the European fishermen, which, in the tuna sector, characterised by an essentially industrial method of production, could simply mean maintaining jobs and therefore production structures.

From the point of view of the envisageable policy developments, the question of meeting the expectations of European consumers could also tackle two additional matters:
- maintaining competition relating to supply would make it essential to take into account the situation of concentration within the sector, the dynamics of its development and the means of changing it;
- maintaining competition in relation to supply in principle could be assumed to be guaranteed by liberalisation of the market, subject to checking that liberalisation, beyond a visible multiplication of supplier countries in the short term, does not produce a long-term reduction of private participants.

In addition, one important point in the development of consumption in Europe lies in the diversification of products for final consumption (in particular in the direction of the segment of tuna-based preparations). Policy instruments capable of sustaining this diversification could also be envisaged, for example in the form of a differentiated treatment of changes in customs tariffs for the various types of products.

2.1.2 The requirements and expectations of the European shipowners and industries

European shipowners want to be able to have the following:
- safety of access to traditional fishing zones via fishing agreements;
- community support in negotiating access to these fishing zones (saving on costs of negotiation versus cost of complying with the fleet's obligations when bound by fishing agreements);
- Community assistance in paying access duties; to be compared with the profitability of boats and the cost of private licences (moreover less restricting);
- access to the tuna raw material market which must comply with certain criteria of origin (EU-ACP-GSP)

European canners consider the following to be necessary:
- the protection of their domestic markets in the face of competition from the Asian countries in order to consolidate their processing industry;
- the pursuit of a process of concentration around a few leader firms in order to be able to achieve sufficient size on an internationalised market;
- to be able to have a reliable system of supply at the best possible price: thanks to their privileged links with European shipowners and intermediary processing factories;
- to seek improvements in their competitivity by lowering costs (salaries in particular) which requires looking abroad, depending on the conditions for accessing the end market.

It seems that certain groups have started to think about the model of the "company without a factory". The latter, which owns a strong commercial brand, makes it profitable on a market which is both segmented and dynamised by product differentiation (it works in particular by using advertising and packaging and by making customers aware of the social and ecological guarantees of the brand). The company manages the specifications for manufacturing abroad and flows of subcontracted goods. This strategy seems highly likely to constitute the initial response of private players to a scenario of complete liberalisation. However it can also be implemented in the absence of liberalisation.

2.1.3 The needs and requirements of the partner countries (developing countries)

The privileged partner countries of the EU have variable requirements depending on their involvement in the sector:

- those who have direct interests in processing and fishing will not be able to retain these unless privileged access to the European market is maintained;
- the same is true for indirect interests via the economic effects induced by the activities of the European fleets and industries;
- the level of dependency of the national economy on the tuna sector is variable but sometimes very high (Seychelles);
- this results in economic vulnerability caused by specialisation in a small number of products intended for one single market (European Community); some developing countries envisage using this argument in order to negotiate a differentiated treatment with the WTO for the sensitive export segments of certain vulnerable countries[66];
- on the subject of exports of canned tuna and tuna loins in a totally liberalised market, the deficit of competitivity in comparison with Asian competitors seems to create a barrier for the ACP countries in West Africa, but is not necessarily insurmountable for certain countries in the Indian Ocean (Seychelles, Mauritius) and C&S America (Ecuador);
- in the current situation, some countries are disputing the dominant position of the European tuna fleets as suppliers of raw material because of criteria relating to origin;
- the poor control of national industrial policy (local investments have been opportunistic investments made by certain multinational firms because of tariff preferences; these investments have nevertheless produced positive economic spill over) whose effects will only be accentuated by the disappearance of the trade advantages granted by the EU.

2.1.4 Discussions on the needs and expectations of players involved in the sector

The professionals we have met with to date have all subscribed to the opinion that the preferential system for the ACP and GSP countries, with, as a corollary, compliance with the fundamental notion of the product's origin constitute the basis of the solidity of the European tuna sector.

Summarising a number of notifications and other documents issued by professional organisations of canners/processors, including in particular the FIAC and the ANFACO[67], we can see that opinions converge on the fact that applying this system incorporating exceptions over a long period of time has allowed investments to be made in the ACP and GSP countries which would undoubtedly never have seen the light otherwise. The amount, but above all the consequences, in terms of wealth created locally in the host countries by these investments cannot, for those responsible for these organisations, be compared with the whole of the costs for supporting the European tuna sector (grants for building boats, fishing agreements, tariff concessions).

Moreover, some canneries in certain ACP countries have indicated their wish to free themselves from the "so-called monopoly" of the EU/ACP fleets fishing for tuna resources in their region. As the liberalisation of the market would allow them to escape from the clause of origin, they hope by this means to diversify their supplies and reduce the costs of purchasing raw material which we know represent a minimum of between 39 and 48% of the cost of the can of tuna. In fact, in spite of the exemptions from customs duties on entering the EU, these canneries have, for a decade, been experiencing serious problems relating to

66 See in particular the notification on access to markets for non-agricultural products, presented to the WTO by Benin in the name of the ACP States (document NT/MA/W/53 dated 11 March 2005)
67 Federation of Canned Food Industries; National Association of Manufacturers of Canned Fish and Seafood

competitivity[68], particularly with Thailand. They therefore believe that they can see in the abrupt liberalisation of the market a panacea which could resolve all their problems.

It is in fact true that monthly price reports on the major world market places show that the prices applied on unloading whole frozen tuna are annually unfavourable overall to Abidjan, to Tema or the Seychelles, with the exception of certain seasonal values. However, the weighted calculation over the year for supplies to factories from Manta or Bangkok, for example, including freight, insurance, transport FOB loss and theft on unloading and unloading itself ($200-$210/tonne) results, on the contrary, in a value for material delivered to the factory of the same amount, or even higher than a local supply in the second case.

However, the compensation for withdrawing the rule of origin is free competition on the final European market for canned tuna: as they were only able to maintain their position on the European Union market thanks to the advantageous customs system, which has been the case for a long time, canners in the ACP countries have expressed the fact that they would then be placed in the following dilemma:

- either to pass the pressure of the end consumer market on to their purchases to the tuna fleet fishing for regional resources,
- or to establish with fishing shipowners an clever transactional policy taking into account price differentials between the major markets, but including the variables of supply costs (freight, etc.) relating to products which they could have bought elsewhere.

The first case, in their opinion, would lead to the rapid bankruptcy of European shipowners, followed by that of the canners; the second case would lead to the slow death of canners, followed by that of European shipowners. Finally, in their opinion, European representation within the bodies set up for the scientific management of stocks of a desirable international resource, which can only be regulated on an international level given its migratory character, would more or less disappear.

This approach is shared by other professionals, both shipowners and canners, who reach the same conclusions but starting from the resource and the way in which it is fished, and adding the weight of the link of trade.

With regard to the "historical" fishing zone of the European fleet, the Atlantic Ocean, production is falling leaving only the oldest European purse seiners. The ICCAT's resolution to limit the number of long liners fishing for bigeye tuna, which does not concern the European market, has been late in appearing. Only Ghana, which has a national ship owning company, is maintaining its position. At the level of processing, prospects are glum with the tuna market place in Dakar in decline and the crisis in the Côte d'Ivoire[69].

In the Indian Ocean, although catches of yellowfin tuna have increased, those of skipjack are decreasing. The IOTC[70] has advised Taiwan not to send out any more new long liners. Factories have virtually reached the optimum stage of production development, except in Mauritius where "Thon des Mascareignes" is due to open in 2005 (loins for export).

With regard to the Eastern section of the Pacific Ocean, the number of boats cannot be increased any further, and the prohibition against fishing now lasts for 1.5 months. The lack of availability of the resource is becoming acute, with Ecuador and Mexico even lacking tuna completely for a period. With regard to the Western and central regions of the Pacific, a new intergovernmental commission is working hard to limit access of purse seiners to the exclusive economic zones.

With regard to the tuna fishing shipowners which fish for tropical tuna, the signs of reaching the ceiling of exploitation of the resource are already present on the 3 oceans: the reduction of fishing effort for boats

68 We can quote for example: "Study on competitivity of Senegalese canneries on the international market", 1994, SEPIA
69 End of the SCODI since March 2005
70 Indian Ocean Tuna commission

flying a European flag is obvious from the extent of the reduction of the numbers of European boats and the low level of orders for new boats. So, the liberalisation of the European market presents two major consequences:

i) a high risk of a drive effect on shipping investments in Asia, in order to meet an increased demand from Asian processors, at a time when it is necessary to face up to a resource which is already destabilised throughout the world.
j) the consequent commercial deterioration of the wholesale market for imports.

If duties had to be greatly reduced, industrialists involved in the processing business believe that the effects would be disastrous on the ACP/GSP manufacturers of canned tuna who would have nothing to offer to trade: the commercial players involved in trading will naturally move towards products with a comfortable margin produced by Asian producers. In order to win back a margin of manoeuvre in relation to European trading agents, producers in the ACP/GSP countries would try to keep down their costs, which they are already doing, then they would transfer market pressure onto the European purse seiners which would be destabilised in turn, as mentioned previously. Certainly, the Taiwanese shipowners could probably live with tuna costing $280 ex vessel, or approximately $430 C&F Bangkok, but at that price, European shipowners would shut up shop and sell off their boats. These meet requirements relating to the environment, safety on board, employment rights, etc, and their use has significant secondary economic effects from a European point of view and also on the developing countries (unloading ports) from which they conduct their operations.

For these professionals, the end of the spiral is the disengagement of the major financial groups such as Heinz, Bolton, ONA which, as very diversified groups realising that there is nothing further to be gained by working in the ACP countries, would withdraw in stages, sacrificing to the profitability of their groups all the disastrous socio-economic implications which might be the local consequences of this action.

They would enter into filling agreements with their competitors who are in a better position, or, even worse, they would leave the tuna sector altogether, as they do not consider it to be very profitable. Poorly equipped from the point of view of trade and the penetration of distribution networks, with little involvement in fishing for the resource, the developing countries, and African countries in particular, would not be able to take on all the subsequent marketing risks, even if the facilities could be purchased under good conditions, and they would definitively lose a wealth which has taken a long time historically to build up.

These apprehensions expressed by professionals in the tuna sector are undoubtedly legitimate. Their knowledge of the sector also suggests that we ought not to discount some of their declarations and allegations. In fact, behind the formal description, there are always unvoiced comments which are known by everybody but which cannot be measured, or cannot be measured very successfully. These unvoiced comments may, however, have a significant impact on economic profitability and/or competitivity between economic agents from different countries. However, amongst the many aspects quoted, two particular points are worthy of being expanded or completed:

- The notion of preferential origin is not such a strong constraint on their supplies as that described by canners in the ACP countries: it is relaxed by two factors of unequal importance:
  - the most important quantitatively is the regulation relating to the tolerance of 15% maximum of the value of the product processed into products which do not originate in the country. Given the structure of costs for manufacturing a can of tuna, this means that almost 20% of the raw material used for manufacturing within the country is permitted not to be a product originating in the country;
  - added to this there is also a regulation for exemption from the rules of origin covering an overall volume of 8,000 tonnes per annum for the canned tuna and 2,000 tonnes of tuna loins in products not originating in the country, over the periods 2001/2004

- As has been shown in the chapter relating to the ratio devoted to processing and valorisation, canned tuna has now become, within the range of tuna-based products, a middle-of-the-range product which for some time now it has been possible to manufacture either in Europe or in the developing countries. The current trend is for an initial processing into loins (semi-finished products) in countries with low labour costs followed by the production of high-value end products in Europe (including, among other examples, the "direct consumption" canned products segment and the new segments of tuna starters and salads). For historical and structural reasons, and those relating to the distribution of the resource in terms of space and time[71], the European tuna sector is not at all homogeneous in this respect:

- Spain is in a dominant position in this regard, with significant geographical concentration of its processing units in developing countries in South America, with units producing loins being more numerous than canneries.
- France has manufactured none, or very little, of its own tuna loins in the developing countries and up until recently has had factories for manufacturing canned tuna located solely in the ACP countries.
- Nor did Italy manufacture its own loins in the developing countries and was mainly a processing country. It buys raw material and semi-finished products (loins) mainly from Spain. The only Italian tuna fishing boat is operated by a French shipowner.
- Portugal is the smallest of the four European countries involved in terms of production/processing and does not carry the weight of the previous three. Its processing establishments in the developing countries were not units producing tuna loins but canneries which are now obsolete or have disappeared.

The economic impacts of the various scenarios cannot therefore be of the same magnitude either for the developing countries concerned, or for the four European countries which have invested in the tuna sector. In addition, the differential positioning of these four countries with regard to manufacturing and importing loins led us to retain the idea that a differential treatment of the customs system for tuna loins/canned goods could also be one of the factors of the scenarios to be examined.

2.2 Comparison of the needs of each group of players with community policies and international negotiations

The aims of the community policies likely to meet to the needs of the principal groups of players identified are listed below.

In terms of trade policy, the objective of market liberalisation is aimed at satisfying the requirements of the European consumer in terms of volume marketed (guaranteed supply at the best possible price). However, it should be noted that in the sector such as the tuna industry, which is already strongly internationalised, the effects of liberalisation may not be those expected: rapid decline in diversification of supply because of the international specialisation of the activity, trend towards oligopolisation of internationalised supply if this is dominated by a small number of multinationals with an adverse effect on establishing price levels in the new equilibrium of a futures market.

The common fisheries policy is returning to the objective of satisfying consumers without providing any more details than guaranteeing supply at the best possible price. On the other hand, it provides guarantees for fishermen's income. In the tuna sector, this guarantee applies to suppliers of tuna raw material, who, where applicable, benefit from the compensatory allowance for tuna. This mechanism is conditional on the existence of a community processing industry.

The common fisheries policy confirms the EU's desire to maintain a distant fishing fleet on the one hand, and to contribute to the work and orientation of the major RFOs on the other hand. This objective can justify maintaining support for European tuna shipowners, particularly in terms of access. However, the form of this support (subsidies) may be disputed in certain instances, and it must develop in order to comply with the international undertakings of the EU.

71 It is more profitable to manufacture semi-finished products based on skipjack than from yellowfin tuna loin, which suggests a greater regional availability of stocks of the first species.

The common fisheries policy defines objectives on the subject of employment, particularly via the notion of regions dependent on fishing.

The development policy as well as the undertakings made by the EU in Doha may seem to justify providing support to sectors with a strong ACP and GSP component, but by other routes than tariff preferences which are doomed to dwindle away. Support of this nature should nevertheless be counterbalanced and remain consistent with all the EU's international undertakings.

Generally speaking, the current options of the European Commission seem to indicate that the processing sector must comply with general rules of competition (liberalisation and providing proof of competitivity, all the more so because in the partner countries certain investments have proved to be purely opportunistic), but that the primary sector may be the subject of differentiated treatment.

Other aspects must also be taken into account:

- there are no current links between complying with the recommendations of the RFOs and the system of sanctions within the multilateral commercial framework; one stake for the EU could be to maintain a potentially "exemplary" fleet in order to legitimise its action within the RFOs and to promote this type of international regulation for managing resources (if it wishes to do so, of course).
- on the other hand, the objection to "fishing subsidies" which may lead to overexploitation of stocks is spreading (World Bank, WTO, OCDE), and could weaken support for the shipowners; in this context we can even question the impact which liberalisation of the European canning market could have on demand for tuna raw material (in Asia) and therefore in terms of pressure exercised on the resource by certain shipowners who supply Asian processors, considered not to be very transparent and impervious to the recommendations of the RFOs.
- negotiations by the WTO do not leave any (or few) margins for manoeuvre in relation to tuna, if we consider the European position, but certain developing countries are attempting to put forward differentiated treatments to suit individual countries and particular products (in order to preserve the rare sectors which were actually "dynamised" by Lomé; this is based on the notion of an index of vulnerability (e.g.: exports of canned tuna from the Seychelles).
- WTO negotiations do not allow any promotion of the dossier on ecological and social standards relating to processes and methods of production (considered as non-tariff barriers); in addition certain developing countries are afraid that these standards will slow down negotiations or will be unfavourable to them: in order to regain competitivity by using these arguments, producers (European shipowners and canners) therefore seem to have no other choice apart from voluntary certification (EU or other bodies which may be able to support them, in the awareness that alongside this the independent "labels" come under dispute, and that the Commission, which has just opened discussions on ecological labelling, favours the establishment of minimum requirements for voluntary labelling programmes[72]).

CHAPTER 19 - PRINCIPLES FOR CONSTRUCTING THE TRANSACTIONAL CHAIN OF SCENARIOS

We propose to identify these principles starting from an awareness of the general characteristics and behaviour of the market for the consumption of tuna-based products in the European Union.

72 See "launching the debate on a Community approach on the subject of ecological labelling programmes for products of fishing", document COM(2005)275 final version of 29 June 2005.

1 Characteristics and general behaviour of the European market for tuna-based products

The chapter in the report devoted to processing and to the valorisation of products shows that, for each national market in the Member Countries of the EU, there are specific details which are worthy of a thorough and detailed market analysis. Nevertheless the dispersion of the market positions noted would probably in itself complicate the construction of the overall economic argument. The aim of this section is therefore to identify the general characteristics which could allow a global evaluation of the possible reactions of the European market as a whole.

1.1 Non versatility

It is often put forward that consumers are increasingly versatile, that they are more willing than in the past to replace one of the major sources of protein with another (red meat, white meat, fish, etc.) depending on prices and the attractiveness of the offer.

However, on the subject of canned fish, most players, particularly those responsible for the large and medium-sized commercial outlets and the European supermarkets, believe that in relation to the principal species, substitution purchases or transfers to fresh or frozen seafood products, or other appertised food products are not very common (SECODIP surveys 2001).

On the other hand, this observation does not apply in relation to ready-cooked dishes, a group of products which has to compete directly with other methods of conservation (fresh and frozen). To a lesser extent, the segment of tuna-based salads and starters, a market segment which is on the increase in France but much less so in Spain and Italy, may have to compete with other mixed preparations. However the weight of this segment is low in comparison with traditional canned preparations (< 10% of the European market).

To sum up, with the exception of the segment of tuna-based salads and starters, a segment with little weight on the whole of the European market, we will take the view that the behaviour of the European consumer mainly concerns transfers within the range of tuna-based products, rather than departures towards other product universes. Consequently there is little or no substitution.

1.2 Saturation of demand

With regard to the segment for the majority product, cans of tuna in brine, the penetration ratio[73] was 76% in 1998 and approximately 80% in the years 2001/2002 for the French and Spanish markets. Although the values observed for this ratio on the other dominant European national markets (Italy, United Kingdom) are slightly lower, this is the highest penetration ratio in the universe of canned fish. As the number of households which do not buy tuna is very low, growth in consumption depends much more on broadening the target of potential consumers than on increasing the number of purchases per purchasing household.

The chapter dealing with product processing and valorisation of product highlighted the fact that the only unsaturated traditional European market is the German market, to which we can add the increasing power of future demand from the Central and Eastern Europe countries (CEEC).

The growth in European demand (European Union formerly with fifteen member countries) will therefore remain limited: the calculations carried out by the FIAC in relation to the growth of the European market over the last five years produced the figure of 5%. It is possible that this gradient of growth of the 15-

73 The penetration ratio mentioned is the SECODIP NAP 100 aggregate (Number of purchases per 100 households) member EU may tend to run out of steam in the next decade; this slowing down of growth of demand relating to the 15-member EU will be counterbalanced by the rising demand from the ten CEEC countries which entered the European Union in 2004, and this must be taken into account in subsequent projections.

1.3 The non-flexibility of demand in terms of volume in relation to price

Demand from the European market does not directly follow the price variations observed for canned goods (variations in price for canned goods of ACP/GSP origin are significant but slightly lower than those of other countries - example of Thailand). We will therefore retain that there is no rebound effect to be expected from European demand by volume in relation to a downward swing in the average product price.

On the other hand, the consumer's decision to purchase tuna will mainly depend on the prices offered between the various origins. However consumers from southern Europe will probably tend to continue to include the traditional organoleptical and gastronomical aspects of tuna-based preparations when determining their purchases.

We can therefore understand the fears of professionals in the European tuna sector in relation to a significant increase in lower-priced imports of canned tuna from Asia within the framework of total liberalisation of the market applied without any progressiveness, since there would not be any compensation in terms of volume of demand.

In conclusion, on the basis of the data collected by the study on the final consumption of products on the European market, a downward or upward price swing would not have any significant impact on global demand, either in terms of volume or in terms of consumer behaviour. The previously noted increase in demand will probably be maintained, but on the other hand, within this pre-defined volume, it is highly likely that if prices drop a proportion of the demand and the whole of its increase would then be transferred to the cheapest products. On the other hand the market is robust and has a low risk of substitution.

2 Transactional chain

The logical deductions which the study proposes to make start from a theoretical outline plan based on the players within the tuna sector, moving from the market for appertised products (or semi-finished products) to the raw material.

We give the current equilibrium price between supply/demand of the average for canned tuna (or tuna loins) on the European market, the reference index of 100 delivered after importation and customs clearance into the EU. Naturally we use as a working hypothesis the fact that the products of different origins currently present on the EU market are competitive with each other and therefore at a price listing close to the reference index.

The market delivered price quoted previously for the ACP countries and Thailand[74] respectively, which is subject to the customs system under common law already show a difference of 15% prior to any process of liberalisation. We believe that this does not prevent the products from being competitive with each other and on the same reference base insofar as the difference noted is not a structural difference: on the one hand the difference varies in the course of the year depending on changes in the buying rate for the raw material and secondly it also partly corresponds to a demand for different organoleptical quality.

With regard to the ACP or GSP countries benefiting from a total tariff concession on customs duties, the price C&F prior to customs clearance is therefore also at base 100. Processors in these countries purchase,

74 Thailand will benefit from GSP duties for products of fishing as of January 2006, namely a reduction of 3.5% on duties.

from tuna fleets whose type of flag and type of fishing guarantee the notion of ACP or GSP origin, raw material at a price of value X. This transactional chain is representative of virtually the whole of the European tuna sector.

With regard to the other countries covered by common law, the application of customs duties of 24% results in a basic price C&F prior to customs clearance which rises to 81. We can see that at this customs rate, the physical flow of imports is moderate, which means mediocre satisfaction of production factors for processors exporting from these countries, therefore a basic C&F price which is economically unsatisfactory. On the other hand, the annual quota[75] of 25,000 tonnes at the reduced rate of 12%, which was initially claimed by Thailand and granted by the EU over the period 2003/2004 is, in its case, used to the full by exporters from these countries, which means that production factors are probably satisfied for a C&F price before customs clearance of base 89. Processors from these countries purchase the raw material from the tuna fleets or on the international market places at a price of value Y.

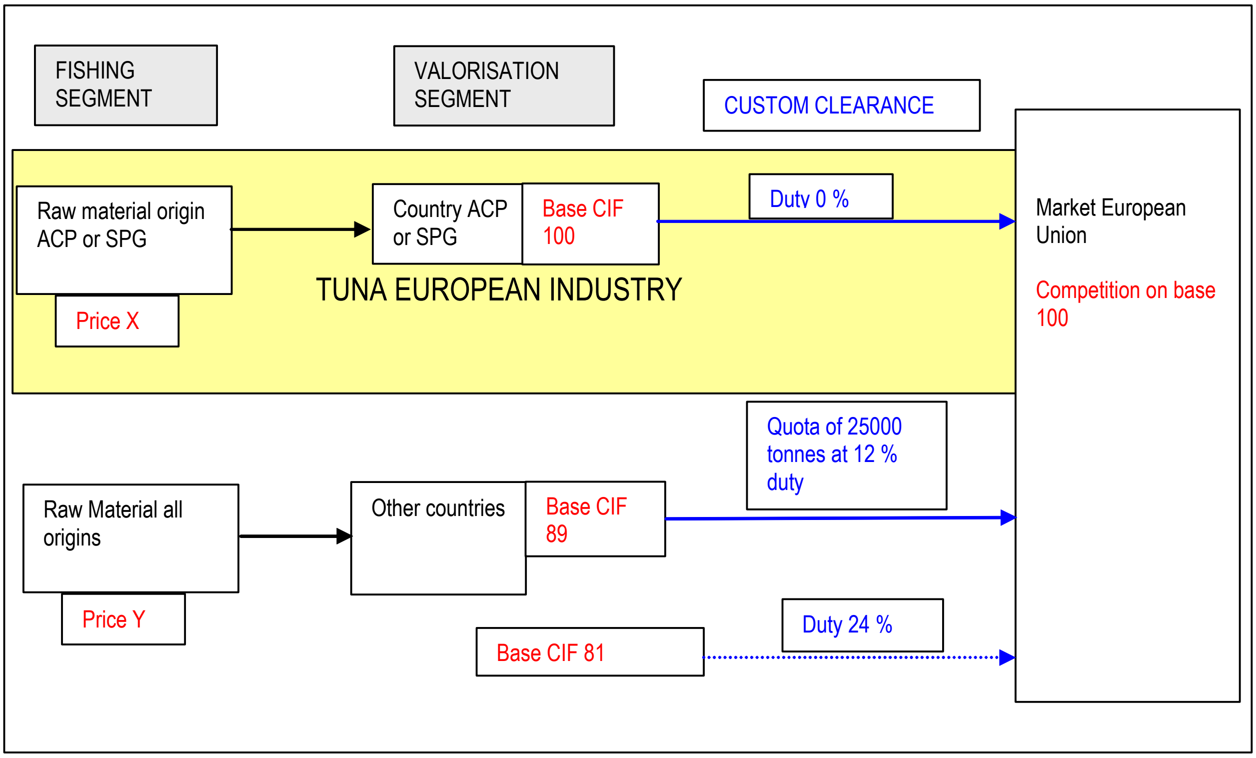


Figure 171: Diagram of the current importation situation in the European Union

The work entitled "The liberalisation of the fishing sector: its extent and its effects"[76] had ample recourse to the theoretical analytical framework established by M. Rognvaldur Hannesson, allowing the effects of liberalisation on halieutic trade and resources to be determined. Even if the real world of halieutic sectors is much more complicated, the grounds of the theories he uses are justified:

- any measure for liberalising the market may result in a change in prices
- the re-establishment of an equilibrium price between supply/demand after application of the measure of liberalisation results in higher prices for producers from exporting countries and lower prices for importing countries.
- it is the effect of this price change on supply which can be analysed.

The nature of the measures for market liberalisation may vary: reduction of customs duties, tariff

75 This quota is shared at a rate of 52% for Thailand, 36% for the Philippines, 11% for Indonesia, 1% for other countries. It has now risen to 25,750 tonnes.
76 75 OCDE publication 2003 ISBN-92-64-29986-6

suspension, the use of quotas exempt from customs duties, the application of preferential agreements and the flexibility of the introduction of quotas. On the other hand, measures for restricting the market, such as tightening up health regulations and technical standards for importation, restrictions on access to ports and services cause costs to increase and have similar effects at lower prices for the exporting producer countries.

If, in order to illustrate the process of methodological construction, we take the scenario of complete liberalisation of the tuna sector (total suppression of customs duties), the new state of equilibrium price between supply/demand which would be obtained must be evaluated.

The exporting countries for which the C&F base at 89 met the cost of production factors in the previous situation, therefore have the possibility of sharing the differential existing in their favour in this new configuration between improving their price competitivity on the European market and increasing their profits: if we take as a hypothesis a distribution of 25/75, the new equilibrium price between supply/demand on the European market would be established at the index 92, leaving them sufficient margin for manoeuvre to offer a purchase price for raw material T which is higher than the price Y previously applied.

As competition on the market is at index 92, the ACP/GSP countries must lower their C&F price to index 92, which forces them to offer a purchase price for raw material Z which is lower than the price X previously applied. We would then obtain the theoretical diagram presented in the following table.

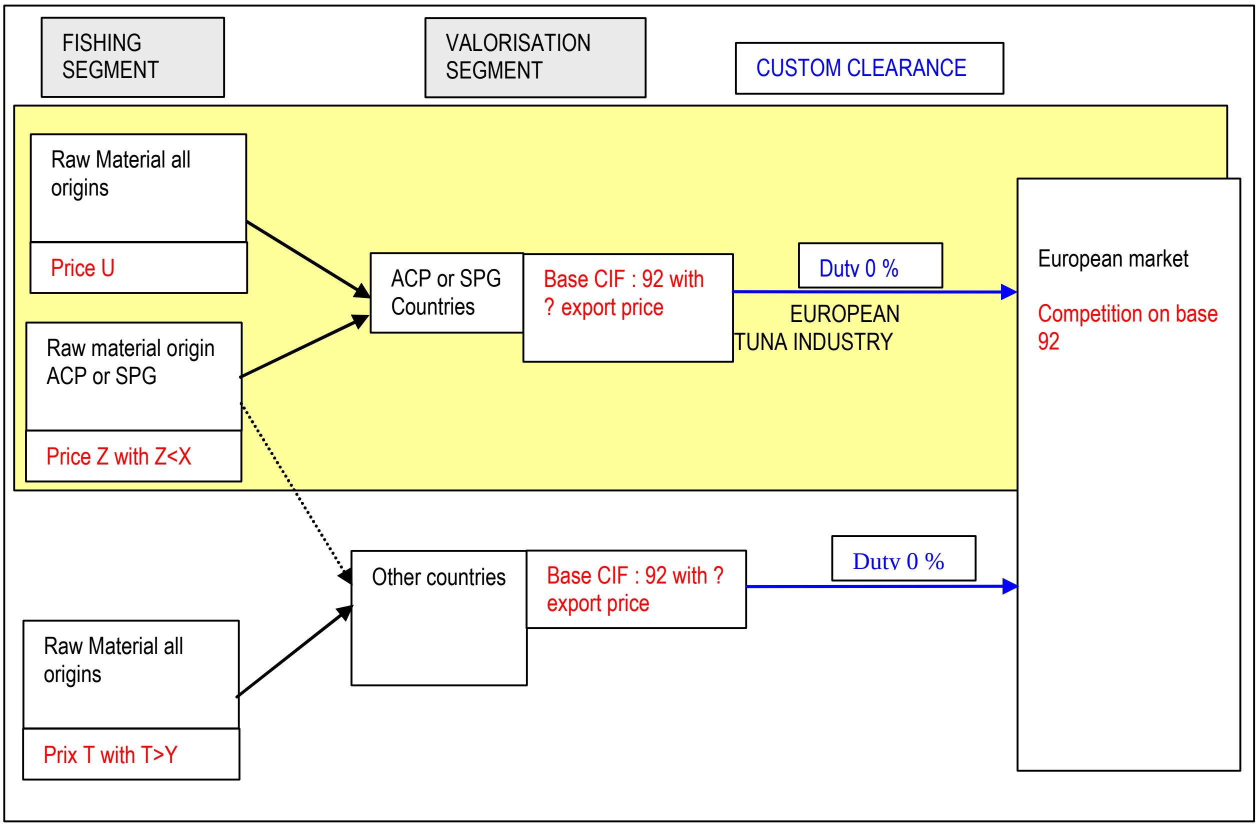


Figure 172: Diagram of the theoretical situation of importation in the European Union without any customs concession

This illustration relates to a scenario of complete liberalisation of the tuna sector but the nature of the principles explained and the corresponding methodological arguments remain valid for the various scenarios which can be envisaged.

3 General principle of the analysis of the scenarios and choice of scenarios

3.1 Method of analysis

The principal objective of these scenarios is to quantify the impact of the various possible approaches, and to supply the party who ordered the investigation with an argument supported by figures, to assist with current considerations relating to the liberalisation of the market: these considerations do not assume that professionals will approve of their implementation. The general principles used in order to conduct the analysis of the scenarios and to measure the latter's economic impact are as follows:

1/ initially to establish the economic reference situation (maintenance of the current situation) of the European tuna sector and European interests in the associated ACP and GSP countries.

2/ to interpret the nature of the scenario retained in terms of price modifications

3/ to evaluate the impact on end European market demand of each scenario envisaged in terms of variations in prices and quantities.

4/ to deduce from this the variations according to origin of manufacture of the supply in processed products required for the European market. To deduce the variations in volumes of raw material required for processing and variations in the origins of these volumes.

5/ to measure the impact of these price and quantity variations by going back up the chain of economic players in the tuna sector, combining the impact on the structural accounts of each link in the tuna sector and the variations in physical flows resulting from the scenarios.

6/ to identify the economic impacts on the European components of the tuna sector: extractive segment (the European tuna fleet) and processing industry based in Europe.

The economic impacts of the scenarios can only be measured once they have reached the end of their development, as it is not possible:

i) to establish them in a provisional way over several years, as too many variables are completely unpredictable
ii) to construct sliding economic matrices over several years and then to add them up.

This has two major consequences:

- the scenario can only be calculated if it is completed in the period of the reference economic situation
- in the case of analyses of scenarios which are degressive over time, the values observed for the economic impacts once they have reached their due date must therefore be distributed over the period covered by the scenario on the basis of a linear or non-linear time function.

3.2 Choice of scenarios

Initially the study established the reference economic situation which was described in the previous chapter. It then developed the analysis of an initial scenario of complete liberalisation at the end of WTO negotiations, without envisaging any degressive step.

These initial works were presented at the meeting of 12 July 2005 of the Steering Committee for the tuna sector study. They were able to note that the direct application without progressiveness of the principles of the WTO, principles consisting of completely liberalising the market for all the products and raw materials concerned, produces economic impacts which are considered to be drastic in relation to the whole of the European tuna sector and European interests in the associated countries. As mentioned in the minutes of this meeting, it ruled on the guiding principles of the scenarios and on the scenarios themselves[77]:

"It is therefore agreed that the scenarios will take into account the following aspects:

- the reduction must be progressive so that the sector is able to adapt,
- different rates must be applied to loins and to end products,
- the maximum acceptable final rates are 0% for loins and 15% for canned tuna.

The following three scenarios will be studied:

- current situation
- progressive reduction in accordance with "Swiss" plan, towards total liberalisation
- progressive reduction towards 0% for loins and 15% for canned tuna, within 6 to 10 years."

From an economic point of view, in addition to the scenario of complete liberalisation at the end of the WTO negotiations, (scenario 0), the three scenarios retained in the course of this meeting therefore correspond to the following analyses:

- ➢ Current situation = reference economic situation completed by recent developments which can be envisaged in the short term.

- ➢ Progressive reduction in accordance with the Swiss plan towards total liberalisation = scenario of complete liberalisation whose impact spread over time must be evaluated over the period for implementing the scenario using as a basis the degressive terms of the Swiss formula.

- ➢ The progressive reduction towards a rate of 0% for loins and 15% for canned tuna within 6 to 10 years = scenario to be constructed by applying tariff conditions without progressiveness completed by the examination of a differential time distribution of impacts over the period for implementing the scenario (linear or non-linear formula)

77 FISH/B/4 D 2005 document: note for the attention of dossier-subject: Steering Committee for the tuna sector study - EU-.

CHAPTER 20 - ECONOMIC ANALYSIS OF THE SCENARIO OF COMPLETE LIBERALISATION AT THE END OF THE WTO NEGOTIATIONS, LIBERALISATION APPLIED WITHOUT PROGRESSIVENESS

1 Principles of analysis

1/ We consider that, for reasons of market segmentation (niche market) and the specific characteristics of the products sold, the economic activities of the secondary sectors of white tuna and bluefin tuna on the food market and on processed products are unvarying within the framework of the envisaged modifications to the customs system, and that consequently there are no impacts resulting from this scenario.

2/ Any quantification of the impacts of a scenario requires the identification of variations in prices and volumes in comparison with the reference situation in order to measure the differences created on the secondary sector for major tropical tunas.

3/ The removal of customs duties involves establishing a new market equilibrium price. Contrary to traditional economic theories, this new equilibrium price is not the result of readjusting volumes to meet supply and demand, but of the behaviour of the players involved in marketing acting in a competitive situation within the context of a market which is relatively stable in terms of volume, with moderate growth.

4/ Within the framework of the liberalisation of the tuna market in Europe, amongst the countries which can make a strong entrance on the European market, it is the countries in Southeast Asia which are the best placed. In fact the capacity of the processing facilities in this part of the world, at approximately 2 million tonnes of raw materials, is far from being saturated since the accumulated production of appertised products from the various countries concerned only reach 1.4 million tonnes of which almost 70% comprises canned tuna. They can also have recourse to additional volumes of tuna raw materials without excessive additional transport costs since they are able to access large production volume shares and they are not too far away from the processing zones (Indian Ocean – 1 million tonnes, Western Pacific - 1.8 million tonnes).

It is therefore the hypothesis of an increase in imports of products of Southeast Asian origin which is the most probable within the framework of this scenario.

2 The position of trade and distribution professionals

Within the framework of this scenario, the position of international trade and large-scale distribution is the key to understanding the market development and the economic analysis of the scenario. The players and observers from this sector consider that the tuna system, historically built up by France and Spain, needs to develop towards a more harmonious and fairer configuration between supplier countries for the following reasons:

- Even if the average current rate of growth of European consumption noted for the years 2000 for the 15-member European Union remains moderate, at 5%, the growth in consumption in Germany, and especially in the CEECs will require a substantial increase in supplies which this system may not be able to satisfy.

- The recent changes in exchange rates recorded between the euro and the dollar, the reference currency for transactions involving raw material within the tuna sector, have proved to have a greater impact than that of removing customs duties. A strong euro allows purchases to take place in the dollar's zone of influence, even with 24% customs duties. Moreover, importer contracts drawn up at a fixed price to satisfy contracts of supply for hypermarkets are currently more and more multi-supported, by Asian countries and countries benefiting from ACP or GSP customs preferences.

- Importers share with exporters from the supplier countries the risks relating to the certification of ACP or GSP origin, and are anxious about rigging taking place in relation to origin and/or its correlated conditions (role of crew, flag flown by boats) which they cannot control. These fears are sometimes such that they prefer to purchase at a customs rate of 24% which frees them from all these concerns. Certain importers and/or distributors also think that the rules associated with origin automatically exclude countries which do not have adequate institutions from arguing for this, as if they are simply processors they cannot guarantee the traceability required for checking the origin of raw material.

- Other trade operators consider that the competition experienced by countries in Southeast Asia working in dollars is more unfair with the countries in South America, a country which is also in the dollar's zone of influence, than with the ACP countries attached to the euro zone.

- The halt in the operations of the Côte d'Ivoire canneries is, in the view of trade operators, likely to lead French players involved in the extraction and processing sectors and, to a lesser extent, Italian players involved in processing, to turn towards the potential offered by the Indian and the Pacific Ocean.

The retail market for canned tuna is dominated in Europe by around ten major distribution groups, whose activity has produced a significant penetration ratio for this product, and its classification as a basic product which each household ought to keep in stock. The counterpart which had to be implicit is that the negotiating powers of these groups – which they proved to be the case with the appearance of own brands less than two decades ago - should sooner or later justify a diversification of their purchasing strategy, with or without changes in the customs context. This is with a view to offering the end consumer the best possible quality at the best possible price.

However, the majority of these groups hopes that the new market equilibrium will be the result of a progressive approach allowing all the countries concerned to find a way of protecting their interests. This is also in the interests of trade and distribution, since as several negotiation partners have emphasised, the intended uses of production facilities cannot be changed abruptly: for a period traditional suppliers will therefore remain necessary for European Union supplies. This period must be put to good use in order to adapt to market developments.

3 Detailed identification of price changes

Weighted imports from the European Union coming from the zone of Southeast Asia over the period to 2000/2002 are shown in the table below:

Table 103: European imports for 2000/2002 in terms of quantity (tonnes) and value (billions of €) coming from Southeast Asia (source Eurostat)

	Cans		Loins	
	Quantity	Value	Quantitiy	Value
2000	57 111	108 076	2 104	6 268
2001	66 652	122 112	937	2 583
2002	91 377	187 770	2 969	9 623
Weiighted average 2000 2002	***71 713***	***139 319***	***2 003***	***6 158***
Weighted average price before custom clearance	1 943 €/tonne		3 074/tonne	
Weighted average price after custom clearance	2 409/tonne		3 812/tonne	

This table shows that over this period, Asian loins are not at all competitive with loins of ACP and GSP origin after customs clearance (the low quantity of volumes imported is an indication of this). Even in the absence of customs duties on loins, loins of Asian origin, mainly consisting of skipjack, would probably be weakly competitive in comparison with other origins. As a consequence, within the framework of a scenario of complete liberalisation applied without progressiveness, the competition would essentially concern canned tuna and not loins, which are much more attractive from an economic point of view for Asian operators.

In fact, within the current situation, canned tuna of Asian origin, mainly consisting of skipjack, has already, after customs clearance, a slight competitive advantage in terms of price in comparison with canned goods of this species from other origins: €11/tonne in relation to ACP origin, €198/tonne in relation to GSP origin. They have a consequent advantage over those of European origin manufactured from whole tuna, €832/tonne, and over those manufactured from tuna loins, €769/tonne. In spite of these price differences, the diversity of European demand for products of different organoleptical quality and consumer habits particular to different countries explain the coexistence of products at different price listings on the end market. However it is quite clear that the suppression of customs duties would result in significant reinforcement of the competitiveness of the price of canned tuna of Asian origin.

Interviews conducted with some trade and distribution professionals, and a consultant specialising in the European market for products of fishing, agree on the scenario which would follow total suppression of customs duties:

- There might be very short phase, of less than three months, during which the traders and dealers and possibly distribution brokers would carry out a few "commercial deals" allowing them to garner the customs differential as a return on sales. However the erosion of this type of margin will be very rapid bearing in mind the competitive conditions existing between the ten or so distributors, between the "hard discounters", and between these two categories of operators.

- For most observers, a new trade price would then be put in place between Asian exporters and European importers. This new trade price will not be equal to the import price before customs clearance, as Asian exporters will want to win a few beneficial points. Nor will trade and large-scale distribution pass on to the consumer all the remaining differential, as they will have the same aims.

- On the end market, most of the negotiating partners questioned consider that 75% of the customs differential will fall to the advantage of the consumer, with the remaining 25% being distributed in variable proportions between the margins of the Asian exporters and those of the distributors. The new equilibrium price for the consumer for products of this origin would therefore be established at 18% below the previous price after customs clearance.

- The equilibrium price on importation will depend on relations of strength between vendors and purchasers, relations which will determine the distribution of the remaining 6%. Without judging either of these in advance, we can assume a hypothesis of equality, which results in an import price 21% below the previous price after customs clearance or 3% above the import price noted up to that point.

If modifications of the customs context had intervened over the period 2000/2002, the new equilibrium price for canned tuna of Asian origin would therefore be established at €2,001, that is €408 below the rate per tonne recorded for the period.

4 Analysis of the provisional impact of price modifications on final demand from the European market for processed products

The final demand for canned tuna on the European market will be established via purchasing strategies applied by European trade and distribution and the wishes of the Southeast Asian industries to increase their market shares. For all those involved in the sector, there is no doubt that purchases of products of Asian origin will increase significantly in comparison with the reference situation where imports of this origin only represented, as a weighted average, 71,000 tonnes of canned tuna per annum. However two estimates clash with regard to the volumes at stake:

A/ Professionals within the canning industry think that:

i) the size and power of the Asian processing facilities are capable of allowing an abrupt change and/or increase in their commercial aims,

ii) those involved in trade and large-scale distribution will be attracted by the size of possible potential profits

iii) the erosion of consumer purchasing power in Europe is an element which is eminently favourable to massive substitution of purchases with lower-priced products.

In their opinion, it is therefore possible for the volume of imports of Asian origin to be abruptly multiplied by 3..

The only limitation they see to this growth, although, in their opinion, this will be in the long term, lies in the consequences of increased requirements of raw materials for the Asian processing industry. For example, the recent establishment of factories in China, for consumption on the domestic market, will increase competition relating to access to tuna availability within a period of 5 to 10 years. Access to the raw material will become the limiting factor.

B/ Those involved in trade state that they prefer to set up multi-origin supply contracts (ACP, GSP and Asia) which they are already doing, in order to protect themselves:

i) against risks of supplies breaking off

ii) against health risks, incidents which have already taken place in the past in relation to products of Asian origin

iii) against risks of changes in exchange rates between €/$.

Finally, the importance of the consumption of products based on yellowfin tuna in certain parts of Europe requires maintaining operations with traditional origins, even if this is at a lower level.

Consequently, importers and other players involved in international trade see a limited increase, doubling imports at the very most.

C/ With regard to those involved in large-scale distribution the swing to purchases of Asian origin will mainly concern top price products, which virtually only involve canned skipjack, and the "hard discount" purchases. There will therefore be an increase in the discrepancy between prices for top of the range products and the own brands and the major brands. This increased discrepancy will very probably drag all market prices down.

On the other hand in France, one of the European countries with high consumption, in which the heart of the market is positioned on the segment of yellowfin tuna, canned raw, representing 65% of sales, it will take some time for factories of this type to be established in Asia and for them to go into operational production.

Several of those involved in large-scale distribution have quoted the example of the liberalisation of the rice market which showed that the effect of this switch on Asian origins actually only produced 50% of the effects calculated before liberalisation.

Those involved in large-scale distribution estimate the increase of imports of Asian origin at only double current quantities.

In the first case, envisaged by those involved in the canning industry, imported volumes of Eastern origin would reach 213,000 tonnes, namely 37% of the consumption of the reference situation.

In the second case, envisaged by those involved in trade and large-scale distribution, imported volumes of Asian origin would reach 142,000 tonnes, namely 25% of the consumption of the reference situation.

In the economic analysis of this scenario, this second situation corresponding to an increase in imports of Asian origin either equal to, or double, the quantities of the reference situation was retained.

In the two cases envisaged, the level would reach or exceed the threshold of 25%: this threshold is that of "the critical mass" on a market. The critical mass is the level of volume starting from which the formation of prices is dependent from the segment of products at the lowest prices. Within this context products of Asian origin become the "price makers" on the European market and products from processing industries of other origins will have to align their prices with this reference. This is all the more true if the market is dragged downwards by hard discount which represents approximately 15% of sales of tuna-based products in Europe and which will mainly obtain its supplies from Asia.

5 Analysis of the provisional impact of price changes on the supply of processed products

It is felt that the differences are maintained between the prices of products from the reference situation. This leads us to consider that re-establishing competition between various origins is possible, starting from a threshold of lowering the prices of all canned products of each origin by €408 in relation to the reference situation.

We will apply as a principle a drop of €408 to the structural accounts taking into account, in the following order: the elimination of 50% of returns on sales[78], reduction of all costs excluding purchases of raw materials, balance of the reduction remaining to be applied being allocated to the price of the raw material.

78 The removal of all returns on sales is not possible, as part of this covers, among other things, the structural costs of the parent companies, but above all costs for discounts and rebates granted to distributors, without which there can be no retail.

The analysis of the overall costs shows that it is unreasonable to envisage a drop of over 5% of the total cost excluding the purchase of raw material, especially in relation to labour.

We consider the market shares won over by the Asian countries to be on equal terms with the commercial positions of the processing industry based in Europe and in relation to the whole processing industry based in third countries. For the latter, loss of market share is considered pro rata for their representativeness on this market.

5.1 Concerning "national production" and imports within the European Union

The loss in volume of end products allocated to the processing industry based in Europe is therefore, in the scenario retained, 35,500 tonnes. The volume imported from Southeast Asia has every chance of being mainly composed of skipjack: a distribution of 70% of skipjack 30% yellowfin tuna can be taken as a working hypothesis. We also used as a hypothesis the maintaining of the volume of products of 2nd and 3rd stage processing at 56,000 tonnes. In comparison with the reference situation, the new volumes of canned goods produced by the European Union would be as follows:

Table 104: New distribution in tonnes of the supply of canned goods of European origin within the framework of the new situation

	Yellowfin cans	Skipjack cans
Production EU (reference stuation)	*120 500*	*107 500*
Increased market shares Asia	- 10 650	- 24 850
New situation	**109 850**	**82 650**

In comparison with the reference situation, naturally the overall volume of European Union imports would be increased by 35,500 tonnes.

In the case of production finished in Europe, those involved in the tuna processing industry can only attempt to re-establish a situation of competition with the new equilibrium price. Calculations showed that it will be difficult for canned goods manufactured in Europe using whole tuna to re-establish a situation of competition with the new equilibrium price, and that this industry will apply pressure on the supply of raw materials in order to obtain a significant reduction in price (-13%).

On the other hand, an accelerated swing from the processing industry based in Europe to manufacture of canned goods from imported loins seems envisageable in the short term for most negotiating partners consulted. In comparison with the data calculated in the reference situation, the application of principles for aligning the structural accounts for the manufacture of canned goods from tuna loins with the new equilibrium price described above produces the results shown in the following table.

Table 105: Average structural accounts in € for the manufacture of canned tuna by member countries of the EU in relation to yellowfin and skipjack tuna using tuna loins for the years 2000/2002, aligned with the new market equilibrium price

YELLOWFIN TUNA		EU	
	Unit cost	cost/ton	%
	Euro		
Fixed overhead		68	2%
variable overhead	labour	139	4%
	utilities	20	1%
	marketing	41	1%
Cost of fish	**3434**	1 975	62%
Cans		513	16%
Oil filling (50% cans)	0,5	90	3%
Brine (50 % cans)	0,08	15	0%
Salt	0,02	0	0%
Cardboard sleeve (3 cans)	0,016	63	2%
Case (outer)	0,23	28	1%
Freight in Europe	50 / ton	48	2%
Less by-product revenues	0		0%
TOTAL COST PRICE		**3 001**	**95%**
Commercial margin	**10%**	**163**	**5%**
MARKET PRICE		**3 163**	

SKIPJACK		EU	
	Unit cost	cost/ton	%
	Euro		
Fixed overhead		68	2%
variable overhead	labour	139	5%
	utilities	20	1%
	marketing	41	1%
Cost of fish	**2778**	1 597	58%
Cans		513	19%
Oil filling (50% cans)	0,5	90	3%
Brine (50 % cans)	0,08	15	1%
Salt	0,02	0	0%
Cardboard sleeve (3 cans)	0,016	63	2%
Case (outer)	0,23	28	1%
Freight in Europe	50 / ton	48	2%
Less by-product revenues	0		0%
TOTAL COST PRICE		**2 623**	**95%**
Commercial margin	**10%**	**145**	**5%**
MARKET PRICE		**2 768**	

The resulting price per tonne of tuna loins, €3,434 for yellowfin tuna and €2,778 for skipjack tuna, are manifestly incompatible with the prices offered by manufacturing in Europe, whatever the efforts made: €4,648 for yellowfin tuna and €4,156 for skipjack tuna respectively. The manufacture of loins in Europe would therefore become fairly insignificant. On the other hand, by means of significant efforts in relation to the manufacture of loins of skipjack, new prices on request for tuna loins on the European market still seem to be compatible with the price of imported tuna loins, from all ACP and GSP origins considered as a whole: €3,421 for yellowfin tuna and €3,040 for skipjack.

They also seem compatible with the prices of loins imported from Asia: €3,074/tonne. However, firstly it would be against the economic and financial interests of the Asian producers to supply the European market with loins within the framework of this scenario, and secondly they would be supplying the processing industry based in Europe to the detriment of market shares which their own production facilities could win over in relation to canned end products. Consequently, the growth of imports of loins of Asian origin would be very low in this scenario.

The quantification of a scenario of the European processing industry switching over completely to tuna loins is unrealistic as it would produce an overall demand from the European Union in the reference situation which would imply tripling the capacity of factories producing loins in the GSP countries, and the processing of an additional 300,000 tonnes of raw material which is completely unenvisageable.

It is therefore necessary to envisage a scenario in which the manufacture of canned goods from whole tuna in Europe is partially maintained, reduced in relation to imports and the increased production of canned goods from imported loins. A substantial increase of 50% of the volume of imported loins from ACP and GSP origins is retained in the argument, pro rata for their representativeness over the reference period.

5.2 Concerning national production and exports from the exporting countries

Within the European Union imports over the period 2000/2002, the compared representativeness of the ACP and GSP C&S American countries being 85% and 15% respectively for canned tuna, and 21% as opposed to 79% for tuna loins, the application of the conditions of the scenario produces the following values:

Table 106: New distribution (in tonnes) of the supply of canned tuna and tuna loins of ACP, and GSP+ and EBA origin within the framework of the new situation

	Yellowfin cans	Skipjack cans	Yellowfin loins	Skipjack loins
ACP production (reference situation)	***76 251***	***98 916***	***3 150***	***7 096***
Increased EU demand in loins			1 575	3 548
Increased market share Asia	- 9052	- 21 122		
ACP Production new situation	**67 199**	**77 794**	**4 725**	**10 644**
GSP production (reference situation)	***11 700***	***18 309***	***11 113***	***26 845***
Increased EU demand in loins			5 557	13 423
Increased market share Asia	- 1598	- 3728		
GSP Production new situation	**10 102**	**14 581**	**16 670**	**40 268**

Subject to processing facilities existing in these countries and the economic conditions prevailing therein allowing the processing of loins at lower prices, the impact of the changes in the European tuna market following its liberalisation would clearly be significant on the drop in supply in terms of volume of processed products from the ACP countries. The GSP countries, better equipped for processing into loins, would, on the other hand, see the volume of processed products intended for Europe increasing:

- The overall volume of the supply of processed products would probably reduce for the ACP countries by 13.5%. The drop in exports of canned tuna, 30,000 tonnes, would, for these countries, represent 17% loss of European market shares for canned tuna.

- The overall volume of the supply of processed products would increase by 20% for the GSP C&S American countries in the new situation.

6 Analysis of the provisional impact of the new situation on the formation of prices for raw materials

The formation of prices for raw material is the result of applying the principles of adjustment stated for the structural accounts for canned tuna. The same principles are applicable to loins, except for the fact that the erosion of returns on sales may reach 75%, with the covering of the commercial costs of distribution not being taken into direct account in relation to this product.

We will therefore examine the impact on the formation of the prices for raw materials deriving from alignment with the equilibrium price, carrying out, in reverse order, the calculations of the residual manufacture of canned tuna from whole tuna in Europe, manufacture of canned tuna from whole tuna in the ACP and GSP countries, and the alignment in relation to the new price of loins imported into the European Union from factories in ACP and GSP countries.

The calculations show that the structural accounts for loins have a much better resistance to price alignments: the simple reduction of returns on sales is sufficient in the majority of cases without there being any need to have recourse to a drop in the purchase price for raw materials. Consequently, the price for raw materials asked for the manufacture of loins is practically invariable, which is not at all the case for the price of raw materials resulting from the impact of market prices on the structural accounts for canned tuna.

Table 107: Calculation of new prices for raw materials in € after alignment with the equilibrium prices of canned tuna and the new price for loins

Resulting raw material price	Yellowfin	Skipjack
European Union		
Can manufacturing	**1094**	**680**
ACP country		
Can manufacturing	867	484
Loins manufacturing	1028	642
Weighted average price raw material	**887**	**515**
GSP C&S America country		
Can manufacturing	731	556
Loins manufacturing	895	698
Weighted average price raw material	**856**	**674**

As a result of the good capacity of resistance of the structural accounts for loins in comparison with those for canned tuna, it is the representativeness of the volumes of each product in the supply of processed products from third countries which is the determining factor in the formation of the average weighted price for raw material, and not the variable portion of market losses in relation to canned goods. Price differentials for raw materials in comparison with the reference situation are established at the following values:

Table 108: Calculation of differences of price for raw materials between the new situation and the reference situation

Resulting raw material price	Albacore	Listao
European Union		
Price reference situation	*1 214*	*795*
New price	1094	680
Diffrence in %	**- 10 %**	**-14,5 %**
ACP Countries		
Price reference situation	*1 022*	*642*
New price	889	523
Diffrence in %	**- 13 %**	**- 18,5 %**
GSP C&S America Countries		
Price reference situation	*892*	*701*
New price	861	679
Diffrence in %	**- 3,5 %**	**- 3 %**

The repercussions on raw material prices would be particularly onerous for the production of frozen whole tuna to be marketed in ACP countries. The European Union would also be significantly less well-placed in relation to prices for raw materials. In the case of the GSP C&S American countries, these could practically maintain previous purchase prices. We can also see that generally speaking the repercussions of the new market conditions would be greater on the price of skipjack raw material than on that for yellowfin tuna.

7 Analysis of the provisional impact of the new situation on the supply of raw material

Within the framework of the geographical positioning of its current unloadings, the European tuna fleet would suffer a reduction in the region of 16% of its turnover. This shortfall in earnings could not really be counteracted by fishing shipowners relocating the fishing effort of tuna boats to the zone of the GSP C&S American countries offering more stable price rates, as this movement could only concern a few units, given the limits of available resources.

On the other hand, assuming catches at the same level as the reference situation, shortfall in earnings could be reduced by the transshipment of catches to Bangkok. Under these new market conditions Bangkok would become a much more attractive tuna marketplace with supply prices of 1,073/tonne for yellowfin tuna, and €688 for skipjack tuna. With regard to yellowfin tuna, Bangkok would be able to equal the prices offered in the European Union, but with half the freight costs in relation to fishing zones in the Indian Ocean. With regard to skipjack tuna, the tuna market places of Manta, Bangkok and unloading ports in the European Union would be at the same level in terms of prices. The shipowners would then reach a decision on the final destination of their catches, depending on the location of their boats, the composition of their catches, costs of transhipment in the zone, and freight costs relating to these three destinations, all activities they already carry out, but not subject to the constraint of an operating deficit.

The changes in the supply prices would rapidly result in changes in the destination of products from the European fleet, and therefore a new use for unloadings relating to ACP countries in the first instance, and secondly those relating to Europe, with Bangkok benefiting from this. Indirectly this would reinforce the Asian processing facilities, which will need to increase its supplies and make them more reliable in order to respond to the increased European demand for canned tuna. In the scenario envisaged, if we count on transhipments intended for Bangkok being reinforced by a 50% increase in market shares for Southeast Asia, calculations show that the European tuna fleet can reduce the previous shortfall in earnings to a value of 12% of its turnover.

However, as the weighted average of supply prices on the world market has dropped, shipowners involved in tuna fishing, whether their boats are attached to the European Union or to producer countries, will not be able to catch more fish in order to spread the fixed costs of their boats, as they are already assumed to be fishing to their maximum. The scenario therefore assumes a number of catches equal to those in the reference situation.

The supply of raw material from the national tuna fishing fleets would be reduced or marginalised in the ACP countries, but would probably be maintained in the GSP countries; an increase in the supply of raw material from Asian fleets, in order to respond to the increased demand in Bangkok would not be unlikely, either through the increasing numbers of boats or on account of increased fishing effort using existing boats.

8 Quantification of the socio-economic impacts of the new situation per component identified

8.1 *Per segments of the European tuna sector (extractive and processing)*

The calculations quantifying the socio-economic impacts at the level of the European tuna sector produce the following result:

Table 109: Summary of socio-economic impacts of the new situation on the European tuna fleet fishing for major tropical tuna (at equal volumes of catches)

Millions €	TOTAL	European Union		ACP or GSP Countries	
	Valuer	Value	%	Value	%
		European Tuna Fleet			
Reference situation					
Turnover	328,6				
Primary Added Value	193,9	163,3	*84,2%*	30,6	*15,8%*
Values new situation					
Turnover	289,2				
Primary Added Value	155,4	125,8	*81,0%*	29,6	*19,0%*
Impacts					
Loss turover	**- 39,4**				
Loss Primary Value Added	**- 38,5**	**- 37,5**		**- 1,0**	
		'False-Tuna' sector			
Reference situation					
Turnover	31,4				
Primary Added Value	11,52	6,72	*58,3%*	4,8	*41,7%*
Values new situation					
Primary Added Value	9,22	5,37	*58,3%*	3,85	*41,7%*
Impacts					
Loss Primary Value Added	**- 2,3**	**- 1,35**		**- 0,95**	

At identical volumes, the principal variable costs in terms of value are salaries and payroll taxes for crews, which explains the virtually equal losses between turnover and PAV (salaries and payroll taxes consist 100% of direct added value). Subject to the permanence of shipowners involved in tuna fishing, operating at a deficit of 7% within this context, and the acceptance, which is improbable, of the drop in revenue, the number of jobs in the European tuna fleet would be unchanged; on the other hand the overall number of jobs, direct and indirect, in the secondary sector of false tuna would be reduced by 700. For the European processing industry the situation would be more drastic, with the "salaries" variable being inapplicable in this sector where salaries are very close to the legal minimums.

Table 110: Summary in € millions of the socio-economic impacts of the new situation on the European processing industry

Millions €	TOTAL	European Union		ACP or GSP Countries	
	Value	Value	%	Value	%
		European processing industry			
Reference situation					
Turnover	724,1				
Primary Added Value	268,9	268,9	*100%*		
Values new situation					
Turnover	578,5				
Primary Added Value	173.7	173,7	*100%*		
Impacts					
Loss turover	**- 145,6**				
Loss Primary Value Added	**- 95,2**	**- 95,2**	***100%***		

The alignment with the market equilibrium price and the losses of market share would result, in the new situation, in a reduction of turnover of €145 million for the European tuna industry, €95 million of which would be a loss of economic wealth within the European Union. The loss of added value would be essentially due to the sharp loss of PAV included in the turnover corresponding to the market shares lost, to the alignment with the new equilibrium price, and to the reduction of costs.

From a social point of view, the calculations show that in the new situation the reduction of the share of added value corresponding to the payroll would be 36%. The European processing industry would therefore lose between 3,000 and 4,500 direct jobs and an equal number of indirect jobs, namely between 6,000 and 9,000 jobs in total within the framework of this new situation.

8.2 According to the players involved (European Union third countries)

8.2.1 Impact on ACP countries

Table 111: Summary in € millions of the socio-economic impacts of the new situation on the tuna processing industry in the ACP countries

Millions €	TOTAL	European Union		ACP or GSP Countries	
	Value	Value	%	Value	%
	Share of ACP Processing industry for European market				
Reference situation					
Turnover	492				
Primary Added Value	158,6	62,4	*39%*	96,2	*71%*
Values new situation					
Turnover	366,9				
Primary Added Value	113,4	42,1		71,3	
Impacts					
Loss turover	**- 125,1**				
Loss Primary Value Added	**- 45,2**	**- 20,3**		**- 24,9**	

The alignment with the European equilibrium market price for canned tuna and losses of market share would result, in the new situation, in a reduction of turnover of €125 million for the tuna processing industry in the ACP countries, and an overall loss of economic wealth (PAV) of €45 million.

This loss of economic wealth would be distributed at a rate of 25 million for the ACP countries and 20 million for the European Union. The loss of economic wealth for the European Union is generated by the economic values whose included added value is allocated to Europe (portion of return on sales, inputs which are partly imported, such as cans, etc.)

From a social point of view, the calculations show that in the new situation, the reduction of the share of added value corresponding to the payroll would be 30%. The processing industry in the ACP countries would lose approximately 3,300 direct jobs, and 6,600 indirect jobs, i.e. approximately 10,000 jobs, to be added to the previous job losses in the secondary sector of false tuna (700 boats).

8.2.2 Impact on GSP C&S American countries

The substantial growth (50%) in the demand of loins by the European Union is allowing the GSP countries to increase their turnover, but with a low level of primary added value. Consequently there would not be any reduction in jobs affecting the GSP countries.

Table 112: Summary in millions of Euro of the socio-economic impacts of the new situation on the tuna processing industry in the GSP C&S American countries

Millions €	TOTAL	European Union		ACP or GSP Countries	
	Value	Value	%	Value	%
	Share of GSP Processing industry for European market				
Reference situation					
Turnover	192,3				
Primary Added Value	59,3	21,3	*36%*	38	*64%*
Values new situation					
Turnover	223				
Primary Added Value	60,4	16,8		43,6	
Impacts					
Loss turover	**+ 30,7**				
Loss Primary Value Added	**+ 1,1**	**- 4,5**		**+ 5,6**	

8.2.3 Final economic impact of the new situation on the European Union

The overall impact on the European Union would therefore be the total of the previous figures. It is not logical from an economic point of view to accumulate losses on turnover for the extractive and processing segments since part of the first sector is the intermediate consumption of the second one. On the other hand it is logical to examine the total of the European Union's losses of primary added value.

Within the framework of the new situation resulting from the direct application without progressiveness of the principles of complete liberalisation at the end of the WTO negotiations, losses of economic wealth for the European Union would rise to €158.8 million (€37.5 million for the European tuna fleet, €1.35 million for the secondary sector of false tuna, €95.2 million for the processing industry based in Europe, €20.2 million of economic wealth not supplied by the ACPs, and €4.5 million less in relation to GSP countries).

The total losses of direct and indirect jobs would be between 6,000 and 9,000 jobs in Europe. As Spain represents 65% of European production this would be the country worst affected from both an economic and social point of view, and the regions particularly dependent on tuna activity, such as Galicia, could be in a situation of socio-economic crisis.

8.3 Other impacts of the new situation

8.3.1 With regard to the management of the tuna resource

It is possible that this scenario will have effects on reinforcing the fishing effort of Community and national fleets in the Eastern Pacific (C&S America), in the Indian Ocean by the Community fleet, and in the Western Pacific by the Asian national fleets. On the other hand this scenario would result in a drop in fishing effort in the Central Eastern Atlantic, because of the reduced activity of the ACP coastal countries.

8.3.2 With regard to unloadings and transshipment

The reduction of unloadings relating to ACP countries to the benefit of increased transhipments in Bangkok maintains the local values for labour associated with handling fish, since at equal volumes with the reference situation, the number of working boats remains the same. On the other hand the ACP countries could lose the following:
- some of the revenue associated with the port transit tax for tuna, with transshipment often taking place in the port roads
- some of the revenue associated with port taxes applied to boats insofar as they would reduce the duration

of their stopovers and the number of port entries.

This scenario would therefore be likely to cause a reduction in port revenue for the ACP countries, particularly for those with Central Eastern Atlantic coastlines.

8.3.3 With regard to the marketing of products, markets and strategies of competitivity

In the opinion of professionals involved in distribution, this new scenario would not in principle pose problems with supplying the European market with end products.

The increase in products of Asian origin results in a broadening of the price range which is favourable to consumers, with top price products and certain products sold under own brands being dragged downwards. The major brands which have already been losing speed for several years in relation to basic appertised products, -15 to -20%, will have difficulty in compensating for the shortfall in earnings in relation to other products, of 2nd and 3rd stage processing, whose growth in volume has slowed down, and whose prices are eroded by exacerbated competition between large and medium-sized commercial outlets and hard discounters. Top-of-the-range products will retain their elitist clientele, but, on the other hand, it is much more difficult for those involved in distribution to predict the reaction of middle-of-the-range consumers.

Generally speaking, because of their massive presence on the European market, the ACP countries have an index of vulnerability[79] which is clearly much higher than that of the GSP countries, with the latter being able to work alternately on the European and American markets. The ACP countries will have serious difficulties on the canned tuna market when faced with the arrival of these new products, and unless they can rapidly re-enter a cycle involving the manufacture of loins intended for Europe their competitiveness will be rapidly eroded.

There are still two unknowns for the ACP countries: i) the capacity of innovation of the groups to which the processing industries based in ACP countries are often attached and the relocation of the production of new products; ii) the capacity to rapidly transfer their resources for manufacturing canned tuna to that for manufacturing tuna loins[80]. In the event of progressive application of market liberalisation, other more important factors would intervene and are described in the concluding chapters.

The GSP C&S American countries would have every opportunity to move towards a differential marketing strategy per typology of products: loins intended for Europe, while maintaining their market shares for canned tuna in the United States.

8.3.4 With regard to technical aspects and the degree of integration of the sector within the EU

This scenario would probably lead to greater compartmentalisation between the extractive activity and the processing industry based in Europe and therefore to a reduction in the integrated aspect of the European tuna sector. In fact, under the constraints of fishing in more difficult economic conditions, the fishing

79 This index is constructed in the following way: for a given product of a given type of export, the less the export market is diversified and the lower its share in the world market for this product, the more the exporting country is vulnerable when faced with erosion of preferences.

80 79 Certain trade and distribution operators have evoked the specific nature of the sector of yellowfin tuna canned raw, a product which is traditional on the French market (60 to 65% of the market in France), and which is a flagship product manufactured by industries in the ACP countries, still with little competition from the Asian countries. Consumer surveys have shown that although purchasers are not always aware of species, most of them do, on the other hand, register a difference in taste and appearance between skipjack and yellowfin tuna (more pinkish colour, less obvious oxidation affecting taste after opening).

strategies of the shipowners and those for selling catches would be significantly less influenced by the concern to supply national processing industries than by that of selling on the world market at a price which does at least remunerate the production factors.

The processing industries would become rather more involved in the problem of "sourcing". In particular for the member countries which have not established significant trade relations with private operators in countries exporting loins, the problem of supplies of raw materials and semi-finished products for the processing industry based in Europe could arise with a seriousness varying in accordance with the trade relations established by the various European member countries.

8.3.5 With regard to public finance transfers

The "cost" of this scenario for the European Union could be estimated at the sum of the following elements:

- shortfall of earnings on customs inflow for tuna-based imported products: the calculation of the weighted value over the period 2000/2002 results in €35 million.
- the loss of economic wealth within Europe: €159 million.
- the cost of any accompanying measures aimed at the European processing industry, the processing industry in the ACP countries, and possibly the European tuna fleet.

However there is an indirect gain associated with redynamising the European Union's foreign trade for all other products, but this gain cannot be measured within the framework of this study.

CHAPTER 21 ANALYSIS OF SCENARIOS OTHER THAN THAT OF THE APPLICATION OF NON-PROGRESSIVE LIBERALISATION OF TRADE

1 Scenario 1: Maintaining the current situation

This scenario corresponds to the values identified in the reference economic situation previously described in depth. Naturally, in this scenario they would be no socio-economic impacts, or any impact on the management of the tuna resource, or on unloadings and transhipments or on public finance transfers.

Certain professionals involved in trading and processing who were consulted in the study believe, however, that bearing in mind:

i) first of all the recent shutting down of the cannery in the Côte d'Ivoire
ii) secondly the regular growth of the European market and the differential gradient of consumption relating to Germany and the CEEC countries in comparison with other European countries.

Problems with insufficient supplies for the European market would be likely to occur from time to time. However they recognise that these shortfalls could be partly compensated for by reinforcing imports of Asian origin as long as the euro/dollar exchange rate is low.

On the other hand other professionals from the same branches of activity, who were also consulted, consider that there would not be any problem with supplying the European market, for two reasons:

i) first of all because the processing capacity of the European processing facilities is under-used, particularly in Spain, and therefore will be able to respond for a certain number of years to increased European demand,

ii) secondly because the growing development in the supply of European processing units with semi-finished products (loins) undoubtedly brings gains in productivity which are also reflected by an increase in the capacity to respond to a growing demand for finished products.

Maintaining the current situation could therefore only result in sustained growth of imports of loins, whether they come from countries with preferential duties or not.

2 Scenario 2: Progressive reduction towards total liberalisation of exchanges

2.1 Principles and choices of methods of progressive reduction

The Steering Committee for the study touched on the advantage of analysing a scenario concerning the progressive reduction of customs duties up until they disappear, taking inspiration from the Swiss formula.

The generic principles of the Swiss formula only apply distantly to the economic analysis required in the case in question. It actually concerns the application of a non-linear formula between the current customs rate and the target rate for a group of countries which do not necessarily have the same initial customs rate or the same final target rate but which in future wish to harmonise tariff conditions. The advantage of this formula is that, by applying different coefficients and the different degressive steps, it can establish differential gradients of reduction for each country or group of countries, in order to ultimately achieve the desired rapprochement (source: Trade Department of the DG Fish).

The principles of the scenario to be investigated here are simpler: they concern the period for implementing this progressive reduction and the gradient of reduction to be applied.

Period for implementation
With regard to the period for implementation, it has been quoted by the same source as previously, that, generally speaking, in working sessions at the WTO, it is possible to negotiate in relation to the composite food processing sectors of production/processing/trade a period of progressive implementation of the total liberalisation of a sector: the minimum time required would be 5 years. It seems logical to anticipate an interval of application which could at least double this minimum, therefore with a possible ceiling of up to 10 years.

Gradient of reduction
Two methods can be retained with regard to the gradient of reduction to be applied: the linear application of the projected reduction and the non-linear application. For the non-linear application of the envisaged reduction, two working hypotheses are also possible, and also negotiable at the WTO, concerning selecting either a stronger impact over the first years or over the last years, "front load" or "back load" (*Source: trade Department of the DG Fish*)

For this non-linear application we can use the normal rules of accountability/taxation for accelerated depreciation: the degressive rate is equal to the linear rate multiplied by a coefficient: 1.5 if the normal duration of using the goods is between 3 and 4 years, 2 if it is between 5 and 6 years, 2.5 beyond this. For the first year of application, the degressive rate applies to the whole of the reduction; for subsequent years, it applies to the balance of the reduction still to be carried out. Finally, when the degressive rate becomes lower than the linear rate calculated over the remaining number of years, the corresponding quotient is then registered[81].

Starting from these principles and the normal values of the coefficients used for accelerated depreciation in accounting, we then obtain the following table.

Table 113: Calculations of linear and non-linear reduction gradient over periods of between 5 and 10 years

	Year	1	2	3	4	5
	Linear calculation	20%	20%	20%	20%	20%
Ratio	Non linear					
1,5	Front load	30%	21%	15%	10%	7%
	Back load	7%	10%	15%	21%	30%
2	Front load	40%	24%	14%	9%	5%
	Back load	5%	9%	14%	24%	40%
2,5	Front load	50%	25%	13%	6%	3%
	Back load	3%	6%	13%	25%	50%

	Year	1	2	3	4	5	6	7	8	9	10
	Linear calculation	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Ratio	Non linear										
1,5	Front load	15%	13%	11%	9%	9%	9%	9%	9%	9%	9%
	Back load	9%	9%	11%	13%	15%	9%	9%	11%	13%	15%
2	Front load	20%	16%	13%	10%	8%	7%	7%	7%	7%	7%
	Back load	8%	10%	13%	16%	20%	8%	10%	13%	16%	20%
2,5	Front load	25%	19%	14%	11%	8%	6%	4%	4%	4%	4%
	Back load	8%	11%	14%	19%	25%	8%	11%	14%	19%	25%

For implementing the reduction over 5 years we note that the rate for producing the impact previously calculated in relation to the liberalisation of trade is at the mid-period (2.5 years) produced by 50% in the linear form, 58.5% in "front load" and 41.5% in "back load" for a coefficient of 1.5 as opposed to 71% and 29%, respectively, for a coefficient of 2. In view of the importance of the socio-economic impacts evaluated previously it seems difficult to expect the European tuna sector to support the concentrated impacts of a scenario of total liberalisation of trade, of 50 to 71%, over a short period, of two and a half years, whether this period is situated at the beginning or at the end of the process of applying the reduction.

The ceiling period of five years for totally removing customs duties on tuna-based products therefore hardly seems appropriate in terms of the time needed for the sector to adapt to the new situation, whatever the method of applying and implementing the reduction.

We note that for implementing the reduction over 10 years the rate of producing the impacts previously calculated in relation to the liberalisation of trade is established at the mid-period (5 years):

- under the linear system at 50%
- under "front load" at 56% for a coefficient of 1.5, at 67% for a coefficient of 2, at 76% for a coefficient of 2.5
- under "back load" at 44% for a coefficient of 1.5, at 33% for a coefficient of two, at 24% for a coefficient of 2.5

Within the framework of this 10-year period and the application of the various methods, the preference of the European tuna fishing and processing operators would naturally be attracted to the "back load" in order to put off to a more distant future the effects of applying the reduction. If the previous gradient are applied to the interval of reduction 24% - 0% the following table is obtained:

Application at the rate of 24%										
	Linear	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Coefficient	Non-linear									
1.5	Back load	2.09%	2.09%	2.09%	2.09%	2.09%	2.21%	2.60%	3.06%	3.60%
2	Back load	1.57%	1.57%	1.57%	1.57%	1.57%	1.97%	2.46%	3.84%	4.80%
2.5	Back load	1.07%	1.07%	1.07%	1.07%	1.42%	1.90%	2.53%	3.38%	6.00%

81 *(General accounting, Lexifac collection, Breal EDITIONS, 2000)*

The "back load" at coefficient 2.5 produces a reduction in the customs rate which is fairly gentle over the first five years, 5.70% when accumulated, a value close to what certain processing operators who have mentioned reductions in the region of 1% per annum would be likely to experience, but it results in higher rates of annual reductions at the end of the period of application: 4.5% and 6% over the last two years, with a concentration of 58% of the impacts of the scenario over the last three years. These final rates and this concentrated impact would probably have effects which are more difficult for the sector to manage than the other "back load" formulae of application.

Within the framework of this scenario with multiple possible gradients of application, the non-linear application over 10 years of the "back load" reduction at coefficient 2 or at coefficient 1.5 would undoubtedly be the least penalising application approach for eliminating customs duties, if the EU was obliged to adhere, within a given period of less than or equal to 10 years, to a process of total liberalisation of trade within the tuna sector.

2.2 The impact of the scenario of a progressive reduction towards total liberalisation of trade

There is no mathematical link which can be established in a proportional way between the step of annual reduction of customs duties and the distribution over time of the socio-economic impact of the scenario of liberalisation as the European tuna sector, based in Europe and in the associated countries, cannot be brought down to a simple mathematical formula.

If, for example, we take into account the approach of applying the progressive reduction under "back load" at coefficient 2, what it is important to note is that for 5 years all those involved in the European tuna sector and the countries with associated European interests will only have to support a reduction in customs rate of 1/3 of its initial value of 24% and at a rate of less than 1.6% per annum. The effect on the European market of a small scale annual rate of reduction will be relatively diluted and this could leave a free field in the course of which:

1/ the processing industry in the European countries and associated third countries has the possibility of restructuring and consolidating

2/ the tuna sector would, over five years, garner the positive variation of growth in demand from 15-member Europe, of 5% over the years 2000. Even if this were somewhat eroded, we can count on a horizon of five years, with an accumulated growth of 15%, namely 80,000 tonnes of additional canned goods.

3/ the tuna sector could also garner the growth of demand in tuna-based products from the new member countries of the European union which joined after 2004, the 10 countries from central and Eastern Europe (CEEC)[82]. The demographic statistics from the European Union show that this body of countries represents 75 million inhabitants as opposed to 377 million for the European Union with 15 member countries. If we accept that the rise in purchasing power is rapid in these countries and that the penetration ratio of canned tuna will, in five years, be identical to that of the 15-member EU, additional European demand for tuna-based products would be in the region of 17.5% of the total. In comparison with the reference situation for this study, (521,000 tonnes of canned tuna and 56,000 tonnes of tuna-based preparations) this would represent an additional demand for basic products of approximately 90,000 tonnes of canned tuna. If we refer to the figures for European consumption for the 15 member countries evaluated for 2004 (650,000 tonnes of canned tuna and 65,000 tonnes of tuna-based preparations), this would represent an additional 115,000 tonnes of canned tuna to be supplied to the European Union.

82 Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Czech Republic, Slovakia, Slovenia

4/ positive variations in critical variables in the scenario could also occur: the rise in the rate of exchange between euro/dollar (a weak dollar in comparison with the euro penalises the economic activity of the tuna fleet and the processing industry of European interest based in the ACP countries), the variation in the price of tuna on the various tuna market places to the benefit of the European tuna sector, the reinforcement of the role of the RFOs in the traceability of catches which aims to limit the proportion of juveniles in catches.

5/ the possibility of changes in the economic climate such as the Côte d'Ivoire coming out of crisis, or a growth in demand for end products on the part of China from countries in Southeast Asia, which would reduce their commercial pressure on other markets by the same amount, in particular on the European market.

In other words the first period of the scenario of progressive reduction would allow companies within the tuna sector not only to prepare for the final estimated impacts of this scenario but also to offset them, if not greatly mitigate them. There are therefore strong reasons to suggest, although we cannot prove this from an economic point of view, that the values of the socio-economic impacts calculated previously, resulting from an application without progressiveness of the liberalisation of trade within the tuna sector, will be significantly lower at the end of the period of application of the scenario of progressive reduction towards liberalisation of trade.

It is no less true that the application, even progressive, of a reduction in the current customs rate of 24% up until its total disappearance, cannot avoid having negative socio-economic impact on the European tuna sector based in Europe and in the associated ACP and GSP C&S American countries.

On the other hand, questions may be asked, within the framework of this hypothesis of strong growth in demand from the CEEC countries, about the capacity of the processing facilities based in Europe and in associated third countries, to respond to an increase in demand of this kind, above all in view of the current situation of the closure of business of one tuna processing factory in the Côte d'Ivoire and the considerable difficulties being experienced by those established in Senegal, a situation which involves immediately supplying 60,000 tonnes of canned tuna from another origin. The additional demand in five years' time could be established at between 210,000 and 235,000 additional tonnes:

- 30,000 tonnes to fill in the void left by the Côte d'Ivoire processing industry, and 10,000 tonnes for the Senegalese processing industry
- 80,000 tonnes of canned tuna corresponding to increased demand from the 15-member European Union
- 90,000 to 115,000 tonnes of canned tuna corresponding to the final theoretical demand from the CEEC countries.

The total surplus demand equals almost the whole of the current Spanish production (251,000 tonnes), or even between 52% and 59% of the production of the European processing facilities. If all the hypotheses used previously were to prove true, we might have doubts about the ability of the European processing facilities to respond to this market demand, even with the assistance of the facilities in the GSP C&S American countries, that of the ACP countries being limited. Within the framework of these hypotheses, the arrival of new suppliers, or the growth in supplies provided by some of these, could be welcome factors for guaranteeing the necessary level of supplies for the European Union.

Moreover, within the framework of a progressive application of this scenario of progressive reduction, two factors could have noticeable effects in the short and medium-term.

The first factor generally concerns the increase in the cost of energy, and in particular that of oil products:

- the burden of the items of fuel and oil is already significant in the operating accounts for purse seiners, but in view of the current context of an escalation of the rate for crude oil, it could become even more onerous: its impact could make itself felt in a significant way on the cost of raw material, in the first instance at fishing level, but also by increasing the cost of the refrigerated cargo transport of frozen tuna to the various international tuna market places.

- The processing industry is also a consumer of energy, but at a lower proportion per kilogram of end product than the extractive segment. However, we might expect a more significant impact of increased energy costs in developing countries than in developed countries.
- The accumulation of the impact of higher energy costs on fishing, on the transport of frozen products (whole tuna and loins), on the processing industry, and on the transportation of dry products (canned goods) may be a significant burden in the short and medium-term on the price of finished and semi-finished products.

The second factor concerns the problem of fixing a ceiling for the consumer price and its secondary impact on the economic situation of the sector.
The average consumer gives priority to the price factor when making a decision about his purchases. To date, in the field of canned tuna, when the decision to purchase a tuna-based product was made, the consumer has made his selection from the large range of products on offer to him, choosing price listing which was in line with his budget. On the other hand, there was no possibility of substitution with a product other than tuna. Retailers and large-scale distribution are afraid that by increasing prices, they will modify consumer behaviour, and bring about a new phenomenon of substitution within appertised products which up until then had not existed.

This is why large-scale distribution is currently maximising the ceiling on prices and seeking for the lowest possible listings for all its tuna-based products; processing operators for whom large-scale distribution is the most important of its major accounts and its top commercial outlet therefore accept conditions of price, payment and discounting terms which are becoming more and more restricting. Some of these have even gone as far as to agree to work below their cost price in order to survive. Beyond reducing their margins and their costs, processing operators do not have any other option but to try to pass on this context relating to purchase prices of raw materials to end consumption.
This pressure exercised on tuna prices by processing could result in difficulties on the subject of long-term management of the resource. The latter's available potential has already reached its ceiling, and the margin for manoeuvre left to the shipowners is becoming narrower and narrower. In the future, the determining factor will be access to the resource.

3 Scenario 3: Progressive reduction towards a rate of 0% for loins and 15% for canned tuna within 6 to 10 years

It is useful to remember that the analysis of this scenario and its impacts is carried out initially by means of immediate application at the due date in relation to the reference period, and that only then do we establish the working hypotheses characteristic of the temporary application of the reduction envisaged (as in the previous case of progressive application of total liberalisation of trade).

3.1 Detailed identification of the scenario/price

Let us recall that European Union weighted imports coming from the zone of Southeast Asia over the period 2000/2002 show that over this period:

- loins of Asian origin are not competitive after customs clearance with loins of ACP and GSP origin but they are at the same price level without customs duties
- canned tuna of Asian origin, mainly consisting of skipjack, it is still competitive after customs clearance, to varying degrees, with European manufacture and that of the ACP and GSP C&S American countries.

It is more difficult to evaluate the new scenario/price which would result from applying a rate of 15% for canned tuna and the complete liberalisation in relation to tuna loins. However, after consulting the professionals, the working hypotheses which it seems possible to retain are as follows:

- for most observers, there would be comprehensive repercussions on importation prices caused by the disappearance of customs duties for loins.
- on the end market for canned goods, the reduction of the customs tariff from 24% to 15% would be passed on in full to end consumption.

Consequently, if the modifications to the customs context had occurred over the period 2000/2002:

- the new equilibrium price relating to canned tuna of Asian origin would have then been established at €2,115 namely €178 below the rate per tonne noted for the period.
- given a distribution of 75% skipjack 25% yellowfin tuna, on loins of Asian origin, the new equilibrium price of skipjack loins on the European market would be established at €2,850 per tonne and that of yellowfin tuna loin at €3,600.

In comparison with the prices for loins in the reference situation, price gaps according to origin would be established at the following values:

	European Union	ACP Countries	GSP C&S American countries	**Southeast Asia**
Yellowfin loin	4,653	3,650	3,356	**3,600**
Skipjack loin	3,997	2,816	3,086	**2,850**

Except for the manufacture of loins in Europe, whose price per tonne for loin stands out in comparison with other origins because of the high cost of its labour, and its raw material purchasing price, we can see that the other three origins would have presented price ranges which were competitive overall between each other.

3.2 Analysis of the estimated impact of the scenario/price on the final demand from the European market for processed products

With a differential of only €178 per tonne, the hypothesis of a significant growth of imports of canned goods of Asian origin over the period 2000/2002 is not possible: it would probably have been only 50% at the very most more than the volumes noted over the reference period. Imports would have been 106,500 tonnes as opposed to 71,000 tonnes. However in spite of the fact that this volume would not achieve the critical mass, the general feeling is that prices would be dragged downwards by the hard discount segment which would mean that the price for the whole production of canned goods, taking all origins into account, ought to fall into line at -€178.

The demand for loins from the processing industry based in Europe would on the other hand be significant:

i) firstly in order to replace the manufacture of loins in Europe which could no longer be competitive with loins imported from Asia or even with those imported from the GSP and ACP countries

ii) in order to partially substitute for supplies of frozen tuna in the reference situation. The doubling of imports of loins seems to be the minimum level of what could have been observed if this scenario were applied to the reference situation. This corresponds to imports of 30,000 tonnes of loins of yellowfin tuna and 72,000 tonnes of loins of skipjack. If prices were equal independent of origin, the growth in imports of loins would mainly be distributed between GSP and Southeast Asia origins, with the ACP countries being limited by their capacity for manufacturing loins.

3.3 Analysis of the estimated impact of the scenario/price on the supply of processed products

Pre-existing gaps between the prices of products in the reference situation are considered to be retained, and therefore it is possible to re-establish competition between various origins starting from a reduction threshold of €178 on the prices for the reference situation for all canned products of all origins.

As in the case of the other scenario, a reduction of €178 is applied as a principle to the structural accounts, taking into account, in order, the elimination of 50% of returns on sales[83], with the reduction balance remaining to be applied concerning the price of the raw material. Within this less restrictive scenario the search for reducing all costs excluding the purchase of raw materials is no longer necessary.

The market shares won over by the Asian countries for canned goods are considered to be at a level equal to the commercial positions of the processing industry based in Europe and to the whole of the processing industry based in third countries. For the latter, losses of market share are considered pro rata for their representativeness on this market.

In view of the processing capacities for loins present in the ACP countries in the reference period, it is considered that the growth of their market shares for loins would have been a maximum of 50% of their production recorded over the reference period. The majority of the increase in supply of loins for the European Union is shared in equal proportions between increased production in GSP countries and imports of Asian origin.

3.3.1 With regard to "national production" and imports within the European Union

The loss by volume of canned goods allocated to the processing industry based in Europe is therefore 17,750 tonnes. The volume imported from Southeast Asia has every chance of mainly consisting of skipjack: we can use as a working hypothesis a distribution of 70% skipjack 30% yellowfin tuna. In comparison with the reference situation, the new volumes of canned tuna produced by the European Union would have been:

Table 114: New distribution in tonnes of the supply of canned tuna of European origin within the framework of the scenario observed

	Yellowfin cans	Skipjack cans
Production EU (reference situation)	*120 500*	*107 500*
Increased market share Asia	- 5 325	- 12 425
New situation	**115 175**	**95 075**

In comparison with the reference situation, naturally the global volume of imports for the European Union would have increased by 17,750 tonnes of canned tuna from Southeast Asia.

With regard to production finished in Europe, those involved in the European tuna processing industry can re-establish a competitive situation with the new equilibrium price. In comparison with the previous scenario of total liberalisation, calculations show that the manufacture of canned tuna in Europe from whole tuna theoretically would probably not experience any difficulty in re-establishing a competitive situation with the new equilibrium price, since by sacrificing its returns on sales by 50% it could offer practically the same

83 We should remember that eliminating all the returns on sales is not possible, as one portion of the latter covers distribution costs purchase price for raw material.

However, the increased imports of loins of skipjack at a lower price would make the manufacture of canned skipjack from whole tuna less competitive and there would be a consequent drop in volume of production of canned skipjack from whole tuna to the profit of the manufacture of canned skipjack from loins.

3.3.2 With regard to national production and exports from exporting countries

Within the European Union imports over the period 2000/2002, with the compared representativeness of the ACP countries and the GSP C&S American countries being 85% and 15%, respectively, in relation to canned tuna and 21% as opposed to 79% for tuna loins, the application of the previous modifications produces the following values:

Table 115: New distribution (in tonnes) of the supply of canned tuna and tuna loins of ACP, GSP+ and EBA origin within the framework of the scenario analysed.

	Yellowfin Cans	Skipjack Cans	Yellowfin Loins	Skipjack Loins
ACP Production (reference situation)	***76 251***	***98 916***	***3 150***	***7 096***
Increased loin demand from the EU			+ 1575	+3548
Increased market share Asia	- 4526	- 10 561		
ACP production new situation	**71 725**	**88 355**	**4 725**	**10 644**
GSP Production (reference situation)	***11 700***	***18 309***	***11 113***	***26 845***
Increased loin demand from the EU			+13 425	+32 452
Increased market share Asia	-800	-1864	- 6 713	- 16 226
GSP production new situation	**10 900**	**16 445**	**17 826**	**43 071**

Subject to processing facilities existing in these countries and the prevailing economic conditions allowing the processing of loins, the impact of changes on the European tuna market within the framework of this scenario would be clearly much more limited than within the framework of total liberalisation affecting all products:

- The global volume of the supply of processed products intended for Europe would only reduce by 5.3% for the ACP countries. The drop in exports of canned tuna of 15,000 tonnes would represent losses of European market shares of canned tuna for these countries of 8.5% as opposed to a slight gain in market shares for loins.

- The global volume of supply for processed products would increase for the GSP C&S American countries by 30% in this scenario.

3.4 Analysis of the estimated impact of the scenario/ price on the formation of prices for raw material

The prices for raw materials are formed from applying the principles of adjustment stated previously for the structural accounts for canned tuna and for those for loins. Depending on the price positioning according to origin in terms of finished and semi-finished products, they may be completely or partially applied in order to make the price adhere to the new balanced market listing.

Within the framework of this less restrictive scenario relating to prices, in which it is therefore not necessary to have recourse to lowering costs (in particular in relation to labour), calculations show in a general way that the simple reduction of returns on sales and a minimum drop in the purchase price of raw materials allow adhesion to the new market prices.

Table 116: Calculation of the new prices for raw material for the scenario (in €) after alignment with the equilibrium price for canned tuna and in relation to the new price for loins.

Resulting raw material price	Yellowfin	Skipjack
European Union		
Can manufacturing	**1203**	**774**
ACP country		
Can manufacturing	992	596
Loins manufacturing	1028	642
Weighted average price raw material of scenario	**997**	**603**
GSP country		
Can manufacturing	854	676
Loins manufacturing	895	707
Weighted average price raw material of scenario	**886**	**700**

Table 117: Calculation of the price gaps for raw material between the new situation and the reference situation

Resulting raw material price	Yellowfin	Skipjack
European Union		
Price reference situation	*1 214*	*795*
New price	1203	774
Difference in %	**- 1 %**	**-2,6 %**
ACP countries		
Price reference situation	*1 022*	*642*
Weighted average price raw material of scenario	997	603
Difference in %	**- 2,5 %**	**- 6 %**
GSP countries		
Price reference situation	*892*	*701*
Weighted average price raw material of scenario	886	700
Difference in %	**- 1%**	**- 0%**

The repercussions on the price of raw material are relatively minimal with the exception of skipjack unloaded and sold in the ports of the ACP countries. The countries in the European Union and the GSP C&S America countries could, in their case, practically maintain previous purchase prices for both species. Nevertheless, the liberalisation of prices relating to tuna loins would minimise the volume of purchases of frozen tuna by the European processing industry, in particular in relation to skipjack. The maintaining of prices on purchases of frozen tuna can be seen from the calculations but have a more theoretical than practical value.

3.5 Analysis of the estimated impact of the scenario/ price on the supply of the raw material.

Within the framework of the geographical positioning of its current unloadings, the European tuna fleet would undergo a reduction in the region of 3% of its turnover. This low loss of earnings could not be the cause of profound changes in strategy by European ship owners involved in tuna fishing.

On the other hand, in this scenario, the importance of the increase in imports of loins into Europe would reduce the needs of the European processing industry for frozen whole tuna by the same extent. Consequently, the transhipments carried out by the European fleet destined for Europe would reduce significantly to the benefit of transshipment in the direction of Southeast Asia and the GSP C&S American countries, depending on the change in the rate for tuna on the two principal tuna market places of Bangkok and Manta. As the prices relating to skipjack are completely comparable between Manta and Bangkok within this scenario, the distribution of transhipments should be established in accordance with the need to supply the local processing industries.

These flow movements would then essentially concern the amounts for volumes previously directed towards Europe, as in this scenario the ACP countries ought not to register significant variations in their unloadings.

3.6 Quantification of impacts of the scenario/price per component identified

3.6.1 Per segments of the European tuna sector (extractive and processing)

As the sector of false tuna is unvarying within this scenario (no impact in terms of reduction of unloadings for ACP and GSP countries), the calculations for quantifying socio-economic impacts on the European tuna sector are limited to those suffered by the European processing industry and to a much lesser extent those suffered by the European tuna fleet:

Table 118: Summary of socio-economic impacts of the new situation on the European tuna fleet fishing for major tropical tuna (at equal volumes of catches)

Millions €	**TOTAL**	**European Union**		**ACP or GSP countries**	
	Value	Value	%	Value	%
		EUROPEAN TUNA FLEET			
Reference situation					
Turnover	328,6				
Primary Added Value	193,9	163,3	*84,2%*	30,6	*15,8%*
Scenario base value					
Turnover	318,8				
Primary Added Value	184,6	154,3	*83,5%*	30,3	*16,5%*
Impacts					
Loss in turnover	**- 9,8**				
Loss in Primary Added Value	**- 9,3**	**- 9,0**		**- 0,3**	
		FALSE TUNA sector			
Reference situation					
Turnover	31,4				
Primary Added Value	11,52	6,72	*58,3%*	4,8	*41,7%*
Scenario base value					
Turnover	31,4				
Primary Added Value	11,52	6,72	*58,3%*	4,8	*41,7%*
Impacts					
Loss in Primary Added Value	**0**	**0**		**0**	

Table 119: Summary in millions of € of socio-economic impacts of the new situation on the European processing industry

Millions €	TOTAL	European Union		ACP or GSP countries	
	Value	Value	%	Value	%
	European processing industry				
Reference situation					
Turnover	724,1				
Primary Added Value	268,9	268,9	*100%*		
Scenario base value					
Turnover	686,5				
Primary Added Value	193,6	193,6	*100%*		
Impacts					
Loss in turnover	**- 37,6**				
Loss in Primary Added Value	**- 75,3**	**- 75,3**			

The alignment in relation to the equilibrium market price and the losses of market share associated with increased imports of canned tuna would, within the framework of this scenario, limit the reduction of turnover to €37.5 million.

On the other hand, the substantial increase in Europe of the volume of production of canned tuna and other finished products based on tuna from loins instead of from whole tuna would result in a consequent loss of added value for the European industry: €75.3 million. This portion of added value would in fact be relocated into the countries of Southeast Asia and the GSP C&S American countries (in fact the largest proportion of activity involved in the preparation of the raw material would no longer take place in Europe).

As the payroll is the principal component of added value in the manufacture of canned goods from tuna, whereas it only constitutes a small portion in the manufacture of canned goods from loins, there would also be a socio-economic repercussion at the level of employment.

The calculations actually show that in this scenario the reduction of the portion of added value corresponding to the payroll would be 40% (the mechanisation of processing chains is much easier in relation to loins than in relation to whole tuna).

From a social point of view, the European processing industry would lose between 3,300 and 5,000 direct jobs, and the same number of indirect jobs, namely between 6500 and 10,000 jobs in total within the framework of this scenario applied without progressiveness, namely as much or even slightly more losses of jobs as in the case of the scenario of total liberalisation.

3.6.2 According to players (European union, third countries)

3.6.2.1 Impact of the new situation on the ACP countries

Table 120: Summary in € millions of the socio-economic impacts of the new situation on the tuna processing industry in the ACP countries

Millions €	TOTAL	European Union		ACP or GSP countries	
	Value	Value	%	Value	%
	Share of ACP processing industry for European market				
Reference situation					
Turnover	492				
Primary Added Value	158,6	62,4	*39%*	96,2	*71%*
Values new situation					
Turnover	437,3				
Primary Added Value	130,0	48,5		81,5	
Impacts					
Loss in turnover	**- 54,7**				
Loss in Primary Added Value	**- 28,6**	**- 13,9**		**- 14,7**	

The alignment in relation to the European market equilibrium price for canned tuna and losses of market share would involve, within this scenario, a reduction of turnover of €55 million for the tuna processing industry in the ACP countries, of which a loss of global economic wealth of €28.6 million. This loss of global economic wealth would be distributed in almost equal shares between the ACP countries, €14.7 million of losses, and the European Union, €13.9 million of losses.

The calculations show that within this scenario the reduction of the share of added value corresponding to the payroll would only be 5%: from the social point of view, the processing industry in the ACP countries would therefore only lose between 1,000 and 1,500 direct and indirect jobs in total.

3.6.2.2 Impact of the new situation on the GSP C&S American countries

The substantial increase in demand for loins by the European Union allows the GSP countries to increase their turnover, with a non-proportional growth in their rate of added value (the added value of the loin is lower than that of canned tuna). There would therefore be no reduction of jobs in relation to GSP countries, and it is even probable that increased production would create jobs. If we use the same principles as previously applied to the proportional representation of the variation in the share of added value corresponding to payrolls, an increase which is 38% here, in this scenario we would therefore see the creation of 2,000 direct jobs and 4,000 indirect jobs in the GSP countries.

Table 121: Summary in € millions of the socio-economic impacts of the new situation on the tuna processing industry in the GSP C&S American countries

Millions €	TOTAL	European Union		ACP or GSP countries	
	Value	Value	%	Value	%
	Share of GSP processing industry for European market				
Reference situation					
Turnover	192,3				
Primary Added Value	59,3	21,3	*36%*	38	*64%*
Values new situation					
Turnover	250,3				
Primary Added Value	67,6	18,8		48,8	
Impacts					
Increase in turnover	**+ 58,0**				
Increase in Primary Added Value	**+8,3**	**- 2,5**		**+ 10,8**	

3.6.2.3 Final socio-economic impact of the new situation on the European Union

Within the framework of a scenario resulting from the liberalisation of trade relating to loins and the reduction of the customs rate on canned tuna down to a minimum of 15%, and an application without progressiveness of these new tariff conditions, and, as strange as this may seem for a scenario whose results maintain the turnover of the European tuna processing industry at more or less the same level:

- the losses of economic wealth within this scenario would rise, for the European Union, to €100.6 million (€9.0 million for the European tuna fleet, €0 million for the false tuna secondary sector, €75.3 million for the processing industry based in Europe, €13.9 million of economic wealth not supplied by the ACP countries, and €2.4 million less in relation to GSP countries).

- European losses in total direct and indirect jobs would be between 6,500 and 10,000 jobs. Once again, Spain, representing 65% of European production, would be the country worst affected from both an economic and social point of view.

On the other hand this scenario preserves the economic activity of the tuna processing industry of the ACP countries intended for Europe and even favours the tuna processing industry of the GSP C&S American countries intended for Europe.

3.7 Progressive application of the tariff conditions for the scenario

In the same way as within the framework of a progressive reduction of customs tariffs towards a situation of total liberalisation of exchanges, questions can be asked about the methods of applying degressiveness to be taken into account within this scenario.

The socio-economic impacts of the application without progressiveness of the tariff conditions in this scenario are higher than may have been expected. In comparison with the scenario of total liberalisation of trade in relation to all products, they nevertheless represent, for operators strictly based in the European Union, 63% of the impacts of loss of economic wealth of the scenario of total liberalisation and the equivalent in job losses.

Consequently, we would be inclined to retain an approach for applying the reduction of customs duties on loins as a non-linear formula over 10 years, in "back load" at coefficient 2, whereas in relation to canned tuna where the final target rate is 15%, the linear application over 10 years produces a drop in the customs rate of a little less than 1% per annum, a value which does not seem to justify the use of a non-linear formula.

In the case of loins, we would then have in an identical case in terms of the method of progressive application of the reduction and all the remarks made in chapter 0 relating to the progressive application of the reduction of the customs rates toward a total liberalisation of trade are therefore also applicable in this scenario.

The first period of this scenario of reducing customs rates would allow companies within the sector not only to prepare for the estimated final impact of this scenario but also to write them off, if not reduce them. There are therefore good grounds to assume, although this cannot be proved from an economic point of view, that the values of the socio-economic impacts calculated previously, resulting from an application without progressiveness of the liberalisation of trade relating to tuna loins and a 15% reduction of the customs rate relating to canned tuna, will be lower at the end of the period of application of the scenario.

It is equally true that the application, even progressive, of reductions of customs rates, even if a distinction is made between loins and canned tuna, cannot avoid having negative socio-economic impacts on the European tuna sector, in particular for processing operators based in Europe.

3.8 Other impacts of the scenario of progressive reduction towards a 0% rate for loins and 15% for canned tuna

We can summarise the possible effects of this scenario in terms of the following factors:

- The sustained growth of the European market and the continuous growth of demand for loins from the European market could have effects on reinforcing the fishing effort of national and community fleets on all the oceans.

- The relocation and reinforcement of the manufacture of loins in the GSP C&S American countries and in the countries in Southeast Asia would, in this scenario, be very likely to involve a progressive change in the destinations of transhipments carried out by the European fleet to the benefit of these two processing zones.

- In the view of the professionals within the processing and distribution business, this scenario would not, in principle, cause any problems with supplying the European market with finished products, since even if the increase in imports of canned tuna of Asian origin is smaller than in the other scenario, the European processing industry would be capable of making up the demand from the European market thanks to the progressive liberalisation of trade relating to loins.

- This scenario would also probably lead to a stronger compartmentalisation between extractive activities and the processing industry based in Europe and therefore to a reduction in the integrated aspect of the European tuna sector. In fact, the concerns of the European processing industry in relation to "sourcing" would take precedence over the aspects relating to links between European production/European processing.

- The "cost" for the European Union of the application without progressiveness of the tariff conditions for this scenario can be estimated as the sum of the following factors:

- the loss of earnings on customs revenue for imported products based on tuna (loins and canned tuna): the calculation of the weighted value over the period 2000/2002 produces a figure of €15 million
- the loss of economic wealth within Europe: €101 million
- the cost of any accompanying measures aimed at the European processing industry: figures to be provided
- naturally within the framework of a scenario of progressive reduction towards a rate of 0% for loins and 15% for canned tuna, the cost of applying the scenario would certainly be lower. Moreover, there is an induced gain associated with redynamising the foreign trade of the European Union with regard to all other products, but this gain cannot be measured within the framework of this study.

CONCLUSIONS

1. Seven species of tuna are important on the international market. Almost four million tonnes of major tuna are caught every year. Although stocks of skipjack do not give rise to any concern, the same is not true for stocks of bigeye tuna and yellowfin tuna. It should also be pointed out that scientific opinion would gain from the availability of reliable data from a significant portion of the world fleet. In any event, it is advisable to consider that stocks require special attention both in terms of monitoring and of management. In this sense, European Community investment in the RFOs is completely justified and needs to be reinforced.

2. The European Community represents approximately 20% of the world fleet. We can therefore consider that the tuna fleet constitutes the most important, and the most internationalised, Community fishery. Consequently, reinforcing the RFOs, with the latter adopting appropriate management tools and penalising methods, is proving to be essential, not only for the future of the community fleet but also for compliance with international undertakings made by the European Community on the subject of durable development.

3. Nevertheless, we must emphasise that the Community fleet is subject to fishing constraints associated with its "European" status which, although they allow satisfactory monitoring of the fleet's activity, particularly from the point of view of complying with international undertakings and monitoring catches, generate additional costs for shipowners competing with countries with low costs and/or low levels of regulation. In addition, the administrative restrictions on the development/renewal of the tuna fleet on bases identical to those which prevail for the fleets working in Community waters handicaps the dynamism of shipowners and in the long run their durability. In fact, shipowners find themselves obliged to comply not only with the decisions of the RFOs, hoping for inter-RFO reinforcement and consistency to take place at the same time, but also with the constraints affecting the Community fleet, without receiving any special treatment. In terms of consistency, therefore, it would be advisable to develop a new approach for managing the European Community fleet which would at least allow its renewal under satisfactory conditions and in this way would justify the action of the European Community within the RFOs.

4. The setting up of an "external" section of the common fishing policy is essentially based on fishing agreements which mainly concern the tuna fleet. These fishing agreements are an essential factor of making access to resources safe for the European tuna fleet and they also represent an essential way in which the European Community can ensure that its tuna fleet complies with its international undertakings. We feel we need to pursue this policy of fishing agreements, reinforcing it, especially since it is consistent with the development of the processing industry, making the Community market in canned tuna secure, and helping to develop the beneficiary countries. Abandoning this policy would lead the shipowners to prefer to negotiate directly for "private" licences which, in addition to the legal and time-associated insecurity which the shipowners would suffer, would not allow satisfactory controls to be carried out by the flag state and the European Community.

5. More than any other Community fishing fleet, the tuna fleet experiences very significant fluctuations in rates which it cannot anticipate or counteract. These fluctuations can also be magnified by the fact that the world tuna sector is entirely "dollarised" and, therefore, that Community companies are also subject to variations in exchange rates which may be added to fluctuations in rates for frozen tuna. The compensatory allowance for tuna may perhaps no longer be justified in its current formulation. The grounds for releasing it have been further reduced and it is granted less frequently. Effective regulation of rates can only be envisaged if shipowners are given a means of regulating their product marketing. The relative weight of the Community tuna fleet and its very strong capital intensity makes any action on regulating fishing effort unrealistic (fishing less during periods of low prices). Recourse to a policy of temporary stocking, as exists in other segments affected by the Community fishing policy (CFP), should be examined.

6. The three major canned tuna markets (Europe, USA, Japan) have set up regulations relating to access of foreign products. These mechanisms, which are extremely complex, on the one hand aim to provide a certain amount of protection for the interests of national producers and to set up specific development

policies. In this sense, the Community mechanism has allowed not only participation in the development of the Community industry but also the establishment or reinforcement of a tuna industry in certain ACP, GSP+ and EBA countries. Certain countries are in fact extremely dependent on this activity. One example is the Seychelles, which also has geographical and halieutic advantages which are vital for the European tuna sector. Nevertheless, given the fact that they are continuously amended, these mechanisms have not prevented the Community market from opening up in an extremely significant way to foreign products even if they have made it difficult to manage supplies for the Community processing or distribution industry.

7. The European processing sector still remains very important on Community territory, particularly in certain regions (Galicia). It has been able to develop and increase its production capacity in order to follow the development of a market which seeks out products with proven nutritional qualities at a low cost as well as more sophisticated products. Nevertheless, given the volumes involved, we must bear in mind that products meeting the specific requirements of the national markets alone are not capable in themselves of ensuring that significant processing activities are maintained on Community territory. Consequently, the European processing industry has developed its ranges of products, its merchandising and its marketing all at the same time, as well as establishing itself abroad in order to reduce its production costs, and its method of production (development of the use of loins by European factories) in order to maintain its "traditional" market shares and to develop its export shares. Consequently, European processing companies have been very strongly internationalised (production; supplies), and are capable of developing industrial and commercial strategies which are not totally bound by supplying the Community market (investment in GSP+ and EBA companies for significant sales on the North American market; investment in Brazil for the national market, for example). This phenomenon is in progress while the trend towards the concentration of players within the sector is continuing.

8. Although players within the international tuna sector have developed strongly (in terms of production, processing and markets) they do however remain relatively clearly identified. Nevertheless, we must stress that two potentially significant players in terms of population, industrial capacity, dietary habits and standard of living, have not yet appeared, namely India and the People's Republic of China. At the moment it is impossible to know whether these players will in future wish to develop all or a part of the tuna industry. In any event, the development of consumption of tuna-based products by the populations concerned will in point of fact have important consequences in terms of fishing and processing.

9. The analysis of the scenarios shows that changing the tariff systems is not a neutral exercise from a socio-economic point of view. The major importance of the tuna sector (fishing and processing) and its very high international exposure means that this needs to be managed with the aim of protecting existing companies and allowing them to continue to develop. As a reminder:

9.1 The socio-economic impacts measured in the scenarios relate to the loss of turnover, the loss of wealth created in relation to the zone concerned (losses of primary added value) and the loss of jobs, both direct and indirect, induced by the tuna industry,

9.2 The impact is measured over a predefined perimeter of Community interests, for the major sector of tropical tuna, and for 100% tuna-based products. The socio-economic impacts which may exist in relation to extra- and intercommunity trading agents, relating to mixed products of 2nd and 3rd stage processing, in relation to other sectors of tuna (temperate tuna), and outside the perimeter of Community interest, are not quantified in this economic analysis.

9.3 The measurement of the economic scale involved is an underestimate as the study was not able to take into account the economic values relating to the activities associated with 2nd and 3rd stage processing, nor the economic values associated with the activity of importers and generally speaking those relating to the activities of intra-community trading agents in relation to products within the tuna sector.

9.4 In addition to their direct link with the aspects specific to the various links in the European tuna sector based in Europe and in the ACP, GSP+ and associated EBA countries, the differentiated impact of the scenarios is also strongly associated with the differences in positioning strategy on the market of the processing industry operators in the Southeast Asia countries. Within the scenario of total liberalisation they will strongly favour the exportation of canned tuna and will limit their exports of loins[84], whereas in the scenario of liberalisation of trade relating to loins and reduction of customs tariffs relating to canned goods to 15%, they will increase their exports of loins after having reached the volume of canned tuna corresponding to their new market shares.

10. With the exception of the scenario of maintaining the current situation, all the other scenarios have negative socio-economic effects on the European tuna sector:

10.1 The application without progressiveness in time:

i) of the scenario of total liberalisation of trade relating to all tuna-based products,

ii) or a scenario of total liberalisation of trade relating to tuna loin and reduction of customs rate to 15% in relation to canned tuna

has significant global socio-economic impacts on the European tuna sector, impacts which would be difficult for any food processing sector to overcome: losses of between 20% and 25% of its economic wealth and between 30% and 40% of its jobs.

10.2. The scenario of total liberalisation of trade relating to all tuna-based products applied without progressiveness in time has global socio-economic impacts which are more drastic than the scenario of total liberalisation of trade on tuna loins and reduction of customs rate to 15% in relation to canned tuna, also applied without progressiveness in time. Overall job losses at the due date are the same for the two scenarios but the loss of economic wealth for the European Union is over 50% for the first scenario.

10.3 the scenario of total liberalisation of trade relating to all tuna-based products, and the scenario of total liberalisation of trade relating to tuna loins and reduction of customs rate to 15% in relation to canned tuna, have different impacts on the European Union (tuna fleet and processing industry), the processing industry in the ACP countries intended for Europe, and the processing industry in the GSP C&S American countries intended for Europe ;

i) the first scenario shows that the following experience virtually equivalent socio-economic impacts evaluated in terms of loss of turnover, losses of economic wealth and job losses: the European sector (tuna fleet and processing industry based in Europe) and processing industry in the ACP countries with European interests

ii) the second scenario shows that the European processing industry would be the worst affected in terms of loss of economic wealth and loss of jobs; the processing industry in the ACP countries with European interests would experience a great impact in terms of loss of turnover but lower in terms of loss of economic wealth. On the other hand it must be borne in mind that the absolute value of the socio-economic impacts of this scenario is lower than that of the impacts of the first scenario.

iii) the processing industry in the GSP C&S American countries intended for Europe would be the least affected whatever the scenario: the impacts of the second scenario are even positive in terms of turnover, creation of economic wealth and creation of jobs.

11. Whatever the scenarios applied without progressiveness, Spain, which represents 65% of tuna activity in Europe, would be the country most affected by the socio-economic impacts evaluated. In the second place, it is the processing industry in the ACP countries in general which would be the most affected by the new tariff conditions of these scenarios. The processing industry in the GSP countries would experience undergo a relatively minimal impact, or even an improvement, given its orientation towards the manufacture of loins.

12. The progressive application of the scenarios allows their penalising effects to be minimised, but in both cases of scenarios analysed it seems difficult to concentrate even only 50% of the impact over a short period: consequently the application of the scenarios over a period of only five years seems inappropriate.

---

84 In fact the number of units of added value sold in one tonne of canned goods is much higher than the number of units of added value sold in 0.575 tonnes of loins allowing the manufacture of one tonne of canned tuna.

13. The progressiveness of applying the tariff conditions of the scenarios is made less penalising by their development over a period of 10 years, taking into account a non-linear formula of reducing customs tariffs, in "back load" at coefficient 2, except for the 15% reduction of customs tariffs on canned goods in the case of the second scenario where the formula of linear application could be suitable.

14. This method of degressive application in a non-linear formula in relation to the critical products involved on the various scenarios (loins and canned tuna in the first case, loins in the second case) allows a decrease in customs rates which is less rapid than in the linear formula which:

- 14.1 would leave, we would hope, the European tuna sector (tuna fleet, processing industry based in Europe and in the ACP and associated GSP countries) a period of adaptation and preparation for the new market configuration.
- 14.2 would allow the extent of the socio-economic impacts to be reduced by the benefit of garnering the sustained growth of the 15-member European market over the period of applying the scenarios.
- 14.3 would allow the additional significant demand from the CEEC countries to be garnered within the same period within five years.
- 14.4 would allow possible benefits from the positive variation of certain critical variables in the scenarios and changes in economic climate in the role of certain countries, whether they are producers and/or processors and/or consumers.

15. On the other hand in a period of time connected with the progressive application of the scenarios, three factors could have an increased impact:

- increased energy costs would have significant repercussions on the price of finished products, bearing in mind the importance of this item in the extractive segment and in transport.
- the effects of maintaining the ceiling of prices with retailers and large-scale distribution: through the chain effect of operators they apply pressure to obtain rates for the price of frozen tuna, price listings which may prove, in the medium and long-term, harmful to the durable management of the resource.
- Given the fact that the virtually all the catches are already sent for processing, the increase in world demand for tuna-based products, on all the markets whether existing (the most important being: European, American, Japanese) or emerging (South American countries, China) leads inexorably to an increase in fishing effort: however this has a limit associated with the exploitable potential of the resource, a potential which has already been reached in two oceans at least. The Pacific is the only ocean in which there is some additional availability. The limitation of the resource will therefore inevitably cause tension in the medium term with regard to methods of accessing the latter, and this would be reflected on the end consumption market.

As a consequence, in comparison with the basic reference situation, used as a starting point from which the economic analysis for calculating the socio-economic impacts of the scenarios calculated without progressiveness, considerations about the progressive liberalisation of the tuna sector must take into account not only the linear or non-linear time distribution of these non-progressive scenarios, but also the impact of provisional plausible factors which could occur in the course of the period of progressive application of the scenarios, possibly reducing or increasing the effects previously calculated.

APPENDIX 1 - Overview of the production capacity of the canneries quoted in the report (2004)

Overview of the production capacity of the canneries referred to in the report (2004)

Factory	Owner	Registered Office	Production capacity (tonnes/day) whole	loins
Starkist Samoa	Starkist	American Samoa	500	100
Calvo	Calvo	Carvhalo et Esterio in Galicia	400	
Conserveries Jealsa	Jealsa	Boiro	400	
Indian Ocean Tuna Ltd (IOTC)	Seychelles government	Seychelles	350	
Chicken of the Sea Samoa	Chicken of the Sea	American Samoa	350	100
Thai Union Frozen Products Plc.	Thai Union	Thailand	300	
Société des Conserves de Côte d'Ivoire (SCODI)	Bolton/Saupiquet	Côte d'Ivoire	250	
Pêche et Froid Côte d'Ivoire (PFCI)	Pêche et Froid	Côte d'Ivoire	200	
Pêche et Froid Océan Indien (PFOI)	Pêche et Froid	Madagascar	200	
Mauritius Tuna Fishing Canning Enterprise (MTFCE)	Princes Food	Mauritius	182	
Pioneer Food Company	Heinz Europe	Ghana	175	
Starkist Ecuador (1)	Starkist	Ecuador	150	
Starkist Ecuador (2)	Starkist	Ecuador	150	
Bumble Bee Ecuador	Bumble Bee	Ecuador	150	
Bumble Bee Fiji	Bumble Bee	Fiji	130	
Bumble Bee Trinidad	Bumble Bee	Trinidad and Tobago	100	
Castelli	Côte d'Ivoire investors	Côte d'Ivoire	50	
Bumble Bee Puerto Rico	Bumble Bee	Puerto Rico	40	50
Tonelli	Ghanaian investors	Ghana	10-15	
Canneries in the Philippines	Private investors	Philippines	1325 (combined capacity)	
Canneries in Indonesia	Private investors	Indonesia	1540 (combined capacity)	
Heinz France (Paul Paulet – Petit Navire)	Heinz	Douarnerez, France	estimated production: 20000 tonnes of canned tuna in 2002	
Heinz Portugal (Maria Elisabeth)	Heinz	Portugal	estimated production: 7000 tonnes of canned tuna in 2002	
Rio Mare Saupiquet	Bolton/Saupiquet	Cermenate, Italy Vannes, France	estimated production: 50000 tonnes per annum	
Tri-Marine factories (production of loins only)	Tri-Marine	Colombia, Costa Rica, Ecuador, Kenya, Thailand and Solomon Islands	Approximately 200000 tonnes of raw material per annum (estimate)	

APPENDIX 2 - Conversion coefficients used

CONVERSION COEFFICIENTS USED (Source: FAO)

1.54	Tuna loins and fillets, fresh or chilled
1.54	Tuna loins and fillets, frozen
0	Tuna meal
1.92	Tunas nei, canned
4	Tunas nei, dried, unsalted
1.16	Tunas nei, frozen
1.5	Tunas nei, salted or in brine
1.6	Tunas nei, smoked
1.4	Tunas, bonitos, billfishes fillets, fresh or chilled
1.54	Tunas, bonitos, billfishes, etc. fillets, frozen
1.92	Tunas, bonitos, billfishes, etc., canned
1.5	Tunas, bonitos, billfishes, etc., dried, salted or in brine
4	Tunas, bonitos, billfishes, etc., dried, unsalted
1.6	Tunas, bonitos, billfishes, etc., smoked
1.16	Tunas, bonitos, billfishes, frozen
1.92	Tunas, chunk pack, canned
1.92	Tunas, chunk pack, in brine, canned
1.92	Tunas, chunk pack, in oil, canned
1.92	Tunas, flakes and grated, canned
1.92	Tunas, flakes and grated, in brine, canned
1.92	Tunas, flakes and grated, in oil, canned
1	Tunas, fresh or chilled, nei
1.16	Tunas, gilled, gutted, frozen, nei
1.36	Tunas, heads-off, etc., frozen, nei
1.92	Tunas, solid pack, canned
1.92	Tunas, solid pack, in brine, canned
1.92	Tunas, solid pack, in oil, canned

APPENDIX 3 - Identification of the nature of data needed to establish the economic balance sheet for the current situation and analysis of the scenarios

The methodological approach

The previous chapters make it easy to understand the methodological approach we propose to adopt for the economic analysis:

- identification of their strategy and their behaviour within the framework of each scenario studied with the assistance of data collected on non-ACP and non-GSP producing countries, candidates for the European market.

- Evaluation of the impact on the final European market of each scenario envisaged in terms of variations in prices and quantities.

- Finally, with the assistance of the structural accounts from each link in the transactional chain, and possibly those of collateral or dependent economic agents, and that of the physical quantity of each link with regard to the dependent portion of the activities of the European tuna sector, we evaluate the repercussions of the changes previously identified on the extractive and processing segments within the European Union and within the countries bound to it by means of preferential agreements.

In order to identify the socio-economic differentials created by applying the scenarios to the initial situation, we can construct an up-to-date reference situation on the basis of the same principles.

The typology of data needed for carrying out this approach

Applying this approach means collecting, processing and analysing the following groups of information:

- all information needed for evaluating changes in the European market, including amongst others that of identifying the principles of calculation for re-establishing the equilibrium price between supply/demand per product on the European market.
- all information needed for evaluating resistance to the reduction in the export prices in the accounts of European processors and processors in the ACP and GSP countries formerly associated with certain countries in the EU.
- all the information needed for evaluating the impact of the previous factors on the raw material purchase price and on changes in the supply strategy of European processors and processors from formerly associated ACP and GSP countries
- all information needed for evaluating the impact of the previous factors on the purchase price for raw materials and on the changes in the supply strategy of processors in non-ACP and non-GSP countries, currently or potentially exporters to Europe within the framework of plan 2.
- all information needed for evaluating the resistance to the reduction of the first sale prices in the accounts of European tuna shipowners (French and Spanish).
- all information needed to evaluate the impact of the previous factors on the future changes to fishing effort i) carried out by the European tuna fleet ii) carried out by the other world tuna fleets.
- all the information needed for evaluating the impact of the previous factors on future changes to unloadings and transhipments made by the European tuna fleet.
- all information needed for evaluating the economic impact of the previous factors on associated activities linked with the European tuna sector.
- all information needed for evaluating the economic impact of the previous factors on the players: European Union, private European operators, ACP and GSP third countries.

Each group of information itself represents a set of raw data, more or less aggregated, of semi-processed data, etc... which must be organised in a rational way in order to achieve the set targets.

Organised presentation of data

Information Group	Type of data	Category	Data collected
European Market	History of volume and values over 3/5 years Production, Importation Exportation, Apparent consumption according to country and EU total	Fresh tuna Frozen tuna Frozen loins Canned tuna and other products of 2nd stage processing	Collected and processed by the other members of the expert team
	Behaviour of European demand in relation to price	Canned tuna and products of 2nd stage processing	Summarised facts collected
	Initial repository of tariff policy and trade agreements with third countries (per product typology) Summary and texts	Fresh tuna Frozen tuna Frozen loins Canned tuna and other products of 2nd stage processing	Collection carried out using EU data sources
Processing Valorisation	Structural accounts for canners	ACP operators European operators GSP operators Asian operators	Date acquired on ACP countries, Spain, France, GSP countries,
	Structural accounts for loin units	ACP operators Asian operators GSP operators	Some data on West Africa Partial collection carried out for the Asian and GSP operators
Purchase price of raw material and processor supply strategy	Detailed history according to species and size over 3/5 years of prices on major markets (Bangkok, Pago Pago, Porto Rico, etc.)		Collection carried out
	Detailed history according to species and size of unloadings and transhipments	Abidjan/Tema/Dakar Seychelles Mauritius Madagascar European ports	Collection carried out Data missing for these destinations
	Methods of marketing products		Partial collection
	Cost of sea transport for frozen tuna		Collection carried out
	Port costs and infrastructures , cost of operational raw material, associated technical problems		Collection carried out
	Environmental aspects	Difficult to categorise	
	Calculation of impact on purchase price of RM of an export increase for Asian processors	Yield ratio By-product valorisation	Facts updated

Information group	Type of data	Category	Data collected
Extractive segment	Detailed history over 3/5 years of catches per species and per zone		Data collected and processed by the other members of the expert team
	Methods of correspondence between catches/ unloadings/ prices for establishing turnover		Collection carried out
	Structural accounts for French and Spanish purse seiners		Collection carried out
	Changes in fishing effort of the European fleet and impact on unloadings and transhipments		Partial collection
	Changes in fishing effort by other world fleets		Partial collection
Associated activities	Brief structure of accounts (IC/DAV)	Shipyards, Manufacturers of fishing equipment, ship's agents and stevedores, Manufacturers of cans, Manufacturers of packaging, Sea transport	Value added tax included calculated or evaluated
Economic impact on players	Third countries : information specific to the tuna sector for each significant country involved	ACP countries of well-known tuna importance : Senegal Côte d'Ivoire Seychelles Madagascar Mauritius Papua new Guinea GSP countries of well-known tuna importance : Ecuador Colombia Venezuela San Salvador Guatemala Costa Rica	Partial collection

APPENDIX 4 - The constant market share analysis -Method

The constant market share analysis is a method which allows the competitivity of an exporting country to be compared on the basis of an observation of its commercial performances. The competitivity of an exporting country is taken from the differences it presents in comparison with its competitors in terms of the facilities it possesses, technology, public policies or domestic market structures. In order to overcome the difficulty in examining these factors simultaneously, it is possible to use the hypothesis that the market shares of the exporting country are a function of its competitivity (equation 1). Subsequently, the development of the function which expresses the variations in volumes exported (equation 2) can allow this variable to be broken down into different terms, within which the "competitivity effect" features.

In the simplest form of the model we therefore consider an exporting country which holds a market share s by exporting a quantity q when the rest of the world exports the overall quantity Q. With the competitivity of the country being noted down as c and that of the world as C, the market share of the country under consideration is expressed as a function of its relative competitivity in the following way (Richardson 1971):

$$s = \frac{q}{Q} = f\left(\frac{c}{C}\right) \qquad (1)$$

The variation of volumes exported in the course of the period studied can then be broken down in the following way:

$$\dot{q} = s\dot{Q} + Q\dot{s}$$

i.e. $$\dot{q} = s\dot{Q} + Qf'\left(\frac{\dot{c}}{C}\right) \qquad (2)$$

The growth in exports of the country under consideration is therefore explained by a world growth effect (expressed as $s\dot{Q}$), which represents the increase of its exports which the country would have made if it had maintained its constant market share, and by an effect of competitivity, which represents the increase of export due to changes in the relative competitivity of the country. However, the export structure of a country (characterised by the product it exports and countries to which it sends them), affects the change in volumes exported, even in the absence of changes in competitivity. It is therefore necessary to construct a more complex model, taking into account the diversity of products and export markets, in order to separate, within the variations of exports, on the one hand the effects due to choice of products and choice of destinations and, on the other hand, the effects due to competitivity (Richardson 1971).

In the case of the analysis of the commercial performances of the countries supplying canned tuna on the European market, we are considering, however, one single product, but one which is intended for various countries, all the Member States of the European Union. If we refer to this group of importing countries as j, exports of canned tuna from the country under consideration to the EU are provided by the following equation (Mongruel 1998):

$$q = sQ = \sum_j s_j Q_j \qquad (3)$$

where s = market share of the exporting country being considered on the European canned tuna market

q, Q = total exports of canned tuna to the European market by the country under consideration and the world respectively

s_j = market share which the country under consideration holds in the country j, member of the European Union

Q_j = total world exports to the country j;

the variation in time of exports of canned tuna from the country under consideration to the EU can be expressed in accordance with the following two identities:

$$\dot{q} = s\dot{Q} + \dot{s}Q \tag{4}$$

$$\dot{q} = \sum_j s_j \dot{Q}_j + \sum_j \dot{s}_j Q_j \tag{5}$$

The development of equations (4) and (5) result in a breakdown of the variation of exports from the country under consideration in three terms:

$$\dot{q} = s\dot{Q} + \left[\sum_j s_j \dot{Q}_j - s\dot{Q} \right] + \sum_j \dot{s}_j Q_j \tag{6}$$

i.e. $$\dot{q} = s\dot{Q} + \left[\sum_j s_j \dot{Q}_j - s\dot{Q} \right] + \left[\dot{q} - \sum_j s_j \dot{Q}_j \right] \tag{7}$$

The first term corresponds to the effect of market size, which acts in the same way for all exporting countries. The second term (between brackets) corresponds to the distribution effect, which is positive when the export structure of the country under consideration presents a distribution which is more oriented towards markets showing strongly increasing demand than the world export structure. Finally, the third term (between brackets) corresponds to the effect of competition, which is positive when the country under consideration succeeds in winning over market shares from competitor exporting countries. As an indicator of commercial performance, the constant market share analysis is therefore useful in revealing the type of factor which explains the development of market shares of the exporting country under consideration. The effect of competition is entirely due to intrinsic factors: it reflects the competitivity of the companies in the exporting country, which, in particular, results from their raw material supply strategies, their productivity, and the national economic environment (cost of labour, taxation, etc.). The distribution effect is due to both intrinsic and extrinsic factors: it reflects the capacity of the exporting country to position itself on the most buoyant market. The effect of size is due solely to extrinsic factors: it reflects the fact that the exporting country is benefiting from growth in demand over the whole market, or, on the other hand, that it is experiencing a reduction in this demand.

APPENDIX 5 - EU imports of tuna loins and canned tuna per zone of origin

Table 122: EU imports in 2000 of canned tuna and tuna loins per zone of origin (source Eurostat)

	2000				2000		
	Tonnes				1000 euro		
Country	PARTNER	LOINS	CANNED		PARTNER	LOINS	CANNED
EXTRA-EUR	1011	51476	268910		1011	143441	602497
INTRA-EUR	1010	10596	120049		1010	28683	350470
Spain	011	5170	49261		011	14591	147045
Côte d'Ivoire	272	3061	47917		355	4828	125607
Seychelles	355	1787	44437		272	8960	105176
Philippines	708	101	31749		276	307	65770
Thailand	680	1992	25206		003	1299	65283
Netherlands	003	359	24591		680	6057	54604
Ghana	276	158	24420		708	167	53148
Ecuador	500	20716	21072		500	50286	44691
Mauritius	373		17097		373		40560
Germany	004	272	15110		004	599	35491
France	001	433	12239		001	1077	30563
Turkey	052		11963		005	10441	27744
Madagascar	370		10617		052		23282
Senegal	248		7242		010	192	22898
Italy	005	4129	6740		370		19856
Maldives	667	55	6491		248		15767
Portugal	010	81	5037		006	349	13395
United Kingdom	006	105	4222		667	96	12324
Solomon Islands	806		2661		806		7858
Colombia	480	18166	2631		480	56933	6394
Papua New Guinea	801		2404		017	74	4528
Belgium	017	21	1764		801		4395
Costa Rica	436	630	1502		436	1890	3459
Denmark	008	12	453		008	20	1479
Fiji Islands	815		361		204		1343
Ireland	007		358		007		1233
Morocco	204		316		815		849
VARIOUS INTRA NC	1091	0	138		1091	1	377
NON INTRA	959	0	138		959	1	377
United States	400		104		448		329
South Africa	388		91		400		265
Malaysia	701		79		038		260
Austria	038		77		388		195
Cuba	448		72		701		164
Peru	504		67		504		143
Australia	800		44		092		141
Croatia	092		38		030		81
Sweden	030		34		810		81
Am Oceania	810		34		046		75
Pakistan	662		33		732		72
Hong Kong	740		31		009	1	64
Japan	732		29		740		61
Albania	070		23		662		54
Syria	608		19		070		52
India	664		19		800		51
New Zealand	804		19		212		37
Canada	404		18		404		35
Vietnam	690		16		690		35
Greece	009	0	15		664		32
Malta	046		14		018	39	31
Luxembourg	018	14	10		804		30
Tunisia	212		10		608		26
Taiwan	736		9		736		14
Guinea	260		7		260		8
Singapore	706	11	4		706	44	7
Serbia and Montenegro	094		2		094		6
Slovenia	091		1		247		4

Cape Verde	247		1		091		3
St Pierre et Miquelon	408		1		408		2
Brazil	508		1		508		2
Iceland	024	1	0		024	3	0
Kenya	346	4731	0		346	13709	0
Cyprus	600	26	0		600	66	0
ACP+PMA countries		**9792**	**163655**			**27900**	**398174**
GSP C&S American countries		**39512**	**25305**			**109109**	**54741**

Table 123: EU imports in 2001 of canned tuna and tuna loins per zone of origin (source Eurostat)

	2001				2001		
	Tonnes				1000 euro		
Country	PARTNER	LOINS	CANNED		PARTNER	LOINS	CANNED
EXTRA-EUR	1011	45366	268291		1011	146989	659712
INTRA-EUR	1010	7562	118347		1010	21307	377218
Spain	011	3077	55370		011	9223	180611
Seychelles	355	2525	44895		355	6660	142351
Côte d'Ivoire	272	2611	40310		272	8163	94762
Thailand	680	589	30589		276	346	72171
Philippines	708	36	26702		680	1870	67792
Ghana	276	120	26380		373	61	67086
Mauritius	373	15	26300		003	391	64004
Ecuador	500	16567	22980		500	51780	55956
Netherlands	003	111	21064		708	68	49012
France	001	374	12175		005	8885	33280
Madagascar	370		11203		001	829	30887
Senegal	248	69	10368		004	1243	27913
Germany	004	595	10299		248	242	26870
Indonesia	700	216	8542		370		24894
Italy	005	3188	7805		010	356	19136
Colombia	480	13269	6146		480	46025	14844
Maldives	667		6122		006	278	14201
United Kingdom	006	100	4558		700	375	13783
Portugal	010	94	4377		667		12129
Papua New Guinea	801		2787		801		6296
Turkey	052		2283		017	87	4045
Belgium	017	21	1671		052		3894
Peru	504	5	638		204	20	2072
Vietnam	690	96	476		504	12	1733
Morocco	204	5	416		007		1137
Ireland	007		352		008	16	934
Denmark	008	2	298		690	268	933
VARIOUS INTRA NC	1091	0	287		1091	1	702
NON INTRA	959	0	287		959	1	702
Fiji Islands	815		239		216		620
Libya	216		181		815		613
South Korea	728		152		448		411
Algeria	208		107		208		335
Malaysia	701		99		038		297
Cuba	448		79		728		293
United States	400	725	72		346	23658	146
Austria	038		68		400	2603	145
Kenya	346	6936	50		701		125
Hong Kong	740		44		092		99
Japan	732	0	30		740		83
Croatia	092		27		212		63
China	720		18		732	2	60
Finland	032		15		412	215	38
Pitcairn	813		13		032		36
Tunisia	212		12		720		31
Mexico	412	72	9		018		17
Dominica	460		8		460		16
Costa Rica	436	1461	7		813		16
Sweden	030		5		091		13
Melilla	023		3		030		12
Slovenia	091		3		436	4507	12
Luxembourg	018		2		023		7
Greece	009		1		009		5
Cyprus	600		1		404		3
Norway	028	2	0		600		2
Switzerland	039		0		039		1
Guinea	260	47	0		653		1
Canada	404		0		028	25	0
Yemen	653		0		260	90	0

ACP+PMA countries		12323	168654			39220	447319
GSP C&S American countries		31302	29771			102324	72545

Table 124: EU imports in 2002 of canned tuna and tuna loins per zone of origin (source Eurostat)

	2002				2002		
	Tonnes				1000 euro		
Country	PARTNER	LOINS	CANNED		PARTNER	LOINS	CANNED
EXTRA-EUR	1011	56288	320662		1011	192049	817822
INTRA-EUR	1010	5206	154146		1010	16154	467688
Seychelles	355	3094	56472		355	9631	173823
Côte d'Ivoire	272	2408	52387		11	1250	171334
Ecuador	500	22994	27376		272	8228	145079
Spain	11	377	45494		500	75690	69843
Thailand	680	2743	40360		680	9156	90791
Philippines	708	23	39241		3	601	89899
Netherlands	3	314	28413		708	48	76506
Italy	5	2556	25574		373	366	69859
Mauritius	373	107	26639		1	959	67615
France	1	294	23894		480	49296	18102
Ghana	276	504	22620		276	1529	61837
Colombia	480	12769	6992		5	8576	48654
Madagascar	370		15390		4	2360	37152
Germany	4	843	12947		370		37195
Indonesia	700	55	10432		248	50	22286
Senegal	248	17	8478		10	1836	17498
Belgium	17	6	7082		6	535	18698
Papua New Guinea	801		5689		700	109	17740
United Kingdom	6	215	5447		484	13065	63
Maldives	667		5389		801		13030
Portugal	10	599	3771		667		11931
Venezuela	484	3978	29		17	28	10929
Costa Rica	436	3134	4		436	10875	24
Kenya	346	2484	96		346	8767	192
Vietnam	690	124	1068		204		3144
Brazil	508	984	57		508	2436	123
Denmark	8	1	612		690	274	2043
Peru	504		549		8	8	2108
Morocco	204		531		18	1	1994
Ireland	7		442		504		1555
Oman	649	350	0		7		1275
Mexico	412	303	0		649	1085	0
Luxembourg	18	0	287		412	806	0
Turkey	52		265		52		715
Guatemala	416	139	0		448		568
Cuba	448		115		416	439	0
Malaysia	701		112		701		321
Austria	38		71		38		278
South Korea	728	24	40		728	37	143
Greece	9		55		442	138	0
Panama	442	46	0		30	0	122
Sweden	30	0	44		92		121
Taiwan	736		32		212		106
China	720		32		9		102
Mauritania	228		32		228		91
Croatia	92		31		720		83
Japan	732		30		732		78
Tunisia	212		26		736		63
Melilla	23		23		23		53
French Polynesia	822		17		80		46
Hong Kong	740		16		404		44
Poland	60		15		740		36
Turkmenistan	80		15		822		34
Finland	32		14		53		31
India	664		13		32		30
Canada	404		13		60		30
Estonia	53		12		260	24	0
Switzerland	39		9		664		24
Guinea	260	9	0		91		21
Lithuania	55		5		39		17
Slovenia	91		4		55		11
Ste Helene	329		3		329		7
Iran	616		1		616		5
Czech Republic	61		1		21		3

Ceuta	21		1		61		3
Netherlands Antilles	478		0		952		0
Victualling and so	952		0		478		0
ACP+PMA countries		**8623**	**193192**			**28595**	**535325**
GSP C&S American countries		**43060**	**34950**			**149503**	**89587**

APPENDIX 6 - Method of effects and calculation of added value

The method of effect aims to identify any creation of economic wealth. This economic wealth is referred to as Primary Added Value (PAV). This economic wealth can be broken down into two terms, Direct Added Value (DAV) and Indirect Added Value (IAV).

The first term, direct added value, is equal to the balance of the difference between the turnover and the goods and services which allowed the company to manufacture products. These goods and services are referred to as Intermediate Consumption. Direct added value therefore brings together the following items: salaries, payroll taxes, State deductions, financial costs on loans, depreciation, net operating income.

The second term, indirect added value, is equal to the added value included in the intermediate consumption consumed in the countries examined, charges referred to as local intermediate consumption. It therefore includes the direct added value of local suppliers within the tuna sector pro rata for the economic quantities they "have delivered" to the tuna sector. It is the indirect added value of 1st iteration. However these suppliers themselves have intermediate consumption for imports and local intermediate consumption which have generated indirect added value for their own suppliers (2nd iteration). And so on for subsequent iterations for the suppliers of suppliers. For this iterative process, in general we identify the initial suppliers, but then use tools of national accounting, such as the incoming outgoing tables for subsequent iterations.

We look for the formation of IAV throughout the chain of local intermediate consumptions until we no longer have anything other than an import and added value content.

We then have the whole of the formation of economic wealth for the sector analysed. By eliminating cross-consumption with other branches of the national economy, we can then measure the sector's net contribution to the GDP (gross domestic product) since this is the sum of the added values of the branches of the national economy.

This method clearly has other advantages (tax contribution, balance in currency, etc) not developed in this study because they could not be produced and/or were not relevant.

The method of effects also concerns the formation of secondary added value, an economic amount which is not added to the previous primary value, and which corresponds to the demultiplier effect of dissipation of household revenue within the national economy.

APPENDIX 7 - List indicating countries which have a significant tuna activity in comparison with the list of countries attached to the (EC) Regulation No 980/2005 of the Council dated 27/06/2005 implementing a scheme of generalised tariff preferences.

APPENDIX C - list of countries admitted to the GSP+

Countries with a significant tuna industry relevant to the study	Other countries
Colombia	Bolivia
Costa Rica	Mongolia
Panama	Nicaragua
Ecuador	Peru
Salvador	Georgia
Guatemala	
Honduras	
Venezuela	
Sri Lanka	

APPENDIX A - list of countries and territories benefiting from the general system

Countries with a significant tuna industry relevant to the study	Other countries
Netherlands Antilles	South Africa
Belize	Algeria
Brazil	Anguilla
Colombia	Antarctica
Costa Rica	Antigua and Barbuda
Côte-d'Ivoire	Saudi Arabia
El Salvador	Argentina
Ecuador	Armenia
Fiji	Aruba
Guatemala	Azerbajdjan
Honduras	Bahamas
North Mariana Islands	Bahrein
Marshall Islands	Barbados
Tokelau Islands	Belarus
Indonesia	Bermudas
Kenya	Bolivia
Malaysia	Botswana
Morocco	Brunei Darussalam
Mauritius	Cameroon
Mexico	Chile
Micronesia (Federal states of)	China
Nauru	Cyprus
Oman	Congo
Panama	Cuba
Papua New Guinea	Dominica
Philippines	Egypt
French Polynesia	United Arab Emirates
Republic of Palau	Gabon
St-Vincent and the Grenadines	Georgia
American Samoa	South Georgia

Seychelles	Ghana
Sri Lanka	Gibraltar
British Indian Ocean Territory	Grenada
Thailand	Greenland
Tonga	Guam
Venezuela	Guyana
Vietnam	Bouvet Island
Wallis and Futuna	Cook Island
	Niue Island
	Norfolk Island
	Cayman Islands
	Christmas Islands
	Coco Islands
	Falkland Islands
	Heard and Mac Donald Islands
	United States minor outlying islands
	South Sandwich Islands
	Turks et Caicos Islands
	Virgin Islands (United States)
	British Virgin Islands
	India
	Iraq
	Iran
	Jamaica
	Jordan
	Kazakhstan
	Kirghizistan
	Kuweit
	Lebanon
	Libya
	Macao
	Mayotte
	Moldavia
	Mongolia
	Montserrat
	Namibia
	Nicaragua
	Nigeria
	New-Caledonia
	Uzbekistan
	Pakistan
	Paraguay
	Peru
	Pitcairn
	Qatar
	Dominican Republic
	Russia
	St Pierre and Miquelon
	St Kitts and Nevis
	St Helena
	St-Lucia
	Surinam
	Swaziland
	Syria
	Tadjikistan
	French Austral Territories
	Trinity and Tobago
	Tunisia
	Turkmenistan

	Ukraine
	Uruguay
	Zimbabwe

APPENDIX D – List of countries accepted under the PMA system

Countries with a significant tuna industry relevant to the study	Other Countries
Angola	Afghanistan
Cape Verde	Bangladesh
Comores	Benin
Kiribati	Bhutan
Liberia	Burkina Faso
Madagascar	Burundi
Maldives	Cambodia
Mauritania	Djibouti
Solomon Islands	Eritrea
Samoa	Ethiopia
Sao Tomé et Principe	Gambia
Senegal	Guinea
Somalia	Guinea-Bissau
Tuvalu	Equatorial Guinea
Vanuatu	Haiti
Yemen	Laos
	Lesotho
	Malawi
	Mali
	Mozambique
	Nepal
	Niger
	Uganda
	Central African Republic
	Democratic Republic of the Congo
	Rwanda
	Sierra Leone
	Sudan
	Tanzania
	Chad
	Western Timor
	Togo
	Zambia