

Review of Fisheries in OECD Countries

**POLICIES AND SUMMARY
STATISTICS**

AGRICULTURE AND FOOD



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Review of Fisheries in OECD Countries

POLICIES AND SUMMARY STATISTICS

2001 Edition



ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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FOREWORD

This review was approved and declassified at the 86th Session of the Committee for Fisheries on 9-11 October 2000.

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GENERAL SURVEY 2000

I. Summary

The management of capture fisheries in OECD countries during 1998 and 1999 was marked by decisions to reduce catch opportunities and to restructure the fishing sector. Ensuring sustainable use of fish resources and the marine ecosystem led to severe cuts in allowable catches in some fisheries. Some countries also introduced measures to mitigate the impact of fishing operations on the wider ecosystems. Fisheries managers also sought to introduce more co-operative approaches by involving fishers more in decision-making processes. In contrast with capture fisheries policies, several governments actively encouraged the expansion and development of the aquaculture industry.

Fisheries managers reduced catching opportunities for capture fisheries... but aquaculture development was encouraged.

In 1998 total landings from marine capture fisheries were 26.3 million tonnes (worth USD 29.6 billion), a 2.9 per cent decrease from 1997. In quantity terms, the largest OECD fishing nations were Japan, United States of America, Norway, Korea, Iceland, Denmark and Spain. Total aquaculture production of fish and shellfish was 3.3 million tonnes, valued at USD 3.8 billion. In quantity terms Norway and Japan were by far the largest OECD producers of aquaculture fish. For shellfish, Spain, Korea, France and the Netherlands were the largest OECD producers. In 1998 OECD countries imports of seafood products were worth some USD 48.0 billion, compared with exports worth approximately USD 26.2 billion.

OECD landings decreased in 1998.

Many Member countries sought to adjust fishing capacity to the available fisheries resources. The methods of capacity adjustment varied across OECD countries however. 1998 and 1999 saw the announcement of new support packages that provided for capacity reduction through, for example, the decommissioning of fishing vessels, licence buybacks and developing alternative employment for fishers. In some countries support was still made available for new vessel construction and vessel modernisation. But Member countries sought to ensure that these policies did not result in increases in the capacity applied to vulnerable fisheries.

Various capacity management approaches used in many OECD countries.

The liberalisation of trade in fisheries products was discussed in international fora. Trade tensions continued in relation to the imposition of import bans that are based on the way in which fish are harvested, and in relation to the application of sanitary and phyto-sanitary rules. Some regional management organisations used trade measures in seeking to support resource conservation. In addition to the use of trade measures to discourage unauthorised fishing, catch and trade information schemes were developed and implemented to assist compliance with conservation and management

Liberalisation of trade was discussed in international fora.

Trade measures were used to seek to support fisheries management.

initiatives. Governments also moved to improve the labelling information available to consumers.

More OECD countries committed themselves under UN and FAO Agreements.

In 1998, Belgium and Poland ratified, and the European Community formally confirmed itself under, the United Nations Convention on the Law of the Sea (UNCLOS). They joined the nineteen OECD Member countries or entities that had already ratified (or acceded to) UNCLOS. There were no additions to the OECD Member countries that had already signed the 1995 UN Agreement.¹ In 1999 Australia and Canada joined Iceland, Norway and the United States of America as the only OECD countries that have ratified the agreement. The FAO Compliance Agreement² requires another 11 instruments of acceptance to become legally binding. In 1999 Mexico joined Canada, the European Community, Norway, Sweden, and the United States of America as the only OECD countries or entities that have deposited an instrument of acceptance under this Agreement. In 2000, Japan deposited its instrument of acceptance to the Agreement.

II. International developments

1998 was the United Nations Year of the Ocean.

The UN declared 1998 the International Year of the Ocean in recognition of the importance of the ocean and the marine environment and its resources for sustainable development and life on earth. During 1998 efforts were made to create awareness and obtain commitments from governments to take action, provide resources and give priority to ocean and coastal areas. In November 1998 the United Nations' General Assembly adopted the following resolutions in the context of its annual debate on the Law of the Sea:

UN General Assembly adopts resolution on drift nets, unauthorised fishing, and bycatch and discards.

- On the "Oceans and the law of the sea" (resolution 53/32);
- On "Large-scale drift-net fishing, unauthorised fishing in zones of national jurisdiction and on the high seas, fisheries by-catch and discards, and other developments" (resolution 53/33).

With regard to the latter resolution, the General Assembly expressed its concern at the adverse impacts of unauthorised fishing on the sustainable development of the world's fishery resources.

UN General Assembly called for states to consider ratifying, or acceding to, the 1995 UN Agreement.

During its debate in November 1999, the UN General Assembly adopted resolutions on the "Oceans and the law of the sea" (resolution 54/31), the implementation of the 1995 UN Agreement (resolution 54/32) and the results of the Commission on Sustainable Development's (CSD) review of oceans and the seas (resolution 54/33). On the latter resolution, the General Assembly endorsed the recommendations from the CSD review.³ Among other matters, the CSD recommended that priority be given to:

CSD called for further efforts to bring about sustainable fisheries.

- "The conservation, integrated and sustainable management and sustainable use of marine living resources and their ecosystems";
- "The prevention of pollution and degradation of the marine environment from land-based and other activities";
- "Better scientific understanding of the oceans and seas and their resources, of the effects of pollution, and the interaction of the oceans and seas with the world climate system"; and
- Encouraging the effective and co-ordinated implementation of UNCLOS and Agenda 21.

The UN General Assembly took up the CSD recommendation that an open-ended informal consultation process be established to facilitate the monitoring of the oceans and the law of the sea. It was envisaged that such facilitation would involve considering the UN Secretary-General's report on oceans and the law of the sea and suggesting issues to be considered by it, in order to enhance co-operation and co-ordination between governments and agencies.

The 23rd Session of the FAO's Committee on Fisheries was held in February 1999. The Committee emphasised the importance of inland capture fisheries and aquaculture in fish production and in meeting human nutrition needs. In particular, it stressed the importance of integrated resource management, reducing adverse effects on the environment and improving co-operation between fishers, government agencies and other stakeholders. The Committee discussed experiences in implementing the Code of Conduct for Responsible Fisheries ("the Code") and emphasised the need for further assistance from the FAO to help this implementation. The Committee also adopted international plans for: *i*) management of fishing capacity; *ii*) management and conservation of sharks; and *iii*) reducing the incidental catch of seabirds in long-line fisheries. At an FAO Conference convened in March 1999, Fisheries Ministers expressed their concern at "overfishing of the world's marine fishery resources, destructive and wasteful fishing practices and excess fishing capacity". They also expressed their concern at illegal, unregulated and unreported fishing, including that conducted by vessels flying "flags of convenience". Ministers endorsed the adoption of the three international plans that were adopted in February by the FAO's Committee for Fisheries.

The FAO Fisheries Department continued its work in preparing technical guidelines to support implementation of the Code, in collaboration with member states and interested organisations. As of July 2000 the FAO had published eight sets of guidelines in its "Technical Guidelines for Responsible Fisheries" series. These guidelines deal with *i*) fishing operations, *ii*) the precautionary approach to capture fisheries and species introductions, *iii*) the integration of fisheries into coastal area management, *iv*) fisheries management, *v*) aquaculture development, *vi*) inland fisheries, *vii*) responsible fish utilisation, and *viii*) indicators for the sustainable development of marine capture fisheries. Other technical guidelines are under preparation.

The "Agreement to Promote Compliance with International Conservation and Management measures by Fishing Vessels on the High Seas" ("the Compliance Agreement") is binding on those states ratifying the Agreement. Twenty-five instruments of acceptance are required for it to become legally operational. In 1998 and 1999 four instruments of acceptance were submitted to the FAO, bringing the overall total to fourteen. Among OECD countries, Mexico deposited its instrument on acceptance on 7 January 1999, joining Canada, the European Community, Norway, Sweden, and the United States of America as the only OECD countries to have done so. In 2000, Japan deposited its instrument of acceptance to the Agreement. Article VI of the Compliance Agreement requires Parties to exchange information on vessels authorised by them to fish on the high seas, and obliges the FAO to facilitate this information exchange.

The UN established an open ended informal consultation process on oceans and the law of the sea.

FAO Fisheries Committee emphasised importance of inland fisheries production and aquaculture.

FAO Fisheries Ministers expressed concern at overfishing, wasteful fishing practices and excess fishing capacity.

FAO continued to work to help implement the Code of Conduct for Responsible Fisheries.

FAO Compliance Agreement not yet legally operational.

Mexico deposited instrument of acceptance in 1999.

Belgium and Poland ratify, and the European Community formally confirms itself under, UNCLOS.

The United Nations Convention on the Law of the Sea (UNCLOS), which came into force in November 1994, was ratified by two more OECD Member countries in 1998 (Belgium and Poland). These countries join the nineteen OECD Member countries or entities that have already acceded to,⁴ or ratified, UNCLOS over the previous 13 years. On 1 April 1998, the European Community formally confirmed itself under UNCLOS.⁵ EU member States are now bound to the Convention in respect of matters where competency has been transferred to the Community. There were no additions to the number of OECD signatories (24) of the 1995 UN Agreement. In 1999, Australia and Canada joined Norway, Iceland and the United States of America as the only OECD countries that have ratified the agreement. World-wide, 26 countries have ratified the 1995 UN Agreement⁶. As at July 2000, a further four ratifications or accessions are required before this Agreement comes into force.

Australia and Canada ratify 1995 UN Agreement.

OECD examined the transition to responsible fisheries.

The OECD Committee for Fisheries continued its study on the economic and policy implications of the transition to responsible fisheries. Completed in early 2000, the Committee's study observed that the benefits of responsible fisheries are long-term and should be subject to particular attention. Transition policies should address short-term social and economic adjustment costs without detracting from long-run conservation objectives. In doing so all aspects of fisheries – from harvesting to marketing to consumers – should be considered in a comprehensive way for a successful transition process to responsible fisheries.

III. Management of capture fisheries

a) Management of stocks in national jurisdictions

i) Supranational measures

State of stocks prompted large cuts in TACs for a number of EU stocks.

In response to sustainability concerns, the EU reduced TACs for a number of stocks in 1998, 1999 and 2000. The October 1999 ACFM⁷ report, based on 1998 stock assessments, indicated that most stocks were heavily fished, some of them well beyond their precautionary reference points (*e.g.*, eels, Irish Sea cod and Bay of Biscay anchovy). Table 1 shows there were large cuts in the TACs for a number of stocks. The TAC for haddock, which had been increased in 1998, was reduced by 30% between 1998 and 2000. Over the same period, TACs for whiting (–37%), herring (–17%), hake (–25%) and cod (–35%) were reduced. Continuing the trend in recent years, the TAC for blue whiting was increased for 1999 and 2000.

TACs introduced for 12 additional species in 1998 and 1999.

In an effort to better control exploitation, in 1998 the EU introduced TACs for the North Sea fisheries for megrim, anglerfish, turbot and brill, dab and flounder, lemon sole and witch and skates and rays. In 1999 TACs were introduced for North Sea prawns and spurdogs. The TAC for blue whiting in western waters was allocated to individual Member states for the first time in 1999. Previously the TAC had not been allocated and this had created enforcement difficulties. Minimum landing sizes and seasonal closures for bluefin tuna were introduced for Mediterranean fisheries in 1998, in accordance with recommendations from the International Convention for the Conservation of Atlantic Tunas (ICCAT).

Table I. EU TACs for important species for 1998 to 2000

Species	1998	1999	2000	Percentage change	
				1998-1999	1999-2000
Haddock	135 650	114 355	95 580	-16%	-16%
Whiting	105 535	86 295	66 200	-18%	-23%
Hake	67 330	64 120	50 590	-5%	-21%
Blue whiting	255 500	265 500	282 500	4%	6%
Herring	909 580	834 080	753 570	-8%	-10%
Cod	299 325	274 912	195 166	-8%	-29%

Source: Council Regulation (EC) No. 46/1998 of 19 December 1997, Council Regulation (EC) No. 48/1999 of 18 December 1998 and Council Regulation (EC) No. 2742/1999 of 17 December 1999, *Official Journal of the European Communities*.

The EU introduced a number of measures to increase effectiveness in enforcing fisheries laws.⁸ These measures related to i) improvements in controls after landings of fish, ii) control of third country vessels operating in Community waters and iii) co-operation between Member states and the European Commission in monitoring. Further, the EU listed specific behaviours that constitute "serious infringement" of the rules of the Common Fisheries Policy (CFP).⁹ Examples of such behaviour include fishing without a licence or permit, falsifying data, and using prohibited fishing methods. Greater transparency is now required on the actions taken by Member states with regard to such behaviour. Member states are required to notify the European Commission of serious infringements and that information is then passed to the Council of Fisheries Ministers, the European Parliament and the Advisory Committee on Fisheries.

ii) National measures

In Australia, TACs in the southern trawl fishery were decreased for school whiting and orange roughy (southern zone), while TACs for spotted warehou and orange roughy (Cascade Plateau) were increased. Individual transferable quotas (ITQs) were introduced for the blue-eye trevalla, ling and blue warehou fisheries in 1998. Progress was made towards the introduction of ITQs in 15 other fisheries, including the Bass Strait scallop, school shark and gummy shark fisheries.

Canada opened a limited commercial fishery for northern cod in 1999, with a TAC of 9 000 tonnes in the inshore component of NAFO division 2J3KL. While this inshore component contains some strong year classes (relative to earlier in the 1990s), the biomass of the offshore component is still at historically low levels. A tagging programme was introduced in 1999 to better measure migration, distribution and abundance of the stock. The northern shrimp stock was considered healthy and the TAC for the fishery was increased by 15 per cent to 96 540 tonnes in 1999. In response to concerns about dumping in this fishery, observer coverage has been increased for the temporary access inshore fleets and 100% dockside monitoring was continued. New lobster conservation measures, using carapace size increases and v-notching, were implemented in 1998 to increase lobster egg production. Pacific salmon stocks have declined precipitously in recent years as a result of unpredictable environmental conditions, poor ocean survival, habitat degradation and overfishing. In 1999 the Fraser River sockeye salmon fishery had to be closed due to poor returns of spawners.

EU refined its enforcement measures.

ITQs introduced for three Australian fish stocks.

Canada's northern cod fishery reopened.

New measures introduced to address dumping concerns in northern shrimp fishery.

Amalgamation and simplification of Denmark's fisheries laws.

In Denmark legislation for fisheries and food was amalgamated and simplified. In May 1999 nine laws were united under the Fisheries Act so that it now covers protection of fish stocks, regulations on commercial and recreational fisheries, first stage marketing and imposed duties. The most important changes to the law related to simplifications in the structure of advisory committees and establishment of free trade fish auctions. A ban on the sale of saltwater fish caught by recreational fishers was introduced in 1998, followed in 1999 by a similar ban on the sale of freshwater fish.

Japan examining its fishery policies.

In response to concerns arising from the impacts of ratification of UNCLOS in 1996, Japan began examining its fisheries policies. Japan's fishery is facing problems of decreasing production, ageing workforce and fishing community declines. In response to this situation, Japan has reviewed its fisheries policy and decided to establish a new policy with the objective of achieving a stable supply of fisheries products through the appropriate management and sustainable use of fisheries resources. This approach involves:

- Using TAC fisheries management.
- Enhancing of fisheries resources around Japan.
- Controlling of fishing effort and co-management.
- Restructuring the fishing licence system and the fishing vessels management system.
- Restructuring post-harvest policies to ensure efficient and transparent distribution and by the establishment of information schemes for consumers.
- Constructing efficient and effective fisheries facilities and improving the infrastructure of fishing villages.

A new fisheries policy to deal with this situation is to be discussed by the Diet in 2001. Stocks of horse mackerel, skipjack and chum salmon are considered to be in good condition, but there are concerns with sardine, mackerel, saury and many of the groundfish stocks.

Mexico continued implemented its Fisheries Management Program.

Within the framework of the 1995-2000 Fisheries and Aquaculture Program, work continued in Mexico on the Fisheries Management Program. In 1999 efforts were made to improve the collection of scientific information and to apply the precautionary approach. Progress was made in managing fisheries by confirming producers' organisations legal status and conducting censuses of fishers, fishing vessels and fishing equipment. A number of changes were made to fisheries regulations. The closed season for abalone fishing in an area of the west coast of Baja California was extended by a month. Changes were also made to the minimum size limits and measurement methods for sardines, anchovies and mackerel in the its northern Pacific Ocean fishery.

New Zealand amended its quota management system.

New Zealand reviewed its quota management system with a view to improving its flexibility. The changes suggested by the review were enacted into law in the Fisheries Amendment Act 1999. The regime for recording catch against annual catch entitlements (an annual catch right arising from ITQ ownership) was simplified to try to improve voluntary compliance. The changes provide for fisheries management plans for individual fisheries to be developed by stakeholders and/or the Ministry of Fisheries. The new legislation provided the government with powers to control New Zealand fishing outside its EEZ and to manage international fisheries in co-operation

11 species added to quota management system.

with other states. In 1998 and 1999, New Zealand introduced 11 new species into its quota management system, increasing the number of species or species groups managed by ITQs to 44.

In response to positive signs in the state of the Barents Sea capelin stock, Norway opened a limited fishery for this species in 1999. The poor state of the cod and haddock stocks north of 62°N meant that catch limits and quotas were reduced in 1999. To prevent further expansion of its fishing fleet into the blue whiting fishery in international waters, Norway set a national quota of 250 000 tonnes. In 1998 licensing regulations were introduced for the pelagic trawler fleet in the spring-spawning herring fishery. In the same year a limit on vessel numbers was introduced for the North Sea and Skagerrak shrimp fisheries. In 1999 a limit on vessel numbers was introduced for saithe seine fisheries north of 62°N. To reduce waste and bycatch, the use of sorting devices was extended to the cod trawl fisheries in 1999.

In 1998 Spain introduced regulations for its Mediterranean tuna (and tuna-like species) fishery. The regulations specified gear and technical measures for the fisheries. They also established a register of vessels that can fish for bluefin tuna. In late 1999, bottom trawlers in the Cantabrique sea and the Northwest of the Spanish national zone were brought within EU rules. This change was made through a new regulation specifying conditions for fishing, vessel technical characteristics, fishing effort, minimum authorised depths, minimum mesh sizes and the like. Spain passed regulations requiring, from January 2000, that its fishers in the Mediterranean keep and use an EU logbook. This new measure applies to bottom trawlers only.

A special logbook scheme was introduced in Sweden's coastal fishery during 1999. The logbook, which simplifies content and information transmission, specifies information that must be sent to the National Board of Fisheries.

The United Kingdom introduced a system of fixed quota allocation in January 1999. This replaced the previous system of allocation of quotas that was based on landings in the previous three years. In 1998 responsibility for implementing fisheries legislation for Scotland and Wales was transferred to the Scottish Executive and the National Assembly of Wales, respectively.

In 1998 Iceland introduced a requirement that sorting grids be used by purse seine and trawlers over a larger fishing area than had previously been the case. In 1999 the limit on the number of fishing licences was lifted. Iceland's Supreme Court judged that this restriction was contrary to the Icelandic constitution. Before the change, a new vessel could not get a fishing licence unless an exiting vessel of a similar size was taken out of the fishery. Lemon sole was introduced into the TAC and ITQ system.

iii) Aboriginal fishing activities

In Australia initiatives to ensure the protection of traditional rights of Torres Strait Islanders continued. Progress was made towards implementing a single jurisdiction for all Torres Strait commercial fisheries and facilitating the development of complementary community based management.

Norway opened Barents Sea capelin fishery, but reduced catches of cod and haddock.

Input controls introduced for herring, shrimp and saithe.

Spain introduced new management and enforcement measures for its fisheries in the Mediterranean Sea and the Atlantic Ocean.

Sweden introduced new monitoring measures.

United Kingdom introduced a system of fixed quota allocations.

Iceland made changes to technical measures, removed licence limits and introduced ITQs for lemon sole.

Australia moves to strengthen fishing rights of Torres Strait Islanders.

Supreme Court of Canada affirms right of Mi'kmaq people to earn "moderate livelihood" from hunting, fishing, and gathering

In September 1999 the Supreme Court of Canada confirmed the rights of access to commercial fisheries for a group of aboriginals on the East Coast of the country. The Court confirmed that a 1970 Treaty gave the Mi'kmaq, Maliseet and Passamaquody the right to earn a "moderate livelihood" from fishing, hunting and gathering. Canada is in the process of negotiating access for these communities to the fisheries resources through interim fisheries agreements, with a view to moving into more comprehensive longer-term agreements.

New Zealand Maori controlled over half the commercial fishing quota.

As a consequence of the settlement of Maori fisheries claims, and the passing of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, Maori control over half of all commercial fishing quota. Maori commercial fishing assets are currently managed by a commission that leases quota to tribes on an annual basis and at discounted rates. A regulatory framework for customary non-commercial fishing was finalised. These regulations enable customary fishing to be managed by Maori communities at a local level. The regulations establish a framework for issuing customary food gathering authorisations. The relationship between Maori and their traditional fishing grounds is recognised by the establishment of *mataitai* reserves. These areas will be managed by local Maori who use bylaws to govern the harvesting of fish.

Customary fishing regulations implemented.

Norway and Sweden provided for the fisheries requirements of the Lap people.

Norway and Sweden provided for the fisheries requirements of the Lap people that live in the north of these two countries. Norwegian fisheries authorities are obliged to maintain a traditional Lap fishery. Laps are represented in the Advisory Committee on Regulation, which gives advice on fisheries regulations to the Ministry of Fisheries. Funds have been made available to secure the delivery of the catches in the Lap areas of northern Norway. In Sweden, Laps have special fishing rights in waterways on the areas where they conduct reindeer breeding.

USA Community Development Quota programme generated economic and social benefits.

The USA continued to operate its Western Alaska Community Development Quota (CDQ). The programme allocates 7.5% of the groundfish, prohibited species (*i.e.*, bycatch in the groundfish fisheries), crab and halibut quotas to western Alaska communities. The estimated landed value of the CDQ harvest was about USD 50 million each year. In 1999 the USA's National Research Council assessed the operations and effectiveness of the CDQ programme. The report concluded that the programme had generated economic and social benefits for community residents, although there were some problems with governance and communication between communities.

b) Management of straddling, migratory and high seas fish stocks

TACs were cut under EU-Norway agreement.

In the North Sea, and in the Skagerrak and Kattegat, Norway and the EU share joint responsibility for managing a number of important stocks. In 1998 decisions were taken to reduce the 1999 TACs for important species like cod, haddock and whiting. The 1999 TACs for herring, saithe and plaice were increased over 1998 levels. In December 1999 decisions were taken to sharply reduce the TACs for 2000 for a number of stocks: cod, haddock and whiting. The TAC for saithe was also cut sharply, after being increased in 1999. The TAC for plaice was also increased for 1999; but it was reduced slightly for 2000. The herring TAC was unchanged in 2000, after increasing by 12% in 1999.

Table 2. EU-Norway agreement for joint stocks in the North sea for 1998 to 2000

Species	Total Allowable Catches (tonnes)		
	1998	1999	2000
Cod	167 500	157 700	99 600
Haddock	95 550	93 900	77 450
Herring	309 000	345 000	345 000
Plaice	101 000	116 000	111 000
Saithe	97 000	110 000	85 000
Whiting	75 200	52 000	34 000

Source: Council Regulation (EC) No. 46/1998 of 19 December 1997, Council Regulation (EC) No. 48/1999 of 18 December 1998 and Council Regulation (EC) No. 2742/1999 of 17 December 1999, *Official Journal of the European Communities*.

In May 1999 Norway, Iceland and the Russian Federation agreed to end unregulated fisheries of certain stocks in the high seas area of the Barents Sea. The trilateral agreement, which entered into force on 15 July 1999, noted those areas under Norwegian and Russian fisheries jurisdictions that surrounded the high seas "loophole". The agreement recognised the need for a management regime to take into account the straddling and highly migratory nature of several fish stocks found in the loophole. According to the agreement, countries will allot each other quotas of fish within their respective EEZs. Iceland agreed to refrain from making any additional claims on Arctic cod and capelin.

Norway, Iceland and Russia agreed on Barents Sea "loophole" arrangement.

The International Baltic Sea Fishery Commission (IBSFC) cut its 1999 TACs. The 1999 TAC for cod was reduced by 12% from 1998 levels. Other TACs reduced were herring (-15%), sprat (-15%) and salmon (-2%). At its 24th Session the IBSFC adopted a number of principles for salmon enhancement and restocking programmes. These principles included respecting the original genetic diversity of salmon populations and avoiding selection during the rearing process.

Cuts in IBSFC catch limits.

Table 3. TACs by the International Baltic Sea Fishery Commission for 1998 to 2000

Species	Units	1998	1999	2000
Cod	Tonnes	145 000	126 000	105 000
Herring	Tonnes	670 000	570 000	490 000
Sprat	Tonnes	550 000	468 000	400 000
Salmon	No. of Fish	520 000	510 000	540 000

In 1999 the IBSFC fixed TACs for 2000 which continued the downward trend in catch limits. TACs for cod (-17%); herring (-14%) and sprat (-15%) were reduced to protect stocks in accordance with the precautionary approach. The salmon TAC was increased slightly (6%) in response to an observed improvement in some rivers in 1997-1999. Concerns regarding the state of the Baltic cod prompted the third consecutive reduction in that species TAC. The IBSFC adopted a long-term management plan for the two cod stocks. This plan included, among other things, minimum levels of spawning stock biomass, target fishing mortality rates and a commitment by members to co-operate through bilateral arrangements to ensure the efficient management of stocks.

TAC cuts in 2000 for IBSFC stocks, except salmon.

The November 1998 meeting of the North-East Atlantic Fisheries Commission (NEAFC) agreed to a catch limit for Atlanto Scandian herring in

NEAFC catch limits remained constant.

international waters of 102 000 tonnes for 1999, in conjunction with a TAC of 1 302 000 tonnes set by the coastal states. The blue whiting 1999 TAC was unchanged at 650 000 tonnes. Similarly, the oceanic redfish TAC was unchanged at 153 000 tonnes. In February 1999, an allowable catch of 44 000 tonnes was set for mackerel in international waters. This was done to ensure that management in these waters was compatible with measures taken by coastal states (*i.e.*, the European Community, the Faroe Islands and Norway).

Moratoria remained in place for major NAFO groundfish stocks.

For 1998 the North Atlantic Fisheries Organisation (NAFO) agreed to continue the fishing moratoria on capelin, American plaice, witch flounder capelin and certain cod and redfish stocks. These moratoria were extended for 1999. An additional cod stock was placed under moratoria in 1999. The TAC for redfish on the Flemish cap was cut to 13 000 tonnes and the TAC for squid was halved. On the positive side, catch limits for Greenland halibut and Yellowtail flounder were increased for 1999. In 1999 NAFO established a catch limit for the shrimp fishery on the Grand Bank. The fishery, which commenced in 2000 with a TAC of 6 000 tonnes, will be also be subject to area restrictions, gear restrictions, by-catch rules and full observer coverage.

Table 4. **Total TACs Set by the Northwest Atlantic Fisheries Organisation for 1998 to 2000**

Species	NAFO Division	1998	1999	2000
American plaice	3M, 3LNO	0	0	0
Capelin	3NO	0	0	0
Cod	3M, 3NO	2 000	0	0
Greenland halibut	3LMNO	20 000	24 444	25 935
Redfish	3M, 3LN	20 000	13 000	5 000
Squid	Sub-areas 3 + 4	150 000	75 000	34 000
Yellowtail flounder	3LNO	4 000	6 000	10 000
Witch flounder	3NO	0	0	0
Shrimp	3L	–	–	6 000

– No NAFO fishery.

Full observer coverage and satellite tracking to be introduced in the NAFO area.

From the beginning of 1999, 100% observer coverage was required for all contracting party vessels operating in NAFO's regulatory area. In addition, from 1 January 2001 satellite tracking will be required for all vessels operating in the regulatory area. At its 2000 meeting, NAFO agreed to extend 100% observer coverage through to 2000 and further discussed the plan for satellite tracking. Furthermore, NAFO adopted a detailed plan to implement the precautionary approach, on a pilot basis, for three NAFO stocks (*i.e.*, 3NO cod, 3LNO yellowtail flounder, and 3LNO American plaice). As in previous years, concerns were raised about the activities of non-contracting parties fishing in the NAFO area. In 1999 it was agreed that diplomatic undertakings be sent to Belize, Honduras, São Tomé e Príncipe, and Sierra Leone in an effort discourage them from resuming fishing in the NAFO area in 2000.

ICCAT adopted a program to rebuild bluefin tuna in western Atlantic.

At its 1998 meeting, the International Convention for the Conservation of Atlantic Tunas (ICCAT) adopted a program to rebuild the overfished bluefin tuna fishery in the western Atlantic. The TAC under the program is 2 500 tonnes. The program's objective is to rebuild the stock to levels that will

produce maximum sustainable yield within 20 years. For the larger eastern Atlantic and Mediterranean bluefin tuna fishery, ICCAT adopted catch limits of 32 000 tonnes and 29 500 tonnes for 1999 and 2000, respectively. In order to protect bluefin tuna juveniles in the Mediterranean Sea and the Adriatic Sea, ICCAT recommended that purse seine fishing be prohibited at certain times of the year. These limits were a significant reduction from the recent landings of over 40 000 tonnes. A 1999 TAC of 28 200 tonnes was set for the southern Atlantic albacore fishery, the majority of which was allocated to parties fishing actively for the stock (*i.e.*, South Africa, Brazil, Namibia and Chinese Taipei).

In 1999 ICCAT limited fishing effort in the bigeye fishery. It adopted a binding measure to limit the number and capacity of vessels greater than 24 metres in length operating in that fishery. Concerns about the state of stocks of bigeye, yellowfin and skipjack stocks in the eastern Atlantic led to an ICCAT recommendation that fishing for these stocks using fish aggregating devices be suspended for 3 months each year. ICCAT also recommended that its parties limit their fishing capacity in the northern albacore fishery. The stock of northern albacore is close to fully exploited. From 1999 onwards, parties are to keep their vessel numbers in this fishery at about the average number in the period 1993-1995.

In June 1999, Canada and the USA signed a new comprehensive long-term Pacific salmon agreement. The agreement concluded 7 years of negotiations and established a number of new fishing regimes under the 1985 Pacific Salmon Treaty. The new regimes are intended to implement the conservation and harvest sharing principles of the Treaty. The new fisheries arrangements are to run for 10 years from 1999, with the exception of the arrangement concerning Fraser sockeye and pink salmon which will run for 12 years. Among other things, the agreement establishes abundance based regimes, where abundance is defined in terms of run strength, for the Canada and US Pacific salmon fisheries. Allowable catches are to be increased when abundance is higher and constrained when abundance is lower. The agreement is more sensitive to conservation requirements than previous bilateral approaches.

In 1999 Mexico joined the Inter-American Tropical Tuna Commission (IATTC). In 1998 the IATTC set a catch limit of 210 000 tonnes for yellowfin tuna fishing – 10 000 tonnes less than the previous year. In 1999 the catch limit was raised to 225 000 tonnes. In both years the IATTC Director was given discretion to increase this limit by up to three increments of 15 000 tonnes each, provided such increases pose no substantial dangers to the stock. In response to concerns about the fishing mortality of bigeye tuna, the IATTC recommended catch limits for this stock. It recommended that contracting parties reduce their catches of bigeye tuna to 45 000 tonnes for 1998. In 1999 that limit was further reduced to 40 000 tonnes.

In February 1999, the International Dolphin Conservation Program Agreement entered into force. This agreement is legally binding and its objectives are to progressively reduce incidental dolphin mortality during tuna purse seine fishing operations and to ensure the sustainability of tuna stocks in the Eastern Pacific Ocean.

ICCAT introduced capacity controls in bigeye tuna fishery.

Canada and USA signed Pacific salmon agreement.

Mexico joined the IATTC in 1999.

IATTC reduced the catch limit for yellowfin tuna and introduced catch limit for bigeye tuna.

International Dolphin Conservation Program Agreement entered into force.

CCSBT parties unable to agree on TAC and national quotas in 1998 and 1999.

Law of the Sea Tribunal finds against unilateral experimental fishing programs that involve catches in excess of national quotas.

Parties to the Convention for the Conservation of Southern Bluefin Tuna (CCSBT) – Australia, Japan and New Zealand – were unable to agree on TACs and national quotas for 1998 and 1999. In both years Australia and New Zealand undertook to restrain their catches to quotas agreed by the Commission in previous years (5 265 tonnes and 420 tonnes, respectively). Japan also undertook to limit its catch to the level agreed in previous years (6 065 tonnes), but in addition carried out an experimental fishing program that involved the capture of an additional 1 464 tonnes in 1998 and 2 198 tonnes in 1999. Japan then reduced its commercial catch in 1999 by 711 tonnes to take account of the 1999 experimental program catch. Parties to the agreement were unable to agree on this program and Japan implemented it unilaterally in 1998 and 1999. Australia and New Zealand submitted their dispute with Japan to arbitration as provided under Annex VII of the UN Convention on the Law of the Sea. Pending the constitution of the Arbitral Tribunal under Annex VII, Australia and New Zealand sought provisional measures from the International Tribunal for the Law of the Sea. In its Order of provisional measures of 27 August 1999, the Tribunal urged the parties to better co-operate in the management of the resource. It stated that parties should not undertake experimental fishing programs, except with the agreement of other parties, or within national quota allocations. The Tribunal also decided that national quotas for 1999 and 2000 should not exceed those last agreed. In this respect, catch taken during 1999 under any experimental fishing programme would be counted against national quotas. Australia, Japan and New Zealand were also encouraged by the Tribunal to make further efforts to seek agreement with other nations fishing southern bluefin tuna (*e.g.*, Indonesia, Korea, Chinese Taipei and South Africa), with a view to ensuring conservation and optimal utilisation of the stock. CCSBT members undertook efforts to encourage Korea and Chinese Taipei to fully comply with the conservation and management measures of CCSBT, but they remained outside the Convention. On 4 August 2000, the Arbitral Tribunal established by the agreement of the parties decided that it was without jurisdiction to rule on the merits of the dispute, and accordingly decide that the provisional measures in force by Order of the Tribunal for the Law of the Sea be revoked. Australia, New Zealand and Japan have agreed to negotiate in good faith to resolve outstanding issues.

Krill and toothfish remained the largest CCAMLR fisheries.

Problems with IUU fishing continued.

The main fisheries in the area regulated by the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) were krill, Patagonian toothfish, Antarctic toothfish, mackerel and icefish. In the period 1 July 1998 to 30 June 1999, 103 318 tonnes of krill was reported as caught by CCAMLR members, including Japan, Poland and Korea. Total catch of finfish in the Convention area was 18 006 tonnes, with Patagonian toothfish accounting for 17 435 tonnes. Illegal, unreported and unregulated (IUU) fishing for toothfish continued to be a problem. In 1998-99 the IUU catch was estimated to be 10 730 tonnes. The CCAMLR Commission indicated that IUU fishing was seriously depleting toothfish stocks and causing high incidental mortality of seabirds, particularly threatened species of albatross.

c) Arrangements for access to other countries' waters

Japan and Korea entered into mutual access agreement.

Japan and Korea entered a bilateral arrangement in January 1999. The arrangement allows fishers from each country to have access to the other country's economic zone, subject to conditions specified in a licence from the

relevant coastal state. Japan also has mutual access agreements with Russia and China. Japan negotiated an agreement for access to the tuna resources in Fiji's economic zone in 1998, adding to its 20 access agreements that are primarily with Pacific island and African countries. With the exception of those with Canada, Russia, China and Korea, the agreements are for the access of tuna vessels.

With the agreement negotiated with Japan in 1999, Korea now has 17 bilateral fisheries arrangements. These arrangements relate to the waters of coastal states in the Pacific (*e.g.*, Solomon Islands), Atlantic (*e.g.*, Argentina) and Indian (*e.g.*, Iran) oceans. Korea pays fees for access to these waters. In 1999 it paid USD 3.9 million for access to the tuna resources of the Kiribati (1999 catch: 16 000 tonnes). Similarly, for access to the squid resources of the Falkland Islands, Korea paid USD 10.7 million (1999 catch: 265 000 tonnes). The majority of Korea's bilateral arrangements are for access to tuna or squid resources.

In 1998 the EU renewed its fisheries arrangement with the Republic of Guinea. The EU paid the Republic of Guinea ECU 6.5 million for access by Spanish, Italian, Greek, French and Portuguese fishers to finfish, cephalopod, shrimp and tuna stocks in 1998 and 1999. The arrangement with Comoros was also renewed. The EU paid ECU 1.08 million for access by 44 freezer tuna seiners and 16 tuna longliners for three years beginning in February 1998. Spain, French, Italian and Portuguese fishers were allocated access to Comoros' waters. Access to Madagascar's waters for fishers from the same countries was renewed for three years from May 2000. The cost of access was ECU 2.28 million. In 1998 the EU negotiated a new fisheries agreement with Gabon for access to that country's tuna resources. Costing ECU 2.03 million, the agreement provides for access over three years for 75 tuna fishing vessels from Spain, France and Portugal. All of the payments made by the EU under these agreements have specific allocations for fisheries science and technical programmes, surveillance and protection, institutional support, study grants and for participation in international fisheries organisations and international meetings. In 1998 the total cost of all EU international bilateral fisheries arrangements was ECU 269 million.¹⁰

In 1999 the EU spent ECU 13.35 million in renewing its arrangement for access to resources in Angola's waters. This renewal, which runs one year from May 1999, provides Spanish, Portuguese and French vessels with access to tuna, shrimp and demersal stocks. In June 1999 the EU renewed its fisheries arrangement with the Seychelles for a further three years. ECU 5.75 million was paid for the access of 80 vessels from Spain, France, Italy, the United Kingdom and Portugal to tuna resources. The EU's fisheries arrangement with São Tomé e Príncipe was renewed for a further three years from June 1999. The arrangement, which costs ECU 1.91 million, provides fishers from Spain, France and Portugal with access to tuna resources. In December 1999 the EU renewed its fisheries access arrangement with Mauritius. Costing ECU 1.24 million, the arrangement provides EU fishers with access to tuna resources. As with arrangements in previous years, the payments made by the EU under these agreements have specific allocations for fisheries science and technical programmes, surveillance and protection, institutional support, study grants and for participation in international fisheries organisations and international meetings. In 1999 the total cost of all EU international bilateral fisheries arrangements was ECU 250 million.¹¹

Korea continued its bilateral fisheries arrangements for tuna and squid resources.

EU renewed fisheries arrangements with Guinea, Comoros and Madagascar and entered into an agreement with Gabon

EU renewed fisheries arrangements with the Seychelles, Angola, São Tomé e Príncipe and Mauritius.

USA-Pacific States treaty provided access to tuna fisheries in the western and central Pacific.

Fishers from USA continued to have tuna fishing opportunities in the waters of Pacific countries under the terms of the South Pacific Tuna Treaty. The treaty provides for access for up to 50 US purse seine vessels in the central and western Pacific tuna fisheries. The industry pays USD 4 million to the South Pacific Forum Fisheries Agency (FFA) for access to these fisheries. Associated with the treaty is an economic assistance agreement where the US Government pays USD 14 million to the FFA. The FFA distributes the total amount – USD 18 million – to FFA members. Under the terms of the treaty, fishing licences are not issued until the FFA receives the payments from both the US tuna industry and the US Government.

IV. Management of aquaculture

Canada and New Zealand are reviewing their aquaculture laws.

In 1999 Canada began a comprehensive review of the legal and regulatory framework for its aquaculture industry. The industry has expressed the view that certain regulations are not well adapted to its situation or are superfluous. The review will also look closely at the controls that are now in place and that should be in place to ensure that there are proper safeguards for the environment, emphasising healthy fish and quality products, a competitive industry and shared use of resources. As part of a longer-term comprehensive plan, in support of a sustainable aquaculture sector, Canada will also review the role of the federal government and other players to ensure sustainable aquaculture, identify and act on policy gaps and overlaps, and address appropriate governance structure. New Zealand also began reviewing its policies in order to develop an integrated approach to aquaculture activity that includes coastal planning and fisheries management considerations. There is strong demand for additional coastal water space for new marine farm development. Providing an updated legislative framework for aquaculture is intended to provide more certainty for participants and allow the industry to move along a sustainable development path.

Norway increased salmon feed quotas.

Norway continued to use feed quotas to reduce the growth in salmon production and to prevent problems in the EU market. Introduced in 1996, each licence holder is not allowed to use more than a maximum feed level. In 1999, Norway increased the feed quota by 4.6 per cent over the previous year to 680 tonnes per 12 000 m³. Licences for inactive marine salmon and trout production were reassigned to new operators in 1998 and 1999. Priority was given to operators in the northern part of Norway.

Ireland launched a grant scheme for aquaculture development.

Ireland announced a grants scheme to develop the aquaculture industry. A development plan, which will run over 2000-2006, allocated IEP 25 million in public funding for aquaculture development. Grants are available expand aquaculture until it reaches a sustainable critical mass for intensive, extensive and novel species. In addition, funds are available for the development and modernisation of supporting infrastructure for the landing, handling, depuration and primary packing of aquaculture products. The funds can also be used for improvements in the efficiency, safety, competitiveness, quality and environmental sustainability of aquaculture. Finally, grants can be given to studies that evaluate the technical and economic feasibility of projects and the performance of the aquaculture industry.

Mexico promoted aquaculture development

In 1998 and 1999 Mexico continued its Rural Aquaculture Program promoted the development of aquaculture in impoverished areas. The aim of this programme is to stimulate food production in rural districts and alleviate

poverty. A number of actions were taken under this programme, in conjunction with the National Programme on Aquaculture Health. These included:

- Publication of measures for preventing and controlling the introduction and dissemination of viral diseases (namely white spot baculovirus and yellow head virus).
- Continuation of a sampling programme in the collection zones of wild shrimp and post-larval prawns. The results revealed the incidence of a number of viruses in some farms in the states of Sinaloa and Nayarit.
- Establishment of state level committees for the evaluation and selection of research protocols in the states of Oaxaca, Chiapas and Veracruz.

In Spain support was used to encourage the construction, modernisation and purchasing of facilities, and the development and upgrading of water circulation in fish farms. Support was also available for investigating new aquaculture investments and for monitoring current investments. Between 1994 and 1999, a total of 1 085 projects were approved, amounting to ESP 22.6 billion. Of this figure, the EU's FIFG contributed ESP 9.9 billion, national aid ESP 2.4 billion; the remainder came from private investors. Throughout the EU, ECU 274 million was programmed to be spent under the FIFG between 1994 and 1999.

In 1998 the USA allocated new funding for marine aquaculture research, technology and to address environmental concerns. Legislation was also prepared to provide long-term lease sites for aquaculture operations.

Spain allocated funds to development of marine aquaculture.

The USA allocated funds to aquaculture research, technology and to address environmental concerns

V. Environmental issues

The interactions between fish stocks and their ecosystem have been an increasing focus of management policies in OECD countries. Countries are beginning to seek an integrated ecosystem approach to management of fisheries and aquaculture. This approach has involved recognising and, where appropriate and possible, managing the interactions between fisheries and aquaculture on one hand, and the aquatic ecosystems on the other. These interactions are not always positive. Problems in harvest fisheries relate to by-catch of non-target fish and other species (*e.g.*, birds, marine mammals and turtles). In aquaculture, pollution from fish waste and the introduction of diseases into wild stocks are the main concerns.

Increased attention on the relationship between fisheries and aquaculture and their ecosystems.

a) Ecosystem management

In June 1999 Australia enacted the *Environment Protection and Biodiversity Conservation Act 1999*. The Act requires all Commonwealth fisheries to undergo environmental performance assessments. In December 1998 *Australia's Oceans Policy* was released. A key part of the policy is the development of regional marine plans based on the management of large ecosystems. The first regional plan will be developed for the south east region of Australia's EEZ. Another part of the oceans policy is the development of a national system of marine protected areas that contain a representative sample of marine ecosystems. Two marine reserves were established in 1999. Canada began work on legislation to protect species at risk. Entitled the *Species at Risk Act*, it will provide a framework for protection species at risk as well as safety net provisions.

Australia enacts new environmental protection legislation.

Canada began work on new species protection legislation.

Japan introduces new law to address environmental problems in aquaculture.

In May 1999 Japan introduced a new legislation to deal with environmental degradation due to excessive fish cultivation, excessive feeding and imported species. These factors contributed to fish disease problems at aquaculture sites. Entitled *Sustainable Aquaculture Production Law*, it aims to improve the quality of aquaculture sites and their environment and it introduces measures to prevent fish diseases.

Sweden introduced objectives for the management of the marine environment.

Sweden's environmental code came into effect on 1 January 1999. An important element of that code is the fifteen objectives for environmental quality. Two of these quality objectives relate to the aquatic environment: i) sustainable lakes and watercourses and ii) a balanced marine environment, sustainable coastal areas and ecosystems. Under ii), Sweden's National Board of Fisheries is responsible for ensuring that "the living resources of the sea are used in a way that preserves the water's long term production capacity and biological diversity". Among other things, this means that the precautionary principle is used, fishing does not negatively influence the natural distributions of marine life, catches of juveniles are minimised, marine life is released from capture responsibly, and aquaculture constructions are located where they do not negatively affect natural or cultural values.

USA restricted its Alaska pollock fishery to protect sealions.

In 1999 the USA increased protection of Alaskan Steller sealions by introducing restrictions in the Alaska pollock fishery. There is no incidental bycatch of sealions in the pollock fishery. But pollock are an important source of food for sealions and the measures introduced were designed to reduce the risk of localised food shortages that were threatening the sealion population. The plan divided the 1999 fishery into four seasons and expanded the no-trawling zones around rocky beaches where sealions gather. In addition, trawling was eliminated from Aleutian Island waters south of the Bering Sea. The area of the trawling prohibition that operated in the Bering Sea over 1 November to 19 January was extended to include the Gulf of Alaska.

b) Environmental problems affecting fisheries

Canada discussed a plan to address degradation of marine environment.

In March 1999 Canada released a draft plan for the protection of the marine environment from land-based activities. The plan, which was subject to public consultation, proposed national and regional programs to protect human health, the environment and to reduce and control land-based activities that contribute to the degradation of the marine environment. Japan introduced the *Environmental Assessment Law* in 1999 to ensure that the environment is properly considered when there is industry development. In the past, development on reclaimed land has tended to negatively affect tidal areas and areas used for seaweed cultivation. The law will attempt to redress this situation.

Japan introduced new law to limit negative effects on the environment.

Norway introduces environmental plan.

In 1998 Norway introduced national plans to deal with environmental crises in the coastal zone. The purpose of these plans is to organise and improve co-operation between the relevant government agencies and institutions. Work on marine mammal and seabird protection continued in 1998 and 1999. Efforts have also been made to map coral distributions in Norwegian waters. To protect coral reefs, which act as spawning areas for fish stocks, regulations protecting them were introduced in 1999.

c) *Fisheries by-catch*

In August 1998 Australia released a plan to reduce the by-catch of seabirds that occurs in ocean long-line fisheries. The plan involves i) implementing mitigation measures to reduce seabird bycatch; ii) developing new measures; iii) educating fishers; and iv) collecting information for future decisions. To reduce the by-catch of porpoises, Danish fishery authorities introduced requirements that fishers using nets in certain areas of the North Sea use acoustic alarms. The impact of these alarms will be monitored to see if additional measures are required and if they can be used in other Danish fisheries.

Australia released a plan to reduce seabird bycatch.

Danish fishers required to use acoustic alarms to reduce porpoise by-catch.

In June 1998 the EU agreed to phase in a ban on the use of drift nets used in tuna fishing on the high seas. The use of drift nets will be reduced over a four-year period with the complete ban coming into effect on 31 December 2002. To facilitate the phase in, compensation will be available for vessel owners and fishers. Depending on the size of their vessel, owners can receive up to ECU 295 000 if their vessel is ceasing all fishing activities and ECU 285 000 if it is permanently converted to another fishing activity. Crewmembers also receive compensation for the change. If they permanently retire from fishing, they can receive up to ECU 50 000. If they leave the drift net fishery and work in another fishery, crewmembers can receive a maximum of ECU 20 000.

EU introduced ban on high seas drift net fishing.

Mexico introduced regulations requiring the mandatory use of turtle excluder devices in the Gulf of Mexico, the Caribbean and Pacific Ocean shrimp fisheries. For tuna fisheries, Mexico reaffirmed and introduced regulations protecting dolphins. In early 1999, Mexico ratified the International Dolphin Conservation Program. The programme requires that countries apply measures to reduce the incidental capture of dolphins during commercial fishing for tuna with seine or ring nets.

Mexico introduced measures to reduce bycatch of turtles and dolphins.

VI. Government financial transfers

Government financial transfers (GFTs) to fishery and aquaculture sectors are an important policy intervention.¹² GFT policies have a variety of objectives and governments employ a number of means to implement them. A large proportion of GFTs is spent on general services – 74% in 1999. General services include fisheries research, enforcement, management, enhancement and infrastructure. Most of these services are important for ensuring the sustainable use of fish stocks and the aquatic ecosystem. GFTs are also being used in OECD countries to promote the transition towards responsible fisheries practices, to reduce dependence on fisheries, and to achieve a better balance between available resources and fishing capacity. GFTs are also spent on other direct payments and cost reducing transfers like modernisation subsidies, decommissioning payments, tax exemptions for fishing enterprises and income support.

GFTs remain a significant policy intervention.

a) *General*

The European Community increased its structural assistance budget for fisheries and aquaculture between 1998 and 1999. This spending, which was conducted through the Financial Instrument for Fisheries Guidance (FIG), increased from ECU 464 million to ECU 808 million.¹³ In December 1999, the Council approved a smaller FIG budget for 2000 of ECU 564 million.¹⁴

EU increased its budgeted spending on fisheries and aquaculture.

EU introduced new structural funds package.

In 1999 the European Community introduced new regulations for providing structural funds to the fisheries sector. In June 1999, the Council of the European Union adopted regulations revising the Community's structural funds. This revision included a new regulation on the Financial Instrument for Fisheries Guidance.¹⁵ In December 1999 the rules for using structural assistance were established.¹⁶ Structural assistance has a number of objectives: i) helping achieve a sustainable balance between fishery resources and their use; ii) strengthening the competitiveness of structures and developing economically viable enterprises; iii) improving market supply and value-added; and iv) helping revitalise areas dependant on fisheries and aquaculture. In achieving these objectives, funds are available for fleet renewal and vessel modernisation, adjustment of fishing effort, joint enterprises, small-scale coastal fishing and social-economic measures. Funds are also available for the protection of marine resources in coastal waters, aquaculture, fishing port facilities, processing and marketing of products, finding and promoting new markets outlets, operations by producer organisations, temporary cessation of activities and other compensation, and "innovation actions" and technical assistance.

b) Fisheries research, management, enforcement and infrastructure**Most of Canada's and the USA's GFTs were spent on fisheries management and research.**

In 1998 Canada spent CAD 69.7 million on fisheries science (for both capture fisheries and aquaculture), CAD 153.3 on fisheries management (including enforcement) and CAD 55.8 million on harbours. In the United States of America, expenditure on management, research and enforcement was USD 798 million in 1999 – about the same as the previous year. Between the two years there were slight increases in spending on research and management, and a slight decrease in spending on enforcement (down 7% to USD 425 million). Ninety-five per cent of Japan's government financial transfers went towards general services. Worth some JPY 280 billion, and down 8 per cent from the previous year, this expenditure funded resource and management costs, fishing facilities, infrastructure, enhancement of the environment of fishing communities, technology research, deep-sea fisheries research and the promotion of international co-operation.

Most of Japan's GFTs were spent on fisheries infrastructure and management.**EU member states and the Community financed spending on general services.**

In 1999 Sweden spent SEK 188 million through its National Board of Fisheries on consultation, fisheries management, promotion, fisheries research, fisheries enforcement and fish enhancement. The government, research funds and the EU finance the Board's activities. The Coast Guard also conducted fisheries enforcement activities. In Spain, ESP 8.3 billion was spent on general services in 1999. The major items were management (ESP 2.2 billion), enforcement (ESP 1.4 billion) and research (ESP 1.7 billion). The United Kingdom spent GBP 17 million on marine fisheries research and development and, in conjunction with the EU, GBP 24 million on fisheries enforcement in 1998.

Most of Iceland's GFTs fund management, research and enforcement activities. Korea's general services were mostly directed at ports, enhancing resources and fishing communities.

In 1998 Iceland spent ISK 1 463 million on fisheries management, research and enforcement. This was slightly lower than in previous years due to lower outlays by the Directorate for Fisheries and the Marine Research Institute. Coast Guard expenditure on fisheries enforcement, which makes up about 75% of the total costs, increased by over ISK 100 million between 1997 and 1998. In Korea, general services made up about 40% of that country's GFTs. The majority of this expenditure (KRW 217 billion in 1999) was spent on improving fishing ports and the environment of fishing communities. A further KRW 39 billion was spent on resource enhancement programmes including the installation of artificial reefs.

Table 5. Estimates of government financial transfers to marine capture fisheries in OECD countries: 1998 and 1999

	1998		1999	
	Total transfers (USD million)	% of landed value	Total transfers (USD million)	% of landed value
Australia	23	2%	..	..
Canada	557	51%	..	..
European Union ¹	1 247	18%	1 297	18%
Belgium	..	..	..	..
Denmark	33	6%	34	7%
Finland	26	113%	26	139%
France ²	73	7%	72	7%
Germany ³	16	8%	15	7%
Greece	27	9%	44	47%
Ireland	119	50%	115	51%
Italy	162	18%	145	18%
Netherlands	..	..	..	..
Portugal	25	9%	27	8%
Spain	294	13%	267	14%
Sweden	27	20%	27	24%
United Kingdom	90	9%	76	8%
Iceland	35	4%	35	4%
Japan	2 204	21%	2 542	..
Korea	211	8%	435	13%
Mexico	..	..	..	..
New Zealand	10	..	13	..
Norway	153	11%	181	14%
Poland	..	..	..	..
Turkey	0.03	18%	..	..
United States of America ⁴	1 040	32%	1 111	32%
OECD Total ⁵	5 480	18%	5 564	18%

.. Information not available or insufficient.

1. Excludes Belgium and the Netherlands.

2. Excludes financial transfers from the EU.

3. Excludes general services.

4. USA figures include an estimate of market price support, *i.e.*, transfers from consumers to producers due to the impact of trade restrictions.

5. Total only for those countries available.

Source: OECD, Country Chapters and submissions to the Review of Fisheries Statistics.

Spending on general services comprised 100% of New Zealand's GFTs. In 1999, NZD 56 million was spent on policy advice, enforcement, prosecution, administration and research. Compared with the previous year, spending on policy advice and enforcement increased slightly. About 55% of these costs were recovered from commercial fishers.

All New Zealand's GFT expenditure went towards general services.

c) Capacity adjustment¹⁷

Australia's Southeast fishery adjustment program concluded in 1998. The one-off program was designed to assist with the transition of the fishery to ITQs. In the 1997-98 year, AUD 6.9 million was spent, of which AUD 4.4 million was used to buyout fishing permits. In July 1999 an AUD 2.6 million adjustment program was launched to assist the transition of the southern shark fishery to ITQ management. This program included the buying out of permits.

Australia concluded one adjustment program in 1998 and commenced another in 1999.

The European Community structural funds package agreed in 1999 provides for the adjustment in fishing effort in accordance with the multi-annual guidance programme (MAGP). From January 2000, funds are available for the permanent cessation of vessels' fishing activities by scrapping the

EU structural funds made available to help meet capacity reduction targets.

vessel, permanently transferring the vessel to a third country (including under a “joint enterprise” arrangement), or by permanently assigning the vessel to a non-fishing activity. Funds are provided to facilitate the creation of joint enterprises between companies based in EU member states and companies based in third countries. Before vessel transfer within a joint enterprise arrangement, there must be guarantees that conservation and management regimes (international and domestic), and the working conditions of fishers, will not be infringed.

Canada introduced new adjustment programs for Atlantic groundfish and Pacific salmon fisheries.

The Canadian Fisheries Adjustment and Restructuring (CFAR) program was introduced in 1998. The program has retired 1 787 Atlantic groundfish licences (as at April 2000). CAD 250 million was devoted to licence reduction in the Atlantic groundfish fishery. Those fishers who retire under this program cannot re-enter this fishery. In the Pacific salmon fishery, CAD 400 million was made available to rebuild the coho salmon resource, restructure the salmon fishery and help people adjust to the changing fishery. CAD 100 million was allocated for measures to protect and rebuild habitat and CAD 200 million for fishery restructuring. As at April 2000, 743 Pacific salmon licences have been retired from the fishery.

Japan scrapped tuna long-line vessels.

Because more than 1500 distant water tuna long line vessels are engaged in the tuna fishing world-wide, there is a significant concern that tuna stocks, especially those that are harvested for the fresh sashimi and sushi market (*e.g.*, bluefin tuna and yellowfin tuna), have been depleted. The FAO's International Plan of Action (IPOA) for the Management of Fishing Capacity, adopted in February 1999, mentioned a 20 to 30% reduction in capacity of large scale long line tuna fleets. Acknowledging the importance of the IPOA and the necessity of reducing the number of distant water tuna vessels as a way of contributing to the recovery of tuna stocks and securing a sustainable tuna fishery, Japan permanently withdrew 132 distant water tuna long line vessels in March 1999 (costing JPY 3.2 billion). All these vessels, which made up about 20% of Japan's distant water long line fleet, were scrapped in order to prevent them being exported and fishing under the flag of another country. In order to enhance co-operation on the management of fishing capacity, Japan is working with Korea and Chinese Taipei with a view to reducing the number of distant water tuna vessels.

Overall, Germany's adjustment payments increased.

Germany's payments for the permanent withdrawal of vessels from the fishing fleet fell by 16% to DEM 1.6 million in 1998. But payments for temporary withdrawals increased by 50% to DEM 10.5 million over the same period. Between 1998 and 1999, Finland's spending on the permanent withdrawal of fishing vessels from the fleet fell sharply from FIM 7.6 million to FIM 1 million. This spending was co-financed with the European Community. A major portion of Korea's GFTs was used to reduce the fleet size in coastal and offshore waters. This reduction was required due to the contraction in fishing opportunities due to the Korea-Japan fishery agreement. In 1999, Korea spent KRW 196 billion to assist fishers affected by the agreement.

Korea provided assistance for fleet reduction.

Norway reformed its adjustment policies.

In 1998 Norway spent NOK 25 million to remove fishing vessels from the coastal fleet. The following year, Norway altered its structural adjustment policies. Support for decommissioning and support for renewal were merged into one scheme in an effort to improve the way funds are allocated. Support can be allocated to fishers who *i)* permanently withdraw

their vessels from fishing; *ii*) permanently withdraw their vessels but transfer the licence of catch rights to more efficient vessels; and *iii*) build new vessels or import second-hand vessels. In 1999, about NOK 68 million was spent on through this scheme, which is administered by Norwegian Industrial and Regional Development Fund.

In Spain a new model for the permanent cessation of fishing activities was agreed between the government and the fisheries sector. This model led to an increase in the support granted and the previous imbalance between requests for assistance and the granting of those requests was addressed. In 1999 ESP 3.8 billion was spent on the permanent withdrawal of vessels from the fleet. A further ESP 1.1 billion funded temporary joint ventures where the vessels are transferred to fish in other countries' waters (but retain the Spanish flag). Permanent joint ventures, where vessels transfer to other countries' waters and are re-flagged, cost ESP 4.1 billion in 1999. Over the 1998-1999 period, the number of vessels in the Spanish fishing fleet was reduced by 812, representing 38 861 GRT. The EU/Morocco Joint Committee established a fishing moratorium for two months to preserve cephalopod and black hake stocks. To support fishers and vessel owners affected by the moratorium, aid was provided of ESP 743 million and ESP 641 million in 1998 and 1999, respectively.

In 1999 the USA spent USD 50 million on a buyout of capacity in the Alaska salmon fishery. Implementation of the American Fisheries Act – mainly involving the buyback of foreign owned vessels in the Alaska pollock fishery – cost USD 20 million. This buyback was required to meet new ownership requirements that reduced the stake that non-USA citizens could have in fishing vessels. Under the Fisheries Finance Program (FFP), loans were made available to fishers to finance the reduction of fishing capacity in over capitalised fisheries (USD 175 million).

d) Social measures

Under the Canadian Fisheries Adjustment and Restructuring (CFAR) program, CAD 480 million was made available on the Atlantic coast. These funds were set aside for early retirement, final cash payments as well as adjustment and economic development measures. In the Pacific salmon fishery, some CAD 100 million was targeted at early retirement and community development programmes. Norway paid out NOK 10.8 million in 1999 as part of its minimum wage scheme. The scheme supports fishers when their income levels are low and when there is bad weather. Sweden continued its special employment fund for fishers. This fund pays out unemployment benefits in certain circumstances, such as the imposition of catch limits, bad weather, change of engines or winches, engine or hull damages, and ice. In 1998, SEK 26 million was paid to fishers from this fund.

The European Community continued its "PESCA" initiative in 1998 and 1999 to assist coastal areas. The initiative made available ECU 293 million (USD 332 million), spread over 1994-1999, and was designed to assist industry change, lessen social and economic consequences, help fishers move into other occupations, and contribute to the diversification of economic activity in fisheries dependent regions. Under the structural policy reforms decided

Spain reformed its procedures to facilitate continued adjustment in the fleet.

USA spent USD 70 million on capacity buyouts in Alaska salmon and pollock fisheries.

Canada's adjustment programmes provided for early retirement and community development.

Norway and Sweden provided income supplements to fishers.

PESCA continued in 1998 and 1999.

in 1999, PESCA was discontinued from 2000. The Community's new structural funds package provides for social measures for fishers. These measures included i) co-financing Member states' early retirement schemes; ii) compensatory payments for redundancy; and iii) payments for retraining or diversifying into other activities.

USA provided funds to fishers and their communities to cope with adjustment in Alaska and New England fisheries

In 1998 the USA allocated USD 9 million to help fishers and their communities deal with the economic consequences of low returns of salmon to Bristol Bay and Kuskokwim regions of Alaska. The majority of these funds went to fund community grants and about USD 2 million went towards loan programs for fishers. The following year USD 5 million was spent on relief funds for owners and crew of some 1 600 fishing vessels in the New England fishing industry. In return fishers participated in research to get a better assessment of the state of the region's groundfish stocks.

e) Taxation exemptions

Australia, Norway and the USA continued to provide diesel tax rebates.

Many OECD countries also provide tax exemptions for the use of fuel. Australian fishing, processing and aquaculture enterprises are eligible to claim benefits including a Goods and Services tax rebate for inputs into their businesses and receive rebates on the excise tax on diesel fuel. This is a practice that is applied across all primary industries and is not specific to fisheries activities. Fishers have the opportunity to average their taxable income over five years, thus minimising their tax liability. The United States of America continued to provide a diesel fuel tax exemption for fishers in 1998 and 1999. This exemption was estimated to be worth USD 150 million. Norway provided refunds and tax exemptions for mineral oil taxes for the fisheries sector. In 1999 the value of these exemptions was NOK 142 million.

Iceland provided special tax treatments for fishers.

Special tax deduction measures are available for fishers in many OECD countries. In Iceland a tax deduction was available for fishers and was based on the number of days they spend at sea. The tax deduction was available to all persons working on sea-going vessels. About 95 per cent of those persons receiving the tax deduction are fishers. It currently constitutes the largest transfer to Iceland's fisheries sector, accounting for ISK 1.2 billion in 1998.

Ireland introduced tax relief for low-income fishers.

In 1999 Ireland introduced a new scheme to benefit low-income self-employed fishers and their families. Over 500 low-income, self-employed fishers benefited from the scheme. Under the scheme, only 80 per cent of all income from self-employment, including income from sources outside fishing (which is common among smaller scale fishers) were assessed for tax purposes. Previously 100 per cent of fishers' income was assessed.

f) Investment and modernisation

Funds available for EU fleet renewal and modernisation ... provided capacity does not increase.

The European Community's new structural funds package provides for fleet renewal and the modernisation of fishing vessels. Government aid can not contribute to an increase in fleet capacity. In order to obtain approval for government aid, a member state must put in place arrangements for monitoring fleet renewal and modernisation. Furthermore, government aid for fleet modernisation or renewal can be granted only if it complies with the objectives

of the multi-annual guidance programmes. There are some exceptions to this principle: for example where capacity increases result from measures to improve safety, navigation, hygiene, product quality and work conditions. But such measures are only allowed if they do not increase the exploitation rate of the resources concerned.

Germany increased the grants, loans and interest subsidies it provides for the purchase of new and second hand vessels and for the modernisation of vessels. In 1998 total payments under these schemes increased by 57 per cent over the previous year to reach DEM 11.6 million. Spending by Finland on construction and modernisation of fishing vessels increased in 1999. Co-financed with the European Community, spending increased by over 40 per cent to FIM 8.6 million. In Ireland, more than IEP 15.5 million in grant aid was approved under the programme for the renewal of the whitefish fleet. Ireland's whitefish fleet has begun to reverse its age profile and improve its safety. The programme allocated aid for 30 new vessels, 11 second-hand vessels, 63 modernisations to existing vessels and 561 safety improvements to existing vessels. Ireland also introduced concessionary tax arrangements to support the investment plan. An accelerated depreciation treatment enables investors to deduct 50% of the value of their capital in the first year of their investment. It is expected that these policies will encourage the investment of IEP 70 million in the Irish whitefish sector.

The USA provided loans to fishers under its Fisheries Finance Program (FFP). The programme provides loans for construction, renewal and purchasing of fishing vessels, as well as for on-land processing and aquaculture (USD 24 million in 1999). Loans were also available to finance the purchase of Individual Fishing Quotas (IFQs) and Community Development Quotas (CDQs) (USD 30 million). The fleet modernisation programme in Mexico is based on voluntary decisions by producers and does not entail the use of on-going subsidies or economic support. Institutions participating in the programme can obtain financial resources in order to carry out modernisation of their fleets, capitalise their organisations and help stimulate corporate development. Producers have tended to rehabilitate rather than replace their vessels. Vessel substitution or rehabilitation should not imply increased fishing effort.

g) Cost Recovery and royalties

Several OECD countries charged fishers to recover some of the costs of managing fisheries (*e.g.*, research, administration and enforcement). In one of these cases the funds recovered also included a royalty charge. Here fishers were charged for the "privilege" of access to a public resource.

Australia continued to recover costs associated with managing its Commonwealth fisheries. In 1999 about AUD 7.5 million of the Australian Fisheries Management Authority's (AFMA) management costs were recovered from commercial fishers. This figure represented about 29% of AFMA's management costs. The philosophy underpinning the recovery of management costs in Australia is that beneficiaries of government services should meet the costs of those services. Consequently, commercial fishers paid for the costs directly related to fishing activity while the government pays for activities that benefit the broader community as well as the industry.

Germany and Finland increase spending to support vessel purchases, construction and modernisation.

Ireland provided aid for renewal of its whitefish fleet.

USA provided loans to enhance capacity.

Mexico's fleet modernisation programme aims at rehabilitation rather than replacement of vessels.

Several OECD countries recovered fisheries management costs from fishers.

Australia recovered certain costs from commercial fisheries to fund fisheries management.

<p><i>Finland uses licence fees to pay for management.</i></p>	<p>Finland used funds from issuing fishing licences to finance management of fisheries organisations, fishing areas, fish stocks, scientific research and extension work. In 1999, 319 100 ordinary fishing licences were issued, raising FIM 27.7 million. A further FIM 9.6 million was raised from the issuing of 80 084 recreational fishing licences. Private water owners, who allow recreational fishers access to their resource, receive these funds as compensation.</p>
<p><i>Iceland recovered certain management costs.</i></p>	<p>In Iceland the costs of certain services are recovered from the industry. Quota holders pay an annual fish inspection fee and vessel owners pay for transfers of quota between vessels. In 1999 about ISK 198 million was recovered by the levy. New Zealand recovered NZD 31 million from its commercial fishers in 1999. This was NZD 6 million less than the previous year. In the future the amounts recovered from commercial fishers are likely to be less. A review of the cost recovery regime found that there were grounds for reducing the amounts that are recovered from commercial fishers (recreational and Maori customary fishers do not pay cost recovery). The principle underpinning decisions on what costs may be recovered was altered to more accurately reflect costs that are generated by other fisheries management demands. As a consequence, commercial fishers now pay a smaller portion of certain fisheries management costs.</p>
<p><i>New Zealand recovered some fisheries management costs... ... and reviewed its cost recovery regime</i></p>	<p>In the future the amounts recovered from commercial fishers are likely to be less. A review of the cost recovery regime found that there were grounds for reducing the amounts that are recovered from commercial fishers (recreational and Maori customary fishers do not pay cost recovery). The principle underpinning decisions on what costs may be recovered was altered to more accurately reflect costs that are generated by other fisheries management demands. As a consequence, commercial fishers now pay a smaller portion of certain fisheries management costs.</p>
<p><i>Norway levied fishers to fund social security arrangements.</i></p>	<p>In Norway fishers continued to provide contributions for certain social security arrangements through a fee levied on the value of catches. The funds raised by this fee contributed to national insurance, occupational injuries insurance, unemployment benefits and collective supplementary insurance for sickness benefits. The level of this fee is set on an annual basis. The level is determined according to the expected costs of the social security arrangements.</p>

VII. Post-Harvesting policies and practices

a) Market policies

<p><i>EU operated market intervention programme.</i></p>	<p>In 1998 and 1999, the European Union continued to operate its intervention programme as part of the Common Organisation of Markets (COM). The programme endeavours to act as a “safety net” operating at the margin. In 1998, ECU 11 million was spent on intervention, in 1999 ECU 9 million. This represented about 0.3% of the total landed value of the EU species eligible for intervention. Intervention mechanisms include:</p> <ul style="list-style-type: none"> • Financial compensation for the withdrawal from sale of products whose prices had fallen to the withdrawal price. • Special financial compensation for significant withdrawals in the event of exceptional market difficulties. • Assistance for the carry-forward of fresh products that are withdrawn from sale when prices have fallen below a value threshold. These products are later sold on the frozen market. • Private storage aid for products that are withdrawn from the market temporarily. • Compensatory allowances for tuna, given directly to tuna fishers that supply the processing industry, in the event of a fall in market prices.
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The COM also allowed for autonomous carry-forwards and withdrawals (with aid and fixed rate premiums) for certain species.

In late 1999 the EU announced reforms to the COM. The objective of the reforms is to incorporate the concerns of consumers and processors into market legislation. The reforms are also intended to reinforce the competitiveness of the sector by strengthening the role of producers' organisations (POs). Objectives of the reforms included *i*) reducing waste by encouraging fishers to only catch what can be sold; *ii*) strengthening POs so that they can be active players in the market and have better links to the rest of the production chain; *iii*) protecting consumers through better labelling information and; *iv*) improving the balance between supply and demand. New roles have been given to POs. They are now expected to have a more proactive role in managing the supply of product landed by their members. The mechanisms are intended to encourage the use of carry-over aid instead of permanent withdrawals. The funds available for financial compensation for permanent withdrawals will be reduced (although the funds available for carry-overs will be raised). An important objective of the reforms is to encourage the use of permanent intervention as a tool of "last resort" to deal with emergencies. Aid will be made available to help POs adjust to their new responsibilities. These reforms come into effect from January 2001.

EU reformed its market policy.

Role of producers' organisations to be strengthened.

Most OECD countries provided transfers from consumers to fishers through restrictions on imports. These transfers, termed "market price support",¹⁸ arise when import restrictions raise the domestic price of fish and fish products above their world price. One way to estimate market price support is to use the tariff revenue that is collected on imports of fish and fish products. Using this method, the USA estimated that market price support increased from USD 37.8 million in 1998 to USD 42.8 million in 1999. The majority of these figures are accounted for by restrictions on imports of a handful of processed products such as canned tuna, sardines and oysters, smoked salmon, and frozen crabmeat. In 1998 and 1999, the USA continued to operate its Surplus Commodity Removal Programme. In 1998 USD 17 million was spent removing "surplus" commodities for use in various domestic food programmes. In 1999 USD 16 million was paid to producers of canned salmon and tuna under the programme.

Market Price Support continued.

Korea continued to operate its price stabilisation fund for agricultural and fishery products. The fund covers ten items, including seaweed, frozen squid and frozen hairtail. In 1999, the fund spent KRW 44.3 billion on price stabilisation. The competence of the Norwegian fishermen's sales associations to approve first-hand buyers was amended in 1998 and replaced by a registration system. The Directorate of Fisheries now registers first-hand buyers. This was done with a view to improving the supervision and monitoring of first-hand sales in a way that supports resource management efforts.

Korea operated its price stabilisation fund.

Norway introduced fish sale registration system.

b) Food safety

Most OECD Member countries in recent years applied the Hazard Analysis and Critical Control Points (HACCP) approach to the inspection systems in their seafood processing industries. The HACCP principles aim at giving greater assurance of product safety without relying on finished product inspection of

HACCP approach applied to ensure seafood safety.

domestically produced or imported goods. Several OECD countries have, to varying degrees, mandatory programmes of HACCP. The use of HACCP-based systems is mandatory, whether the seafood is intended for domestic consumption or export, in Australia, Canada, New Zealand, Mexico, Iceland, the United States of America and the Member states of the European Union. In Korea, the use of HACCP-based systems is voluntary for domestic consumption, but mandatory for exports. In Japan, the use of HACCP-based systems is voluntary for domestic production, but mandatory for exports to the EU and the USA. As a consequence of the Customs Union with the European Community, most of Turkey's fish processing plants are now applying the HACCP approach.

c) Information and labelling

Western Australia rock lobster certified by the Marine Stewardship Council.

During early 2000 the Western rock lobster fishery, located in Western Australia, became the first seafood fishery certified by the Marine Stewardship Council (MSC). The MSC is an independent international body set up to promote sustainable and responsible fisheries and fishing practices worldwide. The MSC has established a broad set of principles and criteria for sustainable fishing against which independent certification companies may certify fisheries. Certification means that products from the fishery can use the MSC logo, thus providing increased information and choice for consumers.

The EU decided to introduce labelling requirements.

An important part of the EU COM reform is the rules on information for consumers. From January 2002, each fishery product will have to carry a mark or label that indicates its commercial designation, how it was produced (aquaculture or wild) and where it was caught. These information requirements are intended to provide consumers with more of an idea about the products they are buying and reduce opportunities for fraud. The Norwegian Seafood Export Council continued its generic marketing campaigns to stimulate consumption of fisheries products in Norway and in other countries. The Council is financed by a levy on exports of fisheries products and in 1999 had a total budget of NOK 390 million. It administers the regulation that came into force in December 1998 on the export of salmon to the European Union. That regulation contains price and quantity controls and an additional export levy on Norwegian salmon. The additional export levy income was used to promote and market Atlantic salmon in the European Union, as well as joint marketing campaigns to the mutual benefit of Norwegian, Scottish and Irish industries.

Norway continued generic promotion of fish products.

USA also funded the promotion of fish products.

The United States Department of Agriculture provided funds for generic and specific product promotion. USD 3 million was allocated for this activity in 1999 – slightly less than in 1998. In April 1999 the USA adopted a “dolphin safe” label for tuna caught by the encirclement method in the eastern tropical Pacific Ocean. Standards in the International Dolphin Program Act allow the use of the label if dolphins are present, but not seriously injured or killed, when tuna are caught. Previously, only tuna caught when no dolphins were present could use the “dolphin safe” label.

USA adopted “dolphin safe” label for tuna imports.

VIII. International trade

In 1998 OECD countries imported more seafood than they exported.

In 1998 OECD countries imported some USD 45.6 billion worth of seafood products. The major importers were the European Union countries (USD 20.6 billion),¹⁹ Japan (USD 12.5 billion) and the United States of America (USD 8.5 billion). OECD countries exported approximately USD 24.6 billion worth

of seafood products in 1998. The major exporting countries were the European Union countries (USD 10.6 billion), Norway (USD 3.7 billion) and the United States of America (USD 2.4 billion). The annex provides more detailed information on trade by OECD countries.

a) General

The Asian Pacific Economic-Co-operation (APEC) group of Member economies continued to work towards the Early Voluntary Sectoral Liberalisation (EVSL) for fish and fish products. This initiative was agreed under the APEC principle of "voluntarism" whereby each economy remains free to determine the sectoral initiatives in which it will participate. The EVSL initiative covered tariffs, facilitation (non-tariff barriers) and economic and technical co-operation. In 1998 APEC resolved that the tariff liberalisation element of the EVSL should be negotiated within the WTO. In the WTO the tariff element was relabelled the Accelerated Tariff Liberalisation (ATL) initiative. With the transfer of this element to the WTO, APEC has focused on non-tariff measures, facilitation and economic and technical co-operation. In 1998 and 1999 the APEC Fisheries Working Group continued its four-year trade study project covering tariffs, non-tariff measures, investment measures and subsidies.

At its meetings in 1998 and 1999, the World Trade Organisation's Committee on Trade and the Environment (CTE) discussed the role of subsidies to the fisheries sector. Documents were presented to the CTE by New Zealand, Iceland (2), Australia and European Community on issues related to subsidies, their role, and possible implications of their reform. The WTO Secretariat also presented a paper summarising subsidies and aids granted to the fishing industry.²⁰ Delegations at the CTE presented a variety of views in response to these papers. Some delegations considered that there would be trade, economic and development benefits from reducing subsidies to fisheries. Others delegations considered many subsidies have positive environmental and social outcomes.

In December 1999 talks to launch a new round of launch trade negotiations were unsuccessful. A meeting of Ministers and delegates from the WTO's 135 member countries was suspended before an agreement could be reached on the text of a Ministerial Declaration. As a result progress on a number of proposals were halted, including a proposal to establish a WTO working group to investigate fisheries subsidies and their effects on trade, environment and sustainable development. At this point in time, it is not clear when a new round of global trade negotiations will commence.

b) Tariffs and quantitative restrictions

Autonomous duties on selected fishery products imported to the EU for processing were suspended totally or partially for the whole of 1999. Products benefiting from zero tariffs included certain forms of sturgeon, hard fish roes, lump fish with roes, red snapper, Pacific salmon and krill. Lower tariff rates applied to dogfish and Alaska pollack. In April 1999 the EU Council amended its "autonomous Community" tariff quotas on certain additional fishery products

APEC continued with its EVSL initiative in 1998 then...

... tariff liberalisation was shifted to the WTO.

The WTO's Committee on Trade and the Environment discussed fisheries subsidies.

Unsuccessful attempt to launch a new round of multilateral trade negotiations.

EU relaxes tariffs and set reduced tariff quotas for certain products.

imported for processing during the months April through December. The major changes were as follows:

- Increasing the quota for fresh, chilled or frozen cod (up 10 000 tonnes to 67 000 tonnes, tariff rate falling to 3%).
- Doubling the quota for fresh, chilled or frozen shrimps and prawns to 12 000 tonnes.
- Increasing the quota for surimi from 8 000 tonnes to 15 000 tonnes, while reducing the tariff rate from 6% to 3.5%.
- Quadrupling the quota for frozen blue grenadier to 20 000 tonnes, while reducing the tariff rate from 6% to 3.5%.
- Increasing the chilled and frozen herring quota from 12 500 tonnes to 20 000 tonnes.
- Increasing the quota for tuna and skipjack “loins” from 800 tonnes to 1200 tonnes, while reducing the tariff rate from 9% to 6%.
- Introducing a new quota for cooked and peeled shrimps and prawns (4 000 tonnes with a 6% tariff).

EU reforms see indefinite suspension of tariffs for some products.

The EU's reform of the COM in late 1999 made a number of changes to reflect the needs of the processing industry. In order to assure the supply of raw material for its processing industry, the Community has partially or totally suspended tariffs for certain products for an indefinite period of time. These products include cod, Alaska pollack, blue grenadier, surimi and prawns. For some other “sensitive” species – such as herring, tuna loins – a series of multi-annual tariff quotas will be implemented. A stable supply of imports at international prices was considered important for the Community's processing industry's competitiveness and the new tariff regime is intended to facilitate this. The changes come into effect in January 2001.

c) Trade measures seeking to support management initiatives

CCSBT discussed trade information scheme.

Parties to the CCSBT held a workshop in July 1999 to discuss the development of a trade information scheme. Obtaining better information about trade in southern bluefin tuna was considered to be important for ensuring its effective conservation and management. A trade information scheme was also considered an effective measure to reduce IUU fishing for southern bluefin tuna.

CCAMLR adopted documentation scheme for landings and trade in toothfish.

In 1999 CCAMLR parties adopted a documentation scheme to reduce the level of IUU fishing for toothfish. This scheme was introduced to trace landings and trade flows of toothfish and, where possible, fish caught in adjacent waters. This scheme, which became binding on Convention parties in May 2000, allows the Commission to identify the origin of toothfish entering the markets of parties and will help determine whether the toothfish has been caught in a manner consistent with CCAMLR's conservation principles.

ICCAT requested that information be collected on imports and landings of tuna and tuna-like species.

In response to concerns about the impact of large-scale tuna long-line vessels in its Convention area, in 1998 ICCAT requested that its parties (and co-operating parties) collect and examine as much import and landing data as possible. ICCAT considered that the activities of these vessels posed a serious threat to the Atlantic bluefin tuna and other tuna and tuna-like species. The ICCAT request arose from a concern that a number of long-line

vessels were transferring their flags from Belize, Honduras and Panama to contracting parties (and other entities) so as to avoid ICCAT recommended import bans. These bans had been recommended by ICCAT to support resource conservation measures.

Late in 1999, ICCAT recommended new measures against flag of convenience vessels including the banning of imports of swordfish from Honduras and Belize. The banning of imports of bluefin tuna from Panama was lifted due to that country's increased co-operation with ICCAT. Import bans are still recommended for bluefin tuna exports from Honduras and Belize. In addition to implementing ICCAT recommendations on the import of Atlantic bluefin tuna, in 1999 Japan introduced additional measures to support fisheries management efforts. Under the *Law Concerning Special Measures to Strengthen Conservation and Management of Tuna Resources*, importers are now required to report the name of the vessel that caught the imported tuna. This measure is intended to support efforts to address the problem of "flag of convenience" fishing of tuna stocks.

d) Bilateral matters

The EU and Mexico concluded a free trade agreement in 1999. Among other items, the trade in fish products will be liberalised over the period 2000 to 2010.

The United States' countervailing and antidumping duties on fresh and chilled salmon imports from Norway, which were first imposed in April 1991, remained in place throughout 1998 and 1999. The Norway-European Community salmon arrangement, which commenced in 1997, continued through 1998 and 1999. Norwegian companies who breached the arrangement were subject to an anti-dumping duty of ECU 0.32 per kilogram and a countervailing duty of 3.8 per cent.

In June 1997 the US International Trade Commission received a petition from a group of 12 US salmon producers arguing that Chilean producers and exporters of Atlantic salmon receive subsidies. The US producers argued that Chilean salmon imports should be subject to countervailing duties in the form of a tariff in the order of 42%. After its investigation of the complaint, the US government imposed a tariff of 4.54% on imports of Atlantic salmon from Chile. Chile took a complaint to the WTO in respect of the US investigation. Chile contended that the decision to initiate an investigation was taken in the absence of sufficient evidence of injury, in violation of GATT Articles. Chile also contended a violation of GATT Articles in relation to the representative status of USA producers of salmon fillets. The decision on establishment of a panel was still pending at the end of 1999.

Canada initiated consultations at the WTO in 1995 in relation to Australia's prohibition of imports of uncooked salmon from Canada (and other countries) based on a quarantine regulation. Canada alleged that the prohibition is inconsistent with GATT Articles XI and XIII, and also inconsistent with the Sanitary and Phyto-sanitary (SPS) Agreement. In June 1998 the WTO dispute panel found that the Australia prohibition was inconsistent with GATT Articles

ICCAT recommends import ban on swordfish from Belize and Honduras.

Japan implemented measures in addition to ICCAT recommendations.

EU-Mexico free trade agreement concluded.

United States continued to apply anti-dumping duties on Norwegian salmon.

Norway-European Community salmon agreement continued.

Chilean WTO complaint against United States' salmon anti-dumping duties still pending.

Australia's import prohibition relating to Canadian uncooked salmon found to be WTO-inconsistent.

and the SPS Agreement, and also nullified or impaired benefits accruing to Canada under the SPS Agreement. Australia appealed the panel's decision and, although reversing the panel's reasoning, the appellate body still found that Australia had acted inconsistently with GATT Articles. Australia was given until July 1999 to implement the recommendations of the dispute settlement body. In July, Canada requested that the original dispute panel determine whether Australia's attempts at implementing the dispute settlement body's recommendations were WTO-consistent. The panel found that Australia, by requiring that salmon be imported in the specifically defined "consumer-ready" form, was maintaining sanitary measures that were not based on a risk assessment and consequently in violation of GATT Articles. Furthermore, Australia had violated GATT Articles as a result of the State of Tasmania's introduction of a measure, also not based on a risk assessment, that effectively prohibits the import of certain Canadian salmon into most parts of Tasmania. The dispute settlement body adopted this report in March 2000.

United States of America lodges complaint relating to Australia's import prohibition of USA salmon.

The United States of America initiated consultations at the WTO in 1995 in relation to Australia's prohibition of imports of salmon based on a quarantine regulation. Like Canada, the USA alleged that the prohibition is inconsistent with GATT Articles XI and XIII, and also inconsistent with the SPS Agreement. In July 1999 the WTO established a dispute settlement panel. Work in this panel was suspended until the outcome of the Canadian complaint became clear.

Resolution of dispute over United States' import ban on shrimp fisheries that do not use TEDs.

In 1996, India, Malaysia, Pakistan and Thailand took a joint complaint to the WTO in respect of the US ban on imports of shrimp and shrimp products. The ban was imposed on the basis that these countries did not use turtle excluder devices in shrimp nets. The complaint to the WTO alleged violations of GATT Articles, as well as nullification and impairment of benefits. The WTO dispute panel found that the import ban on shrimp and shrimp products was inconsistent with GATT Articles and cannot be justified under Article XX of GATT 1994. In July 1998 the USA appealed the panel decision. The appellate body found that the US measure failed to meet the requirements of the GATT Article XX. In January 2000 the USA indicated that it had implemented the dispute settlement body's recommendations. The USA noted that it had revised its law to introduce greater flexibility in assessing foreign programmes and provided a timetable and procedure for certifying imports. Furthermore, the USA indicated that it was seeking negotiations with Indian Ocean governments to protect sea turtles and that it was offering technical training on the use of turtle excluder devices to any government that requested it.

US Secretary of Commerce certified that Japan's research whaling in the north west Pacific diminishes the effectiveness of the IWC conservation program.

In accordance with the USA's Pelly Amendment, in September 2000 the US Secretary of Commerce certified to the US President that Japan's research whaling in the north west Pacific was engaged in activities that diminish the effectiveness of the International Whaling Commission (IWC) conservation program. Specifically, the certification in this case was prompted by Japan's expansion of its North Pacific research program in July 2000 to include the take of sperm whales and Bryde's whales, contrary to the wishes of the IWC (as expressed in the non-binding IWC resolution in July 2000). The research is being conducted in accordance with Article VIII of the International Convention for the Regulation of Whaling. Under a Pelly Amendment certification, the US President is authorised (within 60 days of the certification) to direct the US Secretary of the Treasury to prohibit the import of any products from Japan, provided that such prohibition is sanctioned by the World Trade Organisation.

IX. Outlook

A number of issues are likely to dominate the attention of fisheries policy makers over the next few years. In this section some of the candidate issues of attention are discussed. They are *i)* the extension of the roles and responsibilities of fishers; *ii)* the trend towards ecosystem management approaches; *iii)* the challenges in high seas fisheries management; *iv)* the demand for increased consumer information on seafood products; *v)* the implementation of capacity management approaches; *vi)* the implications for fisheries of the Kyoto Protocol; and *vii)* the interest in liberalisation of fisheries trade and investment.

The expansion of the role and responsibility of fishers in the management of fisheries is likely to continue. Such expansion is likely to manifest itself in a number of ways. These include the increased use of fishers' information in stock assessment processes, devolution of certain administrative functions to fishers' management organisations, increased involvement by fishers' organisations in implementing market policies, and the continuation of government-industry co-operative research arrangements. Expanding fishers' roles and responsibilities may create new tensions for policy makers. These changes will bring into focus issues related to the role of the government as steward of the marine resources. Deciding on what roles it is appropriate for fishers to undertake will, by implication, require a debate on the nature and extent of government's role. An additional tension may come from other fisheries stakeholders (*e.g.*, environmental NGOs) who could be uncomfortable with certain roles and responsibilities residing outside governmental purview.

The "oceans approach", which entails taking ecosystem view of fisheries management, will present new challenges for fisheries decision-makers. The interdependencies between fish and the habitat they live in could require an expansion of the set of policy tools in use which, in the past, may have focused more on single stock management. As other parts of the ecosystem may only have indirect commercial values, using rights-based approaches may not be an option for policy makers. Fisheries managers may therefore have to resort to measures that restrain fishers' access rights in a different way, mainly through prohibitions on certain fishing practices.

The effective management of high seas fisheries will continue to be a challenge. Numerous regional management arrangements now exist for straddling fish stocks and highly migratory fish stocks. Conventions also cover some high seas fish stocks that do not fall into the aforementioned category (*e.g.*, CCAMLR). Arrangements relating to other high seas fish stocks may arise soon as countries try to ensure the sustainable use of, and to protect their historical interests in, these resources. Common challenges for all these arrangements are likely to continue to be monitoring and enforcement (of Members and non-members), agreement on appropriate management measures, and encouraging all relevant fishing nations to be parties to the arrangement. Encouraging progress has been made in monitoring and enforcement where catch and trade information schemes should provide a valuable tool for ensuring compliance with conservation and management measures. The success of these schemes will depend on the vigilance of the countries that import the products concerned.

A number of challenges and opportunities will arise for fisheries policy makers in the next few years.

Expansion of the role and responsibilities of fishers in management and use of fisheries likely to continue.

The trend towards ecosystem approaches to fisheries management will create policy challenges.

High seas fisheries management presents challenges and opportunities for co-operation to ensure sustainable use.

Table 6. OECD Member country status with respect to three major international agreements

OECD Member country or entity	UNCLOS ¹	Compliance agreement ²	1995 UN agreement ³	
	Ratified	Acceptance ⁴	Signed	Ratified
Australia	5.10.94	–	4.12.95	23.11.99
Austria	14.07.95	Yes ⁵	27.06.96	–
Belgium	13.11.98	Yes ⁵	3.10.96	–
Canada	–	Yes	4.12.95	3.08.99
Czech Republic	–	–	–	–
Denmark	–	Yes ⁵	27.06.96	–
European Community	1.04.98 ⁶	Yes	27.06.96	–
Finland	21.06.96	Yes ⁵	27.06.96	–
France	11.04.96	Yes ⁵	4.12.96	–
Germany	14.10.94 ⁷	Yes ⁵	28.08.96	–
Greece	21.07.95	Yes ⁵	27.06.96	–
Hungary	–	–	–	–
Iceland	21.06.85	–	4.12.95	14.02.97
Ireland	21.06.96	Yes ⁵	27.06.96	–
Italy	13.01.95	Yes ⁵	27.06.96	–
Japan	20.06.96	Yes	19.11.96	–
Luxembourg	–	Yes ⁵	27.06.96	–
Mexico	18.03.83	Yes	–	–
Netherlands	28.06.96	Yes ⁵	28.06.96	–
New Zealand	19.07.96	–	4.12.95	–
Norway	24.06.96	Yes	4.12.95	30.12.96
Poland	13.11.98	–	–	–
Portugal	3.11.97	Yes ⁵	27.06.96	–
Korea	29.01.96	–	26.11.96	–
Spain	15.01.97	Yes ⁵	3.12.96	–
Sweden	25.06.96	Yes	27.06.96	–
Switzerland ⁸	–	–	–	–
Turkey	–	–	–	–
United Kingdom	25.07.97 ⁷	Yes ⁵	27.06.96	–
United States of America	–	Yes	4.12.95	21.08.96

1. United Nations Convention on the Law of the Sea of 10 December 1982. Situation as at 18 July 2000.

2. Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. Situation as at 18 July 2000.

3. Agreement for the Implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Situation as at 18 July 2000.

4. Instrument of Acceptance sent to the UN Food and Agricultural Organisation.

5. Instrument of acceptance submitted to the FAO by the European Community on behalf of the Member State.

6. Date of formal confirmation

7. Date of accession to UNCLOS.

8. Non-member State of the United Nations.

Source: Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations, New York 10017. (Note this is not an official statement of the status of the agreements.) Fisheries Department, Food and Agriculture Organisation of the United Nations, Rome.

Consumers likely to demand more information on the food that they eat.

In order to provide consumers with more information about the food that they eat, some governments have taken initiatives to improve the information on the labels on fisheries products. This will affect the market for fisheries products. Some labelling schemes include information about place of capture and commercial designation of the product concerned. Other schemes include information that infers certain standards related to bycatch have been complied with. It is possible that governments will seek to broaden the information provided to consumers on the sustainability of the fish stocks and the method of capture. Indeed, this has been the objective of some private certification schemes. Given the interest of consumers in sustainability matters, and if the sector sees economic benefit in promoting its products in such a way, some governments are likely to respond by making sure that such sustainability information is available.

The management of fishing capacity will remain an important domestic and international priority.

Domestic and international pressures for governments to effectively manage fishing capacity are likely to intensify. The majority of OECD Member countries have adopted plans to reduce, or at least limit growth in, the capacity of their domestic fishing fleets. Some countries consider that the adjustment of catch limits will be sufficient to ensure sustainable use of the fish stocks. In such cases capacity will be retired if it is no longer economic and as a consequence adjustment costs will be borne by fishers. In other countries, in addition to reducing catch limits, governments will continue funding the removal of capacity. New schemes to licence "buy-back" vessels, often implemented in combination with accompanying measures, such as early retirement packages or job retraining schemes, will remain the favoured approach. Countries are also likely to view other support policies in a more critical light to ensure they do not contribute to increases in capacity. Renewal and modernisation policies, for example, may be prevented from increasing overall capacity of fishing fleets and allowances may even be made for the effects of the introduction of new technology.

Kyoto protocol commitments could have implications for the fishing sector and its structure.

Future controls on greenhouse gas emissions could affect the fishing industry in the next 5 to 10 years. The Kyoto Protocol calls for emissions of greenhouse gases to be reduced by some 7% on average for OECD countries in the period 2008-2012, relative to their base level (1990 for most countries). There have been substantial increases in emissions since 1990 and it can be expected that cuts of between 20% and 40% will be required to meet the Kyoto targets.²¹ The sharing of the burden of these cuts amongst the sectors of these economies could have implications for the fishing industry. Furthermore, the distribution of the burden of the emission cuts within the industry could affect its structure. Those parts of the fleet that produce relatively more greenhouse gases – *i.e.*, those with mineral oil as a relatively larger proportion of their inputs – could be expected to bear a larger share of the burden.

Fisheries trade issues, including subsidies, will continue to be the subject of international attention.

The unsuccessful attempt to launch a new round of multilateral trade negotiations was a setback for the debate on fisheries subsidies, as they would have been addressed for the first time in a global multilateral trade negotiation framework. Nevertheless it can be expected that this issue will continue to be raised in international fora like the WTO, the FAO and the OECD. For example, the OECD Fisheries Committee's current programme of work includes a study on market liberalisation. This work should provide a valuable contribution to the work of other international fora in the near future.

NOTES

1. Agreement for the Implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.
2. FAO Agreement to Promote Compliance with International Conservation and Management measures by Fishing Vessels on the High Seas.
3. See *Official Records of the Economic and Social Council*, 1999, Supplement N. 9 (E/1999/29), United Nations, New York. Also *Oceans and Seas*, Report of the Secretary General to the Commission for Sustainable Development, United Nations Economic and Social Council, E/CN.17/1999/4, United Nations, New York.
4. Accession is necessary for a country that has not signed UNCLOS before it came into force on 16 November 1994.
5. As an international organisation defined in Annex IX, Article 1, the European Community is subject to formal confirmation following signature. Formal confirmation corresponds, for an international organisation, to ratification for a State.
6. Situation as at 18 July 2000 (see Table 6).
7. Advisory Committee on Fisheries Management of the International Council for the Exploration of the Sea.
8. Council Regulation (EC) No. 2846/98, *Official Journal of the European Communities*, No. L 358, 31 December 1998, amending Regulations (EC) No. 2847/93.
9. Council Regulation (EC) No.2740/1999 of 21 December 1999, *Official Journal of the European Communities*, L 328/62.
10. European Parliament, "General Budget of the European Union for the Financial Year 2000", *Official Journal of the European Communities*, L 40, 14 February 2000, Budget line B7 – 8000.
11. *Ibid.*
12. See OECD (2000), *Transition to Responsible Fisheries – Economic and Policy Implications*, Paris.
13. European Commission (1999), *General Budget of the European Union for the Financial Year 1999: The figures*, SEC(99) 150-EN, p.15.
14. European Parliament, "General Budget of the European Union for the Financial Year 2000", *Official Journal of the European Communities*, L 40, 14 February 2000, Budget lines B2-101 and B2-130.
15. Council Regulation (EC) No. 1263/1999, *Official Journal of the European Communities*, 26 June 1999, L 162/54.
16. Council Regulation (EC) No 2792/1999, *Official Journal of the European Communities*, 17 December 1999, L 337/10.
17. Capacity adjustment policies are discussed in "Special Study: Fishing Capacity in OECD Countries" from p. 51 in this report.
18. See OECD (2000), *Transition to Responsible Fisheries – Economic and Policy Implications*, Paris.
19. Includes trade between EU member states.
20. See WT/CTE/W/80, GATT/WTO *Rules on Subsidies and Aids granted in the Fishing Industry*, Note by the Secretariat, WTO Committee on Trade and Environment.
21. See OECD (1999), "OECD Perspectives on Climate Change", Statement to the Fifth Session of the UNFCCC Conference of the Parties, Paris. www.oecd.org/env/docs/cc/cop5-statement.pdf.

TABLES TO THE GENERAL SURVEY 2000

NATIONAL UNIT PER US DOLLAR

	Monetary unit	1998	1999
Australia	Dollar	1.59	1.55
Austria	Schilling	12.37	12.91
Belgium-Luxembourg	Franc	36.27	37.84
Canada	Dollar	1.48	1.49
Czech Republic	Koruny	32.20	34.59
Denmark	Krone	6.69	6.98
Finland	Markka	5.34	5.58
France	Franc	5.89	6.15
Germany	Deutchemark	1.76	1.83
Greece	Drachma	295.16	305.47
Hungary	Forint	214.19	236.88
Iceland	Krona	71.16	72.43
Ireland	Pound	0.70	0.74
Italy	Lira	1 735.32	1 816.49
Japan	Yen	130.89	113.68
Korea	Won	1 393.64	1 186.70
Mexico	Peso	9.11	9.55
Netherlands	Guilder	1.98	2.07
New Zealand	Dollar	1.87	1.89
Norway	Krone	7.55	7.80
Poland	Zloty	3.49	3.96
Portugal	Escudo	180.03	188.08
Spain	Peseta	149.28	156.09
Sweden	Krona	7.95	8.26
Turkey	Lira	258 562.71	412 980.04
United Kingdom	Pound	0.60	0.62

Table 1. OECD FISHING FLEETS BY VESSEL CAPACITY 1999

	0-49.9 GT		50-99.9 GT		100-149.9 GT		150-499.9 GT		500-999.9 GT		+ 1000 GT	
	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT
Australia	480	12 108	179	12 094	81	9 876	98	20 336	12	7 936	7	15 623
Canada*	..	..	..	..	..	..	..	..	..	..	..	..
Iceland*	1 633	11 871	58	3 957	17	2 087	145	42 396	72	50 569	51	70 008
Japan*	..	..	..	..	..	..	..	..	..	..	..	..
Korea*	84 337	263 486	1 872	144 520	425	53 940	709	228 709	67	49 981	92	245 703
Mexico*	432	..	1 341	..	1 128	..	41	..	6	..	40	..
New Zealand*	1 745	..	110	..	17	..	48	..	14	..	15	..
Norway**	7 786	71 295	154	12 033	65	8 243	255	74 937	126	86 592	74	118 903
Poland*	204	8 177	41	3 111	155	16 719	22	3 967	–	–	31	105 253
Turkey*	15 746	..	360	..	169 ¹	..	40 ²	..	3	..	..	..
United States	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	..	..	..	..	..	..	..	..	..	..	..	..
Denmark	3 895	28 209	89	5 893	30	3 571	164	46 039	16	10 806	3	4 289
Finland	3 693	13 708	42	3 020	16	1 855	10	2 052	1	644	–	–
France	5 255	54 571	302	22 914	141	16 251	76	17 881	37	25 578	20	29 650
Germany	1 963	13 105	57	3 930	28	3 351	55	11 982	–	–	13	37 232
Greece	18 318	65 863	302	22 099	26	3 167	34	9 752	–	–	1	2 357
Ireland	..	..	..	..	..	..	..	..	..	..	..	..
Italy	18 008	122 354	701	47 275	258	29 594	126	26 059	7	4 672	2	3 606
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..
Portugal*	7 080	8 178	423	2 897	188	2 362	468	12 492	133	9 336	264	82 271
Spain*	9 481	87 618	717	51 989	402	52 320	471	113 358	66	47 372	30	46 025
Sweden	1 781	9 920	78	5 582	34	4 292	75	20 796	8	5 513	–	–
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..
EU	69 474	403 526	2 711	165 599	1 123	116 763	1 479	260 411	268	103 921	333	205 430
OECD TOTAL**	181 837	770 463	6 826	341 314	3 011	207 628	2 797	630 756	568	298 999	643	760 920

* GRT

** Sum of GT and GRT.

– Zero.

.. Information not available.

1. Refers to 100 – 199.9 GT.

2. Refers to 200 – 499.9 GT.

Table 2. OECD FISHING FLEETS 1998 AND 1999 TOTALS

	Total Vessels with engines				Total Vessels without engines				Total Fleet			
	1998		1999		1998		1999		1998		1999	
	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT
Australia	1 078	67 682	944	77 973	..	..	..	..	1 078	67 682	944	77 973
Canada*	..	..	..	..	..	..	..	..	26 140	..	24 252	..
Iceland*	1 928	187 098	1 976	180 889	..	..	..	..	1 928	187 098	1 976	180 889
Japan*	344 994	1 539 194	..	..	7 603	8 892	..	..	352 597	1 548 086	..	..
Korea*	82 803	971 704	87 502	986 339	8 194	6 630	7 350	5 617	90 997	978 334	94 852	991 956
Mexico*	2 988	..	2 988	..	102 807	..	102 807	..	105 795	..	105 795	..
New Zealand*	2 037	89	1 949	77	..	..	..	..	2 037	89	1 949	77
Norway**	8 460	372 003	8 443	384 730	–	–	–	–	8 460	372 003	8 443	384 730
Poland*	458	139 615	453	137 227	1 170	–	1 037	–	1 628	139 615	1 490	137 227
Turkey*	17 475	..	16 318	..	..	..	..	..	17 475	..	16 318	..
United States	..	..	..	..	..	..	..	..	..	..	..	..
Belgium	..	..	..	..	..	..	..	..	..	..	..	..
Denmark	4 334	98 158	4 197	98 807	32	50	31	46	4 366	98 208	4 228	98 853
Finland	3 881	22 352	3 762	21 279	–	–	–	–	3 881	22 352	3 762	21 279
France	6 013	169 642	5 831	166 845	76	–	75	–	6 089	169 642	5 906	166 845
Germany	2 303	67 744	2 116	69 600	208	212	198	202	2 511	67 956	2 314	69 802
Greece	19 878	107 692	19 223	103 238	542	510	526	486	20 420	108 202	19 749	103 724
Ireland	..	..	..	..	..	..	..	..	..	..	..	..
Italy	19 633	241 562	19 102	233 560	–	–	–	–	19 633	241 562	19 102	233 560
Netherlands	1 064	178 764	1 053	177 308	–	–	–	–	1 064	178 764	1 053	177 308
Portugal*	8 747	119 183	8 556	117 536	2 442	1 344	2 377	1 305	11 189	120 527	10 933	118 841
Spain*	11 399	413 111	11 167	398 892	6 090	6 808	5 947	6 801	17 489	419 919	17 114	405 693
Sweden	2 131	46 263	1 976	46 103	–	–	–	–	2 131	46 263	1 976	46 103
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..
EU	79 383	1 464 471	76 983	1 433 168	9 390	8 924	9 154	8 840	88 773	1 473 395	86 137	1 442 008
OECD TOTAL**	541 604	4 741 856	197 556	3 200 403	129 164	24 446	120 348	14 457	670 768	4 766 302	317 904	3 214 860

* GRT.

** Sum of GT and GRT.

– Zero.

.. Information not available.

Table 3. OECD TOTAL EMPLOYMENT IN FISHERIES 1999

Sector Sub-Sector	Australia	Canada	Iceland	Japan ¹	Korea	Mexico	New Zealand	Norway	Poland	Turkey	United States
Harvest sector	5 640	277 042	192 302	239 181	10 000²	..	8 240	..	..
<i>Inland fisheries</i>	10 649	57 893	..	..	..	..	..
Male	6 957	..	..	..	..	..	..
Female	3 692	..	..	..	..	..	..
<i>Marine fisheries (coastal)</i>	237 507	170 590	154 095	..	21 247	4 240	..	..
Male	191 357	89 026	..	..	20 686	..	..	..
Female	46 150	81 564	..	..	588	..	..	..
<i>Marine fisheries (deep sea)</i>	39 535	11 063	27 193	..	..	4 000	..	..
Male	39 242	11 063	..	..	..	..	..	..
Female	293	0	..	..	..	..	..	..
Aquaculture	60 247	64 114	20 571	..	..	0	..	..
Male	41 203	..	..	..	..	0	..	..
Female	19 044	..	..	..	..	0	..	..
Processing	7 584	..	0	30 115	..	..	16 000	..	..
Male	0	..	..	..	..	..	..
Female	0	..	..	..	..	..	..

Sector Sub-Sector	EU Total	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain	Sweden	United Kingdom	OECD Total
Harvest sector	230 023	..	5 325	3 161	25 675	..	38 391	10 040	52 184	..	26 660	66 039	2 548	..	952 428
<i>Inland fisheries</i>	4 352	..	..	381	..	..	..	3 750	..	..	..	..	221	..	72 894
Male	213	..	..	..	..	..	..	..	..	..	..	..	213	..	7 170
Female	8	..	..	..	..	..	..	..	..	..	..	..	8	..	3 700
<i>Marine fisheries (coastal)</i>	117 963	..	..	2 780	..	..	37 356	3 700	25 387	..	..	46 413	2 327	..	705 642
Male	27 702	..	..	..	..	..	..	..	25 387	..	..	..	2 315	..	328 771
Female	12	..	..	..	..	..	..	..	0	..	..	..	12	..	128 314
<i>Marine fisheries (deep sea)</i>	50 048	..	..	..	..	..	1 035	2 590	26 797	..	..	19 626	0	..	131 839
Male	26 797	..	..	..	..	..	..	..	26 797	..	..	..	0	..	77 102
Female	0	..	..	..	..	..	..	..	0	..	..	..	0	..	293
Aquaculture	11 213	..	1 050	2 000	..	..	5 563	2 600	..	..	..	..	..	..	156 145
Male	0	..	..	..	..	..	..	..	..	..	..	..	..	..	41 203
Female	0	..	..	..	..	..	..	..	..	..	..	..	..	..	19 044
Processing	15 653	..	7 037	1 265	..	..	799	4 500	..	..	..	..	2 052	..	69 352
Male	395	..	..	..	..	..	395	..	..	..	..	..	..	..	395
Female	404	..	..	..	..	..	404	..	..	..	..	..	..	..	404

* Coastal + deep sea.

.. Information not available.

1. 1998 figures.

2. Estimate.

Table 4. FISH PRODUCTION IN OECD MEMBER COUNTRIES^{1, 2}

Weight type	1998					1999				
	Fish for food ³ '000 tonnes	Fish for reduction '000 tonnes	Total '000 tonnes	Total value USD million	USD '000/tonne	Fish for food '000 tonnes	Fish for reduction '000 tonnes	Total '000 tonnes	Total value USD million	USD '000/tonne
Australia ***	210	–	210	1 037	4.95	208	–	208	1 103	5.30
Canada ***	975	..	975	1 062	1.09	924	..	924	1 157	1.25
Iceland ***	704	978	1 682	838	0.50	1 760	..	1 760	802	0.46
Japan ***	5 394	..	5 394	10 725	1.99	5 300	..	5 300	..	..
Korea *	2 254	..	2 254	2 804	1.24	2 313	..	2 313	3 405	1.47
Mexico **	756	197	954	900	0.94	893	203	1 096	960	0.88
New Zealand ***	736	–	736	..	..	696	–	696	..	..
Norway ***	1 544	1 307	2 851	1 388	0.49	1 587	1 012	2 599	1 270	0.49
Poland *	262	25	287	181	0.63	194	41	235	142	0.60
Turkey *	433	..	433	1	0.002	..	..	..	..	..
United States ***	3 576	774	4 350	3 293	0.76	3 526	902	4 428	3 602	0.81
EU										
Belgium **	27	–	27	96	3.56	..	..	..	..	..
Denmark **	390	1 153	1 543	509	0.33	383	1 008	1 391	460	0.33
Finland ***	32	74	106	23	0.21	30	55	85	19	0.22
France **	552	..	552	1 059	1.92	588	..	588	997	1.69
Germany ***	233	0.1	234	193	0.83	228	0.03	228	216	0.94
Greece *	113	–	113	295	2.60	34	–	34	93	2.75
Ireland ***	300	37	337	237	0.70	270	38	308	224	0.73
Italy *	306	–	306	910	2.98	280	–	280	815	2.90
Netherlands ***	342	–	342	390	1.14	..	..	..	..	..
Portugal *	211	5	215	317	1.47	186	4	189	308	1.62
Spain *	987	110	1 097	2 198	2.00	985	47	1 033	1 940	1.88
Sweden **	84	317	401	131	0.33	87	242	329	113	0.34
United Kingdom ***	774	124	898	1 041	1.16	714	121	835	948	1.14
OECD Total	21 194	5 101	26 295	29 629		21 185	3 673	24 858	18 571	

1. Fish production. *i.e.*, total national landings.

2. Includes fish, crustaceans, molluscs, and algae.

3. Includes algae (some which is not produced for food).

*** Live weight, ** Landed weight, * Not specified.

– Zero.

.. Information not available.

Table 5. OECD AQUACULTURE PRODUCTION 1998-1999

	Volume				Value (USD million)	
	Fish		Molluscs		Total	
	1998	1999	1998	1999	1998	1999
Australia	15 104	18 349	13 235	32 080	317	389
Canada	68 318	86 085	23 714	27 598	292	374
Czech Republic	..	..	..	..	..	..
Hungary	..	..	..	..	..	..
Iceland	3 901	3 878	1	8	18	..
Japan	326 695	326 069	428 915	421 043	894	..
Korea	57 195	44 811	240 672	222 277	527	562
Mexico	100 697	17 045	57 295	30 880	191	209
New Zealand	5 500	6 000	77 000	74 001	..	..
Norway	412 032	..	988	..	1 150	..
Poland	30 500	32 500	–	–	63	53
Turkey	54 430	..	2 270	..	0.01	..
United States	326 107	..	32 103	..	939	..
EU						
Belgium	..	..	..	..	..	..
Denmark	42 364	42 649	4	4	..	..
Finland	16 024	..	–	..	43	..
France	63 916	..	201 674	..	570	..
Germany	36 647	38 677	–	–	136	120
Greece	34 279	44 895	26 015	31 000	223	236
Ireland	17 085	20 340	25 239	23 516	87	92
Italy	68 500	67 360	148 000	150 000	479	466
Netherlands	..	..	..	..	..	..
Portugal	3 209	3 640	4 327	3 881	42	43
Spain	41 365	44 904	274 112	276 239	348	395
Sweden	5 040	5 093	464	963	16	17
United Kingdom	..	..	..	..	..	..
OECD Total	1 728 908	802 295	1 556 028	1 293 490	6 334	2 955

0 Value less than 0.5 of unit of measure.

.. Not available.

– Zero.

Table 6. OECD IMPORTS OF FOOD FISH BY MAJOR PRODUCT GROUPS AND MAJOR WORLD REGIONS 1999

USD million	All fish	%	Fish, fresh, frozen, incl. fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
Importers										
EU	19 191	41%	8 669	43%	1 503	74%	5 150	33%	3 868	46%
Japan	14 098	30%	6 454	32%	257	13%	5 283	34%	2 105	25%
United States	8 870	19%	2 945	15%	143	7%	4 157	26%	1 625	19%
OECD Total	46 374	100%	20 252	100%	2 043	100%	15 694	100%	8 384	100%
Origins										
OECD	22 586	49%	12 000	59%	1 805	88%	5 295	34%	3 486	42%
Non-OECD*	23 777	51%	8 248	41%	238	12%	10 395	66%	4 895	58%
Africa	2 851	6%	953	5%	9	0%	1 278	8%	611	7%
America	5 309	11%	2 219	11%	38	2%	2 504	16%	549	7%
Asia	12 337	27%	3 048	15%	95	5%	5 636	36%	3 558	42%
Europe	3 061	7%	1 896	9%	96	5%	949	6%	120	1%
Oceania	218	0%	132	1%	0	0%	29	0%	57	1%

Notes:

Fish, fresh, frozen, including fillets = HS Codes 302, 303, and 304.

Fish, dried, smoked = HS code 305.

Crustaceans and molluscs = HS codes 306 + 307.

Prepared and preserved = HS codes 1604 + 1605.

0 Value less than 0.5 of unit of measure.

* The total of the imports to the five non-OECD zones may not correspond to the global figure for non-OECD as a whole, since the latter also includes values from non-specified origin.

Table 7. OECD EXPORTS OF FOOD FISH BY MAJOR PRODUCT GROUPS AND MAJOR WORLD REGIONS 1999

USD million	All fish	%	Fish, fresh, frozen, incl. fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
Exporters										
EU	10 328	41%	5 106	39%	706	35%	2 267	38%	2 250	54%
Canada	2 619	10%	917	7%	197	10%	1 148	19%	357	9%
United States	2 837	11%	1 681	13%	79	4%	751	13%	325	8%
OECD Total	25 139	100%	12 988	100%	2 042	100%	5 966	100%	4 144	100%
Destination										
OECD	22 174	88%	11 660	90%	1 752	86%	5 090	85%	3 672	89%
Non-OECD*	2 953	12%	1 321	10%	288	14%	875	15%	469	11%
Africa	408	2%	320	2%	28	1%	30	0%	30	1%
America	348	1%	72	1%	193	9%	39	1%	44	1%
Asia	1 724	7%	605	5%	47	2%	749	13%	322	8%
Europe	373	1%	241	2%	12	1%	52	1%	68	2%
Oceania	73	0%	63	0%	1	0%	4	0%	5	0%

Notes:

Fish, fresh, frozen, including fillets = HS Codes 302, 303, and 304.

Fish, dried, smoked = HS code 305.

Crustaceans and molluscs = HS codes 306 + 307.

Prepared and preserved = HS codes 1604 + 1605.

0 Value less than 0.5 of unit of measure.

* The total of the exports to the five non-OECD zones may not correspond to the global figure for non-OECD as a whole, since the latter also includes values from non-specified origin.

Table 8. IMPORTS OF FISH, CRUSTACEANS, MOLLUSCS AND PRODUCTS THEREOF BY OECD COUNTRIES ACCORDING TO ORIGIN* 1999

USD million	Importing country																														
	Australia	Canada	Czech Republic	Hungary	Iceland	Japan	Korea	Mexico	New Zealand	Norway	Poland	Switzerland	Turkey	United States	Total EU	Austria	Belgium-Luxembourg	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain	Sweden	United Kingdom	OECD Total	
Origin of Imports																															
Australia	2	2	-	-	-	420	1	0	8	0	0	1	-	81	30	0	-	0	0	11	2	2	0	1	0	0	10	-	3	544	
Canada	17	4	0	0	3	528	19	4	7	24	1	11	0	1 719	372	1	-	81	2	53	25	2	1	17	16	9	13	18	99	2 708	
Czech Republic	0	0	0	-	-	-	-	-	-	-	-	0	0	0	3	0	-	-	-	2	0	-	-	0	0	-	0	-	-	3	
Hungary	-	-	0	-	-	-	-	-	0	-	0	0	0	0	6	0	-	-	-	3	1	1	1	0	0	0	0	0	0	6	
Iceland	1	47	0	1	-	136	4	0	0	69	1	3	0	245	936	1	-	82	6	108	108	2	2	1	66	91	74	13	362	1 444	
Japan	11	15	0	-	0	-	80	1	2	2	-	1	0	168	11	0	-	0	0	1	2	0	1	1	3	0	2	0	2	291	
Korea	6	11	1	0	0	1 002	-	2	1	5	0	0	0	75	101	0	-	2	0	12	2	1	1	21	2	3	44	3	6	1 204	
Mexico	0	4	-	-	-	25	15	-	-	-	-	-	-	507	45	-	-	-	-	6	0	-	-	11	0	0	27	-	0	595	
New Zealand	93	9	0	0	0	148	14	0	1	0	1	5	0	152	141	1	-	2	0	36	36	6	0	7	3	3	22	2	18	565	
Norway	5	44	4	2	21	689	12	6	0	-	120	39	10	168	2 139	2	-	294	54	374	365	4	4	5	42	190	63	456	286	3 261	
Poland	0	2	7	5	2	18	2	-	0	1	-	5	-	3	193	1	-	18	-	28	120	0	0	17	0	2	1	4	237		
Switzerland	0	0	0	-	0	0	0	0	0	0	0	-	0	0	2	0	-	0	0	0	0	0	0	0	0	0	0	0	0	3	
Turkey	-	2	0	0	-	14	0	0	0	0	-	1	-	2	88	0	-	0	0	12	26	8	-	25	8	0	4	1	0	107	
United States	26	571	1	0	2	1 514	125	36	2	39	1	9	0	-	523	0	-	18	1	126	42	6	2	46	25	51	70	10	110	2 849	
EU	23	71	28	9	10	449	31	6	3	183	52	207	18	157	8 378	160	-	230	37	1 399	932	158	98	1 762	508	470	1 223	155	506	9 626	
Austria	-	0	0	0	-	0	-	-	-	-	-	1	-	-	4	-	-	0	0	0	2	0	-	1	0	-	-	0	0	5	
Belgium																															
Denmark	7	44	8	4	2	82	3	0	2	90	10	54	0	22	1 742	27	-	-	13	175	406	36	11	359	97	65	158	109	193	2 070	
Finland	-	0	0	-	-	12	0	-	-	0	-	0	-	0	7	-	-	2	-	0	0	0	0	0	0	0	0	0	4	-	20
France	0	1	2	1	0	31	0	1	0	3	0	36	1	8	848	5	-	6	1	8	78	7	0	194	44	34	295	5	48	932	
Germany	3	1	9	2	2	7	0	0	0	6	13	22	1	4	741	97	-	50	5	100	-	7	0	112	180	12	25	8	64	811	
Greece	1	0	0	0	-	6	-	-	0	0	-	1	0	1	228	1	-	0	0	26	9	-	0	146	2	2	37	0	3	238	
Ireland	0	0	2	0	0	26	5	-	0	7	9	4	0	1	297	1	-	3	0	95	28	0	1	35	5	1	74	3	47	351	
Italy	3	2	1	0	0	24	0	0	0	0	0	17	0	3	224	5	-	2	0	31	29	41	1	-	4	1	100	0	2	276	
Netherlands	1	3	3	1	0	49	3	0	0	3	14	30	0	22	1 270	17	-	25	2	169	212	25	5	272	-	13	151	20	65	1 400	
Portugal	1	4	-	0	3	10	1	0	0	1	-	4	-	7	241	2	-	1	0	30	3	3	0	44	1	-	134	1	17	273	
Spain	1	2	2	0	1	180	10	5	0	1	3	14	14	24	1 045	2	-	7	1	201	36	21	0	409	5	312	-	1	36	1 302	
Sweden	0	2	0	0	0	7	0	0	0	15	1	4	0	3	289	2	-	99	15	17	18	10	0	67	16	5	6	-	16	321	
United Kingdom	5	10	0	0	3	15	7	0	0	56	2	18	1	60	1 145	2	-	31	0	432	74	6	79	109	90	20	227	4	-	1 322	
Non-OECD Africa	45	7	1	1	0	598	13	0	0	3	2	5	1	97	2 100	3	-	4	2	431	73	59	0	350	90	105	760	2	167	2 873	
Non-OECD America	21	93	6	17	3	1 434	38	49	5	40	6	10	28	1 945	2 137	1	-	255	0	375	158	15	1	311	45	9	816	3	98	5 831	
Non-OECD Asia	255	335	16	4	1	6 191	521	12	23	16	24	66	0	3 270	1 736	13	-	46	9	248	284	27	3	178	127	25	239	31	358	12 472	
Non-OECD Oceania	10	2	-	-	-	135	1	0	1	0	-	0	-	25	49	0	-	0	-	14	9	0	0	0	9	-	1	-	16	223	
World	517	1 331	74	41	80	14 507	1 082	119	53	613	257	371	59	8 945	19 911	193	-	1 275	118	3 331	2 334	300	112	2 760	989	1 039	3 420	710	2 252	47 961	

* Comprises HS codes 302-307, 121220, 1504, 1604, 1605, and 230120.

- Zero-

0 Value less than 0.5 of unit of measure.

Table 9. EXPORTS OF FISH, CRUSTACEANS, MOLLUSCS AND PRODUCTS THEREOF BY OECD COUNTRIES ACCORDING TO ORIGIN 1999*

USD million	Exporting country																								OECD Total					
	Australia	Canada	Czech Republic	Hungary	Iceland	Japan	Korea	Mexico	New Zealand	Norway	Poland	Switzerland	Turkey	United States	Total EU	Austria	Belgium-Luxembourg	Denmark	Finland	France	Germany	Greece	Ireland	Italy		Netherlands	Portugal	Spain	Sweden	United Kingdom
Destination																														
Australia	-	7	-	-	0	9	5	0	86	5	-	-	0	37	25	-	0	7	0	0	2	1	0	3	3	1	1	1	5	175
Canada	1	-	0	-	21	12	10	1	5	33	1	0	2	657	25	-	1	4	0	1	1	0	0	1	2	4	2	0	9	768
Czech Republic	-	0	-	0	0	-	0	-	-	4	7	0	0	0	28	0	1	7	0	1	11	-	1	1	3	-	1	0	0	40
Hungary	-	0	0	-	-	-	-	-	-	1	5	-	0	-	21	1	0	3	-	0	15	0	0	1	1	-	0	0	0	26
Iceland	0	5	-	-	-	1	0	1	-	22	-	-	-	1	6	-	0	2	-	0	0	-	0	0	0	1	1	0	1	36
Japan	371	324	-	-	98	-	1 058	6	154	566	1	0	10	1 184	501	-	1	122	11	13	3	3	21	18	40	4	240	7	17	4 274
Korea	1	7	-	-	3	70	-	20	23	12	-	0	0	179	25	0	-	4	0	0	0	-	5	0	2	1	6	0	7	340
Mexico	-	1	-	-	0	0	1	-	0	5	-	0	-	54	6	-	0	0	-	0	0	0	0	-	0	0	5	-	-	69
New Zealand	7	3	-	-	-	17	10	-	-	0	-	-	0	3	2	-	-	1	-	0	0	0	0	0	0	0	0	0	0	43
Norway	0	8	0	-	66	0	4	-	0	-	1	0	0	27	132	-	2	99	0	2	2	0	0	0	2	1	0	17	7	238
Poland	0	1	0	0	1	-	0	-	1	101	-	0	-	0	73	0	0	9	0	0	34	-	8	0	12	-	4	4	1	178
Switzerland	0	6	-	0	2	0	0	-	2	37	3	-	1	5	178	0	2	51	0	29	25	1	1	13	25	4	8	2	16	235
Turkey	-	0	-	0	0	0	0	-	0	9	-	-	-	0	15	-	0	0	-	1	1	1	0	0	0	-	11	-	0	25
United States	82	1 833	0	0	222	142	71	553	144	173	11	0	2	-	159	-	3	14	0	9	4	2	1	3	22	8	24	1	68	3 393
EU	28	250	3	5	913	11	83	34	118	2 307	162	2	80	478	8 698	2	482	1 744	4	870	900	241	247	265	1 139	23	1 164	405	1 001	13 172
Austria	0	0	0	0	1	0	0	-	0	4	0	0	0	0	157	-	1	25	-	5	100	1	0	7	8	3	3	2	1	164
Belgium-Luxembourg	0	-	0	0	-	0	4	0	10	46	-	-	4	15	234	-	-	-	-	-	-	-	-	-	234	-	-	-	-	315
Denmark	0	41	0	-	74	0	3	-	1	379	15	0	0	13	182	0	4	-	0	7	37	1	3	1	12	2	10	84	23	709
Finland	0	3	-	-	6	0	-	-	0	56	-	-	-	2	41	0	0	13	-	1	5	0	0	0	1	0	1	19	1	107
France	10	29	2	3	97	0	6	8	22	342	20	0	11	92	1 789	0	196	242	0	-	247	26	80	37	226	27	238	83	387	2 431
Germany	1	34	0	1	92	2	2	0	32	221	76	1	11	29	1 112	1	64	473	1	99	-	12	28	41	217	5	47	31	95	1 617
Greece	2	2	-	1	12	0	1	-	6	27	-	0	8	6	146	-	3	30	-	7	6	-	0	44	9	4	28	10	5	210
Ireland	0	0	-	-	4	-	0	-	-	4	-	-	0	1	114	-	0	12	-	1	0	-	-	0	6	0	0	0	94	124
Italy	1	10	0	0	28	1	18	5	6	168	-	0	24	48	1 582	0	14	279	0	189	106	151	29	-	210	35	410	66	91	1 892
Netherlands	1	9	0	0	39	3	3	0	7	117	15	0	7	40	609	0	128	142	0	52	177	4	5	6	-	1	13	23	58	850
Portugal	0	6	-	-	95	-	2	0	3	290	0	-	0	41	469	-	5	12	-	29	15	3	1	1	15	-	358	18	12	906
Spain	9	5	0	-	96	4	35	20	16	123	1	-	3	60	1 055	0	24	115	0	245	47	36	51	116	113	123	-	22	165	1 429
Sweden	-	15	-	-	13	0	2	-	1	184	1	0	1	7	204	0	2	159	3	6	7	0	3	0	19	1	1	-	3	429
United Kingdom	3	71	0	0	329	0	6	0	13	347	30	0	10	122	582	0	15	154	0	112	76	8	44	3	70	28	43	28	-	1 514
Non-OECD Africa	3	0	-	-	14	7	3	1	2	29	0	0	0	4	368	-	1	15	0	87	6	0	12	2	137	8	84	0	15	430
Non-OECD America	0	34	-	-	2	16	4	4	0	155	-	0	0	60	77	0	0	4	0	3	2	0	1	1	8	3	49	0	6	353
Non-OECD Asia	394	151	0	-	22	336	139	23	166	142	-	0	2	225	241	0	2	113	0	11	3	1	4	4	20	6	53	1	25	1 842
Non-OECD Oceania	1	0	-	-	0	49	4	-	7	-	-	-	-	3	10	-	0	0	-	3	0	0	2	-	0	0	3	-	1	74
World	889	2 633	6	8	1 382	697	1 407	642	709	3 759	212	3	99	2 932	10 791	5	495	2 234	21	1 039	1 045	257	309	338	1 439	279	1 685	443	1 203	26 169

* Comprises HS codes 302-307, 121220, 1504, 1604, 1605, and 230120.

- zero.

0 value less than 0.5 of unit of measure.

SPECIAL STUDY: FISHING CAPACITY IN OECD COUNTRIES

I. Executive summary

According to the FAO, among major fish stocks for which information is available, an estimated 25-27% were under- or moderately exploited, 47-50% were fully exploited, another 15-18% were overexploited and the remaining 9-10% depleted or recovering from depletion. Urgent actions are therefore required at the national and international levels to address this situation. Recognising the importance of dealing with excess capacity as one cause of over-fishing, the Committee for Fisheries (83rd Session, 7-9 April 1999) decided to provide special coverage on "economic and other cause and consequences of fishing capacity change, based, inter alia, on case studies". By reviewing OECD country experiences, this study aims to provide factual information on fishing capacity development of member countries.

The total number of fishing vessels and fishers has fallen in many OECD countries due to government buy-back programmes, management policies and market pressures. For OECD countries for which data are available for both the number of vessels and gross tonnage (EU member States, Australia, Iceland, Japan, Korea, and Norway), the number of fishing vessels decreased by 11% to 557 983 between 1989 to 1999. The Gross Tonnage (GT) of this fleet decreased by 16% to 5 088 806 over the same period. The total number of fishers has also decreased by 14% to 998 461 between 1990 and 1997 (based on information from some EU member states, Australia, Canada, Hungary, Iceland, Japan, Korea, Mexico, New Zealand, Norway, Poland, Switzerland and Turkey).

The term "*fishing capacity*" is widely used in OECD countries and elsewhere, but there is no internationally agreed or standardised definition. While some OECD countries have defined fishing capacity, others have not. Even in countries that define fishing capacity, the definition tends to be limited to certain technical elements. As a result, these definitions often disregard other inputs in *technical* fishing capacity that determine a vessel's ability to catch fish (*e.g.* vessel, hull, engine power, fishing gear, fishing technology, fishers, and stock availability). An *economic* approach to defining fishing capacity goes further, bringing in other factors (*e.g.* prices, physical productivity, activities and constraints in the market). The absence of a standardised or agreed measurement of fishing capacity can bring about confusion and miscalculation as a result of a variety of methods for measuring fishing capacity.

In many fisheries in OECD countries it is generally considered that the fishing capacity is in excess of what is needed. Capacity therefore needs to be managed to ensure the sustainable use of fish stocks. Principal fisheries management instruments used in OECD countries include input controls (*e.g.* licence limitation, gear and vessel restrictions), output controls (*e.g.* IQs, ITQs, TACs) and technical measures (*e.g.* seasonal and area closures, size and sex selectivity). Management measures are normally used in combination. Most of the fisheries management measures are expected to provide conservation benefits, either applied on their own or in combination with other measures. But no single tool will simultaneously constrain all components of fishing capacity and effort. Some management measures, such as ITQs, are mainly aimed at improving the economic performance of the fishing industry.

Vessel and licence buy-back programmes are the favoured approach for reducing capacity in OECD countries. The majority of OECD countries have adopted plans to reduce, or at least limit growth in the capacity of their domestic fishing fleets. In 1997 an estimated USD 350 million, representing 6% of total government financial transfers, was spent on decommissioning vessels and licence retirement. Pressure

for structural adjustment is likely to continue in the years ahead as Member countries attempt to reduce fishing pressure on stock.

Countries may need to develop capacity management approaches based upon their own national experience, legal and social traditions, and economic and environmental conditions. In this regard work on the FAO's International Plan of Action for Fishing Capacity is relevant. In particular, as noted in previous OECD studies, right-based management measures such as IQs and ITQs, and co-management systems could be considered as useful management frameworks to control fishing capacity. The ingenuity of fishers and the continued advances of technology can usually defeat most regulatory attempts to control fishing capacity and effort. And it is increasingly accepted that the solution must come from motivating fishers to assume more responsibility for the conservation of the resource on which they depend. However, it should be noted that IQs and ITQs, and co-management are not the only way to manage fishing capacity.

To be effective, buy-back programmes (where they are used) and other capacity management programmes should be carried out over the longer-term and be evaluated periodically to determine their effectiveness. The programmes may be accompanied by strict rules to prevent entry of new capacity, spillover into another fishery and expansion of effort by existing vessels. In addition, more strict enforcement may be needed to prevent building or modernisation from contributing to over-capacity.

In practice, however, there are some difficulties in conducting evaluations on how management instruments affect fishing capacity. The principal reasons for this mixture of results are the complexity of fisheries, limited data, poorly defined objectives, conflicting management tools, and limited monitoring and enforcement. In particular, the complexity of most fisheries makes it often difficult to disentangle the effects of a single measure in situations where several management measures are used in combination because one measure alone cannot mitigate the problems of excess fishing capacity.

II. Introduction and study objectives

It is generally considered that many of the world's commercial fish stocks are over-exploited or depleted. In addition, about half of the major fish stocks for which information is available, are fully exploited and some of these are at risk of becoming over-exploited. Therefore, urgent actions are required at both the national and international levels to address this situation; policies are needed to eliminate over-fishing and rebuild fish stocks to more productive levels. In the context of this debate, excess fishing capacity has been identified as an important pressure on fish stocks. The issue of excess fishing capacity needs to be addressed if pressure on fish stocks is to be reduced and, as a consequence, the fisheries sector is to have a more prosperous future.

Recognising the importance of appropriate policies to address excess capacity, the Committee for Fisheries decided to study this area in more detail. This study is a first attempt at reviewing the fishing capacity situation and discussing the experiences of Member countries' fishing capacity management policies. The study also aims to discuss ways to reduce fishing capacity. In addition it seeks to identify information gaps on fishing capacity and point to possibilities for improving the collection of appropriate data.

This study provides a brief background to the issue of fishing capacity, outlines the international dimension and provides an inventory of recent international initiatives. Then the study reviews Member country experiences with regard to fishing capacity policies.

III. Background

The world's fish production has shown an upward trend since 1950 (see Box 1). The increase over the last decade reflects increased landings of small pelagic and other lower valued species and a rapid growth in aquaculture production (FAO, 1999a). During the 1950s the share of production by current OECD Member countries was approximately 65% of the world's total production. However, this share fell to 40% in 1970, 35% in 1990, and 26% in 1997. Among major fish stocks for which information is available,

Box 1. World and OECD fisheries production ('000 tonnes)

	1950	1960	1970	1980	1990	1995	1997
Total production	19 755	36 691	67 198	75 583	103 530	124 038	130 589
OECD countries	12 928	18 460	27 011	32 966	35 775	33 982	34 269
(% of total)	65.4	50.3	40.2	43.6	34.6	27.4	26.2
Australia	33	61	108	147	244	248	247
Canada	957	931	1 395	1 375	1 716	960	1 065
Czech	4	9	13	16	27	23	21
Hungary	4	15	26	34	34	23	22
Iceland	396	630	749	1 525	1 524	1 628	2 229
Japan	3 069	6 168	9 350	11 131	11 130	7 502	7 364
Korea	225	357	871	2 408	3 285	3 360	3 268
Mexico	82	196	385	1 285	1 447	1 405	1 572
New Zealand	34	45	60	156	372	615	669
Norway	1 284	1 388	2 983	2 536	1 950	2 988	3 415
Poland	81	184	469	641	473	451	391
Switzerland	2	3	2	4	4	3	3
Turkey	90	88	180	427	385	652	500
United States	2 688	2 813	2 930	3 815	5 936	5 712	5 519
EU							
Austria	1	4	3	4	4	3	3
Belgium	58	64	53	46	42	36	31
Denmark	244	575	1 227	2 032	1 518	2 044	1 866
Finland	34	66	81	173	160	185	197
France	514	759	845	839	954	967	905
Germany	598	787	935	542	391	298	319
Greece	52	87	89	105	146	198	214
Ireland	17	43	79	149	275	448	365
Italy	187	216	398	510	533	623	568
Netherlands	233	303	301	340	507	522	550
Portugal	317	490	478	276	328	268	231
Spain	616	913	1 542	1 321	1 308	1 399	1 349
Sweden	176	250	286	233	260	412	364
UK	932	1 015	1 173	896	822	1 009	1 022
Non-OECD	6 860	18 292	40 295	42 764	67 999	90 304	96 567
(% of total)	34.6	49.7	59.8	56.4	65.4	72.6	73.8

Source: FAO Data base

the FAO reports that 25-27% were under- or moderately exploited, 47-50% were fully exploited, another 15-18% were overexploited and the remaining 9-10% depleted or recovering from depletion (FAO, 2000). In particular, stocks of demersal species and other highly valued stocks are generally the most affected. The FAO also indicates that production from eleven of the world's sixteen major fishing areas is in serious decline (FAO, 1997).

Effective management may make it possible to increase production from presently over-fished resources and thereby further contribute to an increase in landings. FAO points out that better management of the fisheries could yield an additional 8 million tonnes annually. FAO has estimated that marine fisheries production could potentially reach 125 million tonnes – a 40 million tonne increase on the 1990-94 average of 83 million tonnes. Such increases in landings would be possible with better management (+8 million tonnes) and development of under-utilised fisheries (+35 million tonnes).

Excess capacity is a major problem in many fisheries which leads to pressure for over-fishing. In particular, open access fisheries management institutions create incentives for fishermen to excessively invest and indiscriminately use fishing inputs to cause excess capacity. This situation normally results in

poor economic performance (by fleet, fishers and fishing communities) and biological over-fishing (FAO, 1998 a). In addition, over-fishing substantially contributes to the degradation of marine fisheries resources (living and non-living) and to a decline in food production potential. The issue is essentially the lack of adequate fisheries management measures, which in turn leads to too many vessels or excessive harvesting power. However, in OECD countries most fisheries probably fall between the types of effective management and catch control [see "Toward Sustainable Fisheries"(OECD, 1997)].

IV. The international response

a) International instruments

The international community has adopted various agreements relating to the conservation and management of fisheries. These agreements provide a basis and framework for managing fishing capacity. They include :

- The United Nations Convention on the Law of the Sea (UNCLOS) in 1982.
- Agenda 21 of the 1992 UN Conference on Environment and Development.
- The FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels in the High Seas (1993).
- The UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks (1995).
- The Kyoto Declaration and Plan of Action (1995); and
- The FAO Code of Conduct for Responsible Fisheries (1995).
- Other regional fisheries management arrangements.

The FAO Code of Conduct, in particular, recommends that "states should prevent over-fishing and excess fishing capacity and should implement management measures to ensure that fishing effort is commensurate with the productive capacity of the fishery resources and their sustainable utilisation" (Article 6.3).

In February 1999, the FAO adopted an International Plan of Action (IPA) for the Management of Fishing Capacity. The IPA was developed as an element within the implementation process of the FAO Code of Conduct. The objective of the IPA is to achieve "an efficient, equitable and transparent management of fishing capacity". This is to happen preferably by 2003, but not later than 2005. Each country supporting the IPA is to develop, if necessary, a national plan to manage fishing capacity and to reduce it. In the meantime countries are to take immediate steps to address the management of fishing capacity of overfished stocks. Countries should reduce and progressively eliminate all factors, including subsidies and other economic incentives, which contribute directly or indirectly to the accumulation of excessive fishing capacity threatening living marine resources, taking due account of the needs of artisanal fisheries.

The OECD Council Meeting at Ministerial Level, held in May 1999, paid tribute to FAO's IPA for the Management of Fishing Capacity. The Council endorsed OECD's ongoing examination of the impacts of government financial transfers and other relevant factors on fishery resources sustainability, including over-fishing.

b) International definitions of fishing capacity

It is very important to define fishing capacity well in terms of management and conservation of fishery resources. Further formulating the definition of fishing capacity effectively in terms of catch makes it easier to deal with complexities due to fisheries interactions, determine optimal capacity for fluctuating stocks, and facilitates aggregation between fleets and between the harvesting and processing sectors (FAO, 1999b).

Various definitions of fishing capacity have been developed in the academic literature (see Box 2), but its international discussion was only recently launched by the FAO. The FAO is developing frameworks to help countries manage their fishing capacity.¹ However, a lot of work remains to be done.

In particular, the definition of fishing capacity differs among the international instruments and a variety of terms are used as well: “fishing capacity”, “optimal capacity” and “over-capacity”.

In the short run, the output level indicated by the minimum cost position on the short run average total cost curve, and in the long run, the scale of plant at which long run average total cost is a minimum (Lindebo, 1999a).

Fishing capacity. Fishing capacity can be defined in terms of a technological approach or an economic approach. Using the *technological* approach, fishing capacity is “the maximum amount of fish over a period of time (year, season) that can be produced by a fishing fleet if fully utilised, given the biomass and age structure of the fish stock and the present state of the technology” (FAO, 1998b). But this approach does not incorporate constraints on output due to economic or environmental factors. The *economic* approach for defining capacity is more widely used in the academic literature. Using this approach, “fishing capacity is the output level corresponding to the tangency of the short-and long-run average cost curves” (FAO, 1999c). This definition is flexible in economic terms, as it accommodates various market structure and behavioural objectives.

Optimal capacity. To assess the level of over-capacity in a fleet, the current level of capacity can be compared with a defined “optimal” capacity level. The “optimum” capacity can be defined in a technical way: the minimum capital stock required given the production technology of the fleet. Or it can be defined using an economic approach: the capital stock that will minimise the cost of producing the target output (FAO, 1999c). Since definitions of “optimal” are local and specific, defining “target” capacity may be more appropriate rather than trying to define “optimal” capacity (FAO, 1998b). “Target” capacity can be defined as “the maximum amount of fish over a period of time (year, season) that can

Box 2. Definitions of fishing capacity

Technological definitions

- The maximum amount that can be produced per unit of time with existing plant and equipment provided the availability of variable factors of production is not restricted (Johansen, 1968).
- The amount of production which could be produced given full and efficient utilisation of inputs subject to customary and normal operating procedures (Prochaska, 1978).
- The ability of a fleet or industry to generate fishing effort per unit of time while harvesting the maximum potential output (Hannesson, 1987).
- The quantity of fish (mix of species) which could be caught annually by a specific vessel or fleet depending on productivity per unit of fishing time (CPUE or Kg/hour) or number of fishing time units (hour fishing/year) (Hillis, 1994).
- The maximum available capital stock in a fishery that is fully utilised at the maximum technical efficiency in a given time period, given resource and market conditions (Kirkley and Squires, 1998).

Economic definitions

- The output consistent with achieving some underlying economic goal or objective, *e.g.* the output level corresponding to maximum profit or minimum cost (Cassels, 1937).
- Output level coinciding with the tangency between the short-run and long-run average total cost curves (Klein, 1960).
- The level of output that coincides with the point of minimum value of the short-run average total cost curve (Nelson, 1989).
- The largest feasible output when input prices and cost are given, which is determined according to the maximal level of inputs which do not cost more than a total fixed budget available (Färe and Grosskopf, 1998).

be produced by a fishing fleet if fully utilised while satisfying fishery management objectives designed to ensure sustainable fisheries" (*ibid.*).

Over-capacity. The extent of over-capacity can be estimated as the difference between the current potential capacity of the fleet and a defined optimal or target fleet capacity. FAO defines over-capacity (OC) as "the difference between current fishing capacity and target fishing capacity".²

Despite those definitions, however, defining a universal capacity measure is problematic in practice due to the high complexity and specificity of individual fisheries. From a technical perspective, there are many elements that determine a vessel's ability to catch fish (*e.g.* vessel, hull, engine power, fishing gear, fishing technology, fishers, and stock availability). From an economic perspective, fishing capacity will be driven by many factors (*e.g.* prices, physical productivity, activities and constraints in the market).

V. National and supra-national responses

The first part of this section summarises the definitions of fishing capacity used by OECD Member countries. The second part provides an overview of OECD Member countries' capacity management policies.

a) National definitions of fishing capacity

Australia defines fishing capacity as "the amount of fishing effort that a fishing boat, or fleet of fishing boats, could exert if fully utilised, that is, if vessels were not constrained by restrictive management measures". Within this definition, the dynamic nature of fishing effort and hence fishing capacity through factors such as technological creep are recognised.

At the present time, *Canada* recognises the technical definition of fishing capacity that was agreed to at the FAO Technical Consultation (held in Mexico, November 1999) on the Measurement of Fishing Capacity. This definition of fishing capacity measures the potential harvest of a vessel or fleet given the state of the biomass and technology. However, Canada also recognises that a single measure of fishing capacity is not attainable at the present time. This is because of the many different aspects associated with fishing capacity and because of the lack of comprehensive data.

In the *European Union*, fishing capacity is defined in terms of two vessel characteristics: gross tonnage (GT) and main engine power (kW). This definition of fishing capacity has been adopted to allow clear objectives to be defined for the EU's Multi-Annual Guidance Programmes (MAGPs). The definition does not attempt to take into account any of the other factors influencing fishing effort exerted by the fleet, nor the effects of technological improvements (*e.g.* fishing gears, fish finding equipment, navigational aids). Historically tonnage has been measured as Gross Registered Tonnage (GRT). However, the EU has been progressively moving to a common standard for measuring tonnage, a volumetric measure known as GT which is based on the International Convention on Tonnage Measurement of Ships 1969. Measures of GT/GRT and kW are used for setting objectives and measuring compliance with the MAGPs.

However, the *United Kingdom* uses an additional measure of fishing capacity for national licensing purposes. This is the vessel capacity units (VCUs). VCUs are the sum of a "hull component" and a "engine component". That is, $VCU = \text{length} \times \text{breadth} + (0.45 \times \text{power})$, where the length is overall vessel length in metres, breadth is vessel breadth in metres and power is engine power of the vessel in kilowatts (Lindebo, 1999b). This unit is considered to be proportional to the vessel's ability to catch fish.

In the *United States of America*, a National Excess Capacity Task Force was created in 1998 to examine definitions and technical measures of fishing capacity. It developed the following major recommendations. First, the most appropriate definition of capacity in fisheries should be output-based: defined in terms of volume and value of catches, rather than in terms of inputs (*e.g.* vessels, gear). Second, economic definitions and measures that take into account some economic benchmark like cost minimisation are preferable to technical definitions and measures that simply examine capacity in terms of quantities of outputs. Third, various measures of capacity have practical and analytical advantages, depending on

the available data. The easiest and least data “hungry” is *i*) the “peak to peak” method, and the more complex and data-reliant are *ii*) the data envelopment analysis (DEA) and *iii*) stochastic production frontier metrics (SPF) (US Government, 1999*b*).

The task force proceeded to develop three definitions of capacity (see Box 3): *i*) a technical definition; *ii*) an economic definition based on cost minimisation; and *iii*) a modified economic definition that recognises alternative objectives that may be relevant in the calculation of capacity. Based on the recommendation from the task force, the assessment of US domestic capacity will be accomplished in two stages. First, a “qualitative” report on capacity will be prepared, based on existing literature and other material. Second, more technical and detailed “quantitative” analyses of capacity will be conducted in domestic fisheries using the methods developed by the task force, primarily utilising the peak-to-peak and DEA.

A solid definition of fishing capacity is very important in terms of management of fisheries resources. The term “fishing capacity” is widely used in OECD countries but there is no generally agreed or standardised definition for fishing capacity. While some OECD countries have defined fishing capacity, others have not. Even in countries that define fishing capacity, the definition tends to be limited to certain technical elements. Capacity itself is also measured differently from one country to the others, based on a variety of methods for measuring fishing capacity.

The absence of a standardised or agreed measurement of fishing capacity can bring about confusion and miscalculation as a result of a variety of methods for measuring fishing capacity. In the EU, for example, fishing capacity has been measured in terms of vessel tonnage and engine power. Vessel tonnage has been registered as GRT, GT and other national units. The mixture of these measurements has caused some confusion in relation to MAGP objectives and situation of national fleet segments. The number of kilowatts of a vessel engine is a straightforward measure but has problems including de-rating practices and differing measurement in terms of official kW and maximum effect kW (Lindebo, 1999). Therefore, a standard approach for defining and measuring fishing capacity may be necessary. Such an approach should be defined clearly and simply so that every fishing country can easily use it.

Box 3. USA definitions of fishing capacity

Technical definition. The definition of technical capacity is “the level of output of fish over a period of time (year, season) that a given fishing fleet could reasonably expect to catch if variable inputs are utilised under normal operating conditions, for a given resource condition, state of technology, and other constraints”. Under this definition, excess capacity exists when technical capacity exceeds the target catch level (TCL) where the TCL is set to rebuild or maintain the stock at a long-run target size.

Economic definition. The traditional definition of economic capacity, based on cost minimisation, is that “level of output of fish caught over a period of time (year, season) where short-run and long-run average total costs are equal, for a given fleet size and composition, resource condition, market condition, state of technology, and other relevant constraints”. A cost function is estimated and then solved for the optimal level of output given a particular production technology by calculating and equating the fishing firm’s short and long-run average costs. However, the task force criticised that cost minimisation is not the only objective that can govern a fisherman’s behaviour and suggested alternative objectives.

Modified economic definition. Modified definitions of economic capacity based on alternative objective functions are “those levels of output of fish caught over a period of time (year, season) where objectives such as profits or net social benefits are maximised for a given fleet size and composition, resource condition, market condition, state of technology, and other relevant constraints”. Under this definition, the potential level of output would differ from the cost minimisation objective measure depending on how the alternative objective affected a fisherman’s behaviour.

Source: USA Government (1999*b*).

The use of peak-to-peak analysis and Data Envelopment Analysis (DEA) have been identified as practical ways to measure capacity (FAO, 1998*b*). A guideline covering the practical methods for measuring capacity is now under consideration by the FAO.

b) National policies for managing fishing capacity

Australia

The key objectives for capacity management in Australia's Federal fisheries can be derived from the Australian Fisheries Management Authority's (AFMA) legislative objectives. That is, capacity management will advance ecologically sustainable development and economically efficient fisheries and not endanger resources of the Australian Fishing Zone through over-exploitation. Principal fishery management instruments include a variety of input controls (restrictions on fishing permit numbers, vessel size, gear effort), output controls (ITQs, TACs, direct limits on catches, bag and trip limits), and technical measures (seasonal or area closures).

In particular, output controls in the form of Individual Transferable Quotas (ITQs) have been emphasised. By the end of 1999, ITQs were implemented in the South East Trawl fishery, South East Non-Trawl fishery and the Southern Bluefin Tuna fishery, with new output controls (bag and trip limits) being developed for the Bass Strait Central Zone Scallop fishery and the Southern Shark fishery. The Australian case study provides a key example of how AFMA is using management instruments such as ITQs, limited entry, market forces and complementary input controls to pursue management objectives including reductions in fishing capacity.

Where feasible, the implementation of ITQs or a similar form of output control is supported by complementary technical measures such as seasonal or area closures. Where input controls are the preferred approach, management focus is moving away from limits on the size or capacity of boats, engines or holds, and towards limits on gear or units of gear and the implementing of tradable gear units. In cases where fishing capacity is clearly in excess of that required to balance sustainability and fishing effort in input controlled fisheries, Australia utilises targeted structural adjustment, buyouts, surrender provisions and the like, to achieve necessary reductions in fishing capacity. The South East Fishery Adjustment program concluded in 1998 was a one-off program to assist with transition of the fishery to ITQs. The program was worth AUD 6.9 million in the 1997-98 financial year, AUD 4.4 million of which was used to buy out permits. The government launched an AUD 2.6 million adjustment program in July 1999 to assist the transition to ITQs in the Southern Shark fishery, which also included a permit buy out.

Canada

Canada uses a number of strategies for capacity management. Fisheries management is conducted through:

- Output controls such as allocating quotas to fleet sectors, which are then fished competitively or, giving specific percentages of the quota to individuals or businesses in the form of Individual Quotas (IQs), Individual Transferable Quotas (ITQs) or Enterprise Allocations (EAs); and
- Input controls including limited entry access, controlling fishing effort, and technical measures including escapement for by-catch.

Limited entry access to fisheries is the most widely used approach. This policy is designed to control the number of fishers allowed into a specific fishery. In addition to limited entry, other measures such as gear, vessel size and area restrictions are employed. In addition to imposing limits on the overall length of fishing vessels, there are "cubic number" rules, which limit the volume of replacement vessels. Furthermore, when a vessel is retired it can only be replaced by a vessel of the same length.

In addition to normal input control measures, a series of special measures were designed in the 1990s to address the over-capacity issue in Canada in two specific fisheries: the Atlantic groundfish and the Pacific salmon. A groundfish capacity reduction program – part of the Atlantic groundfish

Strategy (TAGS) – ran from 1994 to 1998. This program aimed to reduce the capacity in these fisheries. The policies included licensing reforms creating core fishing enterprises in Atlantic Canada, area licensing and licence stacking in the Pacific, and a series of publicly funded licence and early retirement programs on both coasts. Once TAGS expired, the Canadian Fisheries Adjustment and Restructuring (CFAR) was introduced. This program is addressing the permanent downsizing of the Atlantic groundfish fishery and the restructuring of the Pacific salmon fishery by using licence and early retirement policies.

Within the Department of Fisheries and Oceans (DFO), Canada has organised a multi-disciplinary, intra-departmental Working Group to meet the requirements and timeline of the FAO IPA. Its first task was to prepare a technical paper for the meeting of experts on methods of measuring fishing capacity held in Mexico in November 1999. Following the technical meeting, the DFO Working Group initiated the study phase to consistently measure the capacity of the Canadian domestic fleet. Beyond DFO, the Working Group co-ordinates its activities with the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) Task Group on Capacity Management, which is composed of federal and provincial fisheries officials. The mandate of the CCFAM Task Group is to assess the current state of fishing capacity in Canada, to evaluate its balance with the fishery resource, and to consider the implications of overcapacity problems for the sustainable development and management of Canadian fish stocks.”

European Community

The European Community has implemented policies to improve the balance between fishing capacity and the available resources. The EU’s main policies for fishing capacity are:

- Vessel decommissioning.
- Vessel renewal and modernisation.
- Licensing systems.
- Effort reduction; and
- Days-at-sea limits.

Vessel decommissioning has been implemented under the MAGPs since 1983. It is a structural policy that aims to achieve a sustainable balance between the capacity of the EU fishing fleet and the available resources. It also aims to reduce inefficient “race to fish” behaviour. The MAGPs set capacity ceilings for the fishing fleets of each Member state.

MAGPs have been updated every five years to accommodate the latest estimates of fishing mortality caused by the fleets, fleet developments and the changing fisheries environment. MAGP I (1983-86) aimed to stabilise fleet capacities for each Member state by the end of 1986, simply expressed in power (kW) and GRT. The objectives of MAGP II (1987-91) were to reduce each nation’s fleet capacity by 2% in terms of power and 3% in terms of tonnage. MAGP III (1992-96) sets different targets for reducing fishing effort according to the type of stock being exploited: reductions of 20% for demersal stocks, 15% for benthic stocks and 0% for pelagic stocks. Over the period 1997-2001, MAGP IV concentrates the reductions in effort on those fleet segments fishing the most vulnerable stocks and it attempts to minimise the short-term socio-economic impacts of the adjustment. MAGP IV, unlike previous MAGPs, unifies and complements structural measures with resource management policies.

The present programme (MAGP IV, 1997-2001) classifies fleets into various segments according to the stocks exploited and the fishing gears used so that capacity reductions can be better targeted. The principal objective of decommissioning is to reduce fishing effort by 30% for 17 very endangered stocks, and by 20% for a further 46 overfished stocks for the years 1997-2001. This is to be done through a voluntary removal of vessels.

Table 1 shows the stocks that required attention and the level of the agreed cuts in fishing effort. Table 2 compares the capacity situation as of 1 January 1997 and 1 January 2000 with the agreed objectives to be reached by the end of 2001.

Table 1. State of European Union fish stocks and objectives under MAGP IV

Category	Definition	Number of stocks	Objectives (over five years from 1997)
Depletion Risk	Spawning biomass presently below the Minimum Biological Acceptable Levels or likely to be in that position in the short-term at the current levels of mortality.	17	30% reduction of fishing effort.
Overfished	Moderate to substantial gains in long-term yield if effort is decreased; if heavily overfished, medium-term risk of spawning stock biomass falling below Minimum Biological Acceptable Levels.	46	20% reduction of fishing effort.
Fully exploited	No long-term gains or losses if effort is moderately increased or reduced.	19	Moratorium on new effort.

Table 2. Capacity reduction targets for the EU fleets under MAGP IV

Member State	GT/ GRT			Kilowatts		
	As of 1.01.1997	As of 1.01.2000	Target 31.12.2001	As of 1.01.1997	As of 1.01.2000	Target 31.12.2001
France	198 030	213 721	223 647	988 087	1 113 475	921 795
Belgium	22 527	22 838	23 323	63 540	63 453	67 857
The Netherlands	177 486	189 855	145 520	496 734	487 877	423 161
Germany	73 022	66 983	81 973	168 013	156 760	170 050
Italy	247 895	233 559	230 178	1 504 466	1 475 721	1 341 775
United Kingdom	247 273	262 794	264 588	1 053 730	1 042 608	1 066 463
Ireland	63 263	58 684	69 649	205 254	184 980	199 009
Denmark	106 499	107 805	132 539	411 684	390 799	463 437
Greece	119 963	114 506	120 755	661 832	622 841	654 172
Spain	603 846	538 581	799 253	1 538 722	1 381 502	1 755 636
Portugal	125 461	118 842	195 920	395 320	397 937	497 246
Finland	23 344	21 310	23 349	218 275	203 573	217 634
Sweden	49 787	47 600	51 159	256 241	229 092	261 587
Total	2 058 396	1 997 078	2 361 853	7 961 898	7 750 618	8 039 822

France: Since 1997 vessels from ultra-sea territories are included.

Denmark: Small vessels less than 5 tonnes are not included.

Aid for the permanent withdrawal of capacity in order to meet MAGP objectives is available under the Financial Instrument for Fisheries Guidance (FIG).³ Fishers are given a financial incentive to leave the fishery, usually in the form of a grant (Lindebo, 1999b). Table 3 shows aid for fleet measures for 1994-99. During the period, a total of ECU 1 143.94 million was provided for adjustment of fishing effort, of which ECU 707.51 million was from FIG. Capacity that has been removed with public aid can never be replaced. The only exception to this is for the small scale coastal segment of the fleet (vessels less than 12 metres overall length other than trawlers), where vessels removed with public aid can be replaced provided that this is done without recourse to public aid.

Once the objectives of the MAGP have been achieved, it is possible to use public aid *to renew and modernise* the fleet. Grant aid has been allocated for the construction and modernisation of fishing vessels to ensure that the EU fleet remains competitive, to improve safety on board vessels, to improve the quality of fish handling and to encourage the use of more selective gears.

Table 3. EU aid for fleet measures 1994-99 (ECU million)

Member states	Adjustment of fishing effort			Construction and modernisation			
	FIFG (EU)	Governments (national)	Total	FIFG (EU)	Governments (national)	Operators (national)	Total
Belgium	5.20	5.20	10.40	7.88	3.94	27.58	39.40
Denmark	37.74	37.74	75.40	35.06	7.01	98.17	140.24
Finland	4.14	4.14	8.28	2.41	1.06	6.55	10.02
France	16.19	16.19	32.38	37.81	29.48	89.01	156.30
Germany	8.66	12.68	21.34	32.61	5.76	66.60	104.97
Greece	31.77	10.59	42.36	14.29	4.76	24.25	43.30
Ireland	5.56	1.86	7.42	11.70	1.91	24.58	38.19
Italy	104.58	104.58	209.16	93.22	23.10	115.11	231.43
Netherlands	9.50	9.50	19.00	2.20	0.88	13.90	16.98
Portugal	82.05	28.02	110.07	36.23	8.07	29.68	73.98
Spain	378.97	188.09	567.06	334.38	71.66	310.56	716.60
Sweden	4.00	4.00	8.00	12.00	4.00	24.00	40.00
UK	19.15	13.84	32.99	20.13	4.73	28.02	52.88
EU Total	707.51	436.43	1 143.94	639.92	166.36	858.01	1 664.29

Value for Finland and Sweden are for 1995-99.

Source: EU aid for the development of the fishing industry, DGXIV.

During the period 1983-90, ECU 451.90 million in EU aid was directed towards vessel construction and modernisation, while ECU 125.60 million was directed towards a reduction in vessel numbers and tonnage. But since then the rates of aid were reduced and the Commission adopted a stricter attitude to the granting of aids to those nations not meeting their MAGP targets (Lindebo, 1999b). Table 3 shows the total budget allocations (EU and national) for the fleet construction and modernisation during the period 1994-99. A total of ECU 1 664.29 million was provided for construction and modernisation for 1994-99, of which ECU 639.92 million was from FIFG.

In 1999 the Council established detailed rules and arrangements for Community structural assistance in the fisheries sector. The general principle is that government aid should not contribute to an increase in fleet capacity. Any capacity introduced with public aid must be compensated by the withdrawal of at least an equivalent capacity without public aid. This means that public aid can not be used to increase the capacity of the fleet even if the capacity is below the MAGP objectives. In order to obtain approval for government aid, the member states of the European Community must put in place permanent arrangements for monitoring fleet renewal and modernisation. Government aid for fleet modernisation or renewal can be granted only if it complies with the objectives of the MAGPs.

The EU also manages fishing capacity by means of a *common licensing system* to control access by vessels to Community fisheries. While the regional control of fishing capacity is harmonised by the MAGPs, fishing capacity and effort are controlled by national licensing systems within each country. Since 1995 all vessels fishing in Community waters and EU vessels operating outside Community areas have required a licence. Fishing effort can be regulated through the allocation of special fishing permits stating the terms of access, time and specific fisheries.

Effort reduction has been applied to MAGPs whereby member states may reduce overexploitation by their fleets by limiting fishing activity. This measure requires vessels to remain in port for a minimum number of days per year, thus reducing the overall fishing effort and pressure on fish stocks (Lindebo, 1999b).

Finally, *days-at-sea limits* are currently used in many EU fisheries, where restrictive licensing alone has been unable to limit the effort of fishing fleets. Days-at-sea regulations are used to limit the total number of days that vessels may spend in a fishery. They are usually set as a monthly limit, and applied in conjunction with restrictive licensing.

Member states are also required to record information for each fishing vessel (*e.g.* country of registration, year of construction, overall length, tonnage, power, *etc.*) and communicate these data to other Member states and the Commission. Any modification to a vessel with recorded information must be immediately communicated. This is done directly by the authorities of the member state concerned, who have direct access by the internet to the Community register data relating to their own fleet.

Belgium

Capacity of the fishing fleet is 2% in GT and 7% in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 10.4 million for decommissioning and ECU 39.4 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 67% of modernisation/construction engagements.

Denmark

Danish policy is to encourage renewal of the fishing fleet without increasing capacity. Under rules introduced in 1998, fishers can remove vessels and pool the capacity of the removed vessel into one new vessel. Fishers can divide the capacity from one big vessel into a number of smaller vessels. Decommissioning of vessels forms a part of the MAGP for the EU's fishing fleet and is carried out with national and FIG aid. As shown at Table 2, Denmark's fleet capacity is below capacity reduction targets under MAGP IV. Its fleet capacity is 23% in GT and 19% in engine power (kilowatts) below the MAGP objectives for the years 2000 to 2001.

The law on structural adjustment – based on the FIG scheme – provided the finances for the restructuring from 1994 to 1999. The scheme covered both decommissioning of vessels and modernising/construction of new vessels. Between 1994 and 1999 the total budget allocations were ECU 75.4 million for decommissioning and ECU 140.24 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 83% of modernisation/construction engagements.

Finland

In accordance with capacity reduction targets under MAGP IV, fleet capacity is 10% in GT and by 7% in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 8.28 million for decommissioning and ECU 10.02 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 69% of modernisation/construction engagements.

France

Fleet capacity in France is 5% in GT below the MAGP objectives but 17% in engine power (kilowatts) above the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 32.38 million for decommissioning and ECU 156.3 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 56% of modernisation/construction engagements.

Germany

Fishing capacity in Germany is 22% in GT and 8% in engine power (kilowatts) below the MAGP objectives for the years 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 21.34 million for decommissioning and ECU 104.97 million for modernisation and construction. From public funds, the EU funded 41% of decommissioning engagements and 85% of modernisation/construction engagements.

Greece

In Greece, Capacity of fishing fleets is 5% in GT and in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 42.36 million for decommissioning and ECU 43.3 million for modernisation and construction. From public funds, the EU funded 75% respectively in decommissioning engagements and modernisation/construction engagements.

Ireland

Capacity of the fishing fleets is 19% in GT and 8% in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 7.42 million for decommissioning and ECU 38.19 million for modernisation and construction. From public funds, the EU funded 75% of decommissioning engagements and 86% of modernisation/construction engagements.

Italy

In Italy, fleet capacity is 2% in GT and 9% in engine power (kilowatts) over the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 209.16 million for decommissioning and ECU 231.43 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 80% of modernisation/construction engagements.

The Netherlands

Capacity of the fishing fleet in the Netherlands is 23% in GT and 13% in engine power (kilowatts) above the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 19 million for decommissioning and ECU 16.98 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 71% of modernisation/construction engagements.

Portugal

In Portugal, its fleet capacity is 65% in GT and 25% in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 110.07 million for decommissioning and ECU 73.98 million for modernisation and construction. From public funds, the EU funded 75% of decommissioning engagements and 82% of modernisation/construction engagements.

Spain

Spanish capacity of the fishing fleet is 48% in GT and 27% in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 567.06 million for decommissioning and ECU 716.6 million for modernisation and construction. From public funds, the EU funded 67% of decommissioning engagements and 82% of modernisation/construction engagements.

Sweden

According to MAGP capacity reduction targets, a decommissioning scheme has been in operation since 1995. Capacity of the fishing fleet in Sweden is 7% in GT and 14% in engine power (kilowatts) below the MAGP objectives between 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 8 million for decommissioning and ECU 40 million for modernisation and construction. From public funds, the EU funded 50% of decommissioning engagements and 75% of modernisation/construction engagements.

United Kingdom

In the UK, capacity of the fishing fleet is 1% in GT and 2% in engine power (kilowatts) below the MAGP objectives for the years 2000 to 2001. Between 1994 and 1999 the total budget allocations were ECU 32.99 million for decommissioning and ECU 52.88 million for modernisation and construction. From public funds, the EU funded 58% of decommissioning engagements and 81% of modernisation/construction engagements.

Iceland

Iceland's principal fisheries management instruments are output controls (ITQs, TACs), input controls (fishing gears with selectivity), and technical measures (closures or division of fishing areas according to the type of vessel and fishing gear).

In Iceland an industry-financed Development Fund was used to pay for the withdrawal of vessels from the fleet. Each year the fishing industry contributes some ISK 600 million (USD 8.5 million) – approximately 1% of total first-hand value of the catch – to the fund. In 1997, 31 vessels were permanently retired and ISK 83 million (USD 1.2 million) was paid by the fund in the form of cessation payments. The fund is financed by a levy on ITQ that is paid by the quota owners. The initial purpose of the Fund, promoting the permanent retirement of vessels through the issuance of cessation payments, has been deemed to be no longer relevant. From 1998 the fund financed the construction of a new marine research vessel.

Japan

Japan manages its fisheries through input controls (licence limitation, restriction of fishing method, limiting size of vessels), output controls (TACs), technical measures (seasonal or area closures) and vessel reduction programs. In addition, coastal and inland water fisheries are managed under the fishing rights system. Japan's structural adjustment policies aim to ensure that fishing effort matches the available fish resources. The policy also aims to improve the operation of fishing enterprises.

licence limitation is the main instrument for controlling fishing capacity in Japan. The licensing system is mainly applied to the offshore and distant water fisheries. Each fishing vessel must obtain a licence under this system. The Ministry of Agriculture, Forestry, and Fisheries (MAFF) issues licences for fisheries under federal jurisdiction. The prefectural governor issues licences for fisheries under prefectural jurisdiction. The Minister and the prefectural governors issue licences regulating vessel size, target species, prohibited species, fishing seasons and fishing areas (Japan Fisheries Association, 1991). As a supplement to the fishing licence system, Japan adopted a TAC system for the first time in 1997. Seven species were covered by TACs in 1999.

Korea

Korea manages fishing capacity through input controls (licence limitation, limitation of engine powers), output controls (TAC), technical controls (fishing grounds, fishing seasons, size of fish, and mesh size regulations) and fleet reduction programs. A TAC system was introduced in 1999. A licence system limits the entry and has historically been Korea's main fishery management tool. A limited number of licence permits is set for fisheries with intensive fishing capacity in order to protect the resources.

Despite efforts to manage resources using input controls, stocks of economically important species in Korea's coastal waters continued to decline. This situation has prompted calls for stronger management, including the use of TACs. Korea is studying a possible National Plan of Action by the Korea Maritime Institute – a research institute in fisheries and maritime affairs to implement the FAO IPA. Conducted in 2000, the study includes methods of assessing fishing capacity, describes capacity on a fishery-by-fishery basis, and sets out a proposed National Plan of Action.

Mexico

Commercial fishing in Mexico's territorial waters is administered through a system of permits and concessions. Permits are issued for terms of up to four years, while concessions can be given for up to 20 years. Harvesting is controlled by limits on the number of permits issued and, when required, the use of permanent or temporary closed seasons. These access limitations are complemented with technical measures relating to minimum sizes, mesh sizes and other restrictions.

Since 1997 a Fishing Fleet Modernisation Program encouraged the replacement and renewal of the fleet. When decisions are made on funding projects, consideration is given to the biological capacity of fishery resources. This assessment is made in order to prevent increases in fishing effort and to guarantee the sustainability of fishing activities. Furthermore, financial and economic criteria is used to assess the feasibility and profitability of projects and guarantee the recovery of the funds. In 1997 the Program spent USD 6.9 million on the renewal of 102 vessels and the introduction of 20 new units.

New Zealand

New Zealand uses input controls (fishing licence, gear restrictions), output controls (TACs, ITQ), and technical measures (area closures) to manage its fisheries. When TACs are reduced for sustainability reasons, adjustment and rationalisation is conducted by fishers with no government involvement or financial assistance.

New Zealand does not manage its fishing capacity. Under its Quota Management System a total allowable catch (TAC) is set annually. Individual quota allocations are denominated as a proportion of the TAC and increase or decrease proportionally to any change in the TAC level. It is then left up to quota holders to decide on the amount of capacity that they wish to use to harvest their quota holdings. The only requirement is that vessels used to harvest fish inside the EEZ are New Zealand registered fishing vessels. New Zealand registered fishing vessels can be either New Zealand flagged vessels or foreign flagged vessels (charter vessels).

Norway

Norway's principal fisheries management instruments are input controls (*e.g.* licence limits), output controls (*e.g.* TACs, IQs) and technical measures (*e.g.* seasonal or area closures). These are supplemented with decommissioning schemes and a system of withdrawing vessels and concentrating vessel quotas on the remaining vessels (unit quota system). The fisheries for the most important species are mainly regulated by a system of individual quotas (IQs). The individual quotas are usually granted to vessels that are based on a minimum historic catch record of the regulated species. Some fisheries are not subject to individual quotas; the most important of these are the fisheries for shrimp.

With regard to input controls, licences are used to control overall fishing capacity in the ocean going part of the fleet. Decommissioning schemes have been applied for different vessel groups in the Norwegian fishing fleet. Such schemes were applied for the cod trawler and purse seine fleet in the 1980s. Priority is given to vessel groups where participation requirements or annual permits have been used. In 1999 around NOK 68 million was allocated for decommissioning.

A unit quota system is used to encourage vessel group members to adjust their fishing capacity to the available resources and also to secure higher profitability. The system allows the owner of two fishing vessels to transfer the quota of one vessel to another vessel, following a certain quota allocation to the other vessels in the group. The owner of the vessel then controls more than one quota for a period of 13 years. In this case the vessel owner is allowed to sell his vessel in both Norway and abroad. If the owner of the vessel commits himself to scrap one of his vessels, the period of quota control is extended to 18 years. The owner of the extra quota is responsible for the costs involved and for the withdrawal of the vessel from the fishing fleet.

Annual grants have been provided by the government over the last years to reduce the average age of the fleet and to stimulate the building of new vessels. Currently, grants are reserved only for the purpose of reducing the number of old vessels. However, complementary measures control the growth

in fishing capacity in certain important vessel groups. Investment limits were set each year in the period 1988-1998 for vessels greater than 34 metres in length for cod or industrial trawlers, for purse seiners and for shrimp trawlers (1990-1998). The import of older fishing vessels above 34 metres in length is not regulated however.

Turkey

In accordance with the Fisheries Law (Article 3) and the Fisheries Regulation (Article 4 and 5), licence is obligatory for fishermen and fishing vessels for fishing, and such licences are issued and recorded in Register Books by Provincial Directorates of the Ministry. Studies to transfer these records to a computer system to establish a database will soon be completed.

The increasing number of fishing vessels has brought to problems of over fishing, therefore to reduce fishing effort, all licensing were stopped for new fishing vessels in 1997. The registration of fishing vessels has also been applied in accordance with the FAO standards. According to 1998 statistics, there were 17 475 fishing vessels (including inland fishing fleet) of which some 1 000 are trawlers and purse-seiners.

United States of America

The United States of America uses input controls (licence limitation, gear and vessel restrictions), output controls [TACs, individual fishery quotas (IFQs)], and technical measures (seasonal and area closures, restrictions on size/weight) to manage its fisheries. The USA manages capacity in the following ways.

Limited entry arrangements are used in virtually all federally managed fisheries (with the single major exception of the Gulf of Mexico shrimp trawl fishery). Under limited entry, fishery managers control the number of participants and, with licence limitations and licence and vessel moratoria, they can prevent new entrants. Therefore, limited entry may be a first step in a graduated process in which managers apply progressively stricter controls on participation.

Buybacks funded entirely by the government have been implemented for many years on a case-by-case basis, and usually with special appropriations. The following fisheries have used these programs: North Pacific groundfish; Pacific Northwest salmon, New England groundfish and scallop; and Gulf of Mexico shrimp.

Industry-funded buyouts relate to the Magnuson-Stevens Act that provides for programmes that are funded by a combination of public resources and industry fees. Capacity reduction can be funded by any combination of: i) Saltonstall-Kennedy Act resources (derived from tariff revenues collected on imports of fish and aquatic products); ii) Congressional appropriations; iii) industry fees; and iv) funds from State or other public sources or private or non-profit organisations

Two forms of *rights-based management* are used: individual fishery quotas (IFQs) and community development quotas (CDQs). Both forms have been implemented at various times in the last decade. The 1996 Sustainable Fisheries Act amendments to the Magnuson-Stevens Act mandated a four-year (*i.e.* until October 2000) moratorium on the development of new IFQs. The ban on ITQ's or IFQ's could be extended under the next reauthorization of the Magnuson-Stevens Act.

The USA has begun to re-examine and selectively modify some of its *domestic economic assistance programs*, in part to mitigate their negative effects on levels of capacity in US fisheries. As examples of these reforms, the USA has reduced or eliminated the capacity-enhancing effects of domestic fisheries sector subsidies. For example, the Federal fisheries loan guarantee program that funded vessel construction, modernisation, and repair (Fisheries Obligation Guarantee) was terminated in 1996. It was replaced by a direct loan program that emphasises lending for other purposes (*e.g.* capacity reduction, purchase of IFQ shares by small-boat fishers).

The US government goal for capacity management is to achieve by 2005 "... 20% fewer overcapitalised fisheries". Here "overcapitalised fisheries" is used in a broad sense and refers to fisheries where there is "overcapacity" according to the technical and economic definition; not simply to fisheries where there

are excessive capital investments. Second, the term “fisheries” may apply either to single or multiple stocks managed under Fishery Management Plans (FMPs), and not necessarily to individual stocks and/or species. Currently (April 2000), there are 41 FMPs in place for Federally managed fisheries in the United States of America. Achieving this capacity management objective will mean the elimination of overcapacity in about 8 FMPs by 2005.

VI. Capacity trends in OECD countries

There are many factors to be considered when analysing fishing capacity, including physical and economic elements. However, in practice, it is not possible to keep track of all factors affecting fishing capacity due to the high complexity and specificity of individual fisheries as well as difficulties in collecting information. This section briefly describes the trends in the total number of fishing vessels (Table 4) and fishers (Table 5). However, the figures are complicated and difficult to compare. For example, for the number of fishing vessels, while some countries include small scale fishing vessels less than 5 tonnes, others include vessels only over 5 tonnes; in tonnage, some countries use GT and others GRT.

The total number of fishing vessels and fishers has fallen in many OECD countries due to government buy-back programmes, management policies and market pressures. For OECD countries for which data are available on the number of vessels and gross tonnage (EU member states, Australia, Iceland, Japan, Korea, and Norway), the number of fishing vessels decreased by 11% to 557 983 between 1989 to 1999. The Gross Tonnage (GT) of this fleet decreased by 16% to 5 088 806 over the same period. The total number of fishers has also decreased: by 14% to 998 461 between 1990 and 1997 (based on information from some EU member states, Australia, Canada, Hungary, Iceland, Japan, Korea, Mexico, New Zealand, Norway, Poland, Switzerland, and Turkey). Some of this capital may have been transferred to developing countries and/or high seas fisheries.

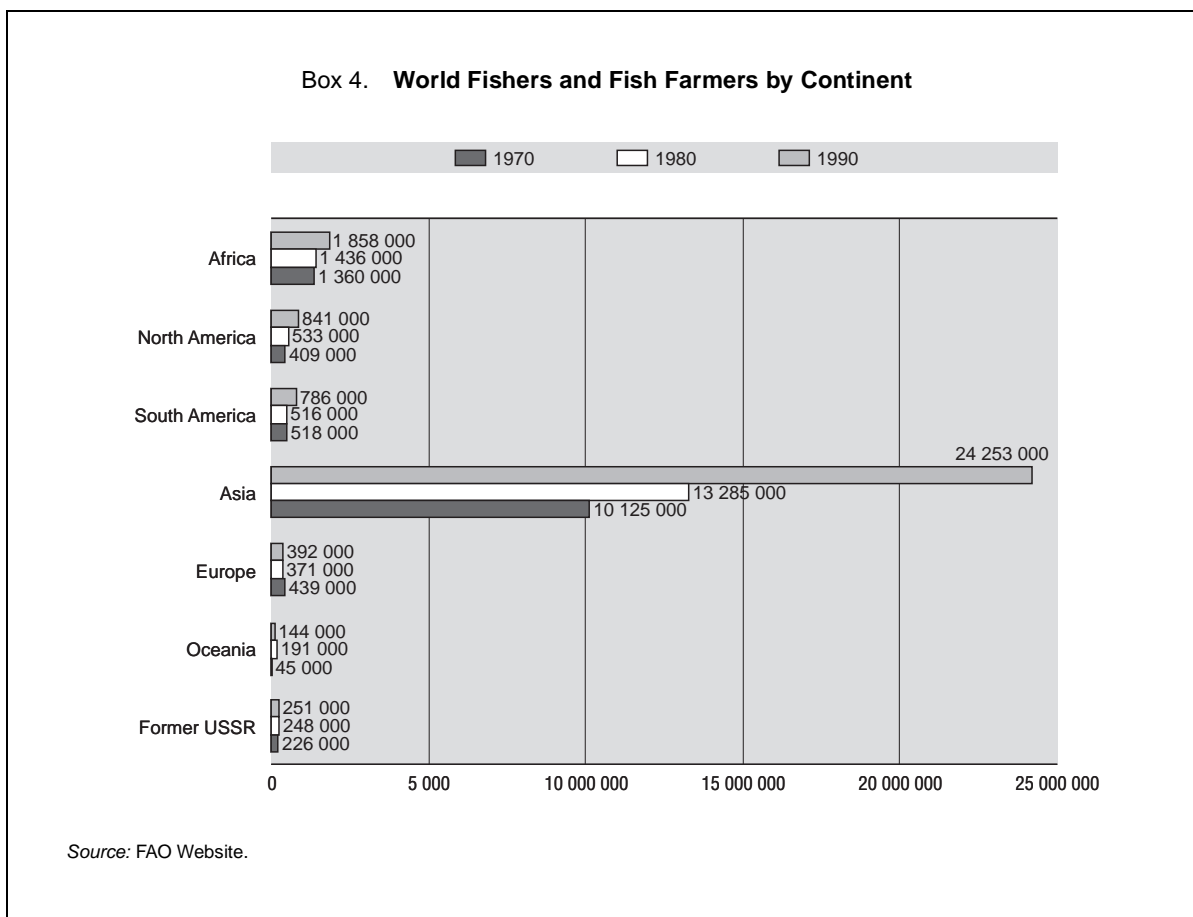
As shown in Box 4, the global number of fishers has increased by 117% to 28.5 million, over the last 20 years from 1970 to 1990 (FAO figures). Asia in particular contributed to the increase in the number of fishers; in Asia the number of fishers increased 140% over the same period. By 1990 Asia accounted for 85% of the global total number of fishers followed by Africa (7%), North America (6%), and Europe (2%). On the other hand, for the OECD countries for which data are available (EU, Canada, Australia, Hungary, Iceland, Japan, Korea, Mexico, New Zealand, Norway, Poland, Switzerland, and Turkey), the total number of fishers decreased by 23% from 1980 to 1997 (see Table 5).

Fishing vessel trends in OECD countries for the period 1989 to 1999 can be classified into the following categories:

- Countries where the total number of fishing vessels and GT decreased;
- Countries where total number of fishing vessels decreased but GT increased or *vice versa*;
- Countries where both the total number and the GT of fishing vessels increased; and
- Countries where there is insufficient data.

Regarding fleet capacity reduction (number of vessels and tonnage) the trends are summarised in Table 6. It should be noted that the measures “number of vessels” and “tonnage/GRT” have limited value. Fishing capacity is a concoction of a number of variables including technological and economic approach. However few Member countries record additional parameters other than number of vessels and tonnage/GRT. Additionally, sometimes, number of vessels may not be a valid indicator of excess capacity in a fishery. The optimal fleet, for example, could consist of many more, but smaller, vessels exploiting the fish stock over a longer period of time. Or it could be fewer, larger vessels exploiting multiple fish stocks sequentially with each individual stock harvested over much shorter periods of time.

Member countries have a mixed set of experiences when it comes to the reduction in the number of vessels, in the tonnage and in the number of fishers. Changes in employment levels and associated policy issues are explored in the Fisheries Committee's study on the *Transition to Responsible Fisheries: Economic and Policy Implications*. The ageing of fishers was a particular problem for a number of countries (in particular in Japan). Some Member countries resorted to the use of adjustment policies for the attrition of fishers, including early retirement packages and other incentives. Clearly such measures will have,



albeit indirect, effect on the fishing capacity. A few countries have used market instruments (*e.g.* New Zealand, Poland) to achieve a reduction in the number of fishers.

VII. Evaluation of fishing capacity policies

This section seeks to evaluate the impacts of capacity management policies in OECD countries. Capacity management policies fall broadly into two categories:

- Administrative measures, *i.e.* buy-back programmes (of vessels, licences or a combination); and
- Active fisheries management policies, including defining and measuring fishing capacity that use economic instruments to encourage self-adjustment by the sector.

In practice, however, there are some difficulties in conducting evaluations on how management instruments affect fishing capacity. OECD studies suggest that some of the expected outcomes of management measures are strongly supported by the evidence, but other expectations remain unconfirmed (OECD, 1997). The principal reasons for this mixture of results are the complexity of fisheries, limited data, poorly defined objectives, conflicting management tools, and limited monitoring and enforcement. In particular, the complexity of most fisheries makes it often difficult to disentangle the effects of a single measure in situations where several management measures are used in combination. Additional complications exist when stocks are of a high seas, straddling or highly migratory nature. In order to analyse the influence of management policies for these stocks all measures and their consequent outcomes need to be reviewed. Such an analysis has not been possible in this study.

Table 4. Trends in number and Gross Tonnage (GT) of OECD fishing fleets

	1985		1989		1995		1999		Percentage Change 89-99(%)	
	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT
Australia	5 065	43 774	4 913	49 556	1 325	68 182	944	77 971	-81	+57
Canada	35 477	..	35 987	..	30 238	..	24 252	..	-33	..
Czech Republic	..	..	..	..	..	..	..	..	..	..
Hungary	..	..	..	..	..	..	..	..	..	..
Iceland*	1 821	111 194	2 113	119 655	2 261	139 414	1 976	180 889	-6	+51
Japan*	400 540	2 744 479	389 674	2 456 134	371 416	1 124 241	349 957	1 589 750	-10	-35
Korea*	90 970	858 398	98 455	963 232	76 801	958 599	94 852	991 956	-4	+3
Mexico*	52 251	479 111	73 627	435 934	74 903	229 245	105 795	..	44	..
New Zealand	2 386	74 775	2 508	261 918	..	..	1 949	..	-22	..
Norway*	23 006	283 676	17 392	257 415	13 933	250 860	13 199	272 806	-24	+6
Poland*	1 442	306 981	1 284	333 863	439	156 241	..	..	..	..
Switzerland	..	..	..	..	..	..	..	..	..	..
Turkey*	6 742	..	8 488	..	9 710	..	17 475	..	+106	..
United States	129 800	..	..	..	..	..	30 000 ^{f1}	..	..	..
Austria	..	..	..	..	..	..	..	..	..	..
Belgium	202	22 416	204	24 620	169	23 971	139	22 767	-32	-8
Denmark	3 300	135 556	2 924	122 460	2 174	94 126	1 778	95 086	-39	-22
Finland	..	9 385	1 860	8 163	4 107	24 475	3 881	22 559	+109	+176
France	14 037	202 208	9 293	209 120	6 829	182 720	8 537	210 718	-8	+1
Germany	1 458	500 060	690	62 168	2 392	76 615	2 313	69 800	+235	+12
Greece	6 061	191 550	24 266	63 659	20 769	112 996	20 494	117 439	-16	+84
Ireland	3 096	..	1 796	..	1 421	55 235	1 063	59 342	-41	..
Italy	19 614	266 401	18 433	263 164	19 302	247 565	19 102	233 559	+4	-11
Netherlands	1 063	147 781	1 059	177 705	993	180 247	1 053	177 308	-1	0
Portugal	16 244	195 878	16 244	195 878	11 846	123 421	10 933	118 842	-33	-39
Spain	17 665	671 804	20 033	796 575	18 868	634 469	17 204	546 224	-14	-31
Sweden	..	..	4 358	48 929	2 535	52 782	2 127	47 895	-51	-2
UK	7 920	..	10 782	226 159	10 808	210 550	8 431	253 895	-22	+12
EU	90 660	2 343 039	111 942	2 198 600	102 213	2 019 172	97 055	1 975 434	-13	-10
TOTAL	840 160	7 245 427	746 383	7 076 307	683 239	4 945 954	737 454	5 088 806	-1	-28

* Gross Registered Tonnage (GRT),

f. Estimate.

.. Information not available.

1. Vessels over 5 tonnes.

Denmark: Small vessels less than 5 tonnes are not included.

Finland: Prior to 1995 only vessels used outside Finnish territorial waters and longer than 9 metres were registered.

France: Since 1997 vessels from ultra-sea territories are included.

Germany: Increase between 1989 and 1995 due to German reunification.

Korea: Increase for 1999 was result of registering previously unauthorised fishing vessels of less than 10 tonnes.

Norway: The figures are estimated and refer to 1986, 1990, 1996, and 1999 respectively.

Source: FAO (1991), Bulletin of Fishery Statistics (for 1985 and 1989), and OECD, Review of Fisheries in OECD countries and additional data (for 1995 and 1999), and Statistical Services – Fisheries and Ocean Canada (for Canadian data).

Table 5. Fisheries employment trends in OECD countries

	1980	1985	1990	1995	1997	Percentage change 1990-97
Australia	14 666	12 100	14 700	15 800	13 500	- 8%
Canada	78 123	69 875	81 473	75 863	57 890	-29%
Czech Republic	1 400	..	..	2 165	2 423	..
Hungary	3 000	3 000	3 300	4 200	4 300	+ 30%
Iceland	5 946	6 641	6 951	7 000	6 300	- 9%
Japan	457 380	431 900	370 600	301 440	278 200	- 25%
Korea	298 122 ^f	260 326	211 753	184 421	180 649	- 15%
Mexico	169 728	199 824	242 804	249 541	258 850	+ 7%
New Zealand	9 547	3 851	4 720 ^f	..	2 090	- 56%
Norway	34 789	29 566	27 518	23 653	22 916	-17%
Poland	17 559	17 317	16 360	10 137	9 096	- 44%
Switzerland	547	503	464	432	404	- 13%
Turkey	62 284	30 870	32 000	33 614	37 482*	+17%
United States	190 000 ^f	238 800	290 000	..	..	..
Austria	2 360	2 400 ^f	2 500	2 300	2 300	- 8%
Belgium	894	875	845	624	579	- 31%
Denmark	14 909	9 000	6 945	5 055	7 022*	+1%
Finland	8 446	8 465	6 335	6 207	6 180	- 2%
France	22 019	..	32 622	26 879	26 113 ^f	- 20%
Germany	4 076	2 432	4 757	4 844	4 426	- 7%
Greece	..	12 973	20 152	22 290	18 379	- 9%
Ireland	..	7 778	7 910	7 500	..	..
Italy	44 903	..	49 429	45 000	40 224	- 19%
Netherlands	3 842	3 290	4 298	3 956	3 711	- 14%
Portugal	..	..	..	..	..	..
Spain	109 258	..	88 199	75 009	..	..
Sweden	5 500 ^f	4 304	3 473	3 287	..	..
UK	23 309	22 224	21 582	19 921	17 850*	-17%
EU Total	239 516	73 741	249 047	222 872	126 784	- 49%
TOTAL	1 582 607	1 378 314	1 551 690	1 131 138	1 000 884	- 36%

f. Estimate, .. Information not available, *: Figure in 1998.

Source: FAO (1999d), and Statistical Services – Fisheries and Ocean Canada (for Canadian data).

Table 6. Summary of fleet capacity trends in OECD countries, 1989-99

Countries that reduced vessel numbers and tonnage	Countries that have reduced the total number of fishing vessels but tonnage increased or vice versa	Countries that have increased both the total number and the tonnage of fishing vessels	Countries where there is insufficient data	
Belgium	Australia	Finland	Austria	Canada
Denmark	France	Germany	Czech Republic	Hungary
Japan	Greece		Ireland	Mexico
Netherlands	Iceland		New Zealand	Poland
Portugal	Italy		Switzerland	Turkey
Spain	Korea		USA	
Sweden	Norway			
	United Kingdom			

a) Administrative measures

Buy-back programmes

Vessel buy-back programmes are the most common approach for reducing capacity in OECD countries. The majority of OECD countries have adopted plans to reduce, or at least limit growth in the capacity of their domestic fishing fleets. In 1997 an estimated USD 350 million, representing 6% of total government financial transfers, was spent on decommissioning vessels and licence retirement. Vessel

buy-back programmes are often implemented in combination with measures such as early retirement packages or job retraining schemes, pensioning off older fishers, and developing alternative employment for younger ones [for a more detailed discussion see OECD (2000*b*)].

Participation in buy-back programmes is usually voluntary on the part of the individual vessel owner, with incentives provided by the government. The fate of the vessel, after decommissioning or retirement, usually depends on the conditions attached to the programme. In some cases vessels have actually been purchased outright by governments and either directed to other purposes (such as fisheries management, or non-fisheries activities), scrapped or – although rarely – sunk. More often, the vessels can not be used in a particular fishery (*e.g.* by retiring the vessel's licence), and their owners are free otherwise to dispose of the vessel as they wish. This disposal can include selling it to a fishing enterprise in another country or to another fishery within the same country (OECD, 2000*a*).

In 1998-99 buy-back programmes were used by Australia, the EU member states, Canada, Germany, Finland, Japan, Korea, Norway, Spain and the USA.

Vessel decommissioning schemes implemented under the EU's MAGPs reduced the size of the fleet since 1983. MAGP-III, which ended in 1996, achieved an 18% reduction in tonnage and a 12% reduction in engine power over five years. The MAGP VI, implemented since 1997, could have additional impact on some sectors of the EU's fleet over the next couple of years. The MAGP IV is also expected to bring about a significant improvement in the economic results of the fisheries companies through a reduction in fixed costs and improved catches, and through greater competitiveness (Lindebo, 1999*b*).

Canada has substantially reduced both the number of registered vessels and the number of licenced fishers. Between 1989 and 1999, the number of vessels fell by 33% and the number of fishers fell by 39%. In 1998, Canada announced the Canadian Fisheries Adjustment and Restructuring Programme, which has retired 1 787 Atlantic groundfish licences and 743 Pacific salmon licences so far (as of mid-2000). CAD 824 million has been spent on this restructuring programme. Also in 1998, details of a CAD 250 million voluntary groundfish licence retirement programme for the Atlantic region and Quebec were announced. This programme is part of a larger CAD 730 million fisheries restructuring package that also includes early retirement, final cash payment, and adjustment and economic development measures. Finally, a CAD 400 million comprehensive federal Pacific salmon fishery plan to rebuild the coho salmon resource, restructure the salmon fishery, and help people and communities adjust to the changing fishery was also announced in 1998. Of the CAD 400 million, CAD 100 million is allocated for measures to protect and rebuild habitat, CAD 200 million is dedicated to fishery restructuring, and CAD 100 million was made available for early retirement and community development programmes.

In 1997 Japan introduced a decommissioning scheme to reduce the number of vessels operating in a number of fisheries: large and medium scale purse-seine fishery; shrimp-cage fishery; small trawl fishery; and the large-scale western trawl fishery. Japan also reduced the number of its large-scale tuna long-line vessels by 132, equivalent to 20% of the total number of vessels. Between 1994 and 1999 Korea has spent KRW 118 billion (including KRW 83 billion of government funds) removing 706 fishing vessels from its coastal and offshore fleets. For vessel reductions during 2000-2004, some KRW 361 billion (including KRW 277 billion in government funds) is planned to be spent removing a further 2 329 vessels. In addition, the Korean government plans to buy 668 vessels from fishers affected by the Korea-Japan Fishery Agreement.

A survey of the evidence from OECD countries (OECD, 1997) found that there could also be some problems with the use of buy-back programmes to manage fishing capacity in the absence of appropriate management controls.

First, a buy-back programme implemented by one country can result in spillover effects into another country's fisheries. At the international level, the collective effect of domestic buy-back programmes will depend on how they are implemented. If the retired vessels are not re-deployed into other fisheries, then global capacity could fall as well. However, there is a danger that without strict rules and enforcement efforts, vessels will be transferred to another country's fishery and could create over capacity problems there. If the vessel goes to a fishery where there is ineffective management, temporarily solving the capacity problem in a country's fishery may be at the expense of another

country's fishery. In most OECD countries, the program of grants for permanent withdrawal of vessels does not require that vessels be scrapped and allows them to be exported. In the EU, for example, 58% of the total tonnage withdrawn under the EU's program of grants for vessel withdrawal (45 500 GRT) was exported to non-EU countries (EC, 1994).

Second, vessel renewal and modernisation may offset any reductions achieved through decommissioning programmes. In some OECD countries, the removal of old and relatively inefficient vessels through decommissioning was followed by the construction of new, more efficient vessels. In 1997 an estimated USD 206 million, representing 3% of total transfers, was provided for construction and modernisation of older vessels. Experience in the EU shows that a number of countries provided financial support for construction of fishing vessels and vessel modernisation, thus providing scope for further growth in fishing capacity. Despite recognised capacity reductions in terms of tonnage and engine power under the MAGP, the effective fishing capacity of the EU member's vessels may have remained unaltered or actually increased (Lindebo, 1999b). This was particularly a problem during the 1980s where measures used to curb fishing capacity were rendered largely ineffective. The 1990s have seen stricter controls on the granting of aid for renewal and modernisation.

Third, overall the total number of fishing vessels in many OECD countries has decreased through the implementation of buy-back programmes. But the evidence from other capacity indicators is mixed. In some countries, both the total number and tonnage of fishing vessels have been reduced at the same time. However, other countries have reduced the number of fishing vessels and increased GT or *vice versa*. The reductions in the EU's MAGP IV appear to be modest. As shown at Table 2, as of 1 January 2000, two countries (Netherlands, Italy) are required to reduce GT and three countries (France, the Netherlands, and Italy) are required to reduce the total engine power of their fleets. But a number of countries retained the ability to expand their fleets and there appears to be scope for an expansion in total capacity without jeopardising the meeting of MAGP IV's objectives. A recent report by the European Commission on the effects of MAGP IV (EC, 2000) concludes that the objectives of reducing over-capacity have had only modest success because of:

- The very unambitious objectives of the MAGPs themselves.
- The significant increase in the fishing effort due to technological progress.
- The system of weighting the reduction rates according to the proportion of the catch made up of "depletion risk" stocks and "over-fished" stocks; and
- The fact that Member states that opted to reduce fishing effort rather than capacity did not always apply efficient management schemes.

Finally, the effectiveness of this policy in reducing fishing capacity can be undermined when fishers who use buyback programs are allowed to return to the same fishery. For example, the United States' General Accounting Office (GAO) report (GAO, 2000) evaluated the impact of recent buyback programs in three fisheries: New England groundfish, Bering Sea pollock and Washington State salmon. Buybacks in these fisheries account for USD 130 million of the USD 140 million in federal funds authorised since 1995 for these types of program. The GAO indicated that the effectiveness of buyback programs in reducing fishing capacity has been severely eroded because fishers have been allowed to return to the same fishery as they were paid to leave or have been allowed to move to other over-fished fisheries. In some instances, fishers used the money they were paid to remove fishing vessels and buy new boats to fish in the same fishery.

Pressures for structural adjustment are likely to continue in the years ahead as Member countries attempt to reduce fishing pressure on stock. To be effective, the buy-back programmes may be carried out over the longer-term and be evaluated periodically to determine their effectiveness. The programmes should also be accompanied by strict rules to prevent the entry of new capacity or another fishery abroad and the expansion of effort by existing vessels in combination with measures such as job retraining schemes. In addition, more strict enforcement is required to prevent building or modernisation from contributing to over-capacity.

Industry funded adjustment

Some OECD countries have implemented capacity adjustment programmes that are funded by the fishing industry. Examples of industry funded capacity adjustment can be found in Iceland, Japan and the United States of America.

In Iceland, the Development Fund financed loans for buy-back programmes of vessels. After 1993, the cessation premiums were paid up to a maximum of 45% of the vessel's hull insurance value. In the 1992-1996 period, vessels accounting for 9 995 GRT (equivalent to 7.6% of the 1996 fleet tonnage) were removed from the fleet under these funds (OECD, 2000*b*).

Japan used industry funds in its vessel reduction programmes. For example, in the Akita Prefecture (1986 and 1992-1993), Mie Prefecture (1991), and Shimane Prefecture (1990-1991), vessel reduction programmes were implemented to restore and improve the fish stocks to sustainable level. These programmes were funded by industry (*e.g.* fisheries co-operative associations, Federation of Fisheries Co-operative Association, remaining fishers) in combination with funds from the central government, prefecture government, and municipal offices (OECD, 2000*b*).

In the future, the USA plans to fund the "Fishing Capacity Reduction Program" of the Magnuson-Stevens Act (Section 312) through a combination of federal funds and industry fees. Industry fee systems will be developed and approved by Regional Fishery Management Councils. These fees will not exceed 5% of the ex-vessel value of the fish harvested from the fishery for which the capacity reduction program is established. As of April 2000, no capacity reduction plans have gone through the full Magnuson-Act process. Nevertheless, in late 1998 Congress directly enacted an industry-funded capacity reduction plan for the Alaska groundfish fleet.

Adjustment programmes supported, partially or totally, by industry funds can benefit both those that are leaving the fishery and those that stay. While those that leave the fishery receive funds for doing so, those that stay are likely to benefit from reduced competition for the resources. As with other buyback programmes, the remaining fishers can increase their effort in order to utilise a larger share of the quota, leading to a similar level of pressure on stocks before adjustment programmes are implemented. The positive aspects of industry funded approaches are their effects on the incentive structure of fisheries when they request adjustment assistance, and the reduced costs to taxpayers.

b) Active fisheries management policies that seek capacity self adjustment

Capacity needs to be regulated to ensure the sustainable use of fish stocks. While most of the fisheries management measures are expected to provide conservation benefits, no single tool (as summarised in Table 7) will simultaneously constrain all the different components of fishing effort and catchability.

Table 7. Contribution to limitation of fishing effort by management tools

Management tool	Contribution to limitation of fishing effort					Contribution to limitation of catchability		
	No. of vessels	Vessel power	Vessel size	Gear units	Fishing time	Technology	Times fished	Places fished
TAC	–	–	–	–	Indirect	–	–	–
IQs/ITOs	Indirect	Indirect	Indirect	Indirect	Indirect	–	–	–
licence limitation	Direct	Indirect	Indirect	Indirect	–	–	–	–
Gear/vessel restrictions	–	Direct	Direct	Direct	–	Direct	–	–
Size/sex selectivity	–	–	–	–	Direct	Direct	–	–
Closed season/area	–	–	–	–	–	–	Direct	Direct
Buy-back programme	Direct	–	–	–	–	–	–	–

Source: Adapted from Lutachman, I. and Hoggarth, D.D (1999).

Therefore, countries may develop models based upon their own national experience and character, legal and social traditions, and economic and environmental conditions. The choice of solutions depends on the acceptability and feasibility of property rights systems, and the ecological, cultural and technical circumstances of individual fisheries. The ingenuity of fishers and the continued advances of technology can usually defeat most regulatory attempts to control fishing effort and impacts. The solution may accordingly come from motivating fishers and the industry to assume more responsibility for the conservation of the resource on which they are dependent.

In particular, rights-based management frameworks and co-management (community based management) have in some cases been used to effectively control fishing capacity. Furthermore, OECD (1997) argued that in many instances traditional management measures alone have had little success in conserving fish stocks, and indicated that promising avenues to deal with fisheries problems included rights-based management approaches. Rights-based management frameworks result in improved stock conservation, reduction in overcapacity and race-to-fish, and hence an overall improved economic performance. However, the systems require governments to establish and maintain a legal framework for the rights and may increase administrative costs. Furthermore, the implementation of such systems may cause structural adjustment consequences, including lower employment opportunities, and distributional conflicts (OECD, 1997).

Individual Quotas (IQs) or Individual Transferable Quotas (ITQs)

IQs give an individual producer, or fishing unit, the right to catch a specified quantity and species of fish in a specific location during a specific period of time (OECD, 1997). ITQs are transferable IQs. IQs are advocated as ways to rationalise over-capitalised and over-exploited fisheries to solve some of the problems associated with other management methods. They create an incentive for the voluntary reduction in excess capacity by vessel owners by shifting the focus away from increasing catches and towards reducing costs as the means to improve income (FAO, 1998a).

IQ systems have been adopted in at least 10 countries and about 60 fisheries are managed with IQs or ITQs (OECD, 1997). These fisheries are managed in combination with other management measures (*e.g.* minimum mesh sizes). IQs are expected to be an effective means of mitigating the “race for fish” that can occur under other management measures. The development of excess harvesting capacity is discouraged because fishers have exclusive rights to a share of the catch. Individual producers or fishing units have an incentive to plan their fishing activities as a long-term sustainable strategy based on a permanent share of the catch. The OECD study (1997) showed the elimination of a pre-existing “race for fish” in twelve fisheries.

ITQs are expected to have many of the same consequences as IQs. In addition, the transferability of ITQs enables the most efficient operators to increase their shares by trading, and allows the less efficient fishers to leave the fishery. In the Canadian halibut fishery, for example, the number of vessels was not reduced under IQs but was reduced from 435 to 353 under ITQs. IQs or ITQs are expected to reduce employment and improve producer's profitability because of the inherent incentive in an individual quota programme to reduce the number of vessels. However, the crew remaining in the fishery will probably have more full-time employment opportunities and more stable income. OECD (1997) showed that producer's profitability or cost-effectiveness was improved in twenty-three IQ and ITQ fisheries.

Australia, Canada, Iceland, Netherlands, New Zealand, Norway and the United States of America have experiences in the use of IQ or ITQs. In the Icelandic herring fishery, the ITQ system reduced the total fleet capacity by 85% while at the same time increasing herring catches. In the case of the US south Atlantic wreckfish fishery, ITQs reduced the number of shareholders by 37% within a little more than a year (Gauvin, 1994). Canada has also seen a reduction in fishing capacity where IQs and Enterprise Allocations (EA) were introduced. In Australia, an ITQ system was introduced for one species in 1989 and for a further 15 species in 1992. Since then, the fleet size has decreased as fishers, faced with lower catch levels, amalgamated their quotas, and surplus quotas were removed from the fishery. This had a significant positive effect on the economic performance of the fishery as well as the long-term sustainability of the stock. For

most sectors of the fleet, rates of return to capital were high or higher following the introduction of ITQs than in previous years (Lutchman and Daniel, 1999). The introduction of ITQs has also reduced fishing capacity in Australia's Federal fisheries. Tradability enabled efficient fishing operators to expand their activities and buy out less efficient operators, thereby increasing overall efficiency.

Unit quota system

In 1984 Norway introduced a unit quota system in some parts of the ocean-going fleet. The system is used to encourage vessel group members to adjust their fishing capacity to the available resources and also to secure higher profitability. The system allows the owner of two fishing vessels to transfer the quota of one vessel to another vessel, following a certain quota allocation to other vessels in the group. The owner of the vessel then controls more than one quota for a set period of time (at the moment, 13 years). From 2000 the unit quota system will be expanded to cover fishing vessels greater than 28 metres in length that harvest groundfish species with conventional gear. To reduce the possibility of fishing capacity being exported to other countries, the unit quota system will be changed so that vessel owners will be rewarded for scrapping, rather than exporting, the vessels they acquire. The unit quota system is a dynamic way of adjusting the capacity and securing a renewal in certain homogenous vessel groups. It is not considered suitable for vessel groups that are less homogenous.

Community based fisheries management and co-management

Community based management and co-management may have different connotations among OECD countries. Community-based management is a form of decentralised management responsibility to those local communities and people directly affected by management and quota allocation while co-management is a sharing of management and science responsibilities between the government and the industry. Under community based management systems, fishing communities manage capacity and effort by defining the qualifications for membership/participation in the community (*e.g.* co-operative), and can also bring effective sanctions to bear against the violation of locally agreed rules. Many OECD countries have implemented community based management and co-management approaches. In particular, Japan, the Netherlands, and United States of America have implemented policies involving fisheries community based management and co-management under diverse conditions and with varying degrees of success.

In Japan all fishers in coastal communities belong to fishers' co-operative associations that make decisions on fisheries management (Shima, 1987). Not even local fisheries managers can change these decisions. Fishers' co-operative associations are multi-purpose co-operatives and may be involved in a number of activities: allocation of fishing licences; consultation with regard to offshore fishing activities; education and training in fishing methods; and compensation claims for developments affecting fishing activities.

The Dutch co-management systems are nested within the Common Fishery Policy of the EU. The Dutch co-management system applies to the cutter fleet that fishes for sole, plaice, shrimp, herring, cod and whiting. The co-management system was introduced in early 1993. The responsibility for managing individual quotas was transferred to eight management groups. Licences and quotas are allocated to the individual fishing groups. The management groups design fishing plans, implement and monitor regulations, and arrange arbitration when needed. A board administers the management groups, consisting of fishers from the same producer organisation and an independent chairman. The principal task of each group is to control the quota of its members in a flexible manner. Members of the group must sign an agreement to support and comply with regulations and plans, sell catch at specified auctions, and make available vessel logbooks (OECD, 1997).

In the United States of America, the Western Alaska Community Development Quota (CDQ) Program provides a unique harvesting privilege to 57 rural communities on the Bering Sea coast of Alaska. The total population of these communities is about 21 000 persons of which about 77% are Alaska natives. The CDQ Program allocates 7.5% of the groundfish, prohibited species (bycatch in the groundfish fisheries), crab, and halibut quotas to eligible western Alaska communities. The objective of

the CDQ Program is to provide the means for starting or supporting commercial seafood activities in western Alaska that will result in ongoing, regionally based commercial seafood or related businesses. The CDQ communities may harvest their allocations directly, or they may contract with vessels and processors to catch and process CDQ in exchange for direct royalty payments and employment opportunities for community residents. The estimated ex-vessel value of CDQ harvests is about USD 50 million per year in 1998-1999.

VIII. Summary and future work

There are some difficulties in conducting evaluations on how management instruments affect fishing capacity. Often the complexity of most fisheries makes it difficult to disentangle the effects of a single measure in situations where several management measures are used in combination. The complexity of fisheries, limited data, poorly defined objectives, conflicting management tools, and limited monitoring and enforcement are reasons for a mixed outcome on fishing capacity among countries.

The total number of fishing vessels and fishers has fallen in many OECD countries. For OECD countries for which data are available (EU member states, Australia, Iceland, Japan, Korea, and Norway), the number of fishing vessels decreased by 11% and the Gross Tonnage (GT) decreased by 16% between 1989 to 1999. The total number of fishers has also decreased: by 14% between 1990 and 1997 (based on information from some EU member states, Australia, Canada, Hungary, Iceland, Japan, Korea, Mexico, New Zealand, Norway, Poland, Switzerland, and Turkey).

The term "*fishing capacity*" is widely used in OECD countries, but there is no internationally agreed or standardised definition. The absence of a standardised and agreed measurement of fishing capacity can bring about confusion and miscalculation as a result of a variety of methods for measuring fishing capacity. Therefore, a standard approach for defining and measuring fishing capacity is required. Such an approach should be defined clearly and simply so that every fishing country can easily use it.

Principal fishery management instruments employed in OECD countries include a variety of input controls (*e.g.* limited licence, gear and vessel restriction), output controls (*e.g.* TACs, IQs, ITQs), technical measures (*e.g.* seasonal or area closures), buy-back programmes, and co-management. Most of the fisheries management measures are expected to provide conservation benefits. However, no single tool will simultaneously constrain all the different components of fishing effort and capacity. Therefore, countries may decide to make plans for how to reduce capacity based upon their own national experience and character, legal and social traditions, and economic and environmental conditions as well as observing the FAO International Plan of Action. The choice of solution depends on the acceptability by stakeholders of the management framework, and on the biological, ecological, cultural and technical characteristics of individual fisheries.

National, regional and international action is required to advance towards reducing fishing capacity. Because many domestic fish stocks migrate beyond country jurisdiction, one country's effort to conserve fish stocks are not effective without co-operation with other countries having jurisdiction over waters where the fish stock migrate. There are several approaches to achieve this. For some countries the FAO's voluntary International Plan of Action (IPA) could be a framework for action. The IPA aims to achieve preferably by 2003, but not later than 2005, the equitable and transparent management of fishing capacity. Under the IPA fishing countries are urged to develop national plans for the management of fishing capacity by the end of 2002 and, if required, reduce fishing capacity in order to balance fishing capacity with available resources. In order to implement the IPA effectively and successfully achieve its objective for fishing capacity, countries are encouraged to participate in the IPA work and to monitor their fishing activities. The management of fishing capacity could be implemented in co-operation with other fishing countries by exchanging information and improving data collection through international fisheries organisations. Such a comprehensive and collaborative approach will be important due to the mobility of fishing capacity and the shared nature of many high seas, straddling and highly migratory fish stocks.

NOTES

1. An FAO Technical Working Group held in the USA (April 1998) discussed the management of fishing capacity. This work and the follow-up meetings held in July and October 1998 led to the elaboration and adoption by the FAO in February 1999 of the IPA for the Management of Fishing Capacity. To facilitate the implementation of the IPA, FAO organised and held a technical meeting on the Measurement of Fishing Capacity in Mexico in November 1999.
2. That is, $OC (\%) = (Y_c - Y_T) / Y_T \times 100$, where Y_c is the current potential yield or catch (at or below the MSY level) and Y_T is the target yield or catch. Or $OC = Q / TAC_m$ where Q is the potential catch by the current fleet and TAC_m is the allowable catch given current stock conditions, set to allow for factors such as fluctuations in stocks (FAO, 1998b).
3. In February 1992 fisheries were included in the structural funds (Delors II Package and Council of Edinbourg) which led to the emergence of the FIFG; this was created by Council Regulation (EC) N 2080/93 of 20 July 1993.

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BACKGROUND INFORMATION ANNEX

QUESTIONNAIRE FOR REPORTING ON FISHING CAPACITY IN OECD COUNTRIES

To allow the Secretariat to prepare a special topic on fishing capacity, countries are asked to provide the following information.

1. Basic Statistics

Countries are asked to provide information, relating to 1998 and 1999, on the following elements of fishing capacity:

- *Capital*. Fishing fleet: total number of vessels by GT/GRT category, total kilowatts of engine power by GT/GRT category, total value of fishing fleet, total value of licences or quota.
- *Labour*. The number of fishers, the age structure, educational level, full-time or part-time.

Respondents are asked to provide additional information on:

- The flexibility of capital and labour to move between fisheries, and from inactive to active status.
- The rate of uptake of new technology by capital and labour.

Finally, countries are encouraged to comment on the information that they do not collect, but that they consider would be useful in improving their understanding of the state and evolution of capacity in their fisheries.

2. Definition of fishing capacity

Countries are asked to submit information on how they define fishing capacity. Information should be provided on how such a definition allows for the dynamic nature of fishing capacity (*e.g.* technological change and factor input substitution possibilities). If fishing capacity is not defined, Member countries are invited to provide a discussion on why they consider a definition to be unnecessary within their management framework. Where appropriate, respondents are asked to provide the definition they use for “excess capacity”.

3. Policies to manage fishing capacity

This section should provide information on policies that are directed at the management of fishing capacity. Useful material would include information on the targets used to reduce or increase capacity (*e.g.* Percentage change in Gross Tonnage), the method of implementation and any government programmes and funds expended in support of the process.

Countries are asked to provide information on whether capacity management tends to be used from time to time in response to problems in particular fisheries, or whether it represents part of a comprehensive plan for the sector that extends over a longer time period. A description of how potential negative spillover effects into other fisheries and jurisdictions are avoided should also be included.

4. Evaluation of impacts of capacity management policies

Countries are requested to provide an indication of the policy objectives associated with capacity management plans (*e.g.* improved stock health, and improved economic performance). Member countries should also explain how the performance of the policy relative to its objectives is evaluated. Countries are asked to comment on the effectiveness of capacity management policies in meeting their stated objectives. In the absence any formal monitoring process, countries can provide an assessment of any changes in fishery performance in biological, economic and social terms.

5. Impacts of other policies on capacity

Other government policies also affect capacity in the fisheries (*e.g.* choice of management instruments, management decisions, and government financial transfers). Member countries are asked to provide information on the role of these policies in contributing to changes in fishing capacity. Details should be provided on how they have attempted to ensure consistency between these policies and capacity management policies.

6. Implementing the FAO Plan of Action

Countries are requested to provide information on steps taken or planned, if any, to implement the FAO International Plan of Action on the Management of Fishing Capacity (*e.g.* new policy proposals for capacity management, increased monitoring of capacity). Member countries will be aware that the Plan of Action was adopted by the 23rd Session of the FAO Committee for Fisheries on 15-19 February 1999.

7. Voluntary Case Study Contributions

Respondents are invited to submit case study contributions that explore specific issues related to management of capacity. Such case study submissions are considered voluntary and are not part of the minimum reporting requirements for this special topic study.

COUNTRY NOTES

AUSTRALIA

Summary

The gross value of Australian fisheries production increased by an estimated 8% to AUD 2 04 billion in 1998-1999. This is largely attributed to a AUD 95 million (75%) increase in the value of tuna production, a AUD 28 million (7%) increase in fish production (other than tuna), a AUD 25 million (6%) and a AUD 32 million (8%) increase in production of prawn and rock lobster production. Commonwealth managed fisheries accounted for AUD 408 million of fisheries production, while State wild-capture fisheries accounted for AUD 1 077 million. Aquaculture continues to grow in importance to the Australian fisheries industry, accounting for approximately 30%, or AUD 602 million, of the gross value of fisheries production in 1998-1999.

The long-term status of Australian fisheries has remained steady since 1992. Several key species which were overfished in the 1970s and 1980s are showing slight signs of recovery. Further research is still needed to accurately determine the status of many Australian fisheries.

Australia introduced several environmental policies during 1998 and 1999. The introduction of Australia's Oceans Policy and the *Environmental Protection and Biodiversity Conservation Act 1999* will have implications for environmental standards of Australian fisheries, especially those producing for export. A number of Australian fisheries are involved in the activities of the Marine Stewardship Council (MSC), an independent international body set up to promote sustainable and responsible fisheries and fisheries products worldwide. The Western Australian Rock Lobster fishery was the first seafood product to be certified by the MSC. New regulations have been introduced covering incidental catch of both bird and marine species. Two new Marine Protected Areas were founded in 1999, and planning has commenced for another three.

Legal and institutional framework

Management of Australia's fisheries resources is a complex mix of Federal and State/Territory responsibilities. Traditionally, State and Territory governments have managed out to three nautical miles (nm) and the Federal Government has managed from 3 nm out to 200 nm. Through a series of agreements between State and Federal Governments, jurisdiction over species and regions has been progressively amended in an attempt to improve the management of Australia's fisheries resources.

Arrangements between the Commonwealth and States to establish agreed fisheries jurisdictional arrangements (otherwise known as Offshore Constitutional Settlement – OCS arrangements) have been in place for a number of years. In general terms, States have jurisdiction over localised, inshore fisheries, with the Commonwealth having jurisdiction over offshore fisheries or fisheries extending to waters adjacent to more than one State. OCS arrangements are utilised to provide a more efficient and cost effective management of the fishery. OCS arrangements and associated Memoranda of Understanding have been agreed between the Commonwealth, Queensland, Western Australia, the Northern Territory Tasmania, South Australia and Victoria for specific fisheries.

The Australian Fisheries Management Authority (AFMA) manages fisheries under Federal jurisdiction in accordance with the provisions of the *Fisheries Management Act 1991*. Principal management instruments include a variety of input controls (restrictions on fishing permit numbers, vessel size, gear effort) and, increasingly, output controls in the form of Individual Transferable Quotas (ITQs). By the end

of 1999, ITQs were in place in the South East Trawl Fishery, South East Non-Trawl Fishery and the Southern Bluefin Tuna Fishery, with new output controls being developed for the Bass Strait Central Zone Scallop Fishery and the Southern Shark Fishery.

Australia permits limited foreign access to some Australian waters, where a genuine tangible benefit to Australia can be demonstrated. Australia also permits foreign ownership of quota.

Capture fisheries

Performance

The gross value of Australian fisheries production increased by an estimated 8% (AUD 160 million) to AUD 2.04 billion between 1997-1998 and 1998-1999. The value of production increased for all major products, except for crabs, abalone, scallops and oysters. The gross value of fisheries production increased between 1997-1998 and 1998-1999 in jurisdictions managed by New South Wales, Western Australia, South Australia, Wales, the Northern Territory and the Commonwealth. The value of fisheries production in Victoria, Queensland and Tasmania declined over the same period.

Employment

In 1997-1998, the marine fishing sector of the Australian seafood industry (excluding the processing, wholesale, marketing or retail sectors) directly employed approximately 9 553 people, a 5% increase from the previous years' level. Rock lobster fisheries are the largest employers accounting for 24% of the total employment in the marine fishing sector in 1997-1998 followed by the prawn fishing sector which employed 17%. Queensland and Western Australia were the two largest employers in the marine fishing sector in 1997-1998.

The information on Australia's fleet structure is covered in the special topic section at the end of this country chapter

Status of fish stocks

Table 1 lists the main Commonwealth managed fisheries and summarises the 1999 review of their status, including reported landings and current management methods. Four fisheries were categorised overfished, ten fully fished, one underfished, and 15 uncertain. In the 1998 review of status, four species or fishery/species groups were categorised as overfished, 12 fully fished, one underfished, and 13 uncertain.

Southern bluefin tuna (SBT), school shark, tiger prawn in the Northern Prawn Fishery and eastern gemfish stocks remain overfished. For eastern gemfish, a substantial reduction in catches since 1992 has not resulted in a recovery. SBT and school shark stocks likewise remain of major concern because their recovery is still not assured. Tiger prawns, first categorised as overfished in 1998, retain that classification because the excessive Northern Prawn Fishery effort levels still require adjustment.

The status of some stocks has deteriorated. The Tropical Rock Lobster Fishery previously fully fished is now uncertain, possibly overfished. In the South East Trawl Fishery, some quotas for orange roughy, an important target species, have followed catches down rather than restricting them. For example, the southern zone catch in 1998 was just 26% of the quota. In the Great Australian Bight Trawl Fishery, categorised "uncertain", the catch rate of deepwater flathead fell below the management target level. Fish abundance in one sub-region of the Macquarie Island Fishery, the Aurora Trough, is still high but fell below the precautionary trigger level so fishing is not permitted there.

Other Commonwealth managed fisheries are not encompassed by Table 1. Among them, the sandfish, a species of Torres Strait *bêche-de-mer*, has been overfished and its commercial collection is prohibited. The Bass Strait Central Zone Scallop Fishery stock has declined again, so the fishery has been closed, not having recovered completely from overfishing in the 1980s. There has been an unexpected decline in the North West Slope Trawl Fishery catch rates of scampi.

Table 1. Status and long term potential yield of Commonwealth managed fisheries: 1999

Fishery	Status (1999)	1998 reported landing (t)	Long-term potential yield (t)	Management method
Northern Prawn	Banana prawns fully fished; tiger prawns overfished	8 265	4 000 banana prawns, 4 000 tiger prawns (on average)	Limited entry, gear restrictions and closures
Torres Strait Prawn		2 115	~1 900	Limited entry, gear restrictions and closures
Torres Strait Lobster	Uncertain; possibly overfished	250 (tails; Aust.) 350 (tails; total)	~250 (tails; total)	Limited entry, gear restrictions and closures (Aust.)
Eastern Tuna and Billfish – yellowfin (YFT), bigeye (BET) and swordfish (SWF)	Uncertain; perhaps yellowfin moderately fished, and bigeye and swordfish fully fished	1 844 YFT 1 032 BET 1 773 SWF	Unknown for eastern AFZ	Limited entry, vessel size and area restrictions
Eastern Tuna and Billfish – skipjack	Uncertain; probably underfished	826 (1997-1998)	Higher than current	Limited entry, gear restrictions and closures
South East	Quota species: 1 overfished 6 fully fished 1 underfished 9 uncertain	22 824 (trawl quota) 5 179 (trawl non-quota) 662 (non trawl) 299 (non-trawl non-quota)	Unknown for most species	ITOs; limited entry, gear and area restrictions
Southern Shark	School overfished, declining; gummy fully fished	2 642 (total) 579 (school) 1 523 (gummy)	~950 (school) ~1 800 (gummy)	Limited entry, size limits, gear restrictions and closures
Southern Squid Jig	Uncertain; probably underfished outside Bass Strait	443 (jig) 482 (trawl)	Unknown	Limited entry
Southern Bluefin Tuna	Overfished	5 097 (Aust., 1 997-98) 7 502 (Japan) 332 (NZ) ~6 000 (others)	Considerably higher than current	ITOs (domestic only), no current effective "global" quota
Great Australian Bight Trawl	Uncertain; deepwater flathead catch rate low	1 962 (shelf) 792 (slope)	Unknown	Limited entry
Macquarie Island	Uncertain	n.a.; < 1 500 TAC	Unknown	Limited entry, TAC, closures, bycatch restrictions
Heard Island and McDonald Islands	Fully fished	3 700 plus 500-3 500 illegal foreign (toothfish) 115 (icefish)	3 690 (toothfish) 1 160 short term (icefish)	Limited entry, TACs, closures, bycatch restrictions

n.a.: not available; commercial-in-confidence.

The categorisation as "overfished" does not mean that excessive fishing is continuing and relates to the status of the stock rather than the current amount of fishing. Categorising a species as "fully fished" does not imply excessive levels of activity. It indicates that current catches are sustainable and close to the optimal level. The categorisation "uncertain" is adopted where assessments do not permit precise specification of status. However, for some stocks it may simply mean that little is known.

Source: Bureau of Rural Sciences.

The status of bycatch species in most fisheries is not well researched. In fisheries where a bycatch of threatened or endangered species occurs, bycatch action plans have recently been introduced or are under development.

There has been neither a marked improvement nor a significant deterioration in stock status between 1992 and 1999. The level of uncertainty, however, is a cause for concern and many classifications must be regarded as tentative. For many lower-priority stocks that have received little attention in terms of research priorities, it is important that fisheries management takes a precautionary approach.

Management of commercial fisheries

Changes in management instruments and settings for fisheries under Commonwealth Government jurisdiction are outlined and detailed in Annex I.

Access

No foreign flagged vessels were given permits to fish in the Australian Fishing Zone (AFZ) in 1998 or 1999. However, illegal, unreported and unregulated fishing (IUU) within the AFZ continues to be a problem in some areas. IUU fishing was detected in the sub Antarctic territory of Heard and McDonald Islands and several successful prosecutions were made. Continued IUU fishing occurred in northern Australian waters with many successful apprehensions made.

Management of recreational fisheries

In Australia the responsibility for management of recreational fishing is mainly held by the various States. The Commonwealth does retain a stewardship role through joint Commonwealth and State Ministerial and Standing Committees.

The main forms of management action within Australia's recreational fisheries are:

1. Controls on the types and amount of gear that may be used.
2. The size (minimum and/or maximum), sex and/or number of fish that may landed of a given species.
3. Seasonal and/or area closures.
4. Prohibition on the sale of fish (the sale of fish is the primary distinction between recreational/charter and commercial fishers).

Such restrictions are enforced through fisheries officers in the field and are the subject of extensive education and awareness programs.

While some States of Australia have imposed licensing systems in inland and/or marine waters for recreational fishers, these schemes are simply revenue collection processes for both cost recovery of management and fishery enhancement. The recreational licences do not limit the total number of anglers.

Both State and Commonwealth governments collect data on the catches and spending of recreational fishers through regular broad-scale surveys and the direct observations of fisheries officers in the field.

Aboriginal fisheries

In line with the Torres Strait Treaty, ratified between Australia and Papua New Guinea in 1985, and the *Torres Strait Fisheries Act* 1984, all fisheries in the Torres Strait Protected Zone (TSPZ) are managed to maximise the opportunities for Islander participation and to acknowledge and protect the traditional way of life and livelihood of the indigenous inhabitants of the region. Protection of traditional rights includes the protection of traditional (subsistence) fishing and traditional right of free movement.

In 1998 and 1999, progress was made towards implementing single jurisdiction for all Torres Strait commercial fisheries under the Protected Zone Joint Authority, and facilitating the development of complementary community-based management of dugongs and turtles.

Monitoring and enforcement

Major new programs, regulations or initiatives to assist monitoring and compliance of Commonwealth fisheries in 1998 and 1999 included:

1. Introduction of requirements and technology for Inmarsat C based satellite vessel monitoring systems including 140 vessels in the Northern Prawn Fishery and 70 vessels in the Bass Strait Central Zone Scallop Fishery in 1998.
2. Introduction of requirement and technologies for remote monitoring of catches taken by vessels operating on the South Tasman Rise and the Cascade Plateau in 1998.
3. Developing a risk assessment process to identify major risks for fisheries compliance and the conducting of risk assessments using that process.
4. Catch monitoring requirements and implementation of a catch landing monitoring system in the South East Non-Trawl Fishery in association with new quota management in 1998.

5. Catch monitoring requirements and implementation of a catch landing monitoring system in the Southern Shark Fishery in 1998 in preparation for quota management.
6. Tougher requirements for monitoring catches used in Southern Bluefin Tuna farming operations in South Australia through revised catch disposal records and tow boat forms.
7. A program of Royal Australian Navy, AFMA and civil surveillance patrols to Australia's remote sub-Antarctic resulting in the apprehension and subsequent prosecution of three foreign longliners illegally fishing for Patagonian toothfish in Australian waters in 1997 and 1998. No illegal fishing was detected in 1999.
8. Development of cooperative arrangements, with eastern Antarctic coastal States, to combat illegal fishing in the region.
9. Amendments to the *Fisheries Management Act* 1991 in late 1999, providing Australia with greater powers to deal with illegal, unregulated and unreported fishing, both inside and outside the Australian Fishing Zone. The amendments include greater provisions for forfeiture of vessels, gear and catch and provisions to implement the UN Fish Stocks Agreement.

Multilateral agreements and arrangements

On 23 December 1999, Australia deposited an instrument of ratification for the UN Fish Stocks Agreement. The full title is the *Agreement for the Implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*.

The United Nations Fish Stocks Agreement outlines the rights and obligations of coastal and flag states when exploiting straddling and highly migratory fish stocks. The ratification of this treaty will allow Australia to enforce measures to ensure the sustainable management of several important straddling stocks through regional fishing agreements.

Aquaculture

Policy changes

The day to day management and regulation of aquaculture is primarily a State responsibility as the operations fall within State jurisdiction. There is no aquaculture activity in Commonwealth waters. However, the Commonwealth does have a role in aquaculture development, especially in the coordination of government policy over national issues such as quarantine, disease outbreak controls, product quality, labelling, trade and taxation. The Commonwealth Government also contributes funding for education and research.

During 1998 and 1999, the Commonwealth Government has become more actively involved in encouraging aquaculture to grow and become an internationally competitive and sustainable industry. In August 1999, a National Aquaculture workshop, "Aquaculture Beyond 2000 – Changing Direction" was held in Canberra. Attending the workshop were Australian government, research and aquaculture industry representatives. The purpose of the workshop was to identify key actions to encourage the development of a multi-billion dollar sustainable aquaculture industry in Australia. At the workshop, the Australian aquaculture industry expressed its commitment to implementation of an Aquaculture Action Agenda to achieve a target of AUD 2.5 billion in annual sales by 2010. Issues identified at the workshop for future consideration included: promoting the industry's importance, value and contribution to the community; markets and marketing; site availability, access, planning and approvals; environmental issues and perceptions; research and development; quality assurance systems and food safety; fish health management; quarantine issues; workforce education and training; attracting investment and entrepreneurs; regional and social development. The Commonwealth Government together with State and Territory Governments and the aquaculture industry are now developing the Aquaculture Action Agenda.

In 1999, Australia implemented a five year National Strategic Plan for Aquatic Animal Health (AQUAPLAN). AQUAPLAN is a comprehensive plan of initiatives ranging from border controls and

import certification through to enhanced veterinary education and improved capacity to manage incursions of exotic diseases. AQUAPLAN was jointly developed by State, Territory and Commonwealth Governments, and private industry sectors. Implementation of AQUAPLAN will build on the aquatic animal health efforts of industry and government to-date and ensure profitable and sustainable development of Australia's fisheries and aquaculture industries.

Production facilities, values and volumes

The value of Australian aquaculture industry continues to grow strongly, increasing by AUD98 million (19%) in 1998-1999. Most of the increase in value is attributed to the rapidly growing tuna sector. Aquaculture now accounts for 30% of the annual value of Australia's fisheries.

In 1998-1999, aquaculture production was 32 080 tonnes valued at AUD 602.1 million. Almost all of this value was derived from four sectors: oysters (pearls and edible), salmon and trout, southern bluefin tuna, and prawns.

The most valuable sectors were pearls, tuna, salmon and trout and edible oysters. The value of tuna nearly doubled in 1998-1999 to AUD 166.7 million.

Employment in the aquaculture sector also grew, by 6% from the previous year in 1997-1998 to reach approximately 3 200 people. New South Wales followed by Tasmania were the largest employers in the aquaculture sector over the same period.

Fisheries and the environment

Australia's Oceans Policy

The Commonwealth Government released *Australia's Oceans Policy* on 23 December 1998. The Policy sets in place the framework for integrated and ecosystem-based planning and management for all of Australia's marine jurisdictions. It includes a vision, policy guidance and a series of goals and principles for a national Oceans Policy. Building on existing effective sectoral and jurisdictional mechanisms, it promotes ecologically sustainable development of ocean resources, ensuring the protection of marine biological diversity and the encouragement of internationally competitive marine industries. At the core of the Oceans Policy is the development of Regional Marine Plans, based on large marine ecosystems, which will be binding on all Commonwealth agencies. The first Regional Marine Plan will be developed for the south-eastern region of Australia's Exclusive Economic Zone.

Environment Protection and Biodiversity Conservation Act 1999.

The Commonwealth Government released the Reform of Commonwealth Environmental Legislation Consultation Paper in March 1998, proposing to simplify environmental legislation through reducing duplication between State and Commonwealth processes, and amalgamating and refining current Commonwealth statutes. This led to the enactment of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in June 1999 which will come into force on 1 July 2000. Under the EPBC Act, Commonwealth fisheries will be subject to strategic environmental assessments. Each fisheries' management arrangement (there are currently approximately 22 Commonwealth fisheries) will be assessed in terms of its environmental performance. The EPBC Act also affords most marine species strict protection against bycatch and provides for the creation of new classes of protected areas, including RAMSAR wetlands.

Fisheries action program

The Fisheries Action Program, which is a component of the Natural Heritage Trust, aims to rebuild Australia's fisheries to more productive and sustainable levels through:

1. Fish habitat restoration and protection.
2. Aquatic pest control.

3. Encouraging community participation in activities to improve fisheries ecosystems.
4. Ensuring sustainable and responsible fishing by commercial and recreational fishers.
5. Raising community awareness.
6. Promoting related research encouraging integrated approaches to fisheries resources management and habitat conservation.

The program will provide some AUD 12.6 million over five years ending 2001-2002 to fund community and government projects.

Threat abatement plan for by-catch of seabirds

On 2 August 1998, the Commonwealth Government released the Threat Abatement Plan (TAP) for the Incidental Catch (or By-catch) of Seabirds during Oceanic Longline Fishing Operations. Preparation of the TAP is required under the *Commonwealth Endangered Species Protection Act 1992*. The primary objective of the plan is to reduce the bycatch of seabirds in longlines through the following:

1. Implementation of mitigation measures to reduce seabird bycatch.
2. Development of new measures.
3. Education.
4. Collection of information upon which to base future decisions. Building upon the TAP, the Commonwealth, in mid-2000, is initiating the negotiation of a regional agreement to conserve seabirds.

National policy on fisheries bycatch

On 14 October 1998, the Commonwealth Government released the *National Policy on Fisheries Bycatch* on behalf of all fisheries ministers as a commitment to address bycatch. The Policy provides a framework under which each jurisdiction can manage bycatch according to its situation in a nationally coherent and consistent manner. A number of activities are being pursued to give effect to the Policy, including the release of a technical report by the Bureau of Resource Sciences on the level of bycatch, adoption of turtle excluder devices in trawl fisheries, and implementation of the Threat Abatement Plan to reduce seabird bycatch.

Shark finning

Concern over the sustainability of shark resources is growing (both domestically and internationally) and there are a number of activities being pursued to address these concerns on both levels. Potential further expansion of the largely undocumented practice of shark finning adds to this concern. In terms of Australia's activity, in 1999 the Commonwealth moved to address the issue of shark finning under the National Bycatch Policy by commissioning a study to assess the extent of the problem. The results of this study (available early 2000) will decide if further action on the part of the Commonwealth is needed. As well, the Commonwealth is preparing a national plan of action for sharks to meet its international undertakings to the Food and Agricultural Organisation (FAO). The results of the shark finning study will contribute to that plan.

International Plan of Action to Combat Illegal, Unregulated and Unreported (IUU) Fishing

At the FAO Committee for Fisheries meeting in Rome on February 1999, Australia took the initiative through the FAO to develop an International Plan of Action to combat illegal, unregulated and unreported (IUU) fishing, including fishing vessels flying flags of convenience. The Department of Agriculture, Fisheries and Forestry – Australia (AFFA) has contributed AUD 200 000 to the international effort to develop this Plan and is providing assistance to the FAO. Australia, jointly with the FAO, will host an international “expert consultation” or workshop in May 2000 to further develop and refine the

Plan. The Plan is expected to integrate a comprehensive suite of measures covering flag state, port state and market state issues.

National Representative System of Marine Protected Areas (NRSMPA)

The development of a National Representative System of Marine Protected Areas (NRSMPA) is a key component of the Oceans Policy. The NRSMPA is a national system of Marine Protected Areas (MPAs) which aims to contain a comprehensive, adequate and representative sample of Australia's marine ecosystems. The NRSMPA consists of MPAs in Commonwealth, State and Territory waters and some associated intertidal areas. The Tasmanian Seamounts Marine Reserve was declared on 19 May 1999 and Macquarie Island Marine Park was declared on 27 October 1999. Significant progress has been made towards the declaration of MPAs in the regions of Lord Howe Island, Cartier Islet and Heard and McDonald Islands.

Marine pests

An outbreak of black striped mussels (*Mytilopsis salleii*) was detected in Darwin harbour in April 1999. All governments and the fishing industry were able to coordinate activity and successfully eradicate the mussel. In response to this incident, the Standing Committees on Conservation and Fisheries and Aquaculture established the National Taskforce on the Prevention and Management of Marine Pest Incursions to propose a two year interim arrangement and outline a general structure for the longer-term national system for combating introduced marine pests.

Convention for the Conservation of Southern Bluefin Tuna (CCSBT) and Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

In December 1998, the Commonwealth Government committed to assess a possible role for the Convention on International Trade in Endangered Species of Wild Fauna and Flora in protecting stocks of Patagonian toothfish and southern bluefin tuna (SBT). This decision was driven by concerns over the status of both SBT and Patagonian toothfish stocks. At this stage, the Commonwealth Government envisages the best way to manage commercial stocks is by improving the efficacy of established management arrangements. Australia is continuing to pursue improved management arrangements through the CCSBT and the CCAMLR, including product and trade certification measures.

The Marine Stewardship Council

The Marine Stewardship Council (MSC) is an independent international body set up, to promote sustainable and responsible fisheries and fishing practices worldwide. The MSC was originally established in 1996 by the World Wide Fund for Nature and Unilever – one of the world's largest buyers of frozen fish.

The MSC has established a broad set of principles and criteria for sustainable fishing, against which independent certification companies may certify fisheries, on a voluntary basis. The principles and criteria were developed through an international round of consultative workshops with fisheries stakeholders. By opting to use the MSC logo, producers of fish products will give consumers the option to buy products that have been derived from sustainable, well managed sources.

On 3 March 2000, product from the Western Rock Lobster fishery in Western Australia was the first seafood product certified by the MSC. The Western Rock Lobster fishery is the most valuable single species fishery in Australia and usually represents about 20% of the total value of Australia's fisheries.

Government financial transfers

Transfer policies

Government financial transfers generally apply across all primary industries and are not specific to fisheries. All businesses in Australia including fishing and fish processing are eligible to claim a

wholesale sales tax rebate for inputs into their business. In 1998, it was decided this exemption would also apply to the Good and Services Tax, which will replace wholesale sales tax in July 2000.

Fishing operations, including aquaculture are eligible for the Diesel fuel rebate scheme. This scheme provides rebates on Commonwealth Government excise on diesel fuel to all primary producers in Australia. The fishing industry is a very small part of this scheme. Australians involved in the fishing industry are also eligible for income averaging. This allows their taxable income to be assessed on their average income from the previous five years to ensure they do not pay excess income tax.

Social assistance

The Commonwealth Government funds the Fisheries Action Program. The key aims of this program is to develop awareness of fishery issues encourage participation in habitat rehabilitation and the enhancement of sustainable resource use. This program is worth AUD 12.2 million over four years, including AUD 2.2 million in 1999.

Structural adjustment

The South East Fishery Adjustment program was concluded in 1998. This was a one-off program to assist with transition of the fishery to ITQs. The program was worth AUD 6.9 million in the 1997-1998 financial year, AUD 4.4 million of which was used to buy out permits.

The Commonwealth Government launched a AUD 2.6 million adjustment program in July 1999 to assist the transition to ITQs in the Southern Shark Fishery which included a permit buy out.

Post harvesting policies and practices

In mid 1997, the Prime Minister established the Food Regulation Review. The Review investigated all food regulatory matters, including seafood, focusing on regulations administered by agricultural and health agencies and involving all levels of government. In August 1998 the Review recommended, that governments concentrate their efforts on improving the efficiency of the current food regulatory system.

The Review Report recommended a model for an integrated, coordinated food regulatory system through a partnership between all levels of government; improved coordination and interaction between government regulatory agencies, the food industry and consumers; and a preventative, risk-based, co-regulatory approach to food safety.

In mid 1999, the National Food Safety Working Group (NSFWG) established the Risk Analysis Team (RAT) and Communications Advisory Team (CAT) to progress mechanisms to facilitate safe food production in the primary industry sector. Both teams reported to the NSFWG in October/November 1999.

The RAT report recommends a process for assessing the adequacy of existing food safety arrangements and assisting sectors to develop and implement appropriate arrangements where they do not already exist. The CAT report recommends a communication strategy to disseminate this and other food safety information relevant to the primary industry sector.

The recommendations of these reports are expected to provide an important contribution to the implementation of the Government's response to the Food Regulation Review Report within the primary industry sector, particularly with respect to ensuring the production of safe food in that sector.

The reports and recommendations outlined above apply to the whole food sector and have implications for the future of fish inspection in Australia for both export and domestic consumption. Both reports will be considered by Agriculture and Fisheries Ministers when they meet early in 2000. None of the recommendations were implemented in 1998 or 1999.

Markets and trade

Markets

The main Australian products consumed on the domestic market were prawns, oysters and fish (excluding tuna).

The major imports of edible fish products for the Australian domestic market were fresh or chilled fillets, canned fish, canned crustaceans and molluscs and fresh or chilled prawns. The major non edible fish products imported for the domestic market were pearls and fish meal.

There was no new research into Australian domestic consumption of fish in 1998 or 1999. Australian Bureau of Statistics figures for 1996-1997 indicate that Australians consume 10.2 kilograms per capita.

Australia's Supermarket to Asia (STA) initiative is aimed to promote the export of all food products, including fisheries products, to Asia. The STA council provides advice and support to Australian food exporters, including information on food market profiles and market access in Asia. The STA initiative aims to increase export opportunities by building demand chains and increase food exports to Asia, which as a region is a major source of fisheries exports.

Trade

Exports

The value of fisheries exports was AUD 1.5 billion in 1998-1999, up 1.5% on the previous year. The Asian economic downturn did not adversely affect the majority of Australian fisheries exports during 1998-1999. With the depreciation of the Australian dollar against the United States' dollar and the Japanese yen during 1998-1999, Australian seafood exports remained competitively priced in key Asian markets. This was important for the high value seafood products such as tuna and rock lobster. The volume of most seafood exports increased, although export unit values declined for a number of products. This resulted in a fall in the value of sales for all major commodities except for tuna, finfish and rock lobster.

Australian exports have mainly been to Japan, China, Chinese Taipei, Hong Kong and the United States, which accounted for 90% of Australian exports in 1998-1999. The dominance of these five markets has remained fairly constant over the past five years, although the relative importance of individual countries has changed. The proportion of exports destined for Japan and Chinese Taipei has declined, while the significance of markets in China, Hong Kong and the United States has increased.

Australian exports of non-edible fisheries products declined by 7% to AUD 288 million in 1998-1999. Pearls dominate this category, accounting for 95% of non-edible exports in 1998-1999.

Imports

The value of fisheries imports was AUD 743 200 in 1998-1999, up 7.3% on the previous year. Imports supply around 60% of all seafood consumed in Australia. Originally, imported seafood products met the demand from those segments of the Australian market that the domestic market could not supply because of resource constraints, but imports have increasingly been competitive in other market segments.

The major sources of seafood products imported into Australia in 1998-1999 were Thailand (32% of total import value) and New Zealand (19%). Nearly 70% of the total fisheries product imports from Thailand comprise prawns and canned fish – Thailand remains the major supplier of prawns to Australia, accounting for 57% by value in 1998-1999. The major imported products from New Zealand are frozen fish fillets and chilled whole fish. Imports of seafood products from the APEC region made up three quarters of the total value of Australian seafood imports.

Outlook

Economic

The prospect of increased economic growth in the Asian economies provides a positive outlook for Australian seafood sales in the medium term. The outlook is tempered by the expected strengthening

of the Australian dollar against the United States dollar and the Japanese yen, which may reduce the competitiveness of Australian exports in key export markets.

Environmental issues will have an increasing influence on both the production and consumption sides of the seafood industry. On the production side, users of Commonwealth fisheries and fish species would need to take into account strict environmental assessment requirements following key developments in domestic environmental and wildlife protection legislation. Fisheries will be assessed against a set of ecological sustainability criteria before fisheries management plans or policies for those fisheries are finalised, or before gaining export approval.

In summary, the Australian fishing and aquaculture industry faces good prospects in the medium term. The gross value of Australian production is forecast to increase by 9% to reach USD 2.2 billion in 1999-2000. It is then projected to increase by 4% in 2000-2001. The key influences on this outcome are continuing prospects for steady market growth in Japan and Hong Kong, domestic constraints on the growth in fisheries production, and the assumed appreciation of the Australian dollar against major currencies.

Sustainability

Most Australian fish stocks appear to be fully exploited at sustainable levels. Several fisheries are overfished including the Northern Prawn Fishery, SBT, eastern gemfish and Southern Shark fishery.

Northern Prawn Fishery tiger prawn stocks should rebuild quickly provided that an appropriate reduction of fishing effort is achieved.

The overfished condition of SBT, eastern gemfish and school shark stocks is not a recent phenomenon. They are slow-growing long-lived species that were fished excessively in the 1970s and 1980s. Perturbations take a long time to "grow through" such populations, so rebuilding is a slow process. The status of the eastern gemfish stock, now closed to targeted fishing, has shown little improvement on its condition in the late 1980s and the school shark stock is still declining. There is uncertainty also as to whether the SBT spawning stock can rebuild under the current catching regime.

In the case of SBT, fishing extends beyond Australia's management "reach". This has posed a difficulty in introducing management measures that will ensure recovery of the stock. The resumption of a quota for gemfish in 1997 was based on reasonable assessments that suggested limited resumption of fishing could be allowed for – one year only – to benefit from one comparatively strong cohort present in the stock. Ongoing decline in the status of school shark is a matter for concern. Restraints intended to permit rebuilding the stock are planned. However, the measures involve a long phase-in period (five years), and will require rigorous monitoring. The overfished classification for school shark could, like that for SBT, remain for some years yet.

Fishing and the environment

The *Environment Protection and Biodiversity Conservation Act* (EPBC Act) 1999 commences operation on 16 July 2000. The Act relates to the protection of the environment and the conservation of biodiversity, and replaces five Commonwealth statutes: *Environment Protection (Impact of Proposals) Act* 1974; *National Parks and Wildlife Conservation Act* 1975; *Whale Protection Act* 1980; *World Heritage Properties Conservation Act* 1983; and the *Endangered Species Protection Act* 1992.

The new Act impacts on fisheries in three main ways:

1. With some exceptions, new activities which have or may have a significant impact on the Commonwealth marine environment – whether that action takes place within waters managed by a State or Territory – will require an approval from the Minister for the Environment and Heritage. This will provide for a general environment protection regime for Commonwealth waters that will parallel state based environmental impact assessment processes.
2. All Commonwealth managed fisheries that do not have management plans in force at the time the Act commences should be strategically assessed in relation to the impacts that an action taken in accordance with a management plan will have or is likely to have on the marine environment. The

Act provides that all Commonwealth managed fisheries must have agreements for strategic assessments concluded within five years of the Act commencing, with two-thirds of fisheries assessed within three years.

3. There will be more stringent requirements relating to interactions between fishing (among other activities) and protected species, under which it is an offence to recklessly kill, injure, take, trade, move or keep a member of a threatened species or community; listed migratory species; cetaceans; or listed marine species

The ecological sustainability of export fisheries will be assessed against guidelines developed specifically for this task. A set of guidelines, based upon the Marine Stewardship Council's principles, has been developed in consultation with stakeholders, including the fishing industry and fisheries agencies. The main role of the guidelines is to act as reference points for assessment of the fisheries, agreement on the precautionary management approach to be implemented, and subsequent export approval.

Future amendments to the EPBC Act will provide for exemption from export regulation on a species by species basis, where the species are demonstrably harvested in accordance with sustainable and ecologically-based management arrangements. If this is not possible, exports of fish species would still be permitted where a precautionary management approach is used, subject to any specific conditions that may be placed on the management regime.

Special topic: Fishing Capacity

Basic statistics

Table 3 outlines the Australian fishing fleet by number of vessels and tonnage for the last three years. Apart from the general employment data provided in Table 2, no other employment details are available.

Flexibility of capital and labour

In the management of Australia's Federal fisheries, AFMA recognises that the provision of secure long term access rights through the allocation of tradeable Statutory Fishing Rights is a key element in pursuing ecologically sustainable development and economic efficiency. Such tradeability enables efficient fishing operators to expand their activities and buyout less efficient operators thereby increasing overall efficiency. There is therefore the preference for management tools which allow market forces to operate, that is, management tools which allow a high degree of flexibility of capital and labour within fisheries. Generally, this means introducing individual transferable quotas (ITQs) unless it can be demonstrated that alternative management measures are superior for a particular fishery. In some cases, alternative management measures may not be as effective in terms of overall economic efficiency but are preferred for various other reasons including cost-effectiveness and sustainability concerns.

Table 2. **Employment in the Australian fishing and aquaculture industry**

Sector	Employment (September 1998) ¹	% Total
Rock lobster	2 303	18.1
Prawn fishing	1 638	12.9
Finfish trawling	1 247	9.8
Line fishing	903	7.1
Other marine fishing	3 462	27.2
Total (capture fisheries)	9 553	75.0
Aquaculture	3 179	25.0
Total	12 732	100.0

1. Does not include processing and wholesaling.

Source: ABARE Australian Fisheries Statistics 1999.

Table 3. Number and weight of Australian fishing vessels by size class for 1997-1999

Interval size (tonnes)	1997		1998			1999		
	Numbers	Weight (tonnes)	Numbers	KiloWatt	Weight (tonnes)	Numbers	KiloWatt	Weight (tonnes)
0 *	117	0	109	22 581	0	87	23 775	0
0.1-24.9	357	4 505	323	45 568	3 999	219	40 943	2 896
25-49.9	313	11 035	295	52 117	10 336	261	53 374	9 212
50-99.9	189	12 591	183	38 621	12 049	179	41 970	12 094
100-149.9	71	8 745	77	21 305	9 505	81	25 963	9 876
150-249.9	64	12 165	69	25 579	13 185	85	32 596	15 827
250-499.9	13	4 470	10	5 714	3 591	13	7 157	4 509
500-999.9	5	3 261	8	5 540	5 370	12	10 420	7 936
1 000-1999.9	0	0	1	3 134	1 696	3	7 086	5 189
2 000+	2	5 221	3	9 541	7 951	4	13 071	10 434

* No data available on tonnage for these vessels.

Source: Australian Fisheries Management Authority.

Rate of uptake of new technology by capital and labour

Australia's fishing industry is highly capital intensive and features rapid uptake of new technology, particularly in the higher value fisheries. State-of-the-art fish finding and navigation equipment, for example Global Positioning and Vessel Monitoring Systems, are on board many of the commercial vessels in Commonwealth managed fisheries.

Information not collected

Australia would benefit from collecting a range of information on capital and labour that is not currently being collected. Regular collection of further information on fleet structure, total engine capacity, fleet and quota value, on board technology, and the size and nature of the industry workforce, would assist in monitoring fishing capacity over time as well as evaluating the effectiveness of management tools in addressing over capacity.

Definition of fishing capacity and excess capacity

In line with AFMA's guiding policy fishing capacity is defined:

"... the amount of fishing effort that a fishing boat, or fleet of fishing boats, could exert if fully utilised, that is, if vessels were not constrained by restrictive management measures."

Within this definition, AFMA recognises the dynamic nature of fishing effort and hence fishing capacity through factors such as technological creep. Where possible and practical, there are moves to output control management where market forces determine fishing capacity. In this way, individual operators make commercial investment decisions based on their share of the TAC and individual cost structures.

Policies to manage fishing capacity

Key policies employed in Australia's Commonwealth fisheries to manage fishing capacity are:

1. The use of limited entry.
2. Where feasible, the implementation of ITQs or a similar form of output control supported by complementary input controls such as seasonal or area closures, as required.
3. Where input controls are the preferred approach management focus is moving away from limits on the size or capacity of boats, engines or holds to limits on gear or units of gear used and to implementing tradeable gear units.
4. In cases where fishing capacity is clearly in excess of that required to balance sustainability and fishing effort in input controlled fisheries, Australia utilises targeted structural adjustment, buyouts, surrender provisions and the like, to achieve necessary reductions in fishing capacity.

The increased use of output controls and transferability provisions is increasingly allowing market forces to regulate fishing capacity in Australia's Commonwealth fisheries. In this way capacity management tends to be part of a comprehensive long term plan to achieve ecologically sustainable development and economically efficient fisheries. (For an example of this, see the attached case study.)

Evaluation of impacts of capacity management policies

The key objectives for capacity management in Australia's Commonwealth fisheries can be derived from three of AFMA's legislative objectives. In essence, capacity management will advance ecologically sustainable development and economically efficient fisheries and not endanger resources of the Australian Fishing Zone through over-exploitation.

Various Commonwealth agencies have a role in evaluating the performance of AFMA's fisheries management in these key areas. The Department of Agriculture, Fisheries and Forestry, the Bureau of Rural Sciences, the Australian Bureau of Agricultural and Resource Economics and individual Fishery Assessment Groups in each of the major Commonwealth fisheries, all report on various aspects of AFMA's performance against stated ESD or economic efficiency objectives. Each year, AFMA formally reports performance against its legislative objectives in its Annual Report. As a key task in 2000, AFMA is looking to improve the rigour of criteria and measures for performance against these key objectives.

Impacts of other policies on capacity

Fishing capacity is treated as part of the broader management framework for Commonwealth fisheries. Policies underpinning the development of management plans for major fisheries, AFMA's increased use of output control management, transferability and market-based adjustment, all have implications for fishing capacity. To help achieve consistency between various policies AFMA relies strongly on its established processes and partnership approach through which a range of stakeholders have key input into the development of management arrangements, management plans, policies and decisions.

Implementing the FAO plan of action

All of the structural changes outlined in the government financial transfers section are designed to reduce Australia's fishing capacity to ecologically sustainable levels. The introduction of output controls such as ITQ's into several major fisheries has, through market forces, reduced fishing capacity in these fisheries. There has been a reduction of fishing capacity in the South East Trawl Fishery and the South East Non Trawl Fishery detailed in a case study below.

Australia has also implemented a threat abatement program to prevent the capture of sea birds.

Voluntary case study contribution

The following case study provides a key example of how AFMA is using management instruments such as ITQs, limited entry, market forces and complementary input controls to pursue management objectives including necessary reductions in fishing capacity.

Fishing capacity reduction in the South East non-trawl fishery

The South East Non-trawl Fishery (SENTF) is one of two fisheries which supply the majority of fresh fish to the populated south east region of Australia, including Sydney and Melbourne. The other fishery, the South East Trawl Fishery (SETF), is a demersal trawl fishery managed by a system of limited entry, trawl gear controls and TACs and ITQs for 16 fish species. ITQ management was introduced in the SETF in 1992. The two fisheries are situated in largely the same geographic location in waters adjacent to New South Wales, Victoria, Tasmania and South Australia.

The SENTF covers all fishing methods other than trawling including dropline, demersal longline, demersal gillnet and fish traps. This fishery has moved relatively rapidly from very few controls on

fishing capacity in the late 1980s to a rigorous ITQ system which mirrors that in place in the trawl fishery, and has had a correspondingly marked effect on fishing capacity. The speed of these changes reflects the hard lessons learned from introducing quota management to a number of other Australian fisheries, including the SETF.

A Summary of the south east non-trawl fishery management history

- Pre-1992 Under the now defunct *Fisheries Act 1952*, 2 500 Commonwealth Fishing Boat Licence holders could take demersal scalefish in unlimited amounts by any fishing method other than trawl and demersal gillnet, anywhere around the Australian coast. Another 160 shark fishers could use demersal gillnets to take unlimited quantities of scalefish in waters adjacent to south east Australia. As many as 1 500 State licence holders could also potentially take demersal fish using non-trawl methods in State waters (waters within three nautical miles of the Australian coastline).
- 1993 Under the *Fisheries Management Act 1991*, the Australian Fisheries Management Authority (AFMA) granted 550 Commonwealth Fishing Permits to allow the take of demersal fish in unlimited amounts by any fishing method other than trawl in the area of what is now the SENTF. AFMA also introduced a range of gear controls on non-trawl methods. The 1 500 State licence holders were still able to take demersal fish within three nautical miles of the Australian coastline.
- 1996 The Commonwealth and relevant State governments signed agreements which moved jurisdiction over SENTF species solely to the Commonwealth. AFMA applied entry (qualifying) criteria for continued access to the fishery and subsequently cut the number of Commonwealth Fishing Permits to 155. This included any previously State licenced operators who had to meet the same criteria in order to gain a Commonwealth permit under the revised jurisdictional arrangements. No catch limits were applied at this time, however additional gear controls were applied.
- 1998 AFMA introduced an ITQ system and the 155 South East Non-Trawl Fishery Permit holders were allocated individual quotas for three key fish species in accordance with an allocation formula.
- 1999 Gear controls were reviewed and largely removed, except where necessary for ESD purposes (noting that target species are provided a level of protection by the TACs).
- 2000 Ongoing trading in quota lowered the number of active operators in the SENTF to somewhat less than 50 operators – a greatly reduced capacity than pre-1992.

Annex: Management changes in Australian fisheries in 1998-1999

Fishery	Management instruments	Changes in management instruments and settings	Policy changes
Northern Prawn Fishery	Input controls including limited entry, seasonal and area closures, gear restrictions and operational controls to contain fishing effort.	<p>Long term structural change (Amendment to Management Plan) initiated in response to effort creep.</p> <p>Vessel Monitoring System introduced in 1998.</p> <p>A range of spatial and temporal closures including closure of fishing season three weeks early in 1998 and two weeks early for each season in 1999.</p>	
South East Trawl Fishery	Combination of input and output controls, including TACs and ITQs for 16 species, limited entry and mesh size and area restrictions.	<p>Variations to TACs included:</p> <ul style="list-style-type: none"> • school whiting – decreased from 2 000 tonnes in 1998 to 1 500 tonnes in 1999; • spotted warehou – increased from 2 500 tonnes in 1997 to 3 500 tonnes in 1998 to 4 000 tonnes in 1999; • Southern Zone orange roughy – decreased from 1 000 tonnes in 1998 to 700 tonnes in 1999; • eastern gemfish-nil TAC continued with 300 tonne bycatch provision in 1998 and 250 tonne bycatch provision in 1999. • orange roughy on the Cascade Plateau – increased from 1 600 tonnes in 1998 to 1 645 tonnes in 1999. • a 500 tonne trigger amount was set in 1998 and 1999 for orange roughy catches on the section of the South Tasman Rise inside the Australian Fishing Zone. <p>Global TACs for blue eye trevalla (630 tonnes in 1998 and 1999), ling (2 200 tonnes in 1998 and 2 400 in 1999) and blue warehou (2 000 tonnes in 1998 and 1 750 tonnes in 1999) were set to include South East Trawl and Non-Trawl Fisheries in 1998 and 1999. Cross-sector leasing of ITQs between these Fisheries was introduced for these three species in 1998-1999. Statutory Management Plan determined in 1998 which commenced the process of granting long term access through Statutory Fishing Rights</p> <p>27 Fishing Permits were surrendered under an Adjustment scheme and financial assistance provided to 17 operators in 1998.</p>	
Southern Bluefin Tuna Fishery	Output controls based on a TAC and ITQs for the domestic fishery consistent with the international management arrangements established by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT).	<p>New catch disposal records were introduced into the fishery; one specifically designed for the growing needs of farm operations.</p> <p>Farm monitoring procedures were reviewed and several requirements concerning seas farming were passed into legislation.</p> <p>All vessels fishing south of 30 S are required to use tori-poles to reduce the incidental catch of sea birds.</p>	A Threat Abatement Plan to reduce the bycatch of seabirds during Oceanic longlining was introduced in 1998. A pilot observer program to monitor the incidental catch of sea birds within the AFZ was introduced.

Annex: Management changes in Australian fisheries in 1998-1999 (cont.)

Fishery	Management instruments	Changes in management instruments and settings	Policy changes
Bass Strait Central Zone Scallop Fishery	Traditionally managed through combination of input (limited entry, size limits, seasonal and area closures) and output controls.	Informal quota scheme continued through a system of bag limits in 1998. ITQs were accepted as preferred management tool with continuation of some input controls such as minimum size. A Vessel Monitoring System was introduced in 1998. The Fishery was not opened in 1999 to allow for stock rebuilding.	
Eastern Tuna and Billfish Fishery	Input controls, including limiting entry, zoning, boat size restrictions, bycatch provisions and gear restrictions.	Agreement in 1998 to introduce fully transferable gear unit Statutory Fishing Rights, remove existing zones and boat size restrictions under a Management Plan for the Fishery. Maximum size limit for boats in the Historic Zone increased from 25 m to 32.67 m LOA in 1998.	
Torres Strait Fisheries	Under the <i>Torres Strait Treaty</i> with Papua New Guinea, the Commonwealth jointly manages commercial and traditional fishing with Queensland. In accordance with the Treaty there are no limits on the number of Islanders participating in commercial or traditional fishing. The taking of dugong and turtle is reserved for traditional purposes. Non-Islander participation is strictly limited by controls on number of licences and effort.	Fishing effort capped in the prawn fishery through further reduction in the number of prawn licences and transferability of fishing access days in 1998.	Single jurisdiction management under the Torres Strait Protected Zone Joint Authority was introduced on 1 April 1999.
South Tasman Rise (high seas area adjacent to the Australian Fishing Zone)	The Fishery was managed through limited entry and TACs under a Memorandum of Understanding (MOU) between Australia and New Zealand for part of 1998-1999 and subsequently through an exchange of letters between Australian and New Zealand Fisheries Ministers.	A precautionary TAC of 2 100 tonnes was set for orange roughly for the year long MOU ending in February 1999. Catch was shared between Australia and New Zealand based upon the verified catches of vessels in the area in 1997. The TAC was divided 1 669 tonnes (80%) to Australia and 431 tonnes (20%) to New Zealand. The agreed TAC was raised to 2 400 tonnes in 1999-2000 with allocations of 1 800 tonnes (75%) to Australia and 600 tonnes (25%) to New Zealand. Penalty clauses were introduced in 1999 for overfishing and applied 1:1 for first 100 tonnes overcaught and 2:1 for overcatches exceeding 100 tonnes.	
Southern Shark Fishery	Input controls, including limited entry, restrictions on transferability, gear limitations (hook and net limits) and area restrictions.	Progress was made towards ITQ management in 1998 and 1999, including setting of TACs for school and gummy shark in anticipation of that form of management being introduced. Requirement for all catches to be landed through a registered first fish receiver commenced in October 1998.	

Annex: Management changes in Australian fisheries in 1998-1999 (cont.)

Fishery	Management instruments	Changes in management instruments and settings	Policy changes												
South East Non-Trawl Fishery	Output controls, in the form of ITQs for the three key species (blue eye trevalla, pink ling and blue warehou), together with input controls including limited entry and some gear and area restrictions.	ITQs introduced for blue eye trevalla, ling and blue warehou from 1 January 1998. Progress towards ITQ management for additional 13 species. Area restrictions were revised and input controls and hook methods were streamlined in 1999.	The South East Fishery Non-Trawl Consultative Committee was replaced in mid 1998 by the South East Non-Trawl Management Advisory Committee with formalised membership from key stakeholders.												
Great Australian Bight Trawl Fishery	Input controls – limited entry of vessels demersal trawling, limited cod end mesh size, area restrictions for vessels over 40 metres in length.														
Heard Island and McDonald Islands Fishery	Output controls and limited entry. Australia applies conservation measures agreed by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) as a minimum standard for management within the area. Fishing is restricted to trawl operations only.	Fishing restricted to within TACs as follows set by CCAMLR for the region in 1998 and 1999. <table border="1"> <thead> <tr> <th></th> <th>1998</th> <th>1999</th> </tr> </thead> <tbody> <tr> <td>toothfish</td> <td>3 700 t</td> <td>3 690 t</td> </tr> <tr> <td>icefish</td> <td>900 t</td> <td>1 160 t</td> </tr> <tr> <td>other species</td> <td>455 t</td> <td>280 t</td> </tr> </tbody> </table> A maximum of two boats permitted to operate. Transferability was limited to those that held Fishing Permits in the Fishery to ensure high environmental standards were maintained.		1998	1999	toothfish	3 700 t	3 690 t	icefish	900 t	1 160 t	other species	455 t	280 t	The formation of SouthMAC facilitated the participation of stakeholders and other interest groups in the management process.
	1998	1999													
toothfish	3 700 t	3 690 t													
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Southern Squid Jig Fishery	Limited entry.	Internal boundaries removed in 1998 to give operators access to entire area of the Fishery.	The formation of SquidMAC in 1998 facilitated the participation of stakeholders and other interest groups in the management process.												
Western and Southern Tuna and Billfish Fisheries	Limited entry.	Thirteen internal boundaries in the fisheries were removed in September 1998. The 34 degree South boundary separating the two fisheries which was reviewed in late 1999, is to be retained whilst formal management arrangements are being developed. Vessel length restrictions were also removed in 1998 allowing vessels of greater than 32.67 metres to operate in inshore waters.	Management of these tuna stocks within the wider Indian Ocean context was progressed through the Indian Ocean Tuna Commission. The Commission took steps towards the introduction of regional management arrangements for Indian Ocean Tuna stocks, with the formation of species working groups in which Australian delegates took part.												
Macquarie Island Fishery	Output controls and limited entry. Fishing is restricted to trawl operations only.	Fishing was limited to one vessel, a TAC of 1 500 tonnes of Patagonian toothfish and strict management controls in 1998. In line with fisheries assessment advice, the toothfish TAC was reduced to 600 tonnes for the 1999 fishing season, combined TAC for other finfish species was set at 200 tonnes and commercial fishing was prohibited in the Aurora Trough during 1999.	The formation of SouthMAC in 1998 facilitated the participation of stakeholders and other interest groups in the management process. AFMA developed a new management policy to replace the developmental policy for the fishery introduced in 1996.												

Annex: Management changes in Australian fisheries in 1998-1999 (cont.)

Fishery	Management instruments	Changes in management instruments and settings	Policy changes
Christmas Island Fishery	Input controls including limited entry and area restrictions. Competitive TAC set for inshore deep water reef species.	Three Fishing Permits were granted in 1998 for targeting tuna in the new offshore tuna fishery.	
Cocos (Keeling) Is Fishery	Input controls including limited entry and area restrictions.	Two Fishing Permits were granted for the first time in 1998 for targeting tuna in the new offshore tuna fishery	
Norfolk Island Fishery	Offshore fishery – strict environmental and management restrictions, including catch limits on individual species. Inshore fishery – restricted to subsistence fishing by local inhabitants.	AFMA issued a scientific permit for one vessel to conduct exploratory fishing in the offshore deepwater fishery in 1998-1999.	

Source: Australian Fisheries Management Authority.

CANADA

Summary

The volume of the 1998 Canadian commercial fisheries remains low in comparison to historical levels. However, as a result of growth in crustaceans, the overall 1998 volume of landings is approximately 1 million tonnes, which equates to almost CAD 1.6 billion. As a result of this surge in crustacean landings, the East Coast of the country is regaining the benefits of fishing it once had before groundfish fishery closure of 1992. In addition to the commercial fishery landing increase, the aquaculture sector has also improved. The overall Canadian production for 1998 is currently 91.4 thousands tonnes which values CAD 430 million. For 1999, the overall volume of Canadian commercial landings is approximately 1.1 million tonnes valued at CAD 1.9 billion, a record value for Canadian fisheries. Aquaculture production is approximately 113 thousand tonnes valued at CAD 558 million.

In 1998, responsibility for the Oceans Management Strategy was transferred to the newly created Oceans sector, giving the initiative higher profile within the Department, along with a more secure resource base. Under the umbrella of the United Nations International Year of the Oceans, the Department made considerable progress in developing interdepartmental co-ordination of oceans efforts and sensitising the public to the challenge of managing the use of the oceans and protecting this resource for future generations. Among the successes were the Louis S. St. Laurent Team Canada mission to Europe and the establishment of new Marine Protected Areas on both coasts.

The support of most countries and economies of the Asia Pacific Economic co-operation (APEC) group was secured in 1998 to support a fish and seafood trade liberalisation initiative for the APEC region. As a result, APEC Trade Ministers agreed to move negotiations on fish products to the World Trade Organisation (WTO) in order to broaden participation by other countries.

The agreement on a new Pacific Salmon Treaty in June 1999 put an end to eight years of uncertainty and risks to stock which have existed since 1992, when the original fishing arrangements expired. The agreement begins a new era of effective conservation and more equitable sharing of the precious salmon resource between Canada and the United States.

In August 1999, Canada became the 22nd country to ratify the United Nations Fish Agreement (UNFA). UNFA provides a framework for the conservation of straddling stocks and highly migratory fish stocks in the high seas areas regulated by regional fisheries organisations. One of the most innovative aspects of this agreement is the right of states party to the agreement to inspect vessels of other party states to verify compliance to regional fisheries organisations, such as the Northwest Atlantic Fisheries Organisation (NAFO), and the International commission for the Conservation of Atlantic Tunas (ICCAT).

September 1999 saw The Supreme Court of Canada, the country's highest court, give special treaty rights to a select group of aboriginals on the East Coast of the country. The 1760 Treaty gave the Mi'kmaq, Maliseet, and Passamaquody First Nations living in Canada the right to earn a "moderate livelihood" from fishing, hunting, and gathering. September 1999 saw the Supreme Court of Canada confirmed the rights of access to commercial fisheries for a group of aboriginals on the East Coast of the country. The Court confirmed that a 1970 Treaty gave the Mi'kmaq, Maliseet and Passamaquody the right to earn a "moderate livelihood" from fishing, hunting and gathering. The Canadian government is in the process of negotiating access for these communities to the fisheries resources through interim fisheries agreement, with a view to move into more comprehensive longer-term agreements. Conservation in the fisheries will not be compromised.

In September 1998, 100% observer coverage for all fishing vessels in the Northwest Atlantic Fisheries Organisation (NAFO) regulatory area was formally adopted. This decision is one of the most important conservation objectives advanced by Canada at the NAFO annual meeting held in Lisbon, Portugal, 14 to 18 September 1998.

Legal and institutional framework

Under the Canadian Constitution, the federal Government has exclusive jurisdiction over all matters concerning the sea coast and its fisheries, including the management of virtually all commercial fisheries (the provinces, however, do have responsibilities for allocation of some freshwater fisheries). While the federal Government has virtual exclusive jurisdiction over the harvesting sector of the commercial fishery, the provincial Governments have primary, though not exclusive, jurisdiction over the processing sector, particularly with respect to fish processing plants. The Department of Fisheries and Oceans (DFO) is the federal department charged with carrying out federal obligations in fisheries and oceans related matters.

Fisheries management in Canada is conducted through various means: by allocating quotas to fleet sectors, which then fish competitively; or, by giving specific percentages of the quota to individuals or businesses in the form of Individual Quotas (IQs), Individual Transferable Quotas (ITQs) or Enterprise Allocations (EAs). Other fisheries are managed by other means, such as controlling effort, escapement or by-catch. The overall goals are conservation, economic viability, responsible and sustainable harvesting practices, and equitable distribution of the resource among user groups. The Minister of the Department of Fisheries and Oceans determines the Total Allowable Catches (TACs) for groundfish which is based on advice from the independent Fisheries Resource Conservation Council (FRCC). The advice is on issues such as conservation measures for the Atlantic fishery and the straddling and transboundary stocks under the jurisdiction of international bodies such as NAFO. Since April 1997, the Pacific Resource Conservation Council is providing advice on Pacific salmon conservation measures.

Over the years, the federal Government has delegated certain responsibilities related to fisheries to the provinces through regulations under the *Fisheries Act*. For aquaculture, Memoranda of Understanding (MOUs) have been signed between the federal Government and the provinces of British Columbia, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland as well as the Yukon and Northwest Territories. The MOUs deal with specific federal and provincial responsibilities and set out the role of each Government.

The important areas of federal responsibility are:

Research and development.

Regulation of fish products marketed in interprovincial and export trade.

Conservation and protection of wild fish stocks and fish habitat.

Importation into Canada and movement between provinces of live fish (salmonids), eggs, and dead, unviscerated fish under the *Fisheries Act* and for fish health, the *Fish Health Protection Regulations* (FHPR).

The Canadian Shellfish Sanitation Programme (CSSP), including water quality studies.

Therapeutic drugs and vaccines.

The MOUs are customised to meet the needs of the aquaculture industry in each province. The scope and involvement of provinces may include specialised research, education and training, leasehold administration and monitoring, infrastructure development, integrated resource planning, and environmental monitoring.

Capture fisheries

Performance

Despite the continued depressed status of the Atlantic groundfish stocks, and lower-than-expected returns in the Pacific salmon fishery, performance of the Canadian capture fishery remains fairly strong on a year-to-year basis.

Commercial landed value in Atlantic Canada totalled CAD 1.3 billion in 1998, up approximately CAD 80 million from 1997. Some of the species that increased in value were shrimp by CAD 77 million, lobster by CAD 33 million, and Atlantic cod by CAD 20 million. The Pacific coast fishery saw landed values totalling CAD 290 million in 1998, down over CAD 100 million from 1997. Some of the notable species that decreased over the period were salmon (all species) by CAD 56 million and herring by CAD 20 million. For 1999, the overall volume of Canadian commercial landings is approximately 1.1 million tonnes valued at CAD 1.9 billion, a record value for Canadian fisheries.

Status of fish stocks

The biomass of the offshore component of northern cod (NAFO region 2J3KL) remains near historically low levels; however, the inshore component is stronger and comprises some strong year classes relative to overall year class strengths of the 1990s. The remaining groundfish stocks on the East Coast remain low with marginal recruitment with the exception of NAFO fishing zone 3LNO yellowtail flounder and sub-areas 2 + 3 Greenland halibut.

The outlook of the Pacific coast salmon stocks is also very weak. All five salmon stocks (chinook, chum, coho, pink and sockeye) have to be closely monitored in order for stock improvements to occur. This is a result of strong fishing efforts, poor marine survival, and changing ocean conditions. The summer of 1999 saw the unexpected closure of the very lucrative Fraser River Sockeye Salmon fishery. The closure was a result of a close to 60% decrease in return of salmon to the river.

Management of commercial fisheries

Management instruments

A limited commercial fishery for northern cod was re-open for the 1999 season with a TAC of 9 000 tonnes in the inshore portion of NAFO division 2J3KL. In its 27 May 1999 report, the Fisheries Resource Conservation Council (FRCC) recommended a total allowable catch of between 6 000 tonnes and 9 000 tonnes in this area.

Scientific initiatives will be carried out to gain additional information about the stock in division 2J3KL. In line with FRCC recommendations, an inshore Sentinel fishery that includes a tagging component is under way. Canada is giving selected Sentinel fishers special training to participate in the northern cod tagging programme this year. The goal in 1999 is to tag 10 000 fish, almost as many as in the previous three years combined. Tagging will allow scientists to better measure current migration and distribution patterns of northern cod and obtain estimates of inshore stock abundance.

The overall TAC for northern shrimp for 1999 was 96 540 tonnes, up from 84 108 tonnes in 1998. The majority of shrimp fishing areas (SFAs) retained their 1998 TAC levels. However, the TAC for SFA 6 was increased to 58 632 tonnes, representing a 27% increase over 1998. Northern shrimp stocks are healthy and thus there are few conservation concerns for this fishery. It is expected that the northern shrimp stock will return to more traditional levels of abundance in the future.

Concerns about possible dumping in the northern shrimp fishery have been raised in recent years. In 1999 Canada implemented additional measures to obtain better data on this matter. These included increased observer coverage on the temporary access inshore fleets, continued 100% dockside monitoring, and a new programme to compare the composition of observed versus unobserved catches to determine if dumping of small-sized shrimps takes place. Appropriate regulatory penalties will be sought where there is evidence of non-compliance with prohibitions on dumping.

The TAC for harp seals in 1999 was kept at the 1998 level of 275 000. The most recent population survey, done in 1994, placed the harp seal herd at 4.8 million animals, more than twice the level of the early 1970s. A harp seal population survey was conducted in 1999. The results of this survey are currently being tabulated, with final results expected in the spring of 2000. Initial indications are that the seal population is not endangered. A hooded seal survey will be conducted in the year 2000. The current TAC for hooded seals remains at 10 000.

The 1998 Snow Crab Management Plan authorised a TAC of 11 125 tonnes for Snow Crab Areas 12, 25, and 26 for 1998. The Plan is based on the five year (1997-2001) Integrated Fisheries Management Plan and co-management approach which was developed with the 130 mid-shore licence holders from New Brunswick, Quebec and Nova Scotia, and the 30 inshore licence holders from Prince Edward Island. The Plan contains a sharing formula, which permits sharing of the resource during periods of abundance, while ensuring the viability requirements of the traditional crab fleet. Given a low abundance and minimal value of snow crab, there was no temporary sharing in 1998 and 1999.

The management measures in the Plan reflect the current stock, which is expected to improve in the near future. The exploitation rate has been set at a conservative level of 35%, which will ensure future recruitment into the fishery is maintained. However, with possible improvements in the stock size, exploitation rates might increase. In addition to the growth in Snow Crab Areas 12, 25, and 26, the fishery in Newfoundland has also increased. The TAC for the Newfoundland fishery in 1999 was 66 000 tonnes, which is up from 44 500 tonnes in 1997.

New lobster conservation measures for the Atlantic Provinces were implemented in 1998. The measures rely on a combination of carapace size increases and V-notching to raise lobster egg production to at least twice that of previous levels. As requested by fishers, the measures also move toward a uniform carapace size throughout the region. These measures are in response to a lobster conservation strategy announced in December 1997, intended to lead to a doubling of lobster egg production.

The conservation measures put into effect for 1998 and 1999 are based largely on increasing carapace size. Larger carapace sizes have allowed a greater number of female lobsters to reproduce before they are harvested. Along with enhancing the reproductive capacity of lobster stocks, larger carapace sizes have ensured that the undersized lobsters left in the water will gain in weight and market value. This approach has allowed additional moult and egg production prior to recruitment into the fishery and has provided a significant increase in egg production.

Additional measures such as maximum size limits, trap limit reductions and further increases in carapace size are also being considered for future years.

In September 1998 an independent panel was announced to advise on proposed partnering provisions for the new *Fisheries Act*. The mandate of the panel was to provide advice to Canada on the best way to shape partnering arrangements between DFO and the industry and on the appropriate legislative framework for these agreements. Partnering would allow the Minister of Fisheries and Oceans to enter into fisheries management agreements (FMAs) with interested groups, effectively sharing responsibility for the conservation and management of the fisheries resource.

Among the panel's objectives are to assess whether Canada's current approach to partnering will move Canada's fishing industry toward the fishery of the future and, if necessary, to propose changes to the current approach; and, to provide advice on the best way of integrating partnering into fisheries management and on the appropriate legislative framework for accomplishing this objective.

The Fraser River Sockeye fishery had to be closed June 1999, as a result of unexpected low returns of spawning salmon. The expected number of fish to return was 8.25 million, however a dismal 3.58 million returned. This resulted in a complete closure of the fishery to all fishers, including the recreational fishery. In total, as a result of the closure the sectors associated with this fishery lost an approximate total of CAD 134 million.

Access

Canada has ratified UNFA in August 1999, in an attempt to begin a formalisation of a precautionary approach to fishing efforts, more transparent operations of vessels, and enhanced enforcement and controls on high seas fishing. UNFA will come into force when 30 countries ratify the agreement.

Canada continues to distribute fish quotas under the United Nations Convention on the Law of the Sea (UNCLOS) of fish surplus that it does not need. Under foreign charters quota holders are permitted to charter foreign vessels to fish Canadian quotas. Canada continues to work with the International Commission for the Conservation of Atlantic Tunas (ICCAT) by accepting the Commission's yearly quota,

which was decreased in 1999 from 601 tonnes in 1998 to 577 tonnes. Japan is still permitted, according to a bilateral agreement, to fish its quota of tuna under ICCAT within Canadian waters. As well, Canada and France signed a *procès verbal* in 1994 which implements the 1972 Treaty providing for reciprocal access to each other's water. The 1994 *procès verbal* gives France a fixed percentage of designated 3Ps transboundary stocks as well as fixed allocations of stocks found in Canadian waters.

Management of recreational fisheries

The recreational/cod food fishery was limited to two weekends in Newfoundland and the Lower North Shore of Quebec in 1999. The daily bag limit was 10 fish per person, with a maximum daily boat limit of 50 fish. As in previous food fisheries, only baited and feathered hooks were permitted (*i.e.* no jiggers). Fishery officers conducted coastal patrols during the food fishery.

For the waters adjacent to Quebec (with the exception of the Lower North Shore), New Brunswick, Nova Scotia and PEI areas 4T, 4Vn, 4VsW and part of 4S a recreational groundfish fishery was open for nine weeks, from 1 July to 7 September 1998. The daily bag limit was reduced from a maximum of ten in 1997 to a maximum of five fish per person with a maximum daily boat limit of 25 fish.

Aboriginal fisheries

The Supreme Court found that a 1760 Treaty of Peace and Friendship between the British Crown and the Mi'kmaq, affirmed the right of the Mi'kmaq people to continue to provide for their own sustenance by taking the products of their hunting, fishing, and gathering activities and trading them for what in 1760 were described as "necessaries". The Court noted that the genesis of this Mi'kmaq trade clause came from earlier negotiations with the Maliseet and Passamoquoddy, who lived in present-day New Brunswick. The Mi'kmaq agreed to "make peace upon the same conditions".

The Court concluded that in today's terms securing "necessaries" is equivalent to a "moderate livelihood". In turn, this was interpreted to include basics such as food, clothing and housing supplemented by a few amenities. It does not extend to the accumulation of wealth. The Court went on to conclude that in order to exercise this right to trade in a meaningful way, Treaty beneficiaries have an implied right to hunt, fish and gather in order to have something to trade for necessities. It added that this right to harvest and trade for necessities can be regulated by Government and contained within limits.

This judgement has some implications to both the federal and provincial Governments as well as the existing users of these resources. The Government is currently in the process of addressing the decision through negotiations with Aboriginals. Through these discussions Government is attempting to co-ordinate interim fishing arrangements. These short term arrangements will then move into more comprehensive longer term agreements covering the Governments mandate on Aboriginals through its Department of Indian and Northern Affairs. Conservation in the fisheries will not be compromised.

Monitoring and enforcement

In August 1999, Canada ratified the United Nations Fish Agreement (UNFA), representing a major step toward international co-operation in conserving and managing fisheries resources on the high seas. The central thrust of the agreement is international co-operation for the conservation and management of straddling fish stocks and highly migratory fish stocks. The UNFA establishes guiding principles for the sustainable management of straddling and highly migratory fish stocks, such as the precautionary approach and the minimisation of pollution, waste, discards and by-catch. The Agreement creates strong obligations for flag states and contains monitoring and enforcement provisions to ensure compliance with fishing measures established by regional fisheries organisations. In addition, a compulsory binding dispute settlement mechanism, contained in the Agreement, provides for the peaceful resolution of conflicts.

In June 1999, changes to Atlantic Canada's and Quebec's Docksides Monitoring Programme (DMP) were announced. The changes were implemented as a result of concerns expressed by a number of stakeholders, including Canada's Auditor General in his October 1997 report. The changes address concerns regarding the

potential conflict of interest of the companies that carry out dockside monitoring, and require that the dockside monitoring companies are audited to ensure the accurate and timely verification of landings.

Canada originally implemented the DMP in the early 1990s as a quota monitoring mechanism when individual quotas were introduced in the groundfish sector in the Gulf of St. Lawrence. Since then, the programme has grown to include most fisheries in Atlantic Canada and Quebec. On 1 January 1999, changes to the DMP regulations were implemented to improve the accuracy, timeliness and integrity of fish landing information. The changes, achieved through amendments to the *Fishery (General) Regulations*, establish designation requirements for dockside monitoring companies.

In September 1998, a policy of 100% observer coverage for all fishing vessels in the NAFO regulatory area was adopted by Canada at the NAFO annual meeting held in Lisbon, Portugal. Initially adopted for a two-year trial period effective 1 January 1996, the observer programme was extended for an additional year at the 1997 NAFO annual meeting. The programme requires that all member vessels in the NAFO Regulatory area carry an observer on board at all times to monitor fishing activity. The observers are independent and impartial, and report any violations of NAFO conservation measures to NAFO fisheries inspectors.

Multilateral agreements and arrangements

In August 1998, amendments to the Coastal Fisheries Protection Regulations were announced which allow US fishing vessels, other than fishing vessels involved in the Pacific hake or salmon fisheries, to enter Canadian ports for the purpose of effecting repairs and obtaining supplies. On the Pacific coast, only US fishing vessels which have not been used in the Pacific hake or salmon fisheries in the two years prior to application will be eligible to obtain licences for the purpose of effecting repairs or obtaining supplies. On the Atlantic coast, all US fishing vessels would be permitted to enter Canadian waters to re-provision or seek repairs only.

In June 1999 the Minister of Fisheries and Oceans and the Minister of Foreign Affairs announced a comprehensive long-term agreement under the Pacific Salmon Treaty (PST), signalling a co-operative, conservation-based approach to the management of Pacific salmon fisheries, and a more equitable sharing of salmon catches between Canada and the United States.

The agreement consists of four parts:

1. Long-term fishing arrangements governing northern boundary fisheries, transboundary rivers, northern boundary coho, southern coho, Fraser River sockeye and pink, chinook salmon coast-wide, and southern chum. These arrangements are all for ten years except for Fraser River sockeye and pink which is a twelve-year arrangement. These arrangements are based on a new, co-operative framework called abundance-based management that is more sensitive to conservation requirements than previous bilateral approaches, and move more fish to Canada for both conservation and harvest.
2. Two new Pacific Salmon Treaty Endowment Funds totalling CAD CDN 209 million (USD 140 million). These funds, one in the North and one for the South, will be administered jointly by both countries and funded by the US Government to invest in habitat, stock enhancement, science and salmon management initiatives in both countries.
3. Strengthened institutional arrangements for co-operation among Canadian and US scientists and fisheries managers. This includes elaboration of the rules and procedures for technical dispute resolution, a new bilateral Panel on Transboundary Rivers and the addition of a Committee on Scientific co-operation to advise the Pacific Salmon Commission.
4. A formal, joint commitment by both nations to protect and restore salmon habitat.

Pacific salmon stocks have declined precipitously in recent years as a result of unpredictable environmental conditions, poor ocean survival, habitat degradation and over-fishing. In 1998, in response to declining salmon stocks, Canada adopted unprecedented measures to protect Canadian coho. This approach included a complete closure of fisheries where stocks were threatened, and the announcement of a five-year, CAD 400 million comprehensive programme to respond to the fishery closure.

Canada has organised a multi-disciplinary intra-departmental working group within DFO to develop the Canadian Plan of Action and meet the requirements and timelines of the International Plan of Action (IPOA) on the management of fishing capacity adopted by the FAO. This group prepared a detailed work plan and a technical paper, which was submitted at the Mexico technical consultation held to agree on methods of measurement of fishing capacity in November 1999. From the results of that technical meeting, the working group initiated the study phase to consistently measure the capacity of the Canadian domestic fleet, including transboundary, migratory and straddling stocks. Canada pledged to be among the first to complete its plan of action.

Aquaculture

Policy changes

Canada's Commissioner for Aquaculture Development announced in June 1999 a comprehensive review of the laws and regulations that affect Canada's aquaculture industry. The review will be carried out over the next year, and will involve consultations with the federal, provincial and territorial authorities responsible for aquaculture. The Canadian aquaculture industry had expressed the view that certain regulations are not well adapted to its situation or are superfluous. As well as examining the legal framework for aquaculture, the review will look very closely at the controls that are now in place and that should be in place to ensure there are proper safeguards for the environment emphasising healthy fish and quality products, a competitive industry and shared use of resources. As part of a longer comprehensive plan, in support of a sustainable aquaculture sector, the Government of Canada will also review the role of the federal government and other players to ensure sustainable aquaculture, identify and act on policy gaps and overlaps and address appropriate governance structure. The review will be followed by recommendations to the Minister of Fisheries and Oceans on changes needed to develop a modern legal framework, better designed for an evolving industry.

Production facilities, values, and volumes

The Canadian aquaculture industry continued to grow into 1998-1999. The Canadian Aquaculture Producer and Suppliers guide states that the number of producers exceeds 2 300 enterprises. The value and volume of the sector has increased by 12% between 1997 and 1998. The strongest growing sector in the industry was Pacific Salmon (chinook and coho). These salmon species have increased in value from CAD 32 million to CAD 48 million from 1997 to 1998, and their volume has increased from 5.7 thousand to 8.9 thousand tonnes within the same period. The Atlantic salmon remains the leader in the aquaculture sector. It's growth in value increased by 2.5% to equal almost CAD 300 million in 1998, while it's volume increased by 3% to reach 50 thousand tonnes in 1998.

Fisheries and the environment

In November 1998, a joint proposal was announced by Canada and the United States to formalise co-operation between the North Pacific Anadromous Fish Commission (NPAFC) and the North Pacific Marine Science Organisation (PICES). This proposal on marine science was accepted by NPAFC's members at the NPAFC sixth annual meeting 1 to 6 November 1998 in Moscow, Russia. The NPAFC, based in Vancouver, British Columbia, was established in February 1993 by the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean and has four members – Canada, Japan, Russia and the United States.

Anadromous species such as salmon and steelhead trout spend part of their lives in the ocean, and return to their rivers of birth to spawn. Working under the Convention and using co-operative enforcement, NPAFC's members help to deter unauthorised fishing for salmon on the high seas of the North Pacific Ocean. The NPAFC also seeks to co-operate with other organisations on common research and environmental issues that affect the conservation of North Pacific salmon resources.

The Government of Canada has proposed legislation on species at risk; the legislation is called SARA (Species at Risk Act). This Act is an essential part of the Government's obligations to protect species. This legislation would provide a framework for protecting species at risk as well as safety net provisions when needed. The Government has a direct responsibility for fisheries species and their habitats, migratory birds as covered by the Migratory Birds Convention Act, and all species on federal lands and in federal waters.

In an effort to find co-operative solutions to better protect our oceans, Canada's Environment Minister and Fisheries and Oceans Minister released in March 1999 Canada's Draft National Programme of Action for the Protection of the Marine Environment from Land-based Activities. This programme of action is intended for a 60-day consultation period to seek the views of Canadians. The draft National Programme of Action proposes national and regional programmes to protect human health, the environment and to prevent, reduce and control land-based activities that contribute to the degradation of the marine environment. Land-based activities affecting the health of the world's oceans include the following source categories: sewage, heavy metals, persistent organic pollutants, radioactive substances, oils/hydrocarbons, litter, nutrients, sediment and habitat destruction.

Government financial transfers

Transfer policies

Government subsidies for fishing activities are discouraged in Canada. In recent years, the federal Government, the principal source of programme assistance in the fisheries sector in Canada, has phased out all contributions aimed at price and vessel support. Ongoing financial transfers to the industry have been designed to promote the transition towards responsible fisheries practices and reduce dependence on the fishery. These transfers have taken the form of licence retirement, fisheries adjustment, and regional economic development initiatives designed to promote the restructuring of Canada's fisheries. Income support assistance has been provided to fisheries workers affected by the closure of fish stocks under moratorium. However, this income support programme was completed in June 1998.

Financial transfers resulting from user charging, alternate service delivery, and partnering initiatives introduced in recent years continue to flow from the fisheries sector to Government in 1999. Such initiatives provide fleets a greater say in decision-making processes as well as a greater share of costs for co-management, such as fisheries science, management, harbours, and conservation and protection.

The Federal Government provides many general services available to the fishing sector. The gross expenditure in millions for these sectors in 1998 was science CAD 69.7, fisheries management CAD 153.3, and harbours CAD 55.8.

Structural adjustment

The Canadian Fisheries Adjustment and Restructuring programme is currently underway to address the permanent downsizing of the Atlantic groundfish fishery and to encourage the restructuring of the Pacific salmon fishery. The programme was announced June 1998 and to date, this plan has retired 1 787 groundfish licences in the Atlantic and 743 Pacific salmon licences. Of the CAD 1.2 billion that was approved by the Canadian Government, CAD 824 million has been spent on this restructuring programme.

In October 1998 details of a CAD 250 million voluntary groundfish licence retirement programme for the Atlantic region and Quebec was announced. This programme was part of the CAD 730 million fisheries restructuring package. In addition to the licence retirement programme, the restructuring package included early retirement, final cash payment, as well as adjustment and economic development measures.

Under the licence retirement programme fishers will have to retire permanently and completely from the fishery in order to qualify for benefits. Priority will be given to those fishers with a demonstrated attachment to the fishery who received support under The Atlantic groundfish Strategy (TAGS).

A CAD 400 million comprehensive federal Pacific salmon fishery plan to rebuild the coho salmon resource, restructure the salmon fishery, and help people and communities adjust to the changing fishery was announced in June 1998. Scientific evidence demonstrates conclusively that wild coho stocks are declining and some are at extreme risk. In May 1998, the Pacific Stock Assessment Review Committee report indicated that conservation concerns for coho are not a short-term problem. The report noted: that "Upper Skeena and Thompson River coho stock aggregates are extremely depressed ... and that some individual spawning populations are at high risk of biological extinction".

The coho recovery plan augmented conservation initiatives contained in the salmon management plan. This recovery plan incorporated significant new initiatives in enforcement, enhancement and stock assessment, which were implemented in 1998 to protect and restore coho stocks in all areas of the Pacific.

The 1998 salmon management plan introduced a fundamental new direction for the management of the Pacific salmon fishery. Severe restrictions were imposed on fishing activity in many areas, and selective, conservation-based fishing techniques were introduced to conserve coho and other stocks at risk.

Of the CAD 400 million, CAD 100 million is allocated for measures to protect and rebuild habitat, CAD 200 million dedicated to fishery restructuring, and CAD 100 million was made available for early retirement and community development programmes. Fishery restructuring initiatives include licence retirement options, as well as providing incentives for selective harvesting techniques and exploring options for diversifying fishing income and opportunities.

Post-harvesting policies and practices

Conservation and sustainable development of the fisheries resource and industry are primary objectives of Fisheries and Oceans. Continued overcapacity in the processing sector of the fishing industry has prompted the federal Government to develop policies, which encourage rationalisation of the industry. Public investment in the fishing industry has been restricted to initiatives involving research and development, market penetration, value-added secondary processing, aquaculture, as well as the rationalisation/consolidation of processing facilities.

Markets and trade

Canada's exports of fish and seafood products amounted to CAD 3.2 billion in 1998, the highest value ever. The United States (US) continues to be the destination of choice for Canada's seafood products, as exports to the US increased from CAD 1.85 billion in 1997 to CAD 2.14 billion in 1998, which accounted for 67% of total exports. This increase can be largely attributed to increased exports of lobster, shrimp, crab and farmed salmon to the US. Canada remains the number one foreign supplier of seafood to the United States.

Canada supplies over 100 countries around the world with fish and seafood products, with 90% of Canada's exports destined for the US, Japan and the European Union. Imports totalled CAD 1.8 billion, with the majority of product coming from the United States, Thailand, Russia, and Iceland. Large portions of imports are processed into higher value added products and re-exported mainly to the US.

In March 1999 the EU Council of Fisheries Ministers approved a regulation opening tariff rate quotas (TRQs) for various fish and fish products from most-favoured-nations, which includes cooked and peeled shrimp and unprocessed shrimp from Canada. Until this time, Canadian exports of cooked and peeled shrimp were subjected to a 20% duty on importation into the EU. This new regulation permits up to 4 000 tonnes of cooked and peeled shrimp at a rate of 6% duty.

Outlook

Strategic Plan

In March 2000, the Department adopted a Strategic Plan to guide the Department over the next three to five years. The framework of the plan consists of three corporate objectives: restoring confidence and credibility; mandate renewal; and organisational effectiveness. Under mandate renewal, a key priority is

policy renewal – *i.e.* new models of governance that promote shared stewardship and responsibility that need clear policy frameworks to work. Two key frameworks identified are Ocean Management Strategy and Fishery of the Future.

Sustainable Development Strategy

The Department of Fisheries and Oceans is currently working on a second Sustainable Development Strategy and Action Plan for the next three years. This follows amendments in 1995 to the *Auditor General Act* that made sustainable development an integral element of government policy. In accordance with the *Act*, and the “Guide to Green Government”, 28 federal departments and agencies, including DFO, tabled their first sustainable development strategies in 1997.

DFO’s second Sustainable Development Strategy has four themes: 1) new forms of governance and shared stewardship; 2) knowledge and technology for sustainable development; 3) sustainable operations; and 4) managing for progress and performance. The strategy and action plan documents are in final round of public consultations and will be tabled in Parliament in December 2000.

Special Topic: Fishing Capacity

Definition of fishing capacity

The theoretical physical capacity of a vessel or a fishing fleet is the amount of fish or shellfish that it can harvest (usually per annum) if unrestrained by any regulations or consideration of sustainable harvesting levels. Actual capacity can be measured in two ways, physical and economic capacity.

Physical capacity can be measured a number of ways: *e.g.* number of vessels, size of each vessel (hold capacity, gross registered tonnage), horsepower, number of fishers/licences, standardised number of fishing days, etc. The underlying assumption is that changes in inputs to the production process reflect changes in potential or actual capacity output. However, it is difficult to develop a single measure that captures all the physical dimensions of capacity, including technological changes over time.

Economic capacity is the production resulting from inputs that are employed in an economically efficient manner. Alternatively, it could be measured as the amount of labour and capital required to be deployed in a fishery that will yield on average a reasonable income/return, taking into account some measure of the carrying capacity of the resource.

Policies to manage fishing capacity

Canada uses different strategies for capacity management. Limited entry access to fisheries is the most widely used by the Government. This is a policy designed to control the number of fishers allowed into a specific fishery. In addition to limited entry, input control measures such as gear, vessel size, and area restrictions are employed. These restrictions are fishery specific.

Time has shown that input control measures to restrain the use of capacity has its limitations. For instance, one input control method is imposing limits on the overall length of fishing vessels. In response, the industry adapted by acquiring wider and deeper vessels within the length constraints, so as to improve capacity. Government then imposed the “cubic number” rules, which limited the volume of replacement vessels. The industry is now purchasing more powerful and faster vessels to improve their range and catch rates.

In addition to the regular input control measures used by fisheries managers in Canada, a series of special measures were designed in the 1990s to address the over-capacity issue in Canada in two specific species: the Atlantic groundfish and the Pacific salmon. A groundfish capacity reduction programme – part of The Atlantic Groundfish Strategy (TAGS) – was introduced between 1994 and 1998. A series of aggressive policy and programme interventions aimed principally at reducing the number of fishers dependent on these fisheries was launched. The policies include licensing reforms creating core fishing enterprises in Atlantic Canada, area licensing and licence stacking in the Pacific, and a series of publicly funded licence and early retirement programmes on both coasts. Once TAGS expired, the current programme called the Canadian Fisheries Adjustment and Restructuring (CFAR) was introduced.

This programme is addressing the permanent downsizing of the Atlantic groundfishery and the restructuring of the Pacific salmon fishery by licence and early retirement to reduce harvesting capacity.

It has become increasingly evident to resource managers in Canada, as well as in other countries, that the ingenuity of fishers and the continued advances of technology can usually defeat most regulatory attempts to control fishing effort and impacts. It is therefore becoming increasingly accepted that the solution must come from motivating fishers and the industry to assume more responsibility for the conservation of the resource on which they are dependent.

Evaluation of impacts of capacity management policies

Canada has already commenced work on assessing Canadian fishing capacity and has made progress in capacity reduction over the last several years. Preliminary analysis shows that between 1986 and 1996 the number of Canadian fishing vessels has gone from more than 36 000 to less than 29 000, a 20% decrease. This decrease is expected to have continued, if not accelerated, in the last two years, due to another round of targeted government restructuring initiatives. At time of writing, the Canadian Fisheries Adjustment and Restructuring measures retired 1 787 groundfish licences in the Atlantic and 743 Pacific salmon licences, and the buy-back process is still in progress.

Impacts of other policies on capacity

There are a number of different policies used by the government that affect the harvesting capacity of the fishery:

The current policy on primary fish processing discourages the federal government to financially assist private investment in primary processing. As a result of the link between the processing and harvesting sectors, this policy indirectly influences the capacity of the harvesting sector.

There are vessel replacement rules to control the capacity of the industry. These rules are specific to each fishery in Canada. In general, when a vessel is retired it can only be replaced by a vessel of the same LOA (length overall).

Individual Quota (IQ) and Enterprise Allocation (EA) fisheries are very effective in controlling the volume of landings, but they also influence the harvesting capacity of a fleet. Canada has seen a reduction in every fleet's capacity where IQ and EA were introduced. Since in IQ and EA fisheries the fleet is guaranteed its share of the total allowable catch, it is in the fishers best interest to acquire just enough capacity to land their assigned quota. If the fleet is over-capitalised, it is reducing its own viability.

Implementing the FAO plan of action

Canada supports the objectives of the International Plan of Action (IPOA) for the management of fishing capacity while further recognising the need to take urgent action to curb the growing problem of flags of convenience and pirate fishing.

Within the Department of Fisheries and Oceans, Canada has organised a multi-disciplinary intra-departmental working group to develop the Canadian Plan of Action. Its first task was to prepare a technical paper to submit at the Mexico technical meeting, called for in the IPOA, to agree on methods of measurement of fishing capacity in November 1999. From the results of that technical meeting, the working group has initiated the study phase to consistently measure the capacity of the Canadian domestic fleet, including transboundary, migratory and straddling stocks. The working group will subsequently develop a list of priority fleets for action in consultation with the industry and the provinces.

In addition, the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) Task Group on Capacity Management has begun work on capacity. The CCFAM includes the Federal Minister of Fisheries and Oceans and all provincial and territorial ministers responsible for fisheries and aquaculture. The mandate of the CCFAM Task Group, which is composed of federal and provincial fisheries officials, is to assess the current state of fishing capacity in Canada, to evaluate its balance with the fishery resource, and to consider the implications of overcapacity problems for the sustainable development and management of Canadian fish stocks. The task group will be contributing to the development of the Canadian portion of the International Plan of Action for the Management of Fishing Capacity to the FAO.

EUROPEAN COMMUNITY

Summary

Over the period 1998-1999 the European Community's work on the common fisheries policy (CFP) focused on:

- The consolidation of the Community system of management and control of fishing activities.
- The adoption of the new regulation on the Financial Instrument for Fisheries Guidance (FIFG) as part of the structural fund reforms.
- The adoption of the new common organisation of the market.
- The continuity of fishing activities inside and outside Community waters consistent with responsible and sustainable fishing.
- The consolidation of the role of marine and aquacultural research.
- The launching of the consultation process on the CFP after the year 2002.

Legal and institutional framework

Sole jurisdiction over the conservation and management of marine fish stocks was vested in the European Community by its member States (Articles 33-41 of the Treaty of Amsterdam). The Community therefore has responsibility for the adoption of all relevant rules and regulations in this area – which are then applied by the member states – and for entering into external arrangements with third countries or qualified international organisations.

The Community's jurisdiction extends to fishing activities in national waters and on the high seas. However, measures relating to the exercise of jurisdiction over fishing vessels, the right of such vessels to fly the flag, the registration of fishing vessels, and the right to impose penal and administrative sanctions fall within the competence of the member States, providing that they comply with Community law. Community law also provides for administrative sanctions.

Council Regulation (EEC) No. 3760/92, instituting a Community system of fishing and aquaculture, is the legal basis for the common fisheries policy (CFP).

Vessels not flying the flag of one of the member States of the European Community are prohibited from entering the Community fishing zone. Access is permitted only in accordance with the terms of bilateral fishing agreements concluded by the European Community with third countries.

Responsibility for a number of areas not directly related to the conservation and management of fishery resources – research, technological development and development co-operation, for example – is shared.

A two-phase consultation process on the common fisheries policy after 2002 was launched in March 1998. In the first phase, some 350 questionnaires were sent out to representative organisations and associations of the fishing sector. The second phase, from September 1998 to June 1999, involved the organisation of thirty regional meetings in the member States.

At these meetings, fishing industry organisations, the processing sector, unions, consumer organisations, research institutes national ministries and non-governmental organisations gave their views on the common fisheries policy and on the future of fisheries in the European Union.¹

Capture fisheries

Resources

Landings for the period 1998-1999 of species subject to TAC are shown in Tables 1 and 2 (Annex).² Landings of species subject to TAC limits increased as compared with similar figures for 1997, mainly due to the inclusion of new stocks in the TAC system, some of which – such as North Sea sandeel and Atlanto-Scandian herring – have high landing volumes.

There have been only minor changes in the **status of fish stocks** since 1997. The most recent report by ACFM³ (October 1999) refers to the stocks status in 1998 and shows that most stocks are heavily fished, some of them well beyond precautionary reference points. Consequently, ACFM has recommended very severe reductions in catches and, in certain cases – such as eel, Irish Sea cod and anchovy in the Bay of Biscay – cessation of all directed fishing.

TACs and quotas for 1998, associated with certain technical fishing conditions, were adopted by the Council on 19 December 1997.⁴ They were subsequently amended several times during 1998, as follows:

- Regulation (EC) No. 783/98⁵ introduced TACs for the first time for megrim, anglerfish, turbot and brill, dab and flounder, lemon sole and witch, and skates and rays, in the North Sea, with a view to prevent non-controlled expansions of fishing effort on these fisheries.
- Commission Regulation (EC) No. 1957/98⁶ adapted certain quotas following application of the inter-annual flexibility foreseen in Regulation (EC) No. 847/96.
- Regulation (EC) No. 2386/98⁷ introduced partial exchangeability between the quotas for cod in the North Sea and in the Eastern Channel, in view of the fact that they correspond to the same biological entity.
- Regulation (EC) No. 2801/98⁸ adapted quotas of Baltic cod and sprat following exchanges with Poland, and increased the TACs for Nephrops in the North Sea and in Skagerrak and Kattegat, following increased fishing possibilities according to scientific advice.

The Council adopted TACs for 1999 on 18 December 1998.⁹ Subsequent amendments were as follows:

- Regulation (EC) No. 1570/1999¹⁰ introduced for the first time TACs for prawns and spurdog in the North Sea, with a view to prevent expansion of fishing effort in these fisheries. It also allocated the TAC for blue whiting in western waters in quotas for member States. The TAC had been unallocated for a number of years and this had led to enforcement difficulties in recent years.
- Regulation (EC) No. 1619/1999¹¹ adapted certain quotas following application of the inter-annual flexibility foreseen in Regulation (EC) No. 847/96.
- Regulation (EC) No. 2598/1999¹² increased the quotas for cod in the Kattegat and for Nephrops in the Skagerrak and Kattegat and the North Sea, following scientific indications of an increased abundance, and adapted the quotas for Baltic sprat following exchanges with Poland.

The Council adopted on 17 December 1999 the TAC Regulation for 2000, merging in a single regulation all regulatory instruments concerning catch limitations for Community vessels in all waters and, for third countries, in Community waters.

The Council of 30 March 1998 adopted Regulation (EC) No. 850/98¹³ for the conservation of fishery resources through **technical measures** for the protection of juveniles of marine organisms. This regulation replaced Regulation (EC) No 894/97, except for measures applicable to fishing for tuna with driftnets, and introduced a new approach to the protection of juvenile fish. The new rules are simpler and hence better enforceable; they are devised to reduce discarding, promote selective fishing and give increased protection to juvenile fish. Amendments during the period 1998-1999 were:

- Regulation (EC) No. 308/1999¹⁴ clarifies certain concepts and adapts the corrective measures for unnoticed omissions or inadequacies.
- Regulation (EC) No. 1459/1999¹⁵ sets out the conditions regulating the carrying on board and utilisation of gear with different mesh sizes.

- Regulation (EC) No. 2723/1999¹⁶ sets out conditions for the fishing of tuna with purse seiners in the area covered by the International Dolphin Conservation Programme and makes some minor adjustments to certain technical measures.

Moreover, on 8 June 1998 the Council adopted Regulation (EC) No. 1239/98¹⁷ amending Regulation (EC) No. 894/97 and introducing a progressive ban on the use of driftnets for tuna fishing, as well as certain measures aiming at the decommissioning of the vessels concerned or to their re-conversion to other types of fishing.

Technical measures in the Baltic Sea are adopted in the framework of the International Baltic Sea Fisheries Commission. They appeared in Community legislation via Regulation (EEC) No. 1866/86, amended on a number of occasions. In order to improve clarity, legislation was consolidated in a new instrument, Regulation (EC) No. 88/98,¹⁸ which was adopted by the Council on 19 December 1997. This was amended by Regulation (EC) No. 1520/98,¹⁹ which altered the seasons where fishing is prohibited for some species. Subsequent alterations to seasons, and other relatively minor adjustments to the technical measures, were also made in the TAC regulations for 1998 and 1999.

Mediterranean technical measures are defined in Regulation (EC) No. 1626/94. Two amendments took place in the period 1998-1999, as follows:

- Regulation (EC) No. 782/1998²⁰ introduced minimum landing sizes and seasonal closures for the fishing of bluefin tuna, as recommended by the International Commission for the Conservation of Atlantic Tunas (ICCAT).
- Regulation (EC) No. 1448/1999²¹ extended, until 31 May 2000, the derogation from the rules on trawling within the 3-mile zone and on minimum mesh sizes which had expired on 31 December 1998.

While considerable progress had been made since the adoption of Council Regulation (EC) No. 2847/93 on establishing a **control** system applicable to the common fisheries policy,²² in view of the specific shortcomings identified in the Communication from the Commission to the Council and the European Parliament – Fisheries monitoring under the common fisheries policy,²³ the Council adopted Council Regulation (EC) No. 2846/98.²⁴ The main amendments it made related to three issues considered priorities by the European Commission, *i.e.*:

- Improvement of controls after landing.
- Control of vessels flying the flag of a third country operating in Community waters.
- Co-operation between member States and with the European Commission in monitoring activities.

Council Regulation (EC) No. 2846/98 covers the “regulatory” side of monitoring, while the Commission working document “Improving the implementation of the common fisheries policy: An action plan”²⁵ outlines the general approach proposed, explaining how the regulations fit into overall policy.

In June 1999 the Council adopted Regulation (EC) 1477/1999 listing types of behaviour which seriously infringe the rules of the common fisheries policy²⁶ and requiring greater transparency on the action taken by the authorities of Member States with regard to such behaviour.²⁷

The Commission adopted:

- Commission Regulation EC No. 1449/98 of 7 July 1998 laying down detailed rules for the application of Council Regulation (EEC) No. 2847/93 on effort reports,²⁸ which defines the content of effort reports for “western waters” and summarises the information to be reported each time a ship enters or exits a fishing area or a port located within such a fishing area.
- Commission Regulation EC No. 2737/1999 of 21 December 1999 amending Regulation (EEC) No. 2807/83 laying down detailed rules for recording information on member States’ catches of fish,²⁹ the main purpose of which is to extend the application of requirements relating to logbooks and landing declarations to fishing operations in the Mediterranean.

Within the framework of Council Decision 95/527/EC on a Community financial contribution towards certain expenditure incurred by member States in implementing the monitoring and control systems applicable to the common fisheries policy,³⁰ based on investment schedules submitted by member States, the Commission adopted Decisions 98/439/EC³¹ and 99/354/EC³² on the eligibility of expenditure

to be incurred by certain Member States for the purpose of introducing monitoring and control systems applicable to the common fisheries policy in 1999 and 1998 respectively.

The Commission also continued its work on monitoring and enforcing TACs and quotas as well as technical conservation measures in Community waters, the waters of certain third countries and certain international waters. As a result of monitoring, 41 fisheries were closed in 1998 and 32 in 1999. The Commission also enforced conservation measures and fishing agreements with third countries of the North, the ACP countries and Morocco and continued to monitor fishing in the area regulated by the Northwest Atlantic Fisheries Organisation (NAFO). The Commission is also helping to develop monitoring schemes for the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the North-East Atlantic Fisheries Convention (NEAFC).

The Commission regularly organised meetings of the Expert Group to review progress on setting up the satellite-based vessel monitoring system (VMS), principally with a view to launching the second phase of the system on 1 January 2000. It also negotiated pilot VMS projects with Norway, the Faroe Islands and the Baltic countries.

As a contracting party to NEAFC, the European Community took part in developing a control and enforcement scheme for fishing vessels operating in the NEAFC area and a programme aimed at promoting compliance with NEAFC recommendations by vessels of non-contracting parties. In order to ensure that these measures would be implemented at Community level, the Council adopted Regulation (EC) No. 2791/1999 laying down certain control measures applicable in the area covered by the Convention on future multilateral co-operation in the north-east Atlantic fisheries.³³

Bilateral agreements and arrangements

In 1998 and 1999, the European Community renewed its annual bilateral agreements with Russia, the Baltic countries and Poland.

During the same period, the European Community took part, as a contracting party in various meetings of regional fishing organisations, such as the International Baltic Sea Fishing Commission (IBSFC), the North Atlantic Salmon Conservation Organisation (NASCO), the Northwest Atlantic Fisheries Organisation (NAFO), the North-East Atlantic Fisheries Convention (NEAFC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the General Fisheries Council for the Mediterranean (GFCM).

In June 1998, the Council adopted a decision on the accession of the European Community to GFCM.³⁴

The Council adopted Regulation (EC) 1446/1999³⁵ amending regulation (EC) No. 858/94 introducing a system for the statistical monitoring of trade in bluefin tuna (*Thunnus thynnus*) within the Community and incorporating the recommendations adopted by ICCAT, which are aimed facilitating management of the system by the Community and its Member States. The Council also adopted Regulation (EC) No. 1435/98,³⁶ prohibiting imports of Atlantic bluefin tuna (*Thunnus thynnus*) from Belize, Honduras and Panama.

The Council also adopted a decision to ratify the Agreement on implementing the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling stocks and highly migratory fish stocks.³⁷

In June 1999, the Council adopted a decision on the provisional application by the European Community of the Agreement on the International Dolphin Conservation Programme³⁸ within the framework of the Inter-American Tropical Tuna Commission (IATTC).

The Council also adopted a decision authorising the Kingdom of Spain to accede on a temporary basis to the Convention establishing IATTC.³⁹ The European Community also took part in the work of IATTC as an observer.

In July 1999, the Council adopted Regulation (EC) No. 1721/1999⁴⁰ laying down certain control measures in respect of vessels flying the flag of non-contracting parties to the Convention on the

Conservation of Antarctic Marine Living Resources (CCAMLR), including the compulsory inspection of vessels voluntarily calling at ports of contracting parties.

In December 1999, the Commission presented a Communication to the Council and Parliament on Community participation in regional fisheries organisations (RFOs).⁴¹ The Communication evaluates the role of the Community in regional fisheries organisations and also focuses on monitoring and inspection in RFOs.

Fisheries protocols with the Republic of Guinea, Comoros and Madagascar were renewed in 1998 and a new agreement and protocol were signed with Gabon.

In the course of 1999, the European Community renewed protocols with Angola, Mauritius, Sao Tome and Principe, and the Seychelles.

The Council authorised Spain and Portugal to extend their fishing agreements with South Africa until March and April 2000,⁴² respectively.

Following the Council's conclusions of 30 October 1997 on Community policy on fishing agreements, an independent cost/benefit analysis of fishing agreements was launched in 1998. The study will assess the impact of fishing agreements on the European Community and third countries.

Fisheries and the environment

In May 1998, the European Commission adopted a report on the implementation of the "Statement of conclusions"⁴³ from the intermediate ministerial meeting on the integration of fisheries and environmental issues, held in March 1997 in Bergen. The report reviewed initiatives that had been taken since the last ministerial meeting in areas such as the protection of juveniles, crustaceans and molluscs, protection from activities other than fisheries, reduction of fishing fleet capacity and/or the deployed fishing effort, and monitoring and enforcement.

In June 1999, the European Commission published its second report to the Council and the European Parliament on the implementation of the statement of conclusions from the intermediate ministerial meeting on the integration of fisheries and environmental issues.⁴⁴ The second report outlines the main steps by the Community, such as the incorporation of the precautionary approach in fisheries management, the review of the CFP monitoring system and the revision of the regulation on technical measures for the conservation of fisheries resources.

In July 1999, the European Commission published a Communication to the Council and the European Parliament on fisheries management and nature conservation in the marine environment,⁴⁵ designed to incorporate environmental and sustainable development concerns more fully in the common fisheries policy. It proposes measures and instruments to increase the protection of marine ecosystems from the impact of fisheries activities.

Integration of environmental concerns in the fisheries conservation policy has led to the adoption of measures whose ultimate objective is the protection of species other than commercial fish. The most recent of these is the setting of an area in the North Sea where fishing for sandeel is prohibited, in order to increase the availability of this forage species for marine predators.

The Community decisions concerning TACs are taken in the light of scientific advice issued by the Scientific, Technical and Economic Committee for Fisheries (STECF), which bases its advice on the reports from the International Council for the Exploration of the Sea (ICES). In recent years, and in particular since 1998, ICES has been building up a system of reference points for management based on the **precautionary approach**. The precautionary principle is therefore being progressively embedded in the Community's decision-making processes.

As a result of agreement in bilateral negotiations with Norway in 1998 and 1999 the Community and Norway have adopted long-term management measures, in accordance with the precautionary approach proposed by ICES, for North Sea stocks of cod, haddock, saithe, plaice and herring, and for North-East Atlantic mackerel. Similar approaches have been adopted for certain Baltic stocks, in the framework of IBSEFC, and for Atlanto-Scandian herring.

The Council of the Baltic Sea States, including the European Union for the Baltic area resulted in a Baltic 21 strategy that adopted the Agenda 21 process in 1998. Responsibility for the fisheries sector was assigned to the International Baltic Sea Fisheries Commission (IBSFC). The goals for sustainable fishery are to achieve a high probability of fish stocks being able to replenish themselves over a long period of time within a sound ecosystem, while offering stable economic and social conditions. In accordance with the goals, agreements have been reached on a salmon action plan and on long-term management plans for cod.

In 1999, European Commission services started preparation of a **biodiversity action plan** with respect to fisheries and aquaculture. The final version will emerge in 2000.

On the initiative of the Commissioners, a process has started to develop an EU strategy for **sustainable development**. The aim is to develop a strategy based on coherent and preferably mutually reinforcing objectives in economic, social and environmental terms. The common fisheries policy exists to secure these objectives and the Fisheries Directorate-General will take a very active part in this process.

The European Community attended the Seventh Session of the United Nations Commission on Sustainable Development in April 1999, which took oceans and seas as its sectoral theme. The Commission proposed to the General Assembly the introduction of an informal consultative process with a view to co-ordinating and integrating various initiatives relating to the oceans and seas.

Government financial transfers

In 1998, the Community began its discussions on the review of its structural policies to prepare the programming of aid under the Structural Funds for 2000-2006. In June 1999, the Council of the European Union adopted regulations on the revision of the Community structural funds,⁴⁶ including a new regulation on the Financial Instrument for Fisheries Guidance (FIFG) (No. 1263/1999 of 21 June 1999).

Later in 1999, the Council established detailed rules and arrangements for Community structural assistance in the fisheries sector (Council Regulation (EC) No. 2792/99 of 17.12.1999). The new regulation lays down conditions for aid to the fleet. The general principle is that government aid should not contribute to an increase in fleet capacity. In order to obtain approval for government aid, the member States of the European Community must put in place permanent arrangements for monitoring fleet renewal and modernisation. Government aid for fleet modernisation or renewal can be granted only if it complies with the objectives of the multi-annual guidance programmes.

Under the Community structural policy reforms adopted in June 1999, a decision was taken not to extend the PESCO initiative to the year 2000.

In April 1999, the European Commission adopted the annual report to the Council and the European Parliament on the results of the multi-annual guidance programmes (MAGPs) up to the end of 1997. According to the report, the fishing capacity of the Community fleet fell by 2% in tonnage and 3% in power in 1997. The report shows that the overall targets set for 2001 under MAGP IV (1997-2001) are already well on the way to being met.

Post-harvesting policies and practices

The central goal of the European Community is to achieve the highest possible level of public health protection for consumers. To this end, the Commission's White Paper on Food Safety⁴⁷ sets out a legislative reform plan to complete the EU's "farm-to-table" approach to food safety and establishes a new European Food Authority. The guiding principle throughout the White Paper is that food safety policy must be based on a comprehensive, integrated approach. The Authority, which should be in place by 2002, will concentrate on risk assessment and risk communication and is to be based on the principles of the highest levels of independence, of scientific excellence and of transparency in its operations.

The European Community adopted a revised common market organisation on 17 December 1999,⁴⁸ which introduced new rules on the minimum level of information to be made available to the consumer for all fishery products in the Community. The commercial designation, the production method (aquaculture or wild) and the area of capture will have to be marked or labelled on fish products from 1 January 2002. Consumers will benefit from the increased transparency proposed at retail level, which will reduce fraud concerning the origin and nature of items on sale.

Markets and trade

The action programme for the improvement of the Japanese import quota management systems was negotiated between Japan and the EU in July 1997. The subsequent biannual meetings have led to increased import quotas for certain species and will improve trade with this important export market for the European Community.

Community pricing policy for fishery products has always endeavoured to reflect market realities rather than maintain artificially high prices and so the intervention mechanism works as a safety net that operates only at the margin. This can be illustrated by the limited financial support provided under existing Community legislation.⁴⁹ Financial support for market intervention is marginal in terms of total production: the Community spent approximately euros 11 million on intervention measures in 1998, and approximately euros 8 million in 1999. This represents an average of about 0.3% of the value of EU species eligible for intervention.

Strong demand for fisheries products combined with stable Community production has led to increasing prices for Community species. This has led to a decrease in the amounts of fish being withdrawn from the market: withdrawals of pelagic species represented 2.47% of the production in 1998 (compared to 4.0% in 1997), and for white fish species 0.67% of production was withdrawn in 1998 (1.68% in 1997).

The reform of the common market organisation, referred to above, was a major development in market policy in 1999. It is also the first time that the concerns of consumers and the processing industry have been incorporated into the market legislation and will reinforce the competitiveness of the sector by strengthening the role of producers' organisations (POs). The main objectives of the reform were:

- To reduce waste by encouraging fishermen to fish only what can be sold.
- To strengthen POs so that they can become more active and dynamic players in the market, with stronger links to the rest of the chain.
- To protect consumers better, by providing fuller information at the point of sale.
- To improve the balance between supply and demand, not only for high-quality fresh fish but also for frozen fish for processing, most of which has to be imported.

The new legislation emphasises the importance of POs taking a more pro-active, preventive role in managing supply to the market rather than simply intervening "after the event" by the withdrawal of unsold products. Two measures in particular should be noted:

- There is a new obligation for POs to put in place annual "operational programmes" in order to manage the landings of their members and take measures to avoid withdrawals. Degressive aid is granted temporarily to help POs meet this new responsibility.
- A re-balancing of *intervention* mechanisms by reducing support for definitive withdrawals and instead favouring carry-over aid, through which producers may stock and stabilise the product before replacing it on the market. The reduction in levels of financial compensation and in eligible quantities for withdrawals means that intervention will increasingly fulfil an emergency role.

Trade: volumes and values

The following table shows the pattern of external trade in fisheries between 1997-1999:

	Imports		Exports		Balance	
	Quantity	Value	Quantity	Value	Quantity	Value
1996	3 983	8 476	1 503	1 684	-2 480	-6 792
1997	4 285	9 460	1 594	1 874	-2 691	-7 587
1998	4 468	10 998	1 529	1 806	-2 938	-9 191
1999	4 396	10 663	1 566	1 869	-2 830	-8 793

Source: Eurostat-Comext. Quantity: '000 tonnes, Value: million Euros

The table indicates that the trade balance for fisheries is in deficit: the European Union imports more fish than it exports. The negative balance in terms of value is rising although the deficit in terms of quantity is relatively constant, which is primarily due to the global increase in the price of fisheries products and relatively stable demand.

However, the Community is not in deficit for all fisheries products: the trade balance for each product in 1998 and 1999 illustrates that exports of some products (pelagic species in particular) exceeded imports.

The **reform of the common market organisation** had an effect on the Community's trade policy. The Community agreed on a partial or total suspension of tariffs for products needed as raw materials for which there is insufficient Community supply (cod, Alaska pollack, blue grenadier, surimi, and prawns). It also agreed on a series of multi-annual tariff quotas for more sensitive species (including herring, tuna loins). The Community processing industry depends on stable imports at international prices in order to remain competitive; the tariff regime will therefore become more coherent with market needs and will facilitate exports to the European Union.

At the end of 1999, negotiations on a free trade agreement with Mexico were concluded. The agreement comprises a liberalisation of almost the entire fisheries products trade at the end of a transitory period (10 years) and is expected to enter into force on 1 July 2000.

Scientific, technical and economic research

Implementing the common fisheries policy requires numerous decisions on the management of fisheries resources, structural controls on fishing fleets, aquaculture and processing industries, etc. In order to anticipate and respond to the constantly evolving needs of the CFP, these decisions must be based on increasingly thorough scientific analyses. Consequently, the demand for research on fisheries, aquaculture and food is consistently high.

In order to promote and give direction to this research, the Commission can draw on two types of financial resources providing support for:

- Scientific research projects conducted under specific programmes that are themselves part of Community framework programmes designed to promote innovative scientific research to underpin Community policies, including the CFP.
- Scientific, technical and economic studies, which facilitate the collection of scientific data, needed to answer specific questions, whose results can be applied directly for the immediate management of the CFP.

Since 1983, multi-annual framework programmes have ensured the co-ordination of the European Community's research and technological development (RTD). Each framework programme comprises a number of specific programmes focusing on particular fields of research and technological development. The second, third and fourth framework programmes covered the periods 1988 to 1992 and 1991 to 1994, while the Community's fifth framework RTD programme,⁵⁰ which has a budget of Euros 14.96 billion, covers the period 1998 to 2002.

The fifth framework programme comprises four specific programmes, each of which is sub-divided into "key actions". The main aim of the first of these programmes, the "Quality of life and management of living resources" programme, which has a budget of Euros 2.4 billion, is to improve the contribution of RTD to optimising the production and use of living resources in Europe. It is expected to help to improve food quality, meet the needs of the processing industry, develop more environmentally friendly methods of production and ensure the integrated development and management of resources. The programme comprises six key actions, of which the fifth – "Sustainable agriculture, fisheries and forestry, and integrated development of rural areas"⁵¹ – covers fisheries and aquacultural research.

The specific programmes, including the "Quality of Life" (QoL) programme, are implemented through calls for proposals for research projects, specific measures for small and medium-sized enterprises (SMEs), fellowships and accompanying measures, as follows.

- RTD projects eligible for Community financial aid are selected after calls for proposals. Three calls for proposals were closed in January 1998 (for the fourth framework programme) and June and November 1999 (fifth framework programme).
- Specific measures to encourage and facilitate the participation of SMEs in RTD activities operate via standing calls for proposals with selections taking place several times a year. Four selections have so far taken place, one at the beginning of 1998 (for the fourth framework programme) and three in 1999 (for the fifth framework programme).
- “Marie Curie” training fellowships are awarded to young researchers who wish to carry out scientific work in research laboratories outside their country of origin and host fellowships are awarded to research institutions, which offer training for young researchers in order to promote the integration of European research. The fellowships are awarded through standing calls for proposals and selections take place several times a year. Four selections have so far taken place, one in early 1998 (for the fourth framework programme) and three in 1999 (for the fifth framework programme).
- Accompanying measures finance activities in support of research, including the dissemination of results through seminars, workshops and the publication of summaries of available results. These measures are financed through standing calls for proposals with several annual selections. Three selections have so far taken place: one in early 1998 (for the fourth framework programme) and two in 1999 (for the fifth framework programme).

The Commission of the European Communities provides funding (of around Euros 20 million each year) for scientific, technical and economic studies on areas of specific relevance to the CFP. The aim of these studies is to contribute to the collection of the basic scientific data, which are sent to regional fisheries management bodies and serve as a basis for the scientific evaluation of the status of stocks and for analyses of appropriate conservation measures. These studies were selected on the basis of a call for proposals published in 1998 and 1999, as every year.

Outlook

In 2000, the European Community proposes to continue implementing the common fisheries policy while at the same time contributing to the Community's environmental and development objectives. The emphasis will therefore be placed on:

- Improving the management and control of fisheries resources.
- Stepping up international co-ordination, chiefly through fishing agreements with regional fisheries organisations.
- Implementing the new common organisation of the markets.
- Implementing multi-annual guidance programmes (MAGPs).
- Continuing with consultations on the review of the common fisheries policy after the year 2002.

Special topic: Fishing Capacity

Definition of capacity

The capacity of the EU fleet is defined only in terms of tonnage in gross tonnes (GT) and main engine power (kW).

This definition does not attempt to take into account any of the other parameters that might influence the fishing effort exerted by the fleet, nor the effects of technological improvements in fishing gears, fish finding equipment, navigational aids, and so on.

This definition of capacity has been adopted to allow simple and clear objectives to be defined for the management of fleet capacity.

Policies to manage fishing capacity

The FAO Code of Conduct for Responsible Fisheries states that measures should be taken to prevent or eliminate excess fishing capacity and that fishing effort should be commensurate with sustainable use of fishery resources.

The EU has long recognised the need to manage fishing capacity so that it is in line with available resources. Multi-annual guidance programmes (MAGP) that fix capacity ceilings for the fishing fleets of each Member State have been in force since 1983. The MAGPs classify the fleets into various segments according to the stocks exploited and the fishing gears so that any capacity reductions that may be necessary can be better targeted.

The MAGP currently in force covers the period 1 January 1997 until 31 December 2001.

Public aid for the permanent withdrawal of capacity in order to meet the objectives of the MAGP is available under the financial instrument for fisheries guidance (FIFG). An incentive to meet these targets is provided by the availability of public aid for fleet renewal and modernisation once the MAGP objectives have been achieved.

Capacity that has been removed with public aid can never be replaced, even without public aid and even if the fleet capacity is below the objectives of the MAGP. The only exception to this is for the small scale coastal segment of the fleet (vessels less than 12 metres overall length other than trawlers), where vessels removed with public aid can be replaced provided that this is done without public aid.

Once the objectives of the MAGP have been achieved, it is possible to use public aid to renew and modernise the fleet. However, any capacity introduced with public aid must be compensated by the withdrawal without public aid of at least an equivalent capacity. This means that public aid cannot be used to increase the capacity of the fleet even if the capacity is below the MAGP objectives.

Reporting requirements

Information on the fleet is recorded in the fishing vessel register of the Community. The following parameters are recorded for each vessel:

- Country of registration
- Name of vessel
- Port of registration
- International radio call sign
- External marking
- Types of fishing gear
- Length overall
- Length between perpendiculars
- Tonnage 2930/86
- Tonnage Oslo Convention
- Tonnage, other standard
- Main engine power
- Auxiliary engine power
- Hull material
- Date of entry into service
- Year of construction
- Segment of the multi-annual guidance programme to which the vessel belongs
- Importing/exporting country

Member States must communicate these data for every vessel that is licenced to fish. Each vessel is identified by an internal number unique to that vessel. Any modification to the vessel that results in a change to any of the parameters recorded in the register must be immediately communicated. This is done directly by the authorities of the member State concerned, who have direct access via the internet to the data in Community register concerning their own fleet.

Capacity of the EU fleet

According to the information in the fishing vessel register of the Community as at April 2000, the capacity of the EU fleet at the end of 1998 and 1999 was as follows:

	End 1998			End 1999		
	Number	GT	KW	Number	GT	KW
Belgium	139	22 613	63 941	128	22 683	63 453
Germany	2 310	67 735	159 720	2 315	69 553	160 615
Denmark	4 375	97 686	370 223	4 227	97 809	367 724
Spain	17 522	554 029	1 406 110	17 337	560 982	1 396 440
Finland	3 881	22 549	211 051	3 762	21 300	203 547
France	8 536	209 809	1 124 859	8 305	211 522	1 106 881
United Kingdom	8 431	256 730	1 021 963	8 486	262 992	1 030 505
Greece	20 485	106 154	647 212	19 833	103 022	620 649
Ireland	1 274	58 572	191 714	1 207	58 317	193 346
Italy	18 933	251 260	1 523 085	18 890	249 118	1 517 648
The Netherlands	1 053	177 308	474 740	1 073	189 854	487 037
Portugal	11 095	118 100	388 511	10 927	117 664	395 761
Sweden	2 128	47 796	236 889	2 084	46 884	233 454
Total	100 162	1 990 341	7 820 018	98 574	2 011 700	7 777 060

NOTES

1. Report from the Commission on the regional meetings arranged by the Commission in 1998-1999 on the common fisheries policy after 2002 (COM/2000/14 final, http://eurospa.eu.int/comm/dg14/docrap_fr.htm).
2. Landing figures for species not subject to TAC are not yet available for 1999 and are only complete for 1998; it is believed that they represent about 30% of the total landings.
3. Advisory Committee on Fisheries Management of the International Council for the Exploration of the Sea.
4. Regulation (EC) No. 45/98, *Official Journal of the European Communities*, No. L 12, 19.1.1998, p. 1.
5. *Official Journal of the European Communities*, No. L 113, 15.4.1998, p. 8.
6. *Official Journal of the European Communities*, No. L 254, 16.9.1998, p. 3.
7. *Official Journal of the European Communities*, No. L 297, 6.11.1998, p. 2.
8. *Official Journal of the European Communities*, No. L 349, 24.12.1998, p. 10.
9. Regulation (EC) No 48/1999, *Official Journal of the European Communities*, No. L 13, 18.1.1999, p. 1.
10. *Official Journal of the European Communities*, No. L 187, 20.7.1999, p. 5.
11. *Official Journal of the European Communities*, No. L 192, 24.7.1999, p. 14.
12. *Official Journal of the European Communities*, No. L 316, 10.12.1999, p. 15.
13. *Official Journal of the European Communities*, No. L 125, 24.4.1998, p. 1.
14. *Official Journal of the European Communities*, No. L 38, 12.2.1999, p. 6.
15. *Official Journal of the European Communities*, No. L 168, 3.7.1999, p. 2.
16. *Official Journal of the European Communities*, No. L 328, 22.12.1999, p. 9.
17. *Official Journal of the European Communities*, No. L 171, 17.6.1998, p. 1.
18. *Official Journal of the European Communities*, No. L 9, 15.1.1998, p. 1.
19. *Official Journal of the European Communities*, No. L 201, 17.7.1998, p. 1.
20. *Official Journal of the European Communities*, No. L 113, 15.4.1998, p. 6.
21. *Official Journal of the European Communities*, No. L 167, 2.7.1999, p. 7.
22. *Official Journal of the European Communities*, No. L 261, 20.10.1993, p. 1.
23. (COM/98/0092 final).
24. *Official Journal of the European Communities*, No. L 358, 31.12.1998, p. 5, amending regulation (EC) No. 2847/93.
25. (SEC (98) 949.2 of 03.06.1998).
26. *Official Journal of the European Communities*, No. L 167, 02.07.1999, p. 5.
27. On 21 December 1999, the Commission adopted Commission Regulation (EC) No. 2740/1999 (*Official Journal of the European Communities*, No. L 328, 22.12.1999, p. 62) laying down detailed rules for the application of Council Regulation (EC) No. 1447/1999 establishing a list of types of behaviour which seriously infringe the rules of the common fisheries policy.
28. *Official Journal of the European Communities*, No. L 192, 08.07.1998, p. 4.
29. *Official Journal of the European Communities*, No. L 328, 22.12.1999 p. 54, Corrigendum *Official Journal of the European Communities*, No. L 12, 18.01.2000, p. 37.
30. *Official Journal of the European Communities*, No. L 301, 14.12.95, p. 30.
31. *Official Journal of the European Communities*, No. L 194, 10.07.1998, p. 50.
32. *Official Journal of the European Communities*, No. L 137, 01.06.1991, p. 41.
33. *Official Journal of the European Communities*, No. L 337, 30.12.99, p. 1.
34. *Official Journal of the European Communities*, No. L 190, 04.07.1998.

35. *Official Journal of the European Communities*, No. L 167, 02.07.1999 (amending Regulation (EC) No. 858/94, *Official Journal of the European Communities*, No. L 99, 19.04.1994).
36. *Official Journal of the European Communities*, No. L 191, 07.07.1998.
37. *Official Journal of the European Communities*, No. L 189, 03.07.1998.
38. *Official Journal of the European Communities*, No. L 147, 12.06.1999.
39. *Official Journal of the European Communities*, No. L 155, 22.06.1999 (Council Decision 1999/405/EC).
40. *Official Journal of the European Communities*, No. L 203, 03.08.1999.
41. COM(1999) 613 final.
42. Decisions 1999/544/EC and 1999/545/EC (*Official Journal of the European Communities*, No. L 209, 07.08.1999).
43. COM (1998) 326 final.
44. COM (1999) 270.
45. COM (1999) 363.
46. Council Regulation (EC) No. 1260/1999 of 21 June 1999 laying down general provisions on the Structural Funds.
47. COM/99/0719 final.
48. *Official Journal of the European Communities*, No. L 17, 21.1.2000, p. 22.
49. Article 12 of Council Regulation (EC) No. 3759/92 on the common organisation of the market in fishery and aquaculture products (as amended).
50. Decision No. 182/1999/EC of the European Parliament and of the Council of 22 December 1998 concerning the fifth framework programme of the European Community for research, technological development and demonstration activities (1998 to 2002), *Official Journal of the European Communities*, No. L 026, 01.02.1999, p. 1.
51. Council Decision of 25 January 1999 adopting a specific programme for research, technological development and demonstration on quality of life and management of living resources (1998 to 2002), *Official Journal of the European Communities*, No. L 064, 12.03.1999, p. 1.

Annex

Table I. TACs, allocations and catches (in tonnes) in 1998

FAO code	Species-Name	TAC(*)	Allocations	Catch
HER	Herring	2 445 570	956 830	697 026.5
SPR	Sprat	401 540	432 490	409 934.7
ANE	Anchovy	45 000	45 000	32 198.9
SAL	Atlantic salmon	499 540	414 750	340 648
CAP	Capelin	0	53 340	45 449.9
COD	Cod	368 228	361 865	255 251
HAD	Haddock	167 700	139 080	104 425.9
POK	Saithe	116 700	73 910	68 489.7
POL	Pollack	22 100	22 100	6 592.8
NOP	Norway pout	220 000	180 000	32 723.1
WHB	Blue whiting	562 500	311 500	243 915.6
WHG	Whiting	125 840	105 535	58 678.1
HKE	Hake	67 330	67 330	35 803.7
JAX	Jack and horse mackerels	462 000	450 000	361 044.6
SAN	Sandeels	1 000 000	1 120 000	667 243
MAC	Mackerel	519 615	379 335	374 332.4
BFT	Northern bluefin tuna		16 073	6 052
SWO	Swordfish	25 620	11 656	10 650.4
PLE	European plaice	118 150	114 840	89 255.5
SOL	Common sole	35 525	35 525	29 941.8
SOX	Soles	2 000	2 000	967.6
LEZ	Megrim	35 840	38 840	21 028.4
ANF	Anglerfish nei	52 900	74 970	46 683.1
T/B	Turbot/Brill		9 000	4 081.9
SRX	Skates and rays nei		6 060	2 761.5
D/F	Common dab/Flounder	30 070	30 070	18 081.4
L/W	Lemon sole/Witch flounder	12 000	12 000	6 296.8
PEN	Penaeus shrimps	4 108	4 000	
PRA	Northern prawn	13 160	10 319	8 154.7
NEP	Norway lobster	64 680	64 680	49 307.3
RED	Atlantic redfish		96 850	30 047.2
GHL	Greenland halibut		15 970	14 856.8
OTH	Other species		12 210	7 927.8
N/W	Norway pout and blue whiting		50 000	67 044
I/F	Industrial fish		800	7
C/H	Cod and haddock		500	381
B/L	Blue ling and ling		3 600	1 485
FLX	Flat fish		1 050	52
POC	Polar cod		2 000	
RNG	Roundnose grenadier		7 200	6 041.4
CAT	Catfishes (Wolffishes) nei		2 000	699.8
HAL	Atlantic halibut		0	121.8
SKA	Skates		0	9 897.5
HKR	Red hake		0	1 224.7
HKW	White hake			492.1
RHG	Roughhead grenadier			7 185.7
CAA	Atlantic wolffish			28.9
WIT	Witch flounder		0	1 807.6
PLA	American plaice		0	1 560.6
W/F	Whitefish		190	5.1
YEL	Yellow tail flounder		0	654.8
VFF	Fishes unsorted, unidentified			705.5
SQI	Short-finned squid	150 000		4

* Total allowable catches as specified in Regulation No. (EC) 45/98 of 19.12.1997.

Table 2. TACs, allocations and catches (in tonnes) in 1999

FAO code	Species-Name	TAC(*)	Allocations	Catch
HER	Herring	2 383 450	886 241	661 314
SPR	Sprat	755 000	510 290	416 115
ANE	Anchovy	46 000	45 898	33 717
SAL	Atlantic salmon	510 000	410 486	260 525
CAP	Capelin	0	59 340	3 837
COD	Cod	368 308	329 257	200 668
HAD	Haddock	134 950	116 985	86 036
POK	Saithe	128 800	75 850	67 776
POL	Pollack	22 100	22 100	5 027
NOP	Norway pout	220 000	180 000	34 000
WHB	Blue whiting	1 021 000	498 000	235 001
WHG	Whiting	97 350	86 593	59 995
HKE	Hake	64 120	64 120	40 840
JAX	Jack and horse mackerels	407 000	401 927	285 997
SAN	Sandeels	1 000 000	1 120 000	549 750
MAC	Mackerel	523 745	355 295	319 308
BFT	Northern bluefin tuna	32 000	16 136	12 856
SWO	Swordfish	25 320	11 509	7 399
PLE	European plaice	134 655	130 790	96 883
SOL	Common sole	36 985	37 008	32 718
SOX	Soles	2 000	2 000	844
LEZ	Megrim	38 840	40 874	19 084
ANF	Anglerfish nei	73 470	73 484	41 958
T/B		9 000	9 000	4 325
SRX	Skates and rays nei	6 060	6 060	5 257
D/F		30 070	30 070	17 007
L/W		12 000	12 000	6 388
PEN	Penaeus shrimps	4 108	4 000	3 495
PRA	Northern prawn	20 173	17 335	8 137
DGS	Dogfish	8 870	8 870	38
NEP	Norway lobster	66 350	66 350	51 077
RED	Atlantic redfish	7 000	95 920	37 959
GHL	Greenland halibut		18 430	16 241
OTH	Other species	760	12 210	8 231
N/W	Norway pout and blue whiting		50 000	67 897
I/F	Industrial fish	800	800	114
C/H	Cod and haddock	500	500	500
B/L	Blue ling and ling	3 600	3 600	2 827
FLX	Flat fish	1 000	1 050	89
POC	Polar cod		2 000	
RNG	Roundnose grenadier		7 200	176
CAT	Catfishes (Wolffishes) nei		2 000	1 098
HAL	Atlantic halibut		0	191
SKA	Skates			11 041
HKR	Red hake			1 349
HKW	White hake			444
RHG	Roughhead grenadier			6 359
CAA	Atlantic wolffish			32
WIT	Witch flounder	0	0	1 750
PLA	American plaice		0	1 847
W/F	Whitefish	190	190	6
YEL	Yellow tail flounder		120	1 126
VFF				880
SQI	Short-finned squid		0	

* Total allowable catch as specified in Regulation No. (EC) 48/99 of 18.12.1998.

BELGIUM

Summary

In 1999, total landings of fish by Belgian fishermen fell by some 700 tonnes to 26 500 tonnes (-3%), and landings in foreign ports by 750 tonnes. Direct exports thus totalled 8 250 tonnes, *i.e.* 31% of total catches.

The value of landings in Belgian and foreign ports remained stagnant at Euro 87 million.

The main species caught was sole, which accounted for 16% of catches and 39% of value. This high-quality species thus earned Euro 34 million. Plaice catches were worth Euro 16 million.

Legal and institutional framework

Belgium's fishing policy is pursued within the framework of Common Fisheries Policy described in the chapter on the EU. In areas where supplementary measures have been introduced at the national level, responsibility for the management of sea fishery resources lies with the federal government and relevant public authorities. The Minister for Agriculture and the Middle Classes is responsible for fishing policy.

The Minister for Agriculture and the Flanders Region is responsible for economic planning and structural aid. The regions are therefore responsible for promoting fishing efforts.

The Act of 12 April 1957 authorised the King to specify measures for the conservation of marine biological resources and was supplemented by the Act of 28 March 1975 on trade in agricultural, horticultural and sea fishery products.

The Act of 13 June 1969 set out provisions regarding and Belgium's fishing zone was established under the Act of 10 October 1978.

The Royal Order of 21 June 1994 laid down provisions regarding fishing licences, as well as temporary measures for the implementation of the EU fisheries conservation and management regime.

Since early 1988 a fishing licensing scheme has been in operation, thus restricting the number of fishing vessels.

By as early as 1 July 1999, all Belgian fishing vessel operators were obliged to demonstrate that a genuine economic link existed between the fishing vessel and the member State by showing that the vessel's fishing activities related solely to the populations dependent upon those activities and to related industries (Royal Order of 3 February 1999).

The Belgian fleet consists of two segments, namely fishing vessels whose engine rating does not exceed 221 kW and those whose rating exceeds 221 kW. Under the Royal Order of 13 May 1999, fishing licences and engine ratings may be combined provided that the maximum fishing vessel engine rating of 957 kW is not exceeded. Changing segment, however, is not permitted.

In accordance with criteria to be set out by the Minister, all fishing vessels must be equipped with an operational on-board satellite positioning system which meets relevant national and European standards; if not, the fishing licence will be withdrawn.

To control the gross tonnage of the fleet, the Minister has reduced the coefficient used to determine gross tonnage for all categories of fishing vessel (Royal Order of 20 December 1999).

Catch sector

Performance

The number of vessels landing their catches in Belgian ports in 1999 amounted to 129 units. The weighted average engine rating, however, rose by 5% to 536 kW, while the number of days at sea fell by 2% to 21 560 days. Landings per day at sea rose by 2% to 845 kg with the result that the total volume of fishery products caught by vessels registered under the Belgian flag and landed for sale in Belgian ports remained stagnant at 18 205 tonnes. Since the average price of catch assortments remained unchanged, earnings amounted to BEF 2.5 billion, representing BEF 115 400 per day at sea (+1%).

Direct exports through landings in foreign ports fell by about 750 tonnes to around 8 250 tonnes. Overall landings amounted to approximately 26 400 tonnes (–3%). Almost a third of the fish caught by vessels registered under the Belgian flag was therefore sold in foreign ports.

Overall earnings in foreign ports amounted to BEF 983 million (+0%). The overall value of fishery products caught by vessels registered under the Belgian flag and sold at auction amounted to BEF 3 469 million (+0%) in 1999.

Landings by foreign vessels in Belgian ports amounted to approximately 400 tonnes.

Landings of cod fell by 35% to 2 300 tonnes. The decline in landings resulted in a 26% increase in cod prices; the value at auction, however, fell by 18% to BEF 210 million.

The average price of sole, the most important species for Belgium, fell from BEF 378/kg to BEF 320/kg. This decline of around 15% in price was directly linked to the arrival at the end of 1998 of the 1996 cohort in catches.

Total landings of sole rose by 265 tonnes, but due to the decline in prices earnings fell by BEF 95 million to BEF 1 072 (–8%).

The volume of landed plaice rose by 14% to 4 900 tonnes. Furthermore, prices strengthened from BEF 72/kg to BEF 79/kg. Average price formation, however, proceeded smoothly throughout the campaign. During the first four months of the year, when plaices are thin, prices improved by 30% to reach BEF 77/kg, whereas during the period May to December average prices remained unchanged at BEF 78/kg.

Management of commercial fishing

In order to stagger landings the Minister decided to introduce temporary additional measures to conserve fish stocks at sea. These Ministerial Orders were decided upon after consultation with the Quota Commission of the shipowners' association.

Catches of sole, plaice and cod were limited by unit of time to ensure optimal distribution of catches throughout the fishing season. A cap has been placed on the maximum number of permitted days sailing. During the first quarter (reproduction), North Sea plaices are about to spawn therefore very thin, thereby making it difficult to market fillets and lowering prices. Fishing targeted on this particular species is no longer possible as a result of the introduction of regulations with regard to by-catches.

To optimise quota use there is on average one amendment a month to supplementary measures.

Management of recreational fishing

Recreational fishing is governed by the Royal Order of 11 March 1996 amending the Royal Order of 14 August 1989 providing for supplementary national measures for the conservation and management of fishing waters and the control of fishing activities.

The constant increase in the number of sports anglers using large trawl nets has made it difficult to ensure sufficient protection for fish populations in Belgian territorial waters, which has distorted competition with professional fishermen and created tension between the latter and sports anglers.

Vessels with an overall length of 8 metres or less are solely permitted to fish for shrimp with a single rod of no more than 3 metres in length or a single otter trawl whose upper bolt-rope measures no more

than 4.5 metres in length. In addition, fishing for shrimp is forbidden between 10.00 p.m. and 5.00 a.m. and catches may not be sold.

Since the 1998 fishing season, restrictions have also been placed on angling with passive fishing tackle.

Inspection

The revised regulations regarding inspection which enter into force on 1 January 2000 contain a number of major changes with regard to the performance of inspections, notably in respect of the transport of fish.

Fisheries inspectors issued 62 fines and impounded 6 810 kg of illegally imported fish (with a market value of BEF 1.2 million) and 280 kg of undersized fish.

The selection procedure regarding the choice of an automatic vessel monitoring system (VMS) to track the position of fishing vessels has been completed and agreements signed with the sector with regard to the choice of providers (communications satellite) and land station, sharing of communications costs and the procedure for installing satellite transmission systems on board fishing vessels.

Table 1. **Inspections for 1998-99**

	1998	1999
Inspections of wholesale fish markets	89	119
Inspections of retail outlets	88	4
Inspections at sea	184 fishing vessels	88 fishing vessels
Air-borne monitoring	304 fishing vessels	297 fishing vessels

Fisheries and the environment

The maximum fishing effort in Western waters which had been set at 6.6 million kW days at sea has been widely respected given that Belgian fishing vessels totalled merely 6.07 million kW days at sea.

In order to pursue efforts to protect fishing zones containing spawn and fry (nurseries), particularly of sole, in the North Sea, a ban was introduced on the use of heavy gear to fish for sole in Belgian coastal waters.

The ban prohibited any vessel with a gross register tonnage of more than 70 gross tonnes from fishing for sole within the three-mile area throughout the fishing season.

In December 1997 the Minister for Agriculture launched a public-awareness campaign aimed at informing consumers, by means of posters, of the existence of standards regarding minimum catch sizes, that is to say that for certain species it is against the law to catch fish that have not reached a minimum size; consumers are advised not to buy fish below the minimum standard size. These posters were distributed to retail outlets throughout the country.

In 1998 Belgium also initiated a restocking project under which small farm-bred turbot were released into a specific area at sea; the turbot were tagged to allow further scientific research.

Markets and trade

Markets

Per capita consumption of fresh fish in 1999 amounted to 8.3 kg, at an estimated cost of BEF 2 635. Per capita purchases of fishery products amounted to 1.8 kg of frozen fish, 0.4 kg of breaded fish, 1.5 kg of canned fish and 0.7 kg of fish salad.

Trade

Belgium's self-sufficiency in fishery products is extremely low. Imports of fishery products in volume terms were nine times higher than landings by the Belgian fishing fleet. The balance of trade in fishery

products for human consumption was therefore 135 000 tonnes in the red, which in monetary terms amounted to a deficit of Euro 576 million. The Netherlands remained the largest single source of imports.

Table 2. Imports and exports for 1999

	1999 Imports		1999 Exports	
	Volume tonnes	Value Euro millions	Volume tonnes	Value Euro millions
Fresh fish, chilled	46 503	117.8	22 300	100.1
Frozen fish	36 460	127.0	17 815	70.2
Salted, smoked, dried fish	6 552	54.8	1 614	14.5
Preserves	46 281	145.0	9 780	39.1
Crustaceans and molluscs	88 585	506.6	41 327	261.7
Fish meal	61 929	27.6	11 501	5.9
Fish oil	1 407	1.3	227	0.6
Other (freshwater fish)	4 803	14.2	1 043	3.5
Total (meal, oil)	229 193	1 065.5	93 880	489.0
TOTAL	292 519	1 094.4	105 608	495.6

Special Topic: Fishing Capacity

Table 3. Belgian fishing fleet 1998-1999

Gross tonnage	1998		1999	
	Number of vessels	kW	Number of vessels	kW
< 50	20	3 464	24	3 116
50-99	43	9 300	38	8 118
100-149	20	5 735	18	4 854
150-249	18	12 736	16	11 170
250-	38	32 436	42	36 195
TOTAL	139	63 671	128	63 453

Structure of the Belgian fishing fleet

Approximately 94% of Belgian fishing fleet units are fitted with beam trawls for the direct harvesting of flatfish, namely sole and plaice. Even shrimping boats use beam trawls. In addition, there are also bottom-fishing vessels.

A new fishing vessel can enter the fleet provided that its engine rating does not exceed the rated power withdrawn and that its gross tonnage does not exceed the gross tonnage withdrawn multiplied by a factor of 0.3.

The maximum rated power per unit is restricted to 957 kW, whereas the maximum tonnage is 385 gross tonnes and maximum length 38 m.

DENMARK

Summary

As the world's fourth biggest exporter of fish products, Denmark exported 1 021 569 tonnes of fish in 1998, valued at 16.10 billion DKK. Landings by the Danish fleet amounted to 1 544 580 tonnes in 1998 and 1 416 042 tonnes in 1999. As the processing industry depends on raw materials from abroad, imports amounted to 1 125 735 tonnes, valued at 9.1 billion DKK in 1998.

The year 1999 saw the approval in the EC Council of Ministers of a new Common Markets Organisation and a new regulation on structural adjustment. In the coming year, detailed EU rules for the market organisation are to be made and a domestic law on structural adjustment is to be read in Parliament.

Domestic legislation on fisheries and on food was simplified and modernised in 1998 and 1999 and national rules on capacity and on recreational fishery have been changed. Other national measures include the use of acoustic alarms to reduce by-catches of harbour porpoise and the implementation of a comprehensive plan for fisheries in the biggest fjord, Limfjorden.

National legal and institutional framework

The fisheries sector in Denmark – excluding Greenland and the Faroe Islands – is managed within the framework of the EU's Common Fisheries Policy (CFP).

The authority responsible of monitoring and enforcing EU and national conservation policies is the Directorate of Fisheries, which is located within the Ministry of Food, Agriculture and Fisheries. The Directorate carries out inspection at sea and at landing and covers verification of EU market standards. Inspection of veterinary standards lies with the Danish Veterinary and Food Administration.

National legislation aims at utilising fishing opportunities while ensuring that Danish quotas are not exceeded. Technical rules are determined on the basis of scientific advice and are assessed regularly.

Legislation on fisheries and food were renewed and simplified in 1998-1999. In May 1999 nine laws were united in the Fisheries Act, covering protection of fish stocks, regulations on commercial and recreational fisheries, first stage marketing and duties. Apart from the adjustments necessitated by uniting laws, few substantial changes were made to the law, the most important being simplifications in the structure of advisory committees and the establishment of fish auctions as a free trade. The 1998 Food Act restructured the food and veterinary inspection by 1 January 2000. Also, national rules on capacity were renewed – these are described in the special topic on capacity.

The National Strategy for Fisheries Research was adopted by the Government in October 1998. The central and main objective of this research is to assist in the maintenance of an economical and sustainable fisheries and aquacultural sector. The following two main themes are central to fisheries research in future years: 1) To support sustainable, effective and quality-oriented utilisation of resources along the chain of activities from harvest to rearing and manufacture; and 2) the development of better management systems to safeguard resources.

Capture fisheries

Performance

Landings by the Danish fleet amounted to 1 544 580 tonnes in 1998 (equivalent to 3 581 million DKK) and 1 416 042 tonnes in 1999 (3 252 million DKK). Approximately 95% was landed in Danish ports. Figures for landings in 1998 of main species as well as aggregated figures for consumption landings and industrial landings can be seen in the table below. As EU and third country fishers account for an important share of landings in Danish ports, these shares – calculated from quantities landed – are shown as well.

Table 1. Landings in Danish port 1998

	Total landings		Caught by fishers from		
	Tonnes	DKK '000	Denmark	Other EU countries	Third countries
Cod	73 353	976 409	79%	8%	13%
Plaice	19 545	260 389	89%	9%	2%
Herring	244 937	455 189	42%	19%	39%
Mackerel	40 960	186 630	55%	33%	12%
Deepwater shrimps	9 646	141 603	57%	0%	43%
Norway lobster	4 680	267 898	97%	1%	2%
Blue mussel	108 330	79 677	100%	0%	0%
Total consumption	557 892	3 018 106	64%	14%	22%
Industrial landings	1 347 691	1 358 320	82%	11%	7%

Source: Fiskeristatistisk Årbog 1998 and www.fid.dk

In 1998, the harvesting sector employed 6 450 persons (equivalent to 2 800 at full time) while 7 550 worked in processing companies (equivalent to 6 100 persons at full time).

The status of the fleet is discussed below in the special topic on capacity.

Management of commercial fisheries

Three important changes have been or are to be made in the management of commercial fisheries. These are the introduction of acoustic alarms on fishing nets, a fishery plan for the biggest fjord in Denmark and the closing of the fishery on sandeel east of Scotland – the two first being national measures and the third an EU measure.

As follow-up on the 1998 national plan for reducing by-catches of porpoise, Danish fishery authorities require that fishers using nets in certain areas of the North Sea use the acoustic alarms (so-called “pingers”). The effects of these pingers will be monitored and if necessary, further steps will be taken. In other waters around Denmark, the fishery authorities will assess the by-catch problem in collaboration with environmental authorities and decide whether pingers or other measures should be introduced.

For Limfjorden – the biggest fjord in Denmark – a comprehensive fisheries plan has been conceived with the aim of recreating the basis for a diversified bird and fish life. Among other things, the plan limits the area where mussel-fishery is allowed as well as the number of vessels allowed to fish mussels. The plan was prepared in collaboration with environmental and local authorities and was subject to extensive public hearing.

The EU Council of Ministers has decided that the fishery on sandeel in an area off the coast of Scotland – mainly conducted by Danish fishermen – will be closed from 2000 to 2002. The aim is to secure the stock of sandeel available to natural predators, especially birds, and in this way to improve the health of the marine ecosystem. The effect on sandeel and predators will be closely monitored.

Management of recreational fisheries

The recreational fishery is regulated by restrictions on the amount and kind of gear used. It is forbidden to sell fish caught in recreational fishery and there are no limits as to the value of catch. Apart from these regulations, national measures include release of fish and research, financed by fees on fishing permits.

The ban on selling fish caught in recreational fishery was introduced with the 1998 Saltwater Fisheries Act, forbidding the sale of saltwater fish. When fisheries legislation was simplified and renewed in the 1999 Fisheries Act, sale of freshwater fish was banned as well. The use of gear has been restricted further as to the use of nets (amount of nets and mesh size). Local committees have been set up as to assess the need for specific, more restrictive local rules.

For the type of recreational fishery called "trolling", new rules were introduced in December 1999. Trolling is now forbidden within 100 meters from the coastline and specific rules concerning the use of rods, bait etc. have been introduced.

Monitoring and enforcement

Apart from a restructuring of the fisheries inspection and the Food and Veterinary Administration, no changes have been made.

Aquaculture

Policy changes

In order to meet environmental requirements there are limits on feed use. There are also specific requirements regarding feed conversion ratio, water use, rinsing and outlets, and removal of waste and offal. The feed limits are assigned to each facility on an annual basis by the local authorities. When stipulating these requirements, broad environmental considerations are taken into account.

All Danish fish farms, except those with full recirculation of production water (eel farms), have to be officially approved in accordance with the Danish Environmental Protection Act. The stringent environmental requirements are necessitating major adjustments and investments in the fish farms. Since 1996 there has been a ban on extending of or establishing new marine fish farms as the Danish Environmental Protection Agency found that outlets were approaching the limits set by the national scheme for protection of water environments.

Production facilities, values and volumes

Aquaculture production in Denmark is mainly concentrated on rainbow trout (*Oncorhynchus mykiss*) farmed in freshwater ponds, in off-shore or land based marine aquaculture. Eel farming in recirculated freshwater tanks is a growing business; mussels, oysters and crayfish are produced on a small scale. Turbot fry is produced mainly for export and further culture. A variety of other species are raised primarily for restocking.

In 1998, the production in freshwater ponds was 32 585 tonnes, the same as in 1997. At the same time, the number of freshwater fish farms was reduced from 433 to 423. Marine fish production was approximately 7 100 tonnes, an increase of 22%. The number of marine farms fell from 41 to 38. Eel farming continued to increase, with output growing by 40% to approximately 2 400 tonnes from 30 farms. In recent years the sale of juvenile fish for restocking purposes has represented an increasing share of total turnover.

Approximately 1 000 people are directly employed in production, mainly in traditional fish farming. Also, a significant number of persons are employed upstream and downstream or in associated industries such as smokehouses.

Fisheries and the environment

Please see “Management of commercial fisheries” concerning the introduction of acoustic alarms on fishing nets, a fishery plan for the biggest fjord in Denmark and the closing of fishery on sandeel east of Scotland.

Government financial transfers

Transfer policies

Most subsidies take place within EU schemes. The scheme for structural adjustment is administered in Denmark whereas the EU administers transfers within the common market organisation – therefore these are not described in the following.

Table 2. **National aid and aid from the Financial Instrument for Fisheries Guidance for the period 1994-1999**

Programme category	DKK million
Final cessation	566.2
Modernisation	315.8
Aquaculture	82.5
Protected sea areas	48.0
Fishing harbour facilities	117.0
Processing and marketing	270.8
Sales promotion	108.0
Other measures	114.6
Total	1 622.3

National support schemes include financial assistance for young fishers, fisheries consultants and the Product Development Law, providing assistance for research and development within agriculture and fisheries.

Social assistance

No support schemes are directed specifically towards the fishing industry.

Structural adjustment

Aid for structural adjustment takes places within EU's FIG scheme (Financial Instrument on Fisheries Guidance). In 1994, a sectoral plan for structural adjustment of the Danish fishing industry was drawn up with the main aim of making the sector self-supportive by the end of the period. Related aims were:

- Maintaining the position of the Danish industry as one of the world's major exporters of fish products.
- Promoting an environmentally sustainable exploitation of available resources.
- Developing employment in the sector.
- Maintaining the competitiveness of the sector as well as its ability to supply quality products at internationally competitive prices.

The ratio between EU and national support varies between 1:1 for cessation/effort regulation and 5:1 for structural investments.

Table 3. **PESCA aid for the period 1995-1999**

Programme area	DKK million
Measures in the fisheries sector	49.7
Reconversion in the sector	18.6
Reconversions outside the sector	37.3
Projects of a general nature	12.4
Technical assistance	6.2
Total	124.2

As well, the PESCA scheme promoted commercial development in areas dependent on fisheries – in the case of Denmark 38 municipalities. Aid from PESCA was given to projects both within and outside the fisheries sector with special focus on projects that diversified the business structure and preserved/created employment in areas dependent on fisheries.

A law on structural adjustment for the new FIG period (2000-2006) will be read in Parliament in spring 2000 whereas the PESCA scheme is not to be continued.

Post-harvesting policies and practices

Policy changes

For changes in EC regulations, please refer to the EC chapter.

Food safety

Food safety was in focus in Denmark in 1998 and 1999. The report “Denmark – a Pioneer in Food Safety” critically reviewed all important food safety aspects with focus on the consumer. Furthermore, the Danish Food Act provided for publication of the results of food control according to guidelines issued by the Danish Veterinary and Food Information.

Information and labelling

More stringent rules on food labelling were issued in 1998 to implement new EU legislation.

Structures

No reforms concerning the efficiency of distribution and marketing have been made.

Processing and handling facilities

Between 1997 and 1998, a concentration in the processing and handling facilities took place and average sales increased. The structure of the processing industry and trading firms and the development between 1997 and 1998 is shown in the table below. It should be noted that “business units” refers to local economic units within a firm.

Table 4. Processing industry structure and sales

	No. business units		DKK million			
	1997	1998	Sales		Average sales	
			1997	1998	1997	1998
Smoking and drying	81	74	1 103	1 408	13.6	20.0
Canning and filleting	138	124	7 301	7 262	52.9	58.6
Fish meal and oil	18	13	2 424	2 538	134.6	195.2
Wholesale trade	698	646	13 204	15 476	18.9	23.9
Retail trade	404	371	452	494	1.1	1.3

Markets and trade

Markets

Domestic consumption of fish has increased with 12% since 1996, equivalent to an increase in value of DKK 200 million. This is the result of promotional efforts, supported under the FIG scheme. Using popular actors, the campaign involved TV-commercials as well as activities aimed directly towards consumers. At the same time, activities strengthening the vertical co-operation in the sector and the availability of fish in supermarkets contributed to the effect. With these good results the campaign closed by the end of 1999.

Trade

Denmark is the fourth biggest exporter of fish products in the world. However, imports are considerable as the important Danish processing industry depends on raw materials from abroad.

Table 5. **Trade in fisheries products**

	Imports		Exports	
	Tonnes	DKK million	Tonnes	DKK million
Unprocessed	504 891	5 102	314 860	6 312
Semi-processed	53 238	1 467	159 057	4 660
Processed	46 066	1 535	98 887	3 094
Fish meal and oil	521 540	963	448 765	2 037
Total	1 125 735	9 068	1 021 569	16 103

1998 figures in tonnes/DKK million.

Fish for consumption: unprocessed HS-codes 0302 and 0303, semi-processed 0304 and 0305, processed 1604.

Fish meal and oil: both unprocessed and processed is included in the figures above.

Concerning Trade policy, please see EU Chapter.

Outlook

Two major legislative initiatives are to be concluded in the coming year. One is the implementation of the new market organisation, which takes place in EU setting. The other is the national implementation of the new FIG scheme. The new law on structural adjustment will be read in Parliament during spring 2000. The proposal includes subsidies for adjusting the fishing effort (DKK 250 million), for modernising the fleet and constructing new vessels (DKK 701 million), for aquaculture, processing, marketing, and protection of aquatic resources (DKK 939 million), for coastal fisheries, socio-economic measures, enhancing sales, pilot projects etc. (DKK 346 million) and finally for technical assistance (DKK 56 million).

Special topic: Fishing Capacity

Basic statistics

Capacity is measured according to size (tonnage) and the power of its engines. National fleet capacity is the sum of individual vessels' capacities.

By the 31 December 1998, 7 022 persons were employed on Danish vessels. Of these, 55% were employed on vessels of a length below 12 meters. On vessels between 12 and 20 meters, the average crew consisted of 2.52 persons, and on vessels above 20 meters the average was 4.5 persons.

Policies to manage fishing capacity

General policies on fishing capacity are laid down by the EU. The Multi-Annual Guidance Programme (MAPG) sets targets for the development of the fleet, while the Financial Instrument on Fisheries Guidance provides funding for the necessary restructuring.

Danish policies aim at adjusting capacity while renewing the fleet. National legislation comprises the departmental order on capacity and Law on structural adjustment. By 1 February 1998, the departmental order was changed to allow for more flexible rules. Under the new rules, fishermen can take out more vessels and pool the capacity into one new vessel – or even split up the capacity from one big vessel onto more, smaller vessels. Finally, a certain pool of capacity has been withheld to enable young fishermen to set up in business.

The law on structural adjustment – based on the FIG scheme – provided the financial back up for restructuring from 1994 to 1999. The scheme covered both decommissioning of vessels and modernising/construction of new vessels. From 1994-1999 engagements were made for DKK 314 million in

decommissioning and DKK 317 million in modernising and construction. The EU funded 52% of decommissioning engagements and 83% of modernising/construction engagements.

In the spring of 2000, the Parliament will read the proposal for the follow-up on structural adjustment. In the proposal, DKK 701 million are designated for renewing and modernising the fleet – one third of the total budget of DKK 2.3 billion.

Table 6. **Fishing capacity 1998 and 1999**

Tonnes	Number of vessels		Tonnage (GT/GRT)		Engine power kW		Insurance value (1 000 DKK)	
	1998	1999	1998	1999	1998	1999	1998	1999
Less than 5	2 468	2 502	3 848	3 800	42 348	41 677	168 726	135 620
5-9.9	597	673	4 192	4 791	34 475	37 045	234 434	249 929
10-14.9	206	227	2 570	2 849	20 479	22 636	166 351	177 784
15-19.9	412	457	7 765	8 682	64 658	72 256	569 095	639 166
20-39.9	169	111	5 150	3 796	30 619	21 382	309 063	237 174
40-59.9	139	142	6 725	6 873	35 914	36 530	390 543	404 477
60-79.9	45	42	3 022	2 828	13 678	13 207	176 469	162 569
80-99.9	12	12	1 073	1 096	4 178	4 126	54 500	51 500
100-149.9	30	29	3 588	3 456	12 011	12 109	154 961	147 836
150-199.9	34	31	5 959	5 415	18 013	16 444	360 584	251 019
200-249.9	41	40	9 240	8 943	23 738	23 075	390 585	384 999
250-299.9	29	29	7 877	7 905	17 583	17 658	295 000	297 008
300-499.9	59	59	22 781	22 507	46 202	45 886	1 022 307	1 031 513
500-	20	19	16 190	15 488	29 138	27 301	719 464	679 464
Total	4 261	4 373	99 981	98 429	393 034	391 332	5 012 080	4 850 058

Evaluation of impacts of capacity management policies

Capacity management has been successful in Denmark – to the extent that capacity targets have been more than fulfilled. However, as a consequence of the policy the fleet needs modernising. This is a goal for the future.

Implementing the FAO Plan of Action

Steps to implement the FAO Plan of Action will take place within the CFP.

Sources

Directorate of Fisheries (1999): Fiskeristatistisk Årbog 1998.

Ministry of Food, Agriculture and Fisheries (1999), Fødevareministeriets årsrapport 1998. Politik, produktion og forbrug.

FINLAND

Summary

The total marine commercial catch in 1998 was 118 800 tonnes in 1998, of which 42 000 tonnes were used for human consumption and 76 800 tonnes for other purposes. Aquaculture production in 1998 was 15 870 tonnes, which was 440 tonnes less than in 1997.

A total of 440 800 fishing licences were issued in 1998 at about FIM 37.4 million and 399 200 in 1999 yielding FIM 36.9 million in government revenues, which was about FIM 4.0 million less than that in 1997.

The total financial transfers associated with the Community (FIFG) and Finland's fishery policy was FIM 148.1 million in 1998 and FIM 145 million in 1999, of which FIM 131.4 million in 1998 and FIM 129.6 million in 1999 came from Finland's fishery policy.

Legal and institutional framework

The Finnish fishing vessel register is managed according to the European Commission Regulation (2090/98), and the segmentation by each fishery is managed by the European Commission Decisions (130/98 and 448/99).

Capture fisheries

Performance

The total marine commercial catch in 1998 was 118 800 tonnes responding to worth FIM 157 million, of which no less than 85 500 tonnes was Baltic herring. While commercial catch for human consumption was 42 000 tonnes, about the same as in 1997, the catch used for other purposes was 76 800 tonnes.

The registered fishing fleets in 1999 were of 3 791 units (3 987 in 1997). Out of 3 791 units, 208 (236 in 1997) were pelagic trawlers engaged in Baltic herring fishery, 3 (5 in 1997) bottom trawlers in cod fishery, and 3 509 (3 620 in 1997) were used in small scale coastal fishery (Baltic herring, salmon and brackish water species). The number of passive gear vessels engaged in salmon fishery and bottom gillnet fishery of cod was 70 (126 in 1997). The segmentation was greatly revised from the one of 1995-96 in accordance with the new MAGP IV (Table 5).

A total of 440 782 fishing licences in 1998 were issued at about FIM 37.4 million and 399 184 in 1999 yielding FIM 36.9 million in government revenues, which was about FIM 4.0 million less than that in 1997. In 1998, out of 440 782 licences, while 358 300 were ordinary fishing licences (FIM 80 each, except FIM 30 for the three northern municipalities) yielding FIM 27.8 million, 82 482 licences were recreational fishery licences (150 FIM each per year and FIM 35 per 7 days) yielding FIM 9.6 million. In 1999, out of 399 184 licences, 319 100 licences (FIM 90 each per year and FIM 25 per 7 days for the whole country) were ordinary fishing licence yielding FIM 27.7 million, and 80 084 were recreational licences yielding FIM 9.2 million.

The revenue was used to finance management of fisheries organisations, fishing areas, fish stocks, scientific research and extension work in the field of fisheries. Compared with the year 1997 there was a decrease 72 400) in 1998 in the number of ordinary fishing licences, and the revenue decreased by FIM 2.1 million. Recreational licences were refunded to the private water owners. The drop from the year 1997 was 15 700 licences and FIM 2.3 million.

Management of commercial fisheries

The resource management of Finland is harmonised according to the Common Fisheries Policy of EU. Finland implements the Community Legislation concerning fishing vessel register, professional fishing register, and catch register etc.

Finnish fishing fleets register includes all the vessels that are engaged in commercial maritime fishing in accordance with EU regulations. The register of commercial fishermen is maintained in connection with the fishing vessel register. The catch register is also maintained in accordance with the control system applicable to the common fisheries policy.

Recreational fisheries

The number of fishermen engaged in recreational fishery has remained for many years at the level of about 2 million. The total recreational fisheries catch in 1998 was 48 000 tonnes equivalent to FIM 320 million, of which 16 000 tonnes was from the maritime catch and 32 000 the freshwater catch. Because actually the recreational catch is not marketed, the value is calculated in proportion to the commercial fisheries as if the recreational catch were sold.

Bilateral and multilateral arrangements

The European Commission negotiated new fishing arrangements for access to fish stocks in the waters of the Baltic Sea fishery. The quotas given to Finland and reciprocal access to EU waters are shown in Table 1 and Table 2. Regarding the reciprocal access there were no allocation between Finland, Sweden, Denmark and Germany.

Table 1. **Bilateral fishing quotas between Finland and the Baltic States in 1998**

Fish species	Units	Quotas in EU waters available to:			Finnish quotas in the waters of:		
		Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania
Baltic herring	Tonnes	4 000	2 500	500	–	–	–
Cod	Tonnes	1 100	2 200	1 350	122	168	80
Salmon	Fish	4 000	2 000	5 00	2 021	2 418	1 534
Sprat	Tonnes	8 000	6 000	4 000	–	–	–

Table 2. **Bilateral fishing quotas between Finland and the Baltic States in 1999**

Fish species	Units	Quotas in EU waters available to:			Finnish quotas in the waters of:		
		Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania
Baltic herring	Tonnes	4 000	1 000	500	–	–	–
Cod	Tonnes	1 000	1 000	1 350	–	42	144
Salmon	Fish	4 000	3 000	5 00	2 526	3 742	1 403
Sprat	Tonnes	8 000	6 000	4 000	–	–	–

Aquaculture

Production facilities

In 1998 the total number of fish farms was 650 (670 in 1997), of which about 281 (287 in 1997) were engaged in rainbow trout production for human consumption. The average production per marine rainbow trout farm per year was about 69 tonnes (65 tonnes in 1997). The largest production facilities are mostly marine net cages usually situated in the coastal archipelago area. The rest of the farms produce fish juveniles for stocking and breeding purpose.

Production

Production of farmed rainbow trout for human consumption in 1998 was about 15 870 tonnes (16 310 tonnes in 1997), worth about FIM 232 million before value-added tax (FIM 218 million in 1997). Production of other fish species was 154 tonnes, worth FIM 3 million (111 tonnes and FIM 2 million in 1997).

The production of rainbow trout juveniles of different ages was in 1998 about 24.1 million individuals (20.2 million in 1997). Fish farming also produced smolts and other species for stocking purposes. In 1998 the total number of fish for stocking and breeding was about 42.1 million juveniles (45.3 million in 1997).

Marketing

The competition between farmed rainbow trout and imported farmed salmon and rainbow trout from Norway continued to be severe. The import price has been low for some years, causing problems concerning profitability of the domestic production of farmed rainbow trout. This has been the case although a minimum import price was introduced by the European Commission.

Government financial transfers

Total financial transfers

As shown at Table 3, total financial transfers associated with the EU contribution and Finland's contribution was FIM 148.1 million in 1998, and 145 million in 1999. The national share of that figure was FIM 131.4 million in 1998 and FIM 129.6 million in 1999.

National financial support in the main land

New marketing loans intended for fish handling, freezing and storage, plant and equipment as well as transport facilities, are no longer granted by private banks under the scheme of interest rebates paid by the Government. The old loans amounted to FIM 1 048 million in 1999. This was about FIM 6.6 million less than in 1997. The rate of interest for the beneficiary was 6.50%. The Government no longer paid the interest rebate. In 1998 only FIM 14 800 was paid.

Fishermen will either no longer receive new fishing loans from private banks for fishing vessels, gear and equipment. The rate of interest of old loans for the beneficiary was 4.5%. The Government no longer paid the interest rebate. In 1998 only FIM 660 was paid. The old loans amounted to FIM 3 680 million (1999), about FIM 7 million less than in 1997.

As before, six fishery insurance associations plus one private insurance company in the Aland County maintained the fishery insurance system. The main part of indemnification comes from the Government. Only commercial fishermen are entitled to insure their vessels, gear and equipment under this scheme, which applies the Baltic Sea region. The insurance system is still under the scrutiny of European Commission waiting for the resolution whether it is compatible with the common market.

The overall coverage of current insurance decreased from FIM 299.5 million in 1997 to FIM 297.4 million in 1998 but increased again to FIM 313.5 million in 1999. The number of accidents, however, increased: from 899 in 1997 to 1 195 cases in 1998 and furthermore to 1 131 in 1999. The total claims, though, decreased considerably in 1998 from FIM 11.5 million to FIM 9.7 million. The 1999 figure was again a little higher as FIM 10.6 million. Table 4 shows the fisheries insurance scheme for 1998 and 1999.

Transport of fish from sparsely populated areas into marketing areas was subsidised by FIM 1.45 million (1998 and 1999). Promoting the use of Baltic herring and farmed rainbow trout a total amount of FIM 1.6 million was used in 1998. This was FIM 0.2 million more than in 1997. In 1999 once again FIM 1.4 million was used for this purpose.

Two Producers Organisations (PO) are to be established during year 2000. Until now the aid measures compatible with marketing system in this sector have not yet been in use. Export of fishery products was not subsidised as this measure is not allowed in the EU. Losses to salmon fisheries were no longer compensated. The compensation scheme in 1996 was established due to a new national regulation introducing considerably large closed seasons. This subsidy measure is still under the

scrutiny of the European Commission waiting for resolution as to whether or not it is compatible with the common market.

Table 3. **Total EU and government financial transfers associated with the common fisheries policy and Finland's fishery policies, 1998 and 1999¹**
Million Finnish markkas

Type of transfer	1998		1999	
	Finnish contribution	EU contribution	Finnish contribution	EU contribution
MARINE CAPTURE FISHERIES (Percentage of Total Landed Value)				
Direct payments	4.096	3.796	0.770	0.490
Payments for the permanent decommissioning of fishing vessels	3.796	4.796	0.490	0.490
Compensation for introducing closed seasons in the salmon fishery	–	–	–	–
Compensation for damage from seals ²	0,300	–	0.280	–
Cost Reducing Transfers	15.153	6.726	15.939	9.045
Support for new vessel construction and vessel modernisation	1.832	4.182	2.426	5.649
Interest rebates ³	0.015	–	0.000	–
Insurance ⁴	6.660	–	7.176	–
Transport subsidies	3.450	–	3.150	–
Support for fishing ports	2.196	2.544	3.187	3.396
Support for access to third country waters	–	–	–	–
General Services	110.213	2.294	111.234	3.407
Market intervention ⁵	–	–	–	–
Research	76.000	–	76.000	–
Protection of marine areas ⁶	0.309	0.317	0.492	0.494
Promotion	3.404	1.977	4.242	2.913
Management costs	21.500	–	21.500	–
Enforcement costs	9.000	–	9.000	–
Other	–	–	–	–
AQUACULTURE	1.892	3.914	1.652	2.507
(Percentage of Total Production Value)				
MARKETING AND PROCESSING				
Interest rebates	–	–	–	–
Other	–	–	–	–
LICENCE FEES⁷				
	–	–	–	–
GRAND TOTAL	131.354	16.730	129.595	15.449

N/A: Information not available.

- This table shows the main elements of transfers associated with the Common Fisheries Policy and Finland's fishery policies (including those to Åland County), and is not necessarily comprehensive. With the exception of general services, the figures refer to the amount paid out to the beneficiaries.
- Compensation to Åland County salmon fishers for damage to the fishery caused by seals.
- Note: this scheme was ended in 1995. Payments refer to the Governments remaining commitments on outstanding loans.
- Refers to the Government's indemnification, and additional subsidies to the Åland County scheme.
- Money spent purchasing fish to support prices (EC withdrawal scheme).
- Mainly expenses connected with the rearing and distribution of salmon smolt.
- Revenues from commercial licences only.

Table 4. **Details of the fisheries insurance scheme for 1998 and 1999**

	1998	1999
Insured value of vessels and gear ¹	FIM 297.4 million	FIM 313.5 million
Number of units insured	3 398 ²	3 380 ³
Number of claims	1 195	1 131
Total value of claims ¹	FIM 9.7 million	FIM 10.6 million
Total indemnification	FIM 8.4 million	FIM 9.1 million
– of which, Government's share	FIM 6.2 million	FIM 6.4 million

- As of the end of the year.
- Of which, 205 trawlers, 893 small boats, and 2 300 other units (mainly gear only).
- Of which, 194 trawlers, 886 small boats, and 2 300 other units (mainly gear only).

National financial support in the Aland County

Economic assistance programme of Aland County is by and large the same as in other parts of Finland. Transporting catches from archipelago to the main land was subsidised by FIM 2.0 million in 1998 and FIM 1.7 million 1999 (in 1997 FIM 1.6 million). The fishery insurance system was subsidised in 1998 by FIM 460 000 and in 1999 by FIM 776 000. The latter was FIM (245 000) more than in 1997. The damages to salmon fishery caused by seals were further compensated in 1998 by FIM 300 000 and by FIM 280 000 in 1999. The 1997 figure was FIM 177 000.

Co-financing (under FIG) including the Aland County

As an EU member State the fishery sector in Finland receives economical assistance according to the FIG. The structural assistance was paid for permanent withdrawal of vessels, construction and modernisation of vessels, protection and development of aquatic resources, aquaculture, fishing port facilities, processing and marketing, and sales promotion.

The structural aid amounted to FIM 48.4 million in 1998 (FIM 45.0 million in 1997). The national share of that was FIM 19.1 million (FIM 17.3 million in 1997) leaving the share of the Community to FIM 29.3 million (FIM 27.7 million in 1997). The 1999 figures were total FIM 60.2 million, national FIM 25.6 million and Community FIM 34.6 million respectively (Table 5).

Table 5. Co-financed structural assistance in 1998 and 1999 (FIM million)

	1998			1999		
	UE	National	Total	UE	National	Total
Permanent withdrawal	3.8	3.8	7.6	0.5	0.5	1.0
Construction and modernisation	4.2	1.8	6.0			
Protection of aquatic resources	0.3	0.3	0.6			
Aquaculture	4.7	2.4	7.1	3.3	3.2	6.5
Fishing port facilities	2.5	2.2	4.7	5.5	5.2	10.7
Processing and marketing	11.2	6.2	17.4	14.8	9.2	24.0
Sales promotion	2.1	1.9	4.0	3.1	3.0	6.1
Technical help	0.5	0.5	1.0	0.9	1.0	1.9
TOTAL	29.3	19.1	48.4	34.6	25.6	60.2

The Community initiative PESCA period was also finished on 31.12.1999. The total assistance was FIM 4.9 million in 1998 and FIM 6.0 million in 1999 (the figure of 1997 was FIM 195 000). The Community's share of that was FIM 2.4 million and FIM 3.1 million respectively (in 1997 FIM 130 000).

Structural adjustment

The restructuring process in 1998-99 has been carried out within the framework of the EU's MAGP. Under the MAGP IV to be implemented for 1997-2001, the target reduction rates (rr) for Finnish fleet per each fishery is as follows.

- 4L1: small scale coastal fishery segment for vessels under 10 m (rr = 0 %);
- 4L2: pelagic segment targeting Baltic herring and sprat (rr = 0 %);
- 4L3: benthic segment targeting cod and salmon (rr = 20 %); and
- 4L4: passive gear segment targeting salmon (rr = 30 %).

Finland has already managed to fulfil these requirements. The decommissioning scheme (vessel scrapping with community aid) of the fleet was carried out in 1997 by 575 GT and 2 480 kW. In 1998 the figures were 250 GT and 1 570 kW and in 1999 25 GT and 205 kW respectively. The capacity of the segments has changed as in Table 6.

Table 6. The progress of the Finnish fishing fleet

Segment	1.1.1997	31.12.1997	31.12.1998	31.12.1999
4L1: Small scale coastal fishery	9 918 GT 139 894 kW	9 929 GT 140 799 kW	9 573 GT 138 881 kW	9 141 GT 135 054 kW
4L2: Pelagic trawlers	9 700 GT 54 658 kW	11 172 GT 59 118 kW	10 453 GT 55 332 kW	10 103 GT 54 083 kW
4L3: Bottom trawlers	731 GT 2 100 kW	449 GT 1 287 kW	449 GT 1 287 kW	449 GT 1 287 kW
4L4: Passive gear vessels	3 030 GT 21 100 kW	2 733 GT 18 850 kW	2 166 GT 15 153 kW	1 971 GT 13 890 kW
Total	23 378 GT 217 751 kW	24 283 GT 220 055 kW	22 640 GT 210 654 kW	21 664 GT 204 314 kW

Markets and Trade

Finland applies as an EU member State the common custom policy concerning tariffs, tariff quotas, import quotas and licensing.

Outlook

The Baltic herring catches will remain the most significant in the Finnish fishery not only for human consumption but also for industrial fisheries.

At the moment there are no Producers Organisations (PO) in Finland but there are advanced plans to establish one for Baltic herring (capture fisheries) and one for farmed rainbow trout (aquaculture) during the year 2000.

FRANCE

Institutional framework

In 1998 and 1999 the French authorities continued efforts already ongoing for several years to adapt and modernise sea fishing and marine aquaculture activities in order to consolidate this economic sector which had been severely damaged by the 1993 crisis and to pursue efforts to secure its sustainable development within the European Union.

This modernisation effort may be seen in the passing of the Act on sea fisheries and marine farming adopted unanimously by the French Parliament in November 1997 and progressively implemented in 1998 and 1999. This legislation provides for an appropriate legal, economic and social framework which properly takes account of the different facets of fisheries policy, namely resource management, the status of fishermen and fishing enterprises, organisation of the sector and the marketing and sale of fishery products. This framework is based on the following objectives, namely to improve resource management, organise the sector, modernise the legal and fiscal status of fishing enterprises, adapt marine farming activities and modernise social relations.

Against this background the Ministry of Agriculture and Fisheries is responsible for administering the sea fisheries and marine aquaculture sectors. Within this Ministry, the directorate for sea fisheries and marine aquaculture is responsible for determining policy directions with regard to sea fisheries and marine aquaculture, and implements the regulations relating to activities and public intervention in the sector. It is supported at the level of the regions and *départements* by regional or *départemental* directorates for maritime affairs (DRAM, DDAM), regional surveillance and rescue operations centres (CROSS for the surveillance of sea fisheries) and the administrative centre for maritime affairs (CAAM which monitors statistics relating to fishermen and vessels) administered by the Ministry of Supply and Transport.

Lastly, the directorate for sea fisheries and marine aquaculture is responsible for supervising, on behalf of the Ministry of Agriculture and Fisheries, the *Institut Français de Recherche pour l'Exploitation de la Mer* (IFREMER). These supervisory duties are shared with the Ministry responsible for supply and transport and the Ministry responsible for Research.

The participation and involvement of the sector in resource management is ensured in particular by the National Committee of Sea Fisheries, an inter-trade organisation representing all actors in the sector. The National Committee must mandatorily be consulted over any national or community measure regarding fisheries conservation and management, the conditions applicable to professional fishing and the working of inter-trade relations *per se*. In this respect, like the regional committees, the Committee can issue licences endorsed by the government for certain fisheries.

The regional and local sea fishery committees, for their part, provide the industry with technical assistance and information and play an active part in drawing up measures taken at the national level with regard to the regional committees (issuing of licences) and social action (accident prevention, occupational training, assistance to families in distress).

There are 39 local committees at the level of individual ports (or groups of ports) which have a significant level of activity, 14 regional committees and one national committee.

With regard to the French fishing fleet, a vessel registered under the French flag is only allowed to take catches included in national quotas, or will only be licenced to fish, if there exists a genuine economic link with the territory of the Republic of France and if the vessel is operated and monitored

from a permanent establishment located on French soil. Furthermore, as part of the management of access to fisheries resources and the organisation of fishing activities, the vessel must have an Operating Licence issued by the French authorities.

Sea fisheries

In 1998 total turnover in sea fisheries sector amounted to FRF 6.155 billion, representing 550 198 tonnes of fish, crustaceans and shellfish (excluding marine farming) broken down as follows:

- 277 271 tonnes of fish (excluding tropical tuna), worth FRF 3 764.1 billion.
- 103 885 tonnes of crustaceans, shellfish and seaweed, worth FRF 1.3 billion.
- 105 632 tonnes of tropical tuna, worth FRF 0.78 billion.

The main species landed are listed in Table 1.

Table 1. **Main species landed at 1998 value**
FRF millions

Species	Value
Fresh and frozen tropical tuna	775.9
Sole	508.5
Angler fish	412.9
Prawns	288.5
Cod	261.7
Hake	251.8
Bass	189.4
Whiting	167.5
Blue fin tuna	119.7
Albacore tuna	55.7

As of 31 December 1999, the French fishing fleet (continental France and overseas *départements*, namely Guadeloupe, French Guyana, Reunion) amounted to 8 271 vessels with a rated power of 108 038 kW and a capacity of 182 743 gross register tonnes (grt).

The fishing fleet in continental France amounted to 5 867 vessels with a rated power of 922 026 kW and a capacity of 166 749 GRT. The size of this fleet has steadily declined since 1991 when the number of vessels amounted to 7 393 with a rated power of 1 072 428 kW and a capacity of 169 860 GRT. This decline is the outcome of fleet reduction plans implemented under successive EU Multi-annual Guidance Plans for the fishing fleet (MGPs).

In 1998 there were 29 779 professional fishermen (on board for more than one day), of which 3 382 seamen in overseas *départements* and territories. In 1999 there were 29 090 professional fishermen (on board for more than one day), of which 3 218 seamen in overseas *départements* and territories.

Not counting sailors on board for less than three months, there were 23 775 fishermen active in 1999 including those involved in shellfish farming and inshore fishing (5 006 fishermen).

Resource management

Each year the French authorities allocate the fishing quotas awarded to France under the EU Common Fisheries Policy to regional and local producers' organisations.

In addition, special measures are taken to ensure the rational and sustainable management of the resource; thereby allowing access to fisheries to be restricted. Examples include the introduction of catch quotas (as in the case of scallops in French territorial waters) and the issuing of licences by the administration or by the sea fisheries trade association. These licences apply to the harvesting of certain species (shellfish, crustaceans, diadromous species) or to certain regions (Corsica, the Mediterranean).

Research and technical support relating to sea fisheries

The IFREMER (*Institut français de recherche pour l'exploitation de la mer*) is a public agency involved in industrial and commercial activities and placed under the supervision of the Ministries responsible for research, supply and transport, agriculture and fisheries. It has a staff of just over 1 200 employees (excluding affiliates and other companies in the IFREMER group) and an annual budget of FRF 968 million, largely funded by government subsidies, in addition to its own resources. It has six operational directorates, of which three are concerned in particular with sea fisheries and aquaculture, namely living resources, the environment and coastal development, marine technology and information systems.

Actions related directly to fisheries are primarily the responsibility of the directorate for living resources and the directorate for marine technology and information systems.

The directorate for living resources (DRV) is divided into four departments. The research conducted by the department for fishery resources at the DRV primarily focuses on matching harvesting to fish population dynamics with a view to ensuring sustainable development. The work of the department of aquaculture resources aims to establish scientific bases for the development of forms of productive aquaculture which take account of consumers' expectations with regard to product quality and which help to preserve the coastal environment.

Working in partnership with industries in the sector, the department for product development is helping to develop technological process which can improve the processing of raw materials and which can offer new product outlets (harvesting of new species, exploitation of certain fish parts, extraction of molecules for use in the pharmaceutical or cosmetics industries).

Lastly, the marine economy service analyses market prospects together with economic and financial performance in the sector.

The fishing technology service within the directorate for marine technology and information systems is responsible for the development of fishing technology. It works in close collaboration with the directorate for living resources on projects concerning the fishery resource management and product development, and also with the directorate for the coastal environment with regard to studies on the environmental impact of fishing techniques. It provides information to the industry and encourages industrial transfers of the results of its work.

In addition to its research activities, IFREMER provides technical assistance to the shellfish farming industry in the areas of breeding and pond design.

Lastly, some of the activities for which the directorate for the environment and coastal development is responsible are of paramount importance to the sea fishery and marine aquaculture economy, namely the monitoring of the quality of the marine environment. Three sampling networks managed by the IFREMER are used to monitor the quality of seawater and the water used by fish farmers: the microbiological monitoring network (REMI), the phytoplankton monitoring network (REPHY) and the national network for the surveillance of pollutants and general parameters relating to the quality of the environment (RNO).

The funding allocated to research can be estimated on the basis of the funding of IFREMER activities reported in the detailed accounts of that institute. Funding can thus be estimated to amount to FRF 320 794 million in 1998 and FRF 350 247 million in 1999. Note that other institutions than those mentioned above (*Institut de Recherche pour le Développement*, IRD), the *Muséum National d'Histoire Naturelle* (MNHN), the CNRS and CEMAGREF also participate in research and training in the maritime sector. In particular, the IRD conducts research into tropical tuna and the MNHN conducts research into species found in French Southern and Antarctic Territories.

Management, surveillance and inspection

In accordance with the Common Fisheries Policy and specific regulations with regard to inspection, responsibility for the surveillance and inspection of fishing activities lies with several administrations reporting to different ministerial departments, namely: Defence (French Navy and the national

Gendarmerie), Finance (Customs) and Transport (regional and *départemental* directorates for maritime affairs). The total funding allocated to fisheries management, inspection and surveillance activities amounted to FRF 75 696 million in 1998 and FRF 82 750 million in 1999. The funding assigned to sea fisheries and marine aquaculture primarily consists of expenditure relating to the operation and staffing of the directorate for sea fisheries and marine aquaculture in the Ministry of Agriculture and Fisheries, and the *départemental* and regional directorates for maritime affairs. It has not been possible to assess the cost of the participation of customs authorities, the French navy and the marine *gendarmerie* in inspection and surveillance activities.

Financial transfers

As part of the implementation of Multi-annual Guidance Programmes (MGPs), financial measures to reduce fishing activities have been introduced in order to reduce the capacity of the French fishing fleet. France's share of the cost of these measures to reduce fishing activities amounted to FRF 35 938 million in 1998 and FRF 9 595 million in 1999 and allowed 22 455 kW to be withdrawn in 1998 and 6 000 kW in 1999.

National expenditure (excluding government support to match community aid) primarily concerned management and surveillance, research, technical support and marine training, and unforeseen aspects of resource exploitation (compensation for unemployment caused by bad weather) and rebates on interest on loans to the fishing industry.

Bilateral arrangements

The fishing agreement with Korea was renewed in 1998 for the period covering October 1998 to September 1999. This agreement provides for allocation of a quota of 3 000 tonnes of tuna, harvested by 70 vessels (surface liners) in the Exclusive Economic Zones (EEZ) of Wallis and Futuna and French Polynesia. A new agreement has been concluded for the period 1999-2000 for 3 300 tonnes and 78 vessels. The agreement between France and Japan with regard to New Caledonia and Wallis and Futuna was suspended in 1998 and 1999. This suspension ended in December 1999 and the arrangement allows renewed access for six Japanese vessels to the EEZ of New Caledonia and Wallis and Futuna for the 2000 campaign.

Commercialisation and international trade

Domestic market

After the two years of crisis in the fishing market in 1993 and 1994, the situation has gradually eased.

Reforms have been introduced to improve marketing conditions. These reforms consist in tailoring production to match market demand and modernising the sector by encouraging professional organisations to undertake joint marketing actions by developing supply forecasts and operator networking at the initial sale and by identifying consumer expectations.

The year 1998 saw a slight increase in output compared with 1997 (+1.5%) which, combined with rising average prices, led to an improvement in overall turnover (+5.1%).

Foreign trade

French consumption of marine products amounted to 1.33 million tonnes in 1998. Compared with this demand, national production amounts to around 0.5 million tonnes of which almost half is exported. Domestic demand is therefore largely met through imports.

The balance of trade balance worsened in 1998 to FRF 13.56 billion compared to FRF 11.3 billion in 1997.

Health and hygiene regulations

With regard to the health and social standards applicable to establishments of initial purchase subject to approval by the *Préfecture* in accordance with Decree No. 89-247 of 14 April 1989, the mandatory upgrading work to ensure the compliance of on-shore structures (fish markets, product preparation and processing plants) has been completed in accordance with the Ministerial Order of 29 December 1992 which set the date of 1 January 1996 as the deadline for completing compliance work.

French trade regime

The French trade regime is integrated into that of the European Union.

Aquaculture

Traditional shellfish farming dominates the domestic marine aquaculture sector. Annual production in 1998 is estimated at 201 650 tonnes with a market value of FRF 2.08 billion.

Farmed oyster beds occupy a surface area of some 18 955 hectares and mussel farms account for 1 587 km of lines, of which 386 km suspended, representing a total surface area of 20 542 hectares. The farming of sedentary filtering molluscs such as mussels and oysters offers many benefits: availability of spat, abundant food, very high yields.

Mussel farming

Production is estimated at 61 500 tonnes in 1998 with a market value of FRF 492 million.

The development of production will require research into ways to improve yields at sites already exploited and the creation of new breeding areas in conjunction with the development of new techniques. In the former case, advances will be based on optimising the density of breeding beds and efforts to combat predators and other parasites. With regard to the latter, the development of bottom culture and ballastable saucer techniques that has been under way for a few years now looks promising and has enabled French shellfish farmers to supply products to the market all year round.

Oyster farming

In contrast with mussel farming, domestic oyster production is sufficient to meet national demand. Production is estimated to have amounted to 138 500 tonnes in 1998, worth a total of FRF 1.55 billion.

The main species farmed are the Japanese cupped oyster which alone accounted for 137 000 tonnes in 1998, and the European flat oyster whose population had been devastated by the *bonamia ostreae* parasite in the 1980s. There are still problems with overstocking in certain oyster beds. The best solutions seem to lie in improving the spatial management of oyster beds, ensuring a better match between the quantity bred and the food supply available in the environment and maintaining the quality of coastal waters.

Other species of mollusc

The main species found are scallops and Pacific clams. For scallops, the programme that has been implemented consists solely in restocking natural beds (Brittany region). As for clams, while the scientific, environmental and economic factors all seemed to indicate scope for rapid development in clam breeding, disease (brown ring) has hindered development and production is currently stagnating at around 650 tonnes a year. Furthermore, there has been substantial regeneration and even development of natural breeding beds, probably through spat fall from farms. Paradoxically, fished clams are now therefore competing strongly with farmed clams.

New types of marine farming

Research and experimental work by scientific bodies and the fishing industry over the past twenty years have contributed to the emergence and development of fish and crustacean farms, whose production techniques are now more or less fully mastered.

The species farmed primarily consist of trout, bass, bream and turbot. Prawn production is still not well established from the technical and economic standpoints.

Total production of new farmed species amounted to around 6 415 tonnes in 1998, worth a total of FRF 288.4 million. The stiff competition between bass and bream farms in the Mediterranean basin has prompted fish farmers to look for new market outlets in Northern Europe. Difficulties also remain in setting up new fish farms in an environment which is already under heavy pressure from other activities such as tourism or to which access is denied on environmental conservation grounds.

Seaweed farming

Seaweed farming may expand significantly over the coming years. The production cycle of Japanese kelp (*undaria pinnatifida*), an edible seaweed, has now been fully mastered and seaweed farming, located mainly in Brittany, looks set to grow significantly in the medium term. Farming of non-edible seaweed primarily consists in Irish moss (*chondrus crispus* or red algae), from which carrageenin and algin are extracted for the agro-food and pharmaceutical industries, and is an activity that is expected to develop rapidly once all technical problems have been solved.

GERMANY

Summary

In the years under review, 1998 and 1999, the situation in the fisheries sector encompassed two aspects. On the one hand operating results developed very positively in some sectors (for instance, shrimp/shellfish fisheries, parts of the fresh fish fisheries sector). However, one must not ignore the fact that many commercially important fish stocks are in a poor state. Therefore, in order to achieve long-term, sustainable fishing activities, fishing intensity will have to be reduced in future. In the last few years Germany has already made a considerable contribution through the substantial reduction of its fleet, particularly affecting high-capacity vessels of the deep sea fishery sector.

The *per capita* consumption of fishery products has stabilised at approximately 14 kilograms. Landings of the German fisheries operations and the production of inland fisheries and aquaculture make a relatively small contribution to meeting the total demand. The efficient businesses in the German fish-processing industry are mainly supplied by imports. In order to enable them to offer their products at competitive prices it is necessary to continue to liberalise trade.

Capture fisheries

Performance

Although the catches of German fishing fleet only meet a small part of the total demand for fish and fish products, they do make an important contribution to securing the population's basic supply of seafood products. In 1998 total landings amounted to approximately 245 000 tonnes (catch weight) worth DEM 350 million. In 1999 landings decreased to approximately 230 000 tonnes. But the value of landings increased to DEM 390 million. Traditionally the few remaining deep sea fishery vessels of the German fishing fleet have accounted for the main share in landings. In 1999, redfish fisheries faced more difficulties with stocks being less concentrated and catches thus requiring more fishing effort. Moreover, prices for frozen redfish fillets decreased slightly. As cod and saithe fisheries were faced with difficulties as well, 1999 was by no means an easy year for the shipowners concerned. Developments in the pelagic fisheries were more favourable however. In the two years under review the main fish species caught were horse mackerel, sardinella, herring and mackerel. The revenues for these species amounted to approximately DEM 65 million in 1998 and 1999 respectively. Less than one fifth of the frozen fish was landed in Germany; most of it was landed in Iceland (white fish) and the Netherlands as well as in Spain (pelagic fish).

In 1999 there was a clear decline in the fresh fish landings of the cutter and coastal fisheries. This was caused by extraordinarily large foreign landings of blue whiting, capelin and sprat caught by a charter vessel in 1998. Some of the landings of traditional fish species, for example landings of Baltic herring, decreased from 1998 levels. With 9 500 tonnes, the level of catches of Baltic herring clearly decreased in the spring season of 1999 (down 25%). There were also fewer landings of cod. However, this negative development was more than offset by a clear price increase. Saithe fisheries were faced with difficulties. Their landings amounted to almost 9 000 tonnes in both years. However in 1999 prices dropped considerably, resulting in a decrease in revenues. Following the poor catch results in flatfish fisheries in 1998, the sector considerably improved its level of catches in 1999. Plaice and sole are the main species. Sole fisheries were very successful, doubling their turnover. In wet fishing, about one third of the catches were landed abroad.

Management of commercial fisheries

Following consultations with all operators, the available catch quotas were allocated to the deep sea fishery sector on the one hand and cutter fisheries on the other. In this context, the deep sea fishery vessels were granted individual catch licences for certain fish species in specific sea areas. At the beginning of the season, catch quotas for cutter deep sea and coastal fisheries were released for general exploitation, except for plaice, saithe, sole, hake, anglerfish and cod quotas. Differentiated catch rules were established for the above species of fish, *inter alia*, weekly and monthly quotas, individual catch licences and collective catch licences for certain groups of vessels.

In addition, the number of active days at sea was restricted for beam trawlers with an engine power of more than 221 kilowatts and the pelagic trawlers of the deep sea fishery sector. It was necessary to take this measure to achieve the objectives of the German fleet structure programme.

In order to be able to calculate the quotas' utilisation rate and the existing catch effort capacities, fisheries operations are obliged to turn in their fishing logbooks including, *inter alia*, information on the level of catches per fish species in each sea area, the duration of the voyage, landing declarations and sales invoices. The data are recorded and then analysed with the aid of data processing technology. In accordance with the amendment to Regulation (EEC) No. 2847/93 establishing a control system applicable to the common fisheries policy, the obligation to keep a fishing logbook was extended to all species, regardless of their quotas, if the quantities caught exceed 50 kilograms per fishing voyage.

Recreational fisheries

Statistical information on recreational fishers' level of catches are mainly based on estimates. According to these estimates, approximately 1.5 million anglers with an average catch of some ten kilograms are active in angling, mainly in inland waters. In addition, there are approximately 4 500 active recreational fishers fishing at sea with longlines and pound nets. The number of fishing gear they may use is limited (*e.g.* a maximum of four pound nets or longlines with a maximum of 100 hooks). Moreover, recreational fishers only fish for their own needs, they may not sell their catch.

Monitoring

In accordance with the Regulation (EEC) No. 2847/93, establishing a control system applicable to the common fisheries policy, Germany has set up a satellite-assisted fisheries monitoring system. This system is geared to the monitoring of fishing vessels equipped with such a device. In the first phase (30 June 1998 to 31 December 1999) 13 fishing vessels of the deep sea fisheries sector were equipped with satellite-tracking devices. As from 1 January 2000 all fishing vessels with an overall length of more than 24 metres have to be equipped with a satellite-tracking device. Under this rule, 89 German fishing vessels have to take part in the satellite-assisted monitoring system.

Aquaculture

There are only rough estimates for the production of freshwater fish in inland waters. However, annual production probably amounts to about 45 000 tonnes of table fish. Aquaculture produces mainly trout (about 20 000 to 25 000 tonnes) and carp (10 000 to 15 000 tonnes) in traditional fish ponds. The catches of lake and river fisheries account for about 3 000 to 4 000 tonnes. There are also some production sites where high value species of fish like eel and sturgeon are intensively bred in facilities that clean and circulate the water.

Again cormorants caused significant damage in fisheries, particularly in river and lake fisheries as well as in carp pond farming. The *Länder* are entitled to take measures at regional level.

Government financial transfers

In 1998, total government financial transfers associated with Germany's fishery policies and the common fisheries policy were DEM 33 million – a 70% increase over the previous year.

Table 1. Government financial transfers associated with Germany's fishery policies and the EU common fisheries policy: 1997-1998

(DEM million)

	1997	1998
MARINE CAPTURE FISHERIES	16.3	23.7
<i>Direct Payments</i>		
– Payments for the temporary withdrawal of fishing vessels	7.0	10.5
– Payments for the permanent withdrawal of fishing vessels	1.9	1.6
<i>Cost Reducing Transfer</i>		
Support for purchase of new or second hand vessels and for modernisation of vessels		
– Grants	2.8	4.6
– Loans	3.8	6.0
– Interest subsidies	0.8	1.0
AQUACULTURE TOTAL	0.0	0.0
MARKETING AND PROCESSING	2.5	8.9
<i>Cost Reducing Transfer</i>	2.5	8.9
TOTAL	18.8	32.6

Markets and trade

Markets

German consumers include fish, crustaceans and molluscs in their diets. Today most of them know the nutritional advantages of fish. In Germany, per capita consumption of fish has stabilised at a level of 14 to 15 kilograms per year. A comparison with other European countries (*per capita* consumption of about 19 kilograms) illustrates that there are possibilities of increasing consumption in future. However, it can only be increased if the 1998 and 1999 trends towards considerable price increases for raw material in international markets does not continue, as this automatically influences the development of consumer prices and thus quantities demanded. Various significant consumption trends could enhance the consumption of fish in Germany. They include, for instance, the growing consumption outside the home and the good development potential for snacks and fingerfood. Furthermore, improving the convenience of consumption is likely to increase demand for fish products.

Trade

Traditionally foreign trade has had a key role to play when it comes to Germany's supply with fish and fishery products. The degree of self-sufficiency – the share of own landings including the production of freshwater fisheries and aquaculture in the total domestic fish consumption – amounted to only 25%. Therefore, Germany depends to a great extent on imports, mainly coming from non-EU countries.

At the end of the nineties, conditions for the German import industry have changed. The concurrence of several factors has contributed to this new situation. For instance, on the one hand stricter catch rules to protect stocks and a more intensive exploitation of fish stocks in practically all oceans led to ever scarcer catches and thus reduced supplies. On the other hand, the growing demand of some countries, which used to play a minor part as fish buyers on the world market, has resulted in increased demand. As a result, prices for raw material rose partly considerably in 1998 and 1999. Average prices for frozen white fish fillet, most of which has to be imported to Germany, rose by 40%.

In 1998 a total of 800 000 tonnes (product weight) of fish and fishery products worth DEM 4.5 billion were imported into the Germany. Never before has a larger volume of fishery products been imported. According to the current provisional results, imports in 1999 amounted to 715 000 tonnes worth

DEM 4 billion. Frozen white fish fillets, particularly of Alaska pollack, continue to constitute the most important product group in import trade. In the last two years there were clear import price increases within this product group. As a consequence, in 1999 significant volumes of frozen fillets of hoki were imported for the first time. Norway, Denmark, the Commonwealth of Independent States (CIS) countries and China were the most important trade partners in import trade.

In 1998 the export business amounted to 370 000 tonnes (product weight), worth DEM 1.8 billion. By contrast, provisional data for 1999 indicates that exports accounted for 300 000 tonnes, worth DEM 1.4 billion. Fish and fishery products were mainly exported to countries of the European Community.

Outlook

With regard to the supply of the German market the government will continue to advocate, at EU and international levels, suitable approaches to securing sustainable fisheries and a liberal import regime. Only in these ways will it be possible to achieve further positive developments in fish consumption in Germany and in the German fish industry.

Special topic: Fishing Capacity

Basic statistics

The following table contains data on the number of vessels of the German fishing fleet and their engine power by GT categories:

Table 2. **German fishing fleet: 1998 and 1999**

GT categories	1998		1999	
	Number of vessels	kW	Number of vessels	kW
< 25	1 939	43 211	1 949	44 230
25-49	215	38 512	212	38 210
50-99	56	11 768	57	11 943
100-149	28	7 793	28	7 793
150-249	41	17 069	41	17 069
250-499	14	10 006	14	10 006
500-999	0	0	0	0
1 000-1999	6	12 483	6	11 987
> 2000	6	18 809	7	22 509
Total	2 305	159 651	2 314	163 747

We do not have any information on the value of the fishing fleet. The German authorities allocate quotas and grant licences which cannot be traded. This is why here, too, we have no information on their value.

In 1998, 4 337 crew members were registered in the German fishing fleet, 790 of them as part-time workers. There was a slight increase in 1999, when 4 363 fishermen were registered, 811 of them as part-time fishermen. We cannot provide detailed information on the age of the fishermen, every fisher must have a vocational qualification for his/her job.

Structure of the German fishing fleet

Within the framework of the current Multiannual Guidance Programmes (MAGP) the German fishing fleet has been broken down into the following seven segments:

1. The small coasters with a length of less than 12 metres fish with passive fishing gear near the coasts (almost 1 800 vessels).
2. Vessels with an overall length of 12 metres and more that use passive fishing gear (26 vessels).

3. Beam trawlers fishing flatfish and shrimp. Here there is a limit of 221 kilowatts (about 300 vessels with up to 221 kilowatts, seven vessels with larger engines). This limit is due to the technical restrictions on fisheries in the flatfish protection zone in the North Sea.
4. Dredgers that are broken down into cutters (approximately 130 vessels).
5. Pelagic deep sea fisheries (four pelagic trawlers).
6. Demersal deep sea fisheries (eight and nine vessels in 1998 and 1999 respectively, catching groundfish).
7. Approximately 50 special vessels that do not catch fish which are subject to a quota system. These vessels are used to catch shellfish or freshwater fish species tolerant to brackish water (eel, perch, pike).

Capacity development

In the past few years the capacities (tonnage and engine power) of the German fishing fleet were continuously reduced. The moderate increase in 1999 as against 1998 is only due to the entry into service of a deep sea demersal fishery vessel. This vessel replaces a vessel of the same segment, which was destroyed by fire in 1996. A gradual reduction of the fleet has been achieved thanks to a consistent implementation of the MAGP for the German fishing fleet. These efforts aim at adjusting the existing fishing capacity to the available resources. According to current estimates Germany will also meet the various requirements under MAGP IV (duration until 31 December 2001).

Age structure – integration of new technologies

The average age of the German fishing fleet is 23 years. The oldest operating German fishing vessel was built in 1919. Four per cent of all ships are older than 50 years. In particular, small vessels and cutters are outdated. In the group of the small beam trawlers only three vessels out of approximately 300 cutters were replaced in 1998. There was a similar replacement rate in previous years. Demersal trawlers in the North Sea and vessels with a length of more than 12 metres that are involved in stationary fishing are faced with a similar situation. Finally, in stationary fishing the average age of small coasters with a length of less than 12 metres is 22 years.

When it comes to the introduction of new technologies, individual fishery operations often face limitations through commercial constraints (renewal of vessel, renewal of engine, etc.). The contrary is true with regard to the use of fishing gear, fish-tracking and other devices, as the German fishing fleet is equipped with state-of-the art devices.

Fleet capacity

Fleet capacity is defined by tonnage (GT) and engine power (kilowatts). Fishing activities are expressed by a calculation of the fishing effort. The fishing effort consists of the product of capacity (GT or kilowatts) and time spent at sea (days at sea, denoted d). Thus, there are always two figures for the fishing effort per vessel and segment ($GT \cdot d$ and $kW \cdot d$). These dimension figures can be calculated rapidly and easily and are used in a uniform manner throughout the EU.

Structural policy in fisheries

The German structural fisheries policy has been completely integrated into the structural fisheries policy of the EU. It is geared to achieving the Community's objectives set within the framework of the MAGP (currently MAGP IV). The MAGP IV are programmes adopted by the European Community in co-operation with the member States, setting specific objectives for a gradual reduction of the capacity of the fishing fleets in the individual member States. There is a fixed period of five years for the implementation of the programmes.

In percentages this means a reduction of the German fleet's capacity or fishing effort ($GT \cdot d$) will be reduced by between 5.9 and 28.3%, depending on the segment, between 1997 and 2001.

The required capacity reduction has been, and is being, achieved through outdated capacity leaving the sector with the support of scrapping premiums. New vessels are subject to the capacity limits imposed by the MAGP. The legal basis is provided by the German Sea Fisheries Act of 12 July 1984, as last amended by the Second Act to Amend the Sea Fisheries Act of 20 October 1997. Fishing effort restrictions have been introduced for segments where no vessels are likely to leave in the foreseeable future. Here, the number of days at sea has been limited, ensuring compliance with the prescribed targets.

Particularly in the first half of the 1990s, scrapping premiums helped to reduce the size of the deep sea fishing fleet. As a result of the considerable capacity reduction that has already been achieved, today scrapping premiums are only available to the segment of small beam trawlers, as there is still excess capacity in this segment.

The development of the fleet is documented with the help of the German fishing vessel register. Annual analyses examine compliance with the objectives.

To sum up, one can say that in the past few years Germany has succeeded in maintaining the German fishery sector and in developing a fishing fleet geared to an economic and sustainable use of natural resources.

GREECE

Legal and institutional framework

The Ministry of Agriculture's General Directorate for Fisheries is responsible for developing and implementing fisheries policy. Within its purview are the aquaculture, capture fisheries and marketing sectors. The Ministry of Agriculture's General Directorate for Veterinary Medicine is responsible for the sanitary inspection of fishery products.

The Ministry of Merchantile Marine's Directorate of Harbour Police and the local harbour offices are responsible for inspecting the implementation of marine fisheries policy. The Prefectural Local Governments and fisheries sections are responsible for implementing fisheries policy. The Ministry of Commerce inspects the markets for fisheries products.

Greece's fisheries policy is governed by the EU's Common Fisheries Policy. The discussion below refers only to national interventions. These interventions comply with Community legislation.

Official scientific inspection of fisheries stocks has not been carried out. There are individual communications and publications of local fishing stocks but these are not of an official nature.

Management of commercial fisheries

Management instruments

a) Fishing with garfish nets prohibited

Presidential Decree No. 320/97, issued in the Official Journal No. 224/A/7-1-97, prohibits the granting of fishing licences to fishing vessels equipped with "garfish nets". All fishing licences already granted to fishing vessels equipped with "garfish nets" ceased, pursuant to provisions of Article 3 of the R.D.666/66 regarding "licences of fishing vessels". The provisions of P.D.526/1998, relating to "fishing with garfish nets," were abolished on the 31 December 1998.

b) Protection of coral formations

Additional fishing prohibition measures have been taken according to the Ministerial Decisions issued pursuant to the Articles 10 and 20 of the L.D. 420/70 and Paragraph 2 of Article 3 of L. 1740/87 "exploitation and protection of coral formations of fishing waters, aquaculture and other provisions" (Official Journal No. 221A /87) as substitutes for the Fishing Code (Official Journal 27 A /70).

The first of these measures, under Ministerial Decision No. 232046/4-8-97, (Official Journal 752 B/97), prohibits fishing that:

- Uses fishing machinery in the S. Euboean Gulf during the period from 8 p.m. to 5 a.m. of the next morning.
- Uses purse seiners (day and night) in the sea area situated on the rational line connecting Tapia Cape to S. Euboean Gulf.

The second of these measures, under Ministerial Decision No. 232045/4-8-97 (Official Journal 719 B/97), prohibits fishing using machinery in the sea area situated between Kalymnos island and Kos island, which is delimited as follows: St. George, Kalymnos island – Nera, Kalymnos island – St. Nicolas,

Kalymnos island, Limnion, Kos island – St. Fokas, Kos island – Roussa, Pserimos island – Plati, Kalymnos island – Chali, Kalymnos island. National Legislation of 1998.

c) *Shellfish Regulations*

The Presidential Decree (P.D.) No. 86/98, which was issued in the Official Journal No. 78/A/10-4-98, changes the regulations applying to shellfishing.

d) *Use of fishing gear by trawlers and purse seiners*

Additional prohibitive measures were taken in connection with the fishing gear, namely the otter trawlers and the purse seiners.

The first decision prohibits:

- Fishing with otter trawlers in the S. Euboean Gulf during the period from 8 p.m. to 5 a.m. of the next day.
- Fishing with purse seiners (day and night) in the sea area situated in the rational line connecting Knimis Cape, Lichada Cape and Tapia Cape.

This decision was made by the Minister of Agriculture (Decision No. 253564/9-9-98 published in the Official Journal No. 997/22-9-98, Part II).

The second decision prohibits fishing in the S. Euboean Gulf and Maliakos Gulf (Decision of the Minister of Agriculture No. 282578/20-10-98, published in the Official Journal No. 1974 B/4-11-99).

The third decision prohibits fishing with otter trawlers in the sea area situated between Kalymnos island and Kos island, the sea area is delimited as follows: Saint George, Kalymnos island – Nera, Kalymnos island – Saint Nicholas, Kalymnos island – Limniona, Kos island – Saint Fokas, Kos island – Roussa, Pserimos island – Plati island, Kalymnos – Chali, Kalymnos island. This decision was made by the Minister of Agriculture (Decision No. 277483/18-5-99) and was published in the Official Journal 1070 B/7-6-99.

Access

Vessels fishing in the open-sea waters can fish in the fishing grounds designated under Community fishing agreements (Mauritania, Senegal, Guinea, Gambia) and under the private agreements concluded by the shipowners themselves (Tanzania, Sierra Leone, Angola, Nigeria).

Management of recreational fisheries

The legislation governing non-professional fisheries, which has been in force since 1985, has not changed (P.D. 373/89). There are strict limitations in the fishing gear used and in fish weight (5-10 kilograms). The sale of fish by non-professional fishers is prohibited and fishing vessels should have a non-professional fishing licence.

Monitoring and enforcement

Within the framework of implementation of EEC Council Regulation No. 2847/93, Article 3, on “the establishment of common fishing policy monitoring system”, as replaced by E.C. Regulation No. 686/97, the Minister of Merchantile Marine made decision No. 3147/4-1-99. The decision provided for the regulation of the organisation and operation of Fisheries Monitoring Center (FMC) and it was published in Official Gazette No. 2221 B of 29-12-99.

The Ministry of Merchantile Marine has made open international invitation to tenders for the supply of the above system, which shall be installed and be operating before the end of 2000.

In 1998-1999 fishing control, monitoring and inspection operations were performed jointly between Greece and Italy in both Ionian and Cretan sea areas.

Aquaculture

The following initiatives and policies were developed and implemented in 1998-1999:

- a) Preparation of studies on the existing situation and management of water resources. The results of the above studies are significant tools for determining future action.
- b) Co-operation with FAO's General Fisheries Commission for the Mediterranean (GFCM) in for preparing a National Report on implementing the Code of Conduct for Responsible Fisheries so that sustainable approaches and responsible policy practices can be incorporated in legislation and citizen's mentality.
- c) Eco tourism development was achieved in parallel with inland water fisheries management.
- d) Enactment of law No. 2647/98, which describes the responsibilities of approving the environmental conditions for various categories of aquaculture installations and determines their annual capacities in the regional local government.
- e) Enactment of law No. 2742/99 regarding surveys of the aquaculture units which aim at ensuring the sustainable development of those units. At the same time, sectoral studies on determining development zones for marine cultures are ongoing. These studies were prepared by the Ministry of Environment, Physical Planning and Public Works, in co-operation with the Directorate of Aquaculture and Inland Waters of the Ministry of Agriculture.

Fisheries and the environment

The following objectives are pursued so that competition between aquaculture and other activities carried out in the coastal zone is avoided:

- Uniform distribution of units so that their installation and operation procedure can be facilitated.
- Effective protection of the environment.

To this end, the procedure of preparing sectoral studies on determining marine culture development zones is in progress by the Ministry of Environment, Physical Planning and Public Works, in co-operation with the Directorate of Aquaculture and Inland Waters of the Ministry of Agriculture (see above).

Post harvesting policies and practices

In the period 1998-1999, the following provisions were laid down for marketing of fisheries products.

According to Paragraph 2, Article 50 of Law 2538/97 (Official Journal No. 242 A 1-12-1997), all catches (fresh and frozen, etc.) should be transported to the auction halls of the prefecture or to the fishing market and they should be distributed from there, regardless of the transport means to be used for their transport (terrestrial transport means, navigation means and aerial means).

According to Paragraph 2 and 6, Article 50 of Law 2538/97, the following decisions were issued:

- a) Decision No. 267359/8-5-98 of the Ministry of Agriculture on the sale of fresh catches at auction halls. According to this decision wholesale of fresh catches, transported by any transport means within the boundaries of the prefectural local government where the auction hall operates, can only be carried out in auction halls.
- b) Joint Ministerial Decision No. 269051/13-8-98 (Official Journal No. 961 B/9-9-98) on specific charges to be paid by category of businessmen transacting business with the staff of auction halls and on tradesmen's obligations to transact business with auction hall staff.
- c) Joint Ministerial Decision No. 279078/27-8-98 laid down rules governing the transportation and marketing of fishing products sold by fishing associations.

IRELAND

Summary

In 1999, landings of fish (quota and non quota species) by Irish registered vessels into Irish and foreign ports totalled 307 000 tonnes (live weight), with a total value of IEP 165.1 million. This represented a decrease of about 1% in value terms and a decrease of over 10% in volume terms over 1998. The main species involved in Ireland's catch are outlined in Paragraph 8.

The overall value of Irish seafood exports in 1999 was IEP 228 million, a decline of 4.6% on 1998. The decline is attributable mainly to a downturn in exports of pelagic products.

In relation to aquaculture, production in 1998 amounted to 41 000 tonnes and 1999 production was of the same magnitude. Markets for farmed finfish and shellfish products were generally favourable in the two year period covered by this review.

Legal and institutional framework

In Ireland, the legal framework for the regulation of fisheries is exercised at national Government level in accordance with the provisions of the Common Fisheries Policy. The Department of the Marine and Natural Resources is responsible under the Sea Fisheries and Fisheries Acts for the formulation and implementation of policies for, among other areas, the sea fisheries, aquaculture and recreational fisheries sectors. A number of State Agencies reporting to the Department have certain responsibilities in relation to research and the management, conservation and protection of fisheries resources. These include the Sea Fisheries Board (An Bord Iascaigh Mhara), the Marine Institute and the Central and Regional Fisheries Boards (7). Policies in the sector are implemented in the context of the EU's Common Fisheries Policy.

Capture fisheries

Fleet

The total capacity of the Irish fleet at the end of 1999 was 58 684 GT comprising some 2000 vessels. Almost 70% of the fleet has a tonnage of less than 25 tonnes GRT; approximately 95% of the fleet has a GRT of less than 150 tonnes. The position at the end of 1998 was 59 342 GT.

The objectives for the Irish fishing fleet for the period 1997-2001 were agreed in the context of the fourth Multi-Annual Guidance programme (MGP IV). The programme sets the fleet capacity/effort objectives which are to be achieved in respect of the Irish fishing fleet by the end of 2001. The Fourth Multi-Annual Guidance Programme provides that Member States can achieve the fleet objectives either through reductions in fishing effort or reductions in fleet capacity. In the context of the Irish decision, it has been agreed that Ireland will meet its objectives for both the Pelagic and Beam Trawler segments through reductions in fishing effort.

Table 1. Fleet capacity objectives for the Irish fleet

Segment	GT Obj	KW Obj	GT*T('000)	KW*T('000)
Polyvalent	46 185	163 857	–	–
Pelagic	22 308	29 039	5 683	7 013
Beam trawl	1 156	6 113	295	1 597

Landings (including crustaceans and molluscs)

The total value of all sea fish (excluding salmon) landings by Irish registered vessels for 1998 and 1999 are given in Table 2.

Table 2. Irish landings 1998 and 1999

1988			1999		
Species	Landings	Value	Species	Landings	Value
	Tonnes	IEP '000		Tonnes	IEP '000
Demersal	44 000	53 200	Demersal	40 000	52 100
Pelagic	251 000	61 500	Pelagic	213 000	53 200
Shellfish	48 000	51 400	Shellfish	54 000	59 800
Total	343 000	166 100	Total	307 000	165 100

For both years the main demersal species harvested were Cod, Haddock, Megrim, Monk, Plaice, Ray and Whiting. The main pelagic species were Blue whiting, Herring, Horse Mackerel and Mackerel. The main shellfish species were Blue Mussel, Edible Crab, Nephrops and Whelk.

Management of commercial fisheries

The control and management of fisheries resources in Community waters which come within the Irish exclusive economic zone (EEZ) are effected in the context of the EC's Common Fisheries Policy which provides for detailed regulations governing, among other matters, catch and effort limitation, technical conservation measures, the processing and marketing of fisheries and aquaculture products, fisheries research and relations with third countries and international fisheries organisations.

A number of fisheries are subject to quotas and require seasonal and/or output management controls to ensure that they operate to maximise their benefit to the sea fishing sector and in accordance with national obligations. The Department implemented and developed fisheries and quota management regimes in consultation with the Marine Institute, BIM, technical staff and the industry within the context of the Common Fisheries Policy.

To facilitate management of these fisheries, Statutory Instruments restricting the amount of fish held on board vessels or landed during specific periods are made from time to time under section 223A of the Fisheries (Consolidation) Act, 1959. These Orders are made by the Minister following consideration of technical and administrative advice.

Pressure stock licence fisheries

Pelagic fisheries also require detailed fisheries management so as to maximise the benefit to the sector from the fishery within the overall quota constraint. On the basis that pelagic quotas can be caught in a very short period of time by a small number of vessels, management initiatives were necessary to ensure that the fishery provided the maximum level of benefit from a national perspective to the catching and processing sectors. In addition to seasonal and output controls (vessel catch limits), additional input controls were employed in the herring, mackerel and horse mackerel fisheries. These input controls regulate the vessels which may participate in the fishery. In 1998 and 1999 the herring, mackerel and horse mackerel fisheries were controlled in this way by the issue of pressure stock licences.

Table 3. Number of licences 1998 and 1999

	1988	1999
Celtic sea herring licences	223	256
North western herring licences	97	117
Mackerel licences	101	116
Horse mackerel licences	–	21
Tuna licences	18	18

Management of recreational fisheries

Ireland's inland fisheries resource comprises of approximately 145 000 hectares of freshwater lakes, equivalent to one fifteenth of the total area of the State, and about 13 800 kilometres of main river channels. The most important components of the resource are salmon, sea trout, brown trout, coarse fisheries and sea angling. The overall policy objective is to ensure that this valuable natural resource is conserved, managed developed and improved and to exploit and support sustainable economic activity and job creation based on the resource.

In 1999, new legislation for the management of recreational fisheries was enacted. The Fisheries (Amendment) Act 1999 provided for clarification in the roles and responsibilities of fisheries boards, including devolution of greater responsibility and accountability for the planning and delivery of services to regional boards, as well as changes in the composition of boards. New management accounting and reporting procedures, in line with current best practise arrangements, were also introduced for the boards.

Also in 1999 a technical report on the operation nationally of a salmon tagging scheme was published. This report followed on, and built upon, the publication in early 1998 of a technical report prepared by the Marine Institute, and made detailed recommendations on the introduction of the scheme. The Fisheries (Amendment) Act, 1999 provided for the establishment on a statutory basis of the National Salmon Commission, to assist and advise on the management of the national salmon resource and in particular, on a scheme of tagging for wild salmon. The Act also gave the Minister power to make regulations to provide for such a scheme.

Reported total salmon catch levels in 1998 and 1999 were 237 663 and 180 477, respectively. Insofar as the issue of licences is concerned, the following is the position for the years under review:

Table 4. **Licences issues, recreational fisheries, 1998-1999**

	1999	1998
Drift	874	871
Draft	502	494
Other	159	170
Rod	30 954	29 848

Aquaculture

Strategic approach

The strategic objectives being pursued are:

- To increase employment, output value and exports in the Irish aquaculture sector on a sustainable basis.
- To create a sustainable structure/basis (critical mass) for further expansion of the sector.
- To secure improved competitiveness, technology, quality, value added and diversification in the sector.

There are currently over 3 000 people employed in the Irish aquaculture sector and aquaculture production is worth approximately IEP 60 million per year to the economy (41 000 tonnes). The sector now accounts for 30% of total fish production in Ireland, reflecting the importance of aquaculture as a developing food source in the global economy. Given the growing market for seafood, aquaculture has considerable potential for further growth in jobs and economic activity in coastal communities and is increasingly important as a raw material supplier to the fish processing sector, with significant added value and export opportunities.

There have been significant levels of investment in the development of the Irish aquaculture industry in recent years and this continued in 1998 and 1999. In the period 1994 to 1999 total investment in excess

of IEP 30 million has been made and as part of the Government's National Development Plan 2000-2006, further investment of almost IEP 60 million is envisaged resulting in a projected doubling of production.

A major strategic review of the aquaculture sector was initiated in 1999 and completed in 2000. Its key recommendations include increasing production of both finfish and shellfish to reach critical mass, as well as measures to diversify production and promote added value.

Aquaculture production in Ireland in 1998 amounted to 41 000 tonnes with a value of IEP 60m approximately. Salmon was the principal element of finfish production (15 000 tonnes with a value of IEP 39 million) with trout – both sea and freshwater – being the other elements. Shellfish production consists mainly of mussels and oysters. Final data is not available in respect of 1999 but it is estimated to be broadly similar to 1998.

Fisheries and the environment

There is increased consideration of environmental issues in the formulation of policies. The Common Fisheries Policy, the primary objective of which is to conserve fish stocks at an optimal level, is also increasingly required to ensure that measures are consistent with the protection of the marine environment.

Ireland is a contracting party to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention, 1992). A report on environmental conditions within the OSPAR region is to be published in the year 2000 which involve five separate Quality Status Reports and which will inform the main report. Ireland and the UK completed a Quality Status Report for the Celtic Seas region, in 1999.

Eutrophication is considered to be the single greatest threat to water quality and freshwater fisheries. The main causes of eutrophication are from point sources *e.g.* discharges of effluent from sewage plants, industry and farms.

Work is continuing on the implementation of an Action Plan on pollution prevention and response strategies at both national and regional level to tackle fish kill incidents and damage to water quality as it affects fish stocks and freshwater fish habitats.

The Action Plan is designed to ensure that the resources of the fisheries service and of all relevant agencies are deployed and mobilised to best effect to prevent pollution, deal with the causes of pollution and to act swiftly when pollution occurs.

Processing, handling and distribution

Most processing, handling and distribution activity is geared to the export market, particularly for herring and mackerel where products are sold to Europe, Southeast Asia and Africa. Irish processors produce and market a wide range of branded consumer products based on whitefish, shellfish and salmon. BIM work with processing companies to maximise product and marketing opportunities for Irish fish on domestic and export markets. In Ireland 50% is added to the value of the primary product through processing. Through investment in the sector the amount of added value is expected to increase. The development of the seafood industry is a Government priority and a provision of IEP 171 million has been allocated for its development in the National Development Plan 2001-2006.

Government financial support

In the period covered by the review, changes in Government financial transfers were relatively minor.

Markets and trade

Exports

Total Irish seafood exports in 1999, including direct exports from Irish vessels landing into foreign ports, reached a value of IEP 250 million. When direct exports from the Irish fleet into foreign ports are excluded the value of Irish seafood exports was IEP 228 million. In terms of volume, seafood exports amounted to 201 479 tonnes which is a decline of 20% on the 1998 level.

The export performance varied among the main product categories. There was continuing growth in the export of freshwater species which reached 16 390 tonnes, an increase of 19% on the 1998 level. More importantly the value of freshwater exports was IEP 43.6 million which was up 38% on the previous year. Salmon exports in particular performed well with an increase in volume of 13% to 11 979 tonnes and in value of 26% to IEP 35 million.

In 1999 quotas were reduced for mackerel and herring and this was reflected in the export of pelagic products which declined 23% in volume to 136 278 tonnes and by 20% in value to IEP 74.5 million compared with 1998. International pelagic markets were also adversely affected by the continuing fall-out from the Russian financial crisis and the collapse in trade to that market which led to increased supplies on traditional European markets. This situation was compounded by continuing recession in Far Eastern countries, including Japan, which are important markets for pelagic products. The combination of these factors created serious marketing challenges for Irish exporters.

Total exports of mackerel declined 24% in volume and 30% in value to IEP 31 million over the 1998 level while exports of horse mackerel declined 20% in volume and 8% in value to IEP 12 million in 1999.

Exports of herring (excluding roe) fell 27% in volume to 29 085 tonnes and by 20% in value to IEP 16 million in 1999.

Once again in 1999, the European herring market was heavily supplied with Atlanto Scandian herring, mainly from Norway. The bulk of this product was sold for human consumption rather than fishmeal and the huge quantities caused a sluggish price situation for herring throughout the year.

Exports of herring roe declined in 1999 to 578 tonnes valued at IEP 2.1 million. This was a substantial drop on 1998 trade in roe where the value was IEP 4.4m. In contrast exports of tuna performed well in 1999 reaching 3 239 tonnes valued at IEP 5.9 million which was an increase of 38% and 51% in volume and value respectively on the 1998 level.

Quota cuts in the whitefish sector resulted in a decline of 24% in volume of whitefish exports to 14 865 tonnes in 1999. In value terms the decline was just 16% to IEP 30.5 million which indicates positive prices for whitefish even though volumes were substantially down on the previous year. The main impact of volume declines was evident in exports of monkfish, megrim, haddock, cod and other flat fish varieties.

The year 1999 was good for Irish shellfish exporting companies. The value of total shellfish exports increased almost 10% in value to IEP 75.6 million with volumes up to 27 130 compared with 1998. Exports of Dublin Bay Prawns and other shrimps increased 5.7% in value to IEP 33 million. Molluscan shellfish increased 8% in value to IEP 25.8 million. The main varieties were mussels, oysters, scallops, periwinkles and other molluscs.

Fishmeal and oil exports declined sharply in 1999 by 59% in volume to 6 815 tonnes and by 62% in value to IEP 3.5 million in the most recent year.

Table 5. Trends in Irish seafood exports in 1998-1999

	1998		1999	
	Tonnes	IEP '000	Tonnes	IEP '000
Freshwater fish	13 805	31 649	16 391	43 600
Demersal	19 632	36 166	14 866	30 496
Pelagic	176 751	92 860	136 278	74 558
Shellfish	26 083	68 796	27 120	75 576
Fishmeal/oil	16 519	9 226	6 815	3 525
TOTAL	252 791	238 698	201 479	227 756

Market spread

The European Community accounted for 80% of Irish seafood exports in 1999 and significantly the unit value of these exports increased by a third in 1999 in a situation where volumes declined by 27%.

Outlook

The years 1998 and 1999 were reasonably successful ones for the seafood industry. While earnings did not reach the record heights of 1996, the level of seafood exports represented a good performance considering the significant marketing difficulties in the pelagic sector in particular.

Output of aquaculture products, particularly shellfish, continued to increase and substantial expansion in this sector is projected in the years ahead. High investment levels together with the updated licensing provisions of the 1997 Fisheries (Amendment) Act will facilitate the establishment of new fish farming ventures while at the same time consolidating existing ones.

The development of the fisheries sector will continue under the new National Development Plan which covers the period 2000-2006. The Programme provides for an investment of over IEP 171 million during its six year period on a range of measures including restructuring and modernisation of the fleet, aquaculture development, processing, marine research, fishery harbours, marketing and training.

The need to ensure sustainable development of fisheries is considered to be the highest priority. A range of measures involving even closer international co-operation and collaboration will be necessary. Ireland will be playing its part at EU level in the conservation of fisheries and marine life. Ireland is in particular anxious to secure improved monitoring and control measures to help protect and develop stocks.

ITALY

Macroeconomic framework in the fishery industry

The present country note illustrates the general macroeconomic framework of the Italian fishing industry and it refers to IREPA's data base figures.¹

In particular, the calculation of the total output results from the data related to the Mediterranean fleet, to the ocean fleet and aquaculture. The calculation of domestic consumption and per capita income, made through the analysis of imports and exports of fresh and frozen products, provides an exhaustive macroeconomic framework of the fishing industry

In 1999, the overall production (maritime fishery and aquaculture) was equal to 680 750 tons for a gross output of ITL 3 893 billion. Compared to the previous year, a reduction in the production levels was recorded both as to quantity and value (in both cases equal to -6.2%). This reduction still involves the maritime fishery, while the production of breeding products is basically stable.

In the year under investigation catches were estimated to be 463 400 tons compared to 509 254 tons of the previous year; the most substantial reduction was recorded in the Mediterranean fishery (-10.5%), with a catch level of 416 400 tons. The production of the ocean fleet increased by 20% and in 1999 its catch was equal to 17 000 tons.

As already mentioned, breeding production was quite stable, being equal to about 217 thousand tons. It should be noted that, while mollusc production increased (+1.4%) fish production declined (-1.7%); this decline seems to be in conflict with the present trends in the industry which show growth margins in the farming of fish species, above all marine species (sea-bass and sea-bream) and innovative species. Actually, an analysis of the main species farmed in Italy, highlights a constant growth as to basses and breams, a stable trend as to eels and grey mullets and a high decline as to trout. The negative trend recorded for this last species had an impact on the total production of aquaculture in 1999.

The decline in the production of maritime fishery and the stable production of aquaculture resulted, also in 1999, in a higher contribution by aquaculture products to the overall domestic production which in 1999 was equal to 32%, *i.e.* two additional percentage points as compared to 1998. In terms of value of the gross output, the share is much lower (21%). Also in 1999, there is a decline in the trade balance of the fishery industry: 726 thousand tons of imported fishery products and 116 thousand tons of exported fishery products with a resulting deficit of 610 thousand tons. In value, imports amounted to ITL 4 874 billion, while exports amounted to ITL 640 billion with a deficit of about ITL 4 234 thousand billion. It should be noted that, as compared to the previous year, the deficit in the trade balance experienced a 9% variation in terms of quantity and a 6% variation in value.

Compared to the previous year, the volume of the imported fishery products increases (+7.2%), while the export flow remains stable. The only positive point is a reduction in the import average prices (-4.5%) and an increase in the export average prices (+1.3%).

Then, in 1999 as well, the national fishery industry increasingly relies on imports, as shown by the self-procurement level shifting from 50% in 1998 to 48% in 1999, *i.e.* less than half of the domestic apparent consumption is met by the domestic production. Also reliance on foreign countries for domestic consumption increased; in fact in 1998, the import apparent consumption ratio was equal to 57.5% compared to 60% in 1999.

For many years the fishery industry has been characterised by an increase in imports and reliance on foreign countries. In 1999, another event highly affected foreign trades; *i.e.* the “war-induced rest” which resulted in a long suspension of the fishery activity in the Upper and Middle Adriatic areas which are the most abounding in fishes. The suspension of the activity for many months brought about a high increase in imports from abroad; in addition, when activity was started again, national operators complained about some problems in trading the product at satisfactory prices. The long period of suspension opened up new procurement channels which undermined the local product. The constant presence in the marketplace of rearing and import products at low prices, complicated the return on the market at the same income levels recorded in the pre-war period.

On the side of the domestic demand for fishery products, it should be highlighted that in the year 1999 an increase in the domestic consumption of fish was recorded, already started in 1998 although at a much lower growth rate. The global volume of the product allocated to domestic consumption, obtained by taking domestic production and imports for 1999 into account, was equal to 1 291 thousands of tons for a value of ITL 8 127 billion. The overall per capita consumption of fish products, net of the contributions provided by the domestic preserved food industry, was equal to 22.38 kg compared to 22.32 kg in the previous year.

Increase in consumption was related to quantity only; in fact, expenditures allocated to purchase fishery products declined by about 2%. As a trend, average prices are declining although different trends are recorded for fresh fish, frozen fish and preserved fish; with respect to preserved fish, as many products (tuna fish, sardines and anchovies in oil) are now mature, the price level is usually low to keep the demand high.

In conclusion, the macroeconomic framework highlights how a constant reduction in the domestic production level corresponds to an increase in the deficit of the fishery trade balance. The high demand, which is constantly increasing after the stagnation stage in the consumption of the main food products which took place from 1992 to 1998, is met through a higher level of imports, while aquaculture production seems to have reached an equilibrium point. Aquaculture production shows the most interesting trends, which enable us to confirm that the supply of sea fish species is increasing, while no positive trends are recorded for freshwater species.

Main events and regulatory measures in 1998

The national regulatory activity in 1998 is included in the framework of the planning guidelines set out by the 5th Three-year Plan (1997-1999) for maritime fishery and aquaculture; in 1998 major regulations on resource management, financial support to the fishery industry, simplification and decentralisation of administrative procedures, were issued.

As to the last point it should be noted that the present political-regulatory framework is characterised by an acceleration of the administrative decentralisation and by a higher devolution of powers to local authorities. One of the early provisions issued in compliance with the Bassanini Law n°59/97, was the one related to the devolution of administrative functions on agriculture and fishery to the regions (L. D. No. 143/97); the decree provides that all functions related to fishery, already performed by the Ministry for Agricultural Policies, have to be performed by the regions, assigning to the Ministry only the management of the sea fish resources of national interest. Again in 1998, by P.R.D. No. 445 of 19 November 1998, a simplification process of the administrative procedures in the fishery industry was started; in particular the deadlines for some obligations were unified and some bureaucratic procedures were eliminated. This process has just started and it will result in the removal of many procedural steps, controls, obligations – which would hinder the efficiency of the administration – in order to better meet the need of the fishery production industry.

In 1998 the regulatory activity supporting the operation of the dredgers continued, reaching its peak with the development of the II° Clams Plan aimed at reducing the fleet – in excess *vis-à-vis* the resource availability – and at developing and enhancing the activity of the Management Consortia. In particular, the Ministerial Decree 21 July 1998, on the “fishery regulation of the bi-valved molluscs”, supersedes all previous decrees which regulated this type of fishery and assigns the management of fishery of bi-valved molluscs to the management consortia which have large powers as to the

monitoring of the fish activity and of the maximum levels of catch. As provided for in the decree, the number of licences for dredgers to fish bi-valved molluscs is further reduced (from 764 to 655 in the Adriatic Sea and from 75 to 40 in the Tyrrhenian Sea).

In 1998 the plan for the *Rationalisation and Re-conversion of the Drift Nets (Spadare)* was also implemented. Through Decision of 8 June 1998, the Council of Ministers of the European Union definitely prohibited the use of set gillnets and drift nets to catch tuna in the Atlantic Ocean and in the Mediterranean Sea as to January 2002. The national administration, while aware of the social economic importance of fishing with drift nets, which in some southern areas represents a primary economic resource for the coastal populations, wanted to comply with its obligations with the European Community. It then adopted a set of measures aimed at monitoring the length of the nets and providing incentives to eliminate this fishing gear. After a long negotiation with the Associations involved, and with the trade unions, which strongly opposed this action due to the negative social economic impact resulting from the final suspension of the drift nets activity, the *Drift Nets Plan* was developed.

This plan provides for phasing out of this fishing gear and re-conversion of the operators. The administrative dynamics of this program was quite complex; the actual implementation of the measures recommended by the Plan was slowed down because of two factors: 1) reluctance of the operators to understand whether it was convenient or not to them to suspend the activity with the drift nets; 2) request by the operators not to levy taxes on the premiums to be granted for the suspension of this activity. The request not to levy taxes on premiums was accepted by Art. 52 of the Financial Law of 27 December 1997. As result of this regulation, the implementation of the program was accelerated; in fact in few months near half of the total fund was allocated and spent.

The ratification at national level is represented by the CIPE resolution of 23 April 1997, which introduced some modifications and integrations and by the M.D of 23 May 1997, which officially enforced the *Drift Nets Plan*. The plan has to be enforced in the period 1997/1999 and includes a fund of ITL 240 billion, 50% out of which granted by the Community, drawn from the allocations of the structural fund for fishery (FIFG).

The progressive involvement of the Italian fishery in the wider context of the management of the international biological resources had a high impact on its subsequent regulatory actions. As consequence of active participation in the ICCAT, Italy has published the *Plan for the Rationalisation of Fishery of Bluefin Tuna in Italy* which provides some guidelines for vessel re-conversion or for permanent withdrawal and final suspension of the fishery activity by fishermen following the allocation to Italy of the EC quota which is equal to only about 30% of the catch capacity of the Italian tuna fleet (estimated to be about 12 000 tons of product).

Again in 1998, the Fourth Program of Multi-Annual Guidance Programme was implemented which was supposed to be already implemented as from 1 January 1997 but which was actually approved by the Commission only on 16 December 1997 through decision 98/123/Ce as modified by Decision of the Commission of 30 March 2000. This last decision includes the up-dated register of the EC vessels by 1 January 1997 and the objectives to be achieved by 31 December 2001 by fishery area and segment. The number of fleet units will be defined by the results obtained by the joint work team (European Commission/Italy) which should finalise its work by the end of 2000.

The negotiation of the new FIFG also began in 1998; the structural funds allocated to the development of the fishery industry has been subject to a general negotiation which involves all structural funds starting from the year 2000. The actions undertaken in Agenda 2000 also include a review of the funds which will be mostly managed at regional level. Only some industries, including fishery, will be partly included in a National Program.

Main events and regulatory measures in 1999

The year 1999 coincides with the last year of implementation of the 5th Three-Year Plan for Fishery and Aquaculture and the drawing of the 6th Plan while the new negotiation of the Structural Funds for the period 2000-2006 is going to start.

From the regulatory standpoint, the year 1999 was characterised by the issue of important measures aimed at managing resources at national level, monitoring fishing effort and supporting the industry operators from the employment and economic standpoint.

In this regard, mention should be made of the decree of 13 April 1999 No. 23 which regulates the fishing-tourism activity to be meant as the whole set of activities undertaken by the ship-owner of the coastal fishing vessels who embark people other than the crew for tourism/recreational activities. This regulation repeals the ministerial decrees of 19 June 1992 and 1 April 1998 providing for the whole set of rules underlying the regulation on the performance of this activity, The decree sets out the periods when the fishery-tourism activity can be performed and the technical characteristics of the tools and vessels to be used for this activity. Fishery-tourism activities include sport fishing and recreational activities aimed at promoting the sea and fishing culture in order to have a closer approach of the general public to the world of professional fishery. In addition, it will be possible to carry out activities aimed at acquiring a better knowledge of and at giving a higher value to the coastal environment, the coastal lagoons and, if authorised by the competent region, the inland waters.

With the publication of the legislative decrees No. 298 of 17 August 1999 (enforcement of the directive 93/103 on minimum safety and health measures for workers aboard of fishing vessels) and No. 271 of 27 July 1999 (safety and health aboard of national fishing vessels) the measures for protection of health and safety of labour force, provided for in the general regulation 26/94, are introduced in the fishery industry as well. Through these decrees the regulations on labour safety – set out in the Community directives dictating the rules to be followed aboard to guarantee health and safety of workers, hygiene and technical maintenance of equipment – were extended to the fishing activity as well.

The major regulations issued in 1999 on resource management, include the new regulation of the Cogevo. Through the “Regulation on the activity of the management consortia of the bi-valved molluscs”,² the Cogevo were assigned larger powers. In particular, they can now autonomously develop and introduce- subject to a unitary request of the relevant Associations and automatic issuing within seven days by the Ministry – technical measures for: maximum amounts that can be fished, use of allowed tools, time schedule of the fishing activities, modifications at the allowed disembarkation points, establishment of the re-population areas, criteria for granting or revocation of licences (as to January 2009).

With respect to resource management during 1999 the decree issued on 14 January 1999, the Rationalisation Plan for tuna fishing in Italy was started, which includes a set of social economic measures aimed at promoting the reduction of the fishing capacity through the productive re-conversion of the operators involved. The decree also provides that the owners or ship-owners of the vessels with an outboard length higher than 10 meters and catching red tunas must maintain a logbook where the amounts of caught fishes aboard, the date and place of these catches and the type of tools used, have to be recorded. The subsequent decree³ set out the quotas for fishing tools for each single vessel authorised to catch red tuna. Always in 1999, fishing of red tuna was characterised by the application, for the first time with respect to this type of fish, of the temporary suspension of the activity to reduce the fishing effort on this specie. In the Adriatic Sea fishery is forbidden for the whole month of May, thus creating dissatisfaction in the whole marine fleet as the suspension is imposed in the period of the year where catches are more abundant and of excellent quality. In the remainder areas, fishing of red tuna was interrupted from 16 July to 15 August.

Due to its importance and to the many effects on the fishing industry, a particular mention must be made of the “war-induced rest”, so called because the war in the Balkans brought about the interruption of the activity of many Adriatic fishing vessels.

The beginning of the war in the Balkans, in the early months of the year, created concern and uncertainties in the fishermen fishing in the Adriatic Sea. Initially the negative impacts on the fishing activity were limited to changing of the fishing routes, obligation of keeping the minimum distance of three miles from any war ships and channelling of the economic traffic into areas competing with the fishing activity which, *inter alia*, brought about problems of overcrowding of vessels in the waters near the border with Albania. Difficulties were higher above all from Termoli downwards as in this area there was a higher concentration of vessels.

Then the finding of implements of war in the waters and the required reclamation works resulted in the enforcement of the “war-induced rest” which was subdivided into two periods: the first period from 14 May to 3 June, for the vessels which stopped voluntarily due to serious safety reasons (in particular the districts of Chioggia, Venice and Manfredonia); the second period, instead – applied to the whole area of the Adriatic Sea and started on 4 June – was supposed to end on 15 July. However this deadline was extended to 31 August by the decree No. 243 of 27 July 1999 including extraordinary and urgent provisions for fishing in the Adriatic sea. As result of this precautionary measure, near all bottom trawlers, midwater pair trawlers and a large part of purse seiners stopped their activity. Only the segments of the small scale fishery and of the dredgers did not stop their activity.

As highlighted in the next sections, the suspension of the activity brought about not only reductions in the fishing days and in the catch levels of the Adriatic fleets, but it also had long-term effects due to its negative impact on prices and on the fishing product commercialisation for the whole year 1999. If we take into account that the year 1999 was characterised by an increase in the oil products which resulted in a constant fuel increase it can be easily understood how the year investigated is characterised by a series of events which have negatively affected the fishery industry which experienced a substantial reduction in the profitability of the activity performed.

NOTES

1. Irepa data .relate to the production of the Mediterranean fleet, except for mussels.
2. D.M. 1.December 1998, No. 515, published on the Official Gazette of 29 March 1999, No. 73.
3. Ministerial decree of 14 September 1999.

Main regulatory measures of the Ministry for Agriculture and Forestry Policies (Mi.Paf) 1998 and 1999

Date	Type	Description
24.11.1997	Ministerial decree	Eligibility of the units used for bi-valved mollusc fishing
15.12.1997	Ministerial decree	Regulation on fishing districts
15.12.1997	Ministerial decree	Extension of the deadline for the submission of the applications for the drift nets plan
03.02.1998	Ministerial decree	Extension of the deadline for the payment of the annual fee for the special fishery of sword fish
15.01.1998	Ministerial decree	Fishery campaign of the "bianchetto" in the administrative districts of Liguria
16.01.1998	Ministerial decree	Interruption of the bi-valved mollusc fishery in the administrative districts of Rome and Gaeta and of the "bianchetto" in the administrative districts of Liguria
18.11.1997	Presidential decree	Approval of the national statistical program for the three-year period 1998/2000
02.01.1998	Ministerial decree	Regulation including new enforcement rules of the regulations No. 2 080/93/EEC and 3 699/93/EC as modified, on final suspension of the fishing activity
10.11.1997	Presidential decree	Regulation on the criteria and procedures for development, filing and transmission of documents through information and telematic tools in compliance with the Art. 15, sub-section 2 of the Law. 59/97
27.01.1998	Ministerial decree	Procedures for the re-conversion of fishermen who previously were registered as mussel catchers
07.01.1998	Ministerial decree	Modification of the M.D. 1.11.1997 on mucilage in the summer of 1997
07.01.1998	Circ. 6025	Ministerial decree of 23.05.97: additional technical procedures for the implementation of the rationalisation and re-conversion plan of the units licenced for fishing with midwater pair trawlers- Explanatory circular letter
11.02.1998	Circ. 6232786	Circular letter granting soft loans for performance of the fishing activity
05.03.1998	Legislative decree	Government substitutive measure for the devolution of administration functions to regions and local authorities on agriculture and fishery, in compliance with Art. 4, comma 5, of the law 15.03.97, No. 59
14.02.1998	Ministerial decree	Experimental assignment to the Consortium for the management of the fishery of bi-valve molluscs in the District of Rome of the management of the biological sea resources, with respect to bi-valved molluscs only
21.05.1998	Legislative decree	Measures on fishery and aquaculture
10.02.1998	Ministerial decree	Restructuring of the fishery and aquaculture co-operatives (grant of capital account and interest account subsidies)
20.03.1998	Ministerial decree	Amendments to the Ministerial decree 23.05.97 on technical procedures for the implementation of the rationalisation and re-conversion of the vessels licenced for drift nets
27.03.1998	Ministerial decree	Assignment to the consortium Gargano Molluschi of the management of biological resources with respect to bi-valve molluscs only, in the administrative district of Manfredonia
27.02.1998	Ministerial decree	Payment of the fee for professional underwater fishing
11.11.1997	Ministerial decree	Extension of the local coastal fishery up to a distance of 12 miles from the national coast.
01.04.1998	Ministerial decree	Procedure for the enforcement of the technical suspension of catch of bi-valved molluscs in the administrative district of Ravenna
01.04.1998	Ministerial decree	Amendments to the ministerial decree 7.01.1998 on the declaration of ecological adversity to the mucilage in the Adriatic Sea
01.04.1998	Ministerial decree	Amendment to the ministerial decree 1.06.1992 on the enforcement rules of the l. 17.02.1982 No. 41 on fishery-tourism activities
01.04.1998	Ministerial decree	Regulation on fishery of small pelagic species in the Adriatic Sea
12.06.1998	Ministerial decree	Procedure to grant fishery licences in the administrative districts of the region Sardinia

Main regulatory measures of the Ministry for Agriculture and Forestry Policies (Mi.Paf) 1998 and 1999 (cont.)

Date	Type	Description
12.06.1998	Ministerial decree	Amendment to the ministerial decree D.M.27.01.1998 on the re-conversion procedures of the fishermen who previously were registered as mussel catchers
13.05.1998	DPR	Exertion of the substitutive powers on the region Calabria due to the non classification of freshwaters to be made suitable for fish life
09.07.1998	Ministerial decree	Regulations on technical suspension of fishery in 1998
26.01.1998	Ministerial decree	Approval of the insurance policy plans and of the performance bond plans for the request in advance of the Fifg subsidies
16.06.1998	Ministerial decree	Procedures for the enforcement of the social support measures associated to the technical suspension of the fishery activity
16.06.1998	Ministerial decree	Procedures for the enforcement of the technical suspension of fishery for those vessels licenced for bottom trawlers and/or midwater pair trawlers for the year 1998
01.04.1998	Ministerial decree	Extension of the deadline for the submission to Mipaf of the permission requests for the initiatives funded by the region Sardinia for maritime fishery
21.07.1998	Ministerial decree	Adoption of the measures of the clams plan, in compliance with the law 1998, No. 164
21.07.1998	Ministerial decree	Regulation on the fishery of bi-valved molluscs
11.06.1998	Circ. No. 601229	Regulation (EEC) 2080/93 of the Council of 20 July 1993; Regulation (EEC) 3699/93 of the Council of 21 December 1993, as amended by the Regulation (EC) 1624/95 of the Council of 29 June 1995; ministerial decree of 14 October 1994, No. 611; ministerial decree 2.01.1998, No. 36: regulations on the procedures for the enforcement of the ministerial decree No. 611/1994 and No. 36/1998 on final suspension of the fishery activity
21.07.1998	Ministerial decree	Assignment of the experimental management of the bi-valved molluscs to the Consortium for the management of the bi-valved molluscs in the district of Rome
27.07.1998	Ministerial decree	Use of the so called totanara tool
30.07.1998	Ministerial decree	Extension of the deadline for the implementation of the Fifg projects
06.08.1998	Ministerial decree	Regulation on the fishery of bi-valved molluscs in the administrative district of Molfetta
06.08.1998	Ministerial decree	Regulation on fishery of bi-valved molluscs in the administrative district of Gaeta
20.08.1998	Presidential decree	Regulation including rules for the enforcement of the directive 95/70/EE on the minimum measurers to be undertaken against some diseases of the bi-valved molluscs
19.11.1998	Presidential decree	Regulation including rules for the administrative simplification in the fishery industry
20.10.1998	Presidential decree	Regulation including rules for the management of the information protocol by the public administrations
09.11.1998	Presidential decree	Regulation including provisions for the enforcement of community rules on controls within the Fishery Community Police
12.11.1998	Ministerial decree	Disciplinary regulation of the professional fishery of the whitebait of sardines, anchovies and rossetto (<i>Aphia minuta</i>)
16.10.1998	Ministerial decree	Re-opening of the deadline to submit additional documentation for the Fifg files for the measure "Fishing vessels constructions"
14.10.1998	Ministerial decree	Technical procedures of the tool named ferrettara
16.10.1998	Ministerial decree	Extension of the deadline for the submission of the applications to be included in the drift nets rationalisation and re-conversion plan e
16.10.1998	Ministerial decree	Criteria and procedures for the granting of a loan to promote projects within the fishing industry, submitted by mobility workers, redundant workers or workers performing social works, grouped in a co-operative
16.10.1998	Ministerial decree	Prohibition of fishing, holding and commercialising sea date mussels and white date mussels

Main regulatory measures of the Ministry for Agriculture and Forestry Policies (Mi.Paf) 1998 and 1999 (cont.)

Date	Type	Description
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Castellammare di Stabia
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Termoli and Naples
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of di Civitavecchia
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Manfredonia
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Rome
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Monfalcone
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Venice
03.11.1998	Ministerial decree	List of the units to be authorised to fish bi-valved molluscs in the administrative district of Chioggia
13/01/1999	Ministerial decree	Definition of rules for fishing licences for vessels fishing in extra-Mediterranean third countries
13/01/1999	Ministerial decree	Extension of the validity of the temporary certificates issued to substitute fishery licences
13/01/1999	Decree	Technical procedures to grant authorisations for ocean fishery
14/01/1999	Decree	Rationalisation plan for red tuna fishery in Italy
15/01/1999	Decree	Authorisation to the owners of the fishing vessels registered in the administrative district of Sardinia, already licenced for seine fishing nets and bottom trawlers to get the additional licence for set gillnets
18/01/1999	Decree	Definition of the lump-sum allowance to be given, for the year 1999, to the credit institutions for the soft loans granted for fishery activity pursuant to the Law 28 August 1 989, No. 302
21/01/1999	Decree	Authorisation per the year 1999 of the activities of special fishery
01/02/1999	Circular letter No. 10/1999	Regulation of the work hours in general
03/02/1999	Circular letter 3 February 1999, No. 602 250.	Amendments to the circular letter No. 601 229 of 11 June 1998 on vessel permanent withdrawal
12/02/1999	Decree	Approval of the insurance regulation of the Social Security Institute for the maritime industry
19/02/1999	CIPE deliberation	Recognition of the resources allocated to the territorial pacts and integration to the Fund provided for in point 1.2, CIPE deliberation No. 70 of 9 July 1998
22/02/1999	Presidential decree	Regulation including rules on the reduction of the diesel extra tax for 1999, pursuant to Article 8, sub-section 10, letter b), of the Law of 23 December 1998, No. 448
22/02/1999	Law	Conversion into law of the legislative decree of 28 December 1998, No. 452, on the extension of the deadline to become members of the National Package Consortium
02/04/1999	Decree	Amount of the annual fee for special fishery with dredgers
13/04/1999	Decree	Regulation including rules on the fishing-tourism activity, pursuant to Art. 27-bis of the Law 17 February 1982, No. 41, and subsequent amendments
11/05/1999	Legislative Decree	Regulations on the protection of the waters against pollution and adoption of the directive 91/271/EEC on the treatment of the urban waste waters and of the directive 91/676/EEC on the protection of waters against pollution caused by nitrates coming from agricultural sources
20/05/1999	Circular letter No. 116	Subject: Taxable compensations to be taken into account to calculate the allowances to be paid to the crews of the fishing vessels subject to the Law 26.7.1984, No. 413, from 1 January 1999, from 1 May 1999 and from 1 January 2000 – Specifications on the calculation for the year 1999 of the minimum threshold of the daily wage
31/05/1999	Legislative decree	Extraordinary and urgent provisions for fishing in the Adriatic Sea

Main regulatory measures of the Ministry for Agriculture and Forestry Policies (Mi.Paf) 1998 and 1999 (cont.)

Date	Type	Description
11/06/1999	Circular 11 June 1998, No. 601 229.	Regulation (EEC) 2080/93 of the Council of 20 July 1993. Regto Regulation (EEC) 3699/93 of the Council of 21 December 1993, as amended by Regulation (EC) 1624/95 of the Council of 29 June 1995; ministerial decree of 14 October 1994, No. 611, ministerial decree of 2 January 1998, No. 36: recent provisions on the procedures for the enforcement of the ministerial decree No. 611/1994e No. 36/1998 on final suspension of the fishery activity Number: 601 229
30/06/1999	Decree	Extension of the deadline as in the decree of 21 April 1999 on the regulation of fishery of bi-valved molluscs
30/06/1999	Decree	Regulation on the fishery activity of bi-valved molluscs by dredgers in the administrative district of Venice
30/06/1999	Deliberation	Law of 16 April 1987, No. 183: Modification of the deliberation No. 121/1998, on the national co-funding of the monitoring program on fishery activity for the year, pursuant to EEC regulations No. 2 847/93, EC No. 686/97 and EC No. 1 489/97. (Deliberation No. 110/1999)
30/06/1999	Deliberation	Law of 16 April 1991, No. 183: Financial re-arrangement of the measures for the fishery and aquaculture industries (FIG) for the period 1994-1999 and additional state funding to the national quota. (Deliberation No. 119/1999).
02/07/1999	Decree	Suspension of the provisions of the ministerial decrees 12 January 1999 on "Procedures for the transfer of open sea fishing to the Mediterranean Sea", and 13 January 1999 on "Technical procedures to grant authorisations for ocean fishing"
02/07/1999	Decree	Suspension of the enforcement of the provisions of Art. 28, sub-section 5e 6, of the ministerial decree of 26 July 1995, on the regulation for granting fishing licences
15/07/1999	Decree	Regulation of the fishing of bi-valved molluscs by dredgers in the administrative district of Chioggia
27/07/1999	Decree	Temporary suspension of the fishery activity in the Adriatic Sea due to the war
27/07/1999	Legislative decree	Adaptation of the safety and health regulations for workers aboard of national fishing vessels, pursuant to the law of 31 December 1998, No. 485
05/08/1999	Decree	Extension to 31 October 1999 of the experimentation – carried out by the Consortia for the management of the bi-valved molluscs – already expired or about to expire in this date
05/08/1999	Decree	Delegation to the port authorities of the competence on formation of the crew of the cargo vessels, fishing vessels and traffic vessels non registered in the international register
06/08/1999	Decree	Amendments and supplements to the ministerial decree of 30 June 1999 on the regulation of the fishing activity of the bi-valved molluscs by dredgers in the administrative district of Pesaro
06/08/1999	Deliberation	National co-funding of the community initiative for fishery in the year 1999 and financial re-allocation of the measurers for the period 1995-1998. (Deliberation No. 158/1999)
06/08/1999	Deliberation	Law of 23 January 1992, No. 32 – Law of 23 December 1998, No. 448, and law of 31 December 1998, No. 483 – Fund allocation. (Deliberation No. 163/1999)
17/08/1999	Legislative decree	Enforcement of the directive 93/103/CE on the minimum safety and health requirements for workers aboard fishing vessels
01/09/1999	Circular letter	Circular letter ref. Law of 21 May 1998, No. 164, on measures for fishery and aquaculture. Procedures for the implementation of the plan for the development of aquaculture in fresh waters
01/09/1999	Circular 1 September 1999, No. 60880	Law 21 May 1998, No. 164, on measures for fishery and aquaculture. Procedures for the implementation of the plan for the development of aquaculture in fresh waters
06/09/1999	Decree	New deadlines for the calculation of the gross tonnage values as set out in the community regulations No. 2930/86 and 3259/94
09/09/1999	Law decree	Extraordinary and urgent provisions for the fishing industry
13/09/1999	Presidential decree	New name of the Ministry for Agricultural and Forestry Policies

Main regulatory measures of the Ministry for Agriculture and Forestry Policies (Mi.Paf) 1998 and 1999 (cont.)

Date	Type	Description
13/09/1999	Decree	Measures for temporary withdrawal
14/09/1999	Decree	Regulation of the small scale fishery
14/09/1999	Decree	Definition of the individual quotas for red tuna fishing
14/09/1999	Decree	Definition of the criteria to confirm the validity of the authorisations already granted and definition of the final time limits of the authorisations already granted
05/10/1999	Decree	Criteria to shift the units authorised to dredgers fishing to the fifth category of the professional fishery
05/10/1999	Decree	Decree which extends to 15 November 1999 the submission of the applications to participate in the plan for the rationalisation and re-conversion of the drift nets in the year 1999
05/10/1999	Decree	Decree for the shift to the fifth professional category of the fishing companies authorised to fish bi-valved molluscs by dredgers
05/10/1999	Decree	Criteria to manage authorisations and new fishing licences and to manage the suspension of the effects of the provisions related to the dismissal of the notices of eligibility to the subsidies provided for in FIFG to construct new units
05/10/1999	Decree	Deadline for the submission of applications to participate in the plan for the rationalisation and re-conversion of drift nets
06/10/1999	Decree	Amendment to the decree of 15 July 1999
15/10/1999	Ministerial decree – integration	Integration to the ministerial decree 13 September 1999
19/10/1999	Decree	Extension of the experimentation carried out by the consortia for the management of the bi-valved Fishery
20/10/1999	Decree	Establishment of areas to fishing vessels offshore the coasts of Romagna and Marche.
19/11/1999	Decree	Experimental authorisation to the fishing vessels owned by residents for the landing of bi-valve molluscs in the port of Civitanova Marche
23/11/1999	Decree	Decree of 23 November 1999 Performance of professional fishing of whitebait of sardines, anchovies and “rossetto” for the 2000 fishing campaign
30/11/1999	Decree	Fishing of the “rossetto” (<i>Aphia minuta</i>) in the administrative districts of Tuscany and Liguria
01/12/1999	Decree	Procedures to extend territorial pacts and area contracts to the agricultural industry
03/12/1999	Ministerial decree	Development project for the Upper Adriatic area
13/12/1999	Circular letter No. 215	Subject: Specifications on the fee to be paid for the crew of the vessels subject to the law 26.7.1984, No.413
16/12/1999	Presidential decree	Regulation including the provisions for the enforcement of the directive 98/45/EC, which modifies the directive 91/67/EEC on the health police regulations for the marketing of animals and aquaculture products
17/12/1999	Decree	Regulation including terms and conditions of the central guarantee fund for the credit to vessel owners
20/12/1999	Decree	Amendment to the ministerial decree of 15 July 1999 on the regulation of fishing of bi-valve molluscs by dredgers in the administrative district of Chioggia
29/12/1999	Integrative social security	Integrative social security

THE NETHERLANDS

Legal and institutional framework

The Netherlands' resource management and conservation policies are carried out in accordance with the Common Fisheries Policy of the European Union. The legal basis is the complete set of rules and regulations as agreed by the Council of Fisheries Ministers of the EU. In addition, the Dutch Fisheries Act of 1963 provides for regulations regarding inland fishery.

Capture fisheries

Performance

The main species harvested by the Dutch fleet are, in order of economic importance: sole, plaice, cod, turbot, shrimp, dab, and lemon sole. In the pelagic fisheries, important species are herring, mackerel, horse mackerel, blue whiting and sardinella. The fleet consisted of 399 cutters, 16 trawlers and 77 dredgers in 1999. Total landings for 1999 add up to NLG 1 067 in value. Annex presents data on the value of fisheries for several years.

No updated figures are available on employment in the fisheries sector. Roughly, employment in the fisheries sector adds up to 14 600. Of this number, 2 700 are fishermen, 400 people are employed in auctions, 6 500 work in the processing industry and wholesale, and finally there are 5 000 retailers.

Management instruments

For the reporting period, no major changes were implemented in the management regime in the Netherlands. The co-management system, started in 1993 and evaluated three years later, is still fully operational. A very large share of the fishermen in the cutter sector voluntarily joined this system, enabling them to optimise the economic use of their individual transferable quota (ITQs) – by means of renting ITQ's and days-at-sea within the co-management groups.

Access

Access arrangements for foreign fleets to the Dutch fisheries are ruled by the EU regulations. On the other hand, Dutch pelagic freezer trawlers make use of the opportunities created by EU fisheries agreement, especially the agreement with the Government of Mauritania, which opens the possibility for EU vessels to catch fish in the Mauritanian waters.

Recreational and indigenous fisheries

No major changes were introduced in the management of recreational fisheries. In the Netherlands there is no indigenous fishery.

Monitoring and enforcement

No national alterations were introduced in the monitoring and enforcement regulations; adaptations have taken place within the context of the EU regulations (see chapter on EU). In 1999 the

Dutch government has commissioned the building of a new control vessel, which will be operational from late 2001 onwards.

Aquaculture

Aquaculture is concentrated on the production of shellfish, in particular mussels and oysters in coastal estuaries, and catfish and some other finfish in the inland waters. No major changes were introduced in the policies regarding aquaculture, nor were any major laws or regulations introduced which directly affect the aquaculture sector. However, the mussels and cockles production is under scrutiny, due to the fact that part of the production activities takes place in a national wetland area (the Waddenzee).

Fisheries and the environment

During the reporting period, no major changes in policy were introduced other than the measures taken in the context of the EU.

Government financial transfers

The following financial transfer instruments were used during the reporting period:

1. Structural adjustment: A decommissioning scheme for the removal of vessels from the fleet. In 1998-1999, six vessels were removed, for which a total of NLG 7 million was disbursed under the FIG. Additionally, expenses to support related activities add up to EURO 0.7 million.
2. General services: this item consists mainly of research costs.

Neither Revenue Enhancing Transfers nor Cost Reducing Transfers took place in the Netherlands.

Post-harvesting policies and practices

Food safety, information and processing industry

New standards for food safety are under development at the European level, and the creation of a European Food Safety Agency is envisaged. Similarly, and in agreement with new European regulations, the Dutch food safety rules and regulations are in a continuous process of being updated and renewed – especially since the dioxin crisis in Belgium broke out.

HACCP became mandatory in 1995 – though many industries have complied with the new regime, a significant number of companies are still in the process of introduction and fully employing the HACCP procedures.

The Netherlands follows the product information requirements established by the EU – there are no additional requirements. No private initiatives regarding information or quality labels or eco-labelling were initiated during the reporting period.

The Dutch processing industry is mainly focused on flatfish. Supply is closely related to catch opportunities. No major structural changes took place in the processing industry.

Markets and trade

Domestic consumption

Fish consumption in the Netherlands is relatively low, compared to neighbouring countries. Annual per-capita consumption increased slightly in 1998 compared to 1996. Turnover in the domestic consumption market grew faster, due to higher prices of the products and a slight modification in the purchase patterns towards more expensive fish species.

Under the FIGG, a promotional campaign was developed to increase domestic fish consumption. In addition, some promotion initiatives were projected and executed towards the end of the reporting period.

Trade

Both imports and exports grew significantly from 1997 to 1998: by 21% and 8%, respectively. Imports amounted to NLG 2 002 million in 1998, with shrimp, sole and cod as the leading species; exports added up to NLG 2 745 million, again with shrimp, plaice and cod (and also sole and horse mackerel) being the most important species.

Almost half of the imports proceed from the rest of the EU (in particular Germany, the UK, Denmark and Belgium), while more than 78% of the exports have the EU as point of destination; especially Germany, Belgium, Italy, France and Spain.

No major changes took place in the trade structure, and the trade regimes affecting fisheries products underwent no modifications other than under EU provisions.

Outlook

The Common Fisheries Policy of the EU will be evaluated in and a new CFP will have to be put into effect as of 2003. In this context, several key elements of the European policies will be scrutinised and might undergo minor or significant modifications, amongst them are the TAC and quota regime, especially its institutional arrangements, and the EU fleet policy. In the country, meetings on a new CFP have already taken place and a document was developed and sent to Parliament in preparation for the debate in 2001 and 2002.

Furthermore, the fleet size and structure have been under severe pressure in the context of the current MAGP IV Decision. The concept of effort control within the Netherlands is interpreted distinctly from the EC position. It is however foreseen that by the end of 2000 both parties will find common ground on a revised MAGP IV.

Annex

Turnover Dutch fisheries (in NLG million)

	1996	1997	1998	1999 (est.)
Cutter fisheries	608	571	607	668
High seas fisheries	190	214	249	240
Total sea fisheries	798	785	856	908
Mussels culture	106	118	98	120
Oyster culture	6	6	5	8
Cockel fisheries	7	10	60	50
Diverse fisheries	1	1	1	1
Grand total	918	919	1.010	1.067

Source: LEI, 2000.

Turnover at auctions (in NLG million)

	1996	1997	1998	1999 (est.)
Urk	215	227	252	282
Ijmuiden	118	121	115	112
Den Helder	101	89	98	110
Goedereede	83	76	75	76
Harlingen	72	65	72	97
Lauwersoog	56	62	68	80
Vlissingen	60	70	65	69
Scheveningen	51	47	47	45
Breskens	23	22	23	22
Den Oever	22	17	22	33
Colijnsplaat	16	16	18	19
Grand total	817	812	855	945

Source: LEI 2000.

PORTUGAL

Summary

In 1998/1999, sectoral policy continued to focus on two major policy issues, namely the social dimension and further sustainable development in the industry.

With regard to sustainable development, the aim was to gain greater scientific insight into the interactions between the environment, resources and production systems (fishing and fishfarming), and further progress was achieved by gradually adjusting the fishing effort to available resources through new partnerships with producer organisations, in particular sardine fishermen. On the institutional side, a new approach was defined towards the environment, port facilities and control and surveillance bodies.

With regard to social issues, one feature was the work aimed at raising the profile and status of fishermen through the approval of a legal regime for work on board fishing vessels, governed by Law No. 15/97, of 31 May 1997, and the publication of a White Paper on social welfare for maritime workers, drafted in collaboration with the social security services.

Another new feature was the creation of the eminently welfare-oriented Earnings Compensation Fund, providing the industry with its first mechanism ever to compensate fishermen for loss of earnings while momentarily prevented from working.

Legal and institutional framework

As an EU member State, Portugal conducts its fisheries policy in compliance with the Common Fisheries Policy, without prejudice to complementary domestic regulations. The country's own general regime is governed by Legislative Decree No. 278/87 of 7 July 1987, as amended by Legislative Decree No. 383/98 of 27 November 1998 and the rules pertaining thereto.

The purpose of the second of these decrees was to lay down stricter fundamental principles to underpin fisheries policy. They include responsible fishing, the precautionary principle, intergenerational and other types of equity, as well as non-discrimination.

The prevailing system of controls has also been made considerably tighter and more dissuasive to prevent breaches of the general fisheries regime. Fines have been substantially increased and other penalties made heavier.

With regard to government, the Ministry of Agriculture, Rural Development and Fisheries is in charge of implementing domestic fisheries policy, with responsibility delegated to the Secretary of State for Fisheries.

The main instruments used to manage the country's fishing effort are the administrative permit required before acquiring or building new fishing vessels or gear, and the annual permit required to fish and use gear. Legislation aimed at making these instruments more effective is currently in the final phase of discussion.

Catches

Performance

There has been a quantitative decline of around 12% in the country's total output of fish over the reference period, confirming the downward trend in recent years. This reflects the far-reaching changes in resource availability that have brought about cuts in the fishing effort, and the gradual decline in fishing opportunities in third country waters and on the high seas.

Stocks

In 1998 and 1999, the Institute of Fisheries and Maritime Research (IPIMAR) conducted a series of studies to inventory and evaluate live resources in the national EEZ and off Portuguese-speaking Africa, notably Mozambique.

The research was conducted not only to support and update knowledge on the distribution and availability of the main EEZ resources and their environmental dynamics, but also to evaluate them in terms of the current harvesting regime and to forecast trends in biomass stocks and catches, in response to the fishing methods used.

Research expeditions were carried out to study common species such as sardine, bivalve molluscs, crustaceans (Norway lobster) and demersal species such as hake, megrim, anglerfish and horse mackerel.

The findings show that stock levels for some of the leading demersal species are still giving cause for concern. They include Norway lobster, anglerfish and hake. As for horse mackerel, there is ample evidence that harvesting remains within biological safety limits.

As for most of the species of interest to Portugal and monitored by the ICES, the evidence over the past two years is that previous trends in biomass, recruitment and fishing effort are continuing (with the exception of sardine, which has seen a slight improvement in spawning stock biomass and recruitment since 1998).

With regard to resource protection and conservation, a project was also launched as part of the work on "Small-scale inshore fishing in Portugal" to collect information from fishing communities and find out more about this key component of the country's fleet, and more specifically about the resources targeted and gear used as well as the vessels and workforce involved.

Research was also carried out into controlling the reproduction and feeding of marine species, and ways to enhance the technologies used to produce juveniles and bivalves of major interest to aquaculture.

Management of commercial fisheries

As part of the comprehensive, integrated management of resources and production, research was carried out to generate data for a social and economic analysis of the industry focusing not only on fishing but also the harvesting of marine animals and plants (in the case of the latter, with the collaboration of IPIMAR).

Specific legal measures were introduced to enhance the resource management and harvesting system in national waters.

Before more effective rules can be introduced with regard to certain practices, a thorough overhaul will have to be made of existing legislation and, in particular, the basic regulations issued in 1987 on the legal framework for marine fisheries and aquaculture.

This is work of the utmost importance as part of an indispensable revision of the standards applicable to the gear used and resources harvested by the national fleet. It will continue in the year 2000.

In 1997 and 1998 additional measures were introduced to regulate fishing with specific gear, including minimum sizes (gill-nets, towed dredges, pots and traps).

It should be pointed out that there are now restrictions on the fishing of sardine (catches), swordfish (catches and minimum sizes) and eel (authorised quotas). A ban on eel fishing is due to begin in 2001.

The harvesting of bivalves is now subject to specific measures relating to maximum catches, as well as minimum catch and marketing sizes.

Further work was also done on revising the regulations on fishing in non-oceanic inshore waters, in particular to harmonise minimum sizes, authorised gear and biological rest periods.

Management instruments

To achieve participatory and responsible resource management, work continued to monitor the sardine fishing effort under the "Action Plan for Sardine Fishing", which also covered other species subject to quotas.

To gain more insight into actual fishing practices, a diagnostic study of local fishing communities was undertaken to draw up adequate, realistic management measures for the use of specific fishing gear and a new permit system with more evenly distributed fishing opportunities.

The industry was also contacted with a view to raising awareness about effective resource protection.

Access

Under the Common Fisheries Policy, 1998 and 1999 saw the follow-up and implementation, within the various Community bodies, of procedures stemming from technical measures to manage and conserve resources, agreements and new fishing opportunities in countries with resources (Morocco, Cape Verde, Guinea Bissau, Guinea Conakry and Equatorial Guinea, Mauritania, São Tomé and Príncipe, Senegal, Côte d'Ivoire, Angola, Comoros, Seychelles, Madagascar, Norway, Svalbard and Greenland). Portugal also continued to participate in various international fishery organisations (NAFO, NEAFC and ICCAT) and the establishment of the South East Atlantic Fisheries Organisation (SEAFO).

The amount of fishing by the Portuguese fleet in international waters over the reference period remained roughly the same as in 1997. The fleet operated under the rules approved by the organisations concerned. Where appropriate, the quotas applying to catches of cod, redfish and swordfish accessible to the Portuguese fleet were cut by the relevant regional fishery organisations, on the basis of scientific advice. The NAFO quota for Greenland halibut was slightly higher than in 1997.

In the North Atlantic, the deep-sea fishing fleet's annual permit for demersal species subject to quota was renewed so as to ensure complementarity between fisheries. The quotas allocated to individual vessels, which are transferable with prior authorisation from the government, remained unchanged.

Some thirty boats with refrigeration equipment and licences for longlines and other selective gear were laid up during this time. They had been operating under the agreement between the European Community and Morocco, which terminated on 30 November 1999.

Recreational fishing management

The overhaul of domestic legislation included a project to regulate recreational fishing. Currently being reviewed by the relevant bodies, the project seeks to regulate access to resources, gear to be used and other conditions imposed on such activities, including limits on catches.

Fisheries surveillance and enforcement

The General Fisheries Inspectorate, Portugal's fisheries authority, continued to co-ordinate the resources used in fishery surveillance and control and endeavoured to make inspections more effective, both in national waters and on land since it covers fish auctions, local markets and major distribution outlets.

In this regard, more adequate and effective steps were taken to monitor and control fishing.

One such measure was Legislative Decree No. 310/98 of 14 October 1998, which provides for the continuous satellite monitoring of certain categories of fishing vessel in order to achieve substantial improvements in fishery surveillance and controls to prevent illegal landings.

In 1999, draft legislation was drawn up to establish and define the Fisheries Surveillance and Control System (SIFICAP).

Within the General Fisheries Inspectorate, a Fisheries Control and Surveillance Centre was also set up to monitor the activities of fishing vessels covered by Legislative Decree No. 310/98 and Community vessels operating in national waters.

Multilateral agreements and arrangements

Portugal, as a member of the EU, benefits from the fishing opportunities afforded by agreements between the European Union and third countries, as stated above.

Furthermore, the bilateral agreement between Portugal and the Republic of South Africa is still in force, although no longer applied.

Aquaculture

Policy developments

Cabinet Resolution No. 87/98 of 10 July 1998 sets out the broad thrust of aquaculture development and acknowledges the industry's strategic importance to a national policy of sustainable development.

It indicates the areas vital to such development, *i.e.* applied research, water network and coastal zone development, a review of financial support systems and improvements to the legal framework.

One important point is that, despite a comprehensive overhaul of the legislation, it was not possible to approve the new legal framework for aquaculture by the end of 1999, but this will be done shortly.

Another development was Legislative Decree No. 293/98 of 18 September 1998, which, as part of the National Plan for Healthier Bivalve Molluscs, is aimed at more effective protection of public health and better quality bivalve molluscs.

Production facilities, output in terms of value and volume

Portuguese aquaculture is characterised by the predominance of family firms farming extensively and semi-intensively. Bivalves still account for much of the output.

Aquaculture still plays a relatively minor role in the fishing industry, with output in 1998 accounting for only 5% of the volume of fresh fish landed and caught in continental waters. However, this is an increase of some 2% on 1997.

Trends in aquaculture production over the past few years have varied substantially, mainly due to freshwater fishing.

Output

Table 1. **Portuguese fish production**

	Tonnes				
	1994	1995	1996	1997	1998
Seawater	4 378	4 057	3 960	5 930	6 265
Freshwater	2 218	983	1 404	1 256	1 271
Total	6 596	5 040	5 364	7 186	7 535

Output in terms of individual species is not very diversified and aquaculture focuses largely on carpet shells, trout, oysters, sea bream, cockles, sea bass and, more recently, turbot. It is interesting to note that carpet shells and trout together account for over 50% of total output, which shows how highly dependent fishfarming is on these two species.

It should be added, however, that there has been a marked increase in the output of sea bream, sea bass and turbot in recent years, largely owing to more sophisticated farming techniques.

Fisheries and the environment

Following the approval of Annex 5 of the OSPAR Convention, on the protection and conservation of the ecosystems and biological diversity of the maritime area, Portugal created two marine parks, one in the Berlengas and the other in the waters off the Arrábida Nature Park.

To combat the hydro-climatic changes observed world-wide and more specifically along the coast of the Iberian Peninsula, the Portuguese Ministry of Science and Technology has approved an Action Plan for Marine Science and Technology. IPIMAR too has completed or continued work on projects and programmes relating to climate change, and is currently developing ocean observation systems to model and forecast bio-oceanographic conditions and their impact on resources.

To address the adverse effects of large-scale intensive or semi-intensive aquaculture, a number of studies have been carried out, but the findings will not translate into national legislation until the year 2000. The studies focused on environmental impact assessments (EIA), and it is now compulsory for all new aquaculture facilities exceeding a specific size or volume of output to conduct EIAs.

In this context, and with the translation into domestic law of Council Directive 85/337/EEC and the amendments introduced by Directive 97/11/EC, Portugal adopted Legislative Decree No. 69/2000, approving the legal basis for environmental impact assessments.

Government transfer payments

Transfer policy

Together with further structural adjustment, Portugal continued implementing Community and national programmes to assist the sector in 1998 and 1999.

The support provided under QCA II went towards PROPECA (Portugal's programme for the economic development of fisheries) and the Community Initiative PESCA (ICPESCA).

Under PROPECA, the emphasis was on renewing and modernising the fishing fleet, developing aquaculture and expanding output, making the processing industry more competitive and distribution channels more efficient, upgrading the port facilities that support the industry, promoting social and vocational development, providing social support for the industry and improving technical and scientific assistance for maritime activities.

The European Community's ICPESCA initiative, with its significant social dimension targeting the most socially and economically vulnerable fishing communities, sets as its priorities the modernisation of fishing structures; better marketing and distribution channels; more competitive, higher quality products; greater organisational and management capacity in small production units; training in areas such as adaptability to other types of work, and retraining for other activities through the creation of investment projects in the industrial and service sectors.

In this regard, 1998 and 1999 saw the approval of intangible investment worth PTE 37 192 billion, with PTE 27 378 billion for PROPECA and PTE 9 814 billion for ICPESCA.

1 824 PROPECA projects were approved, covering a variety of measures and initiatives; in all these represented an estimated investment of PTE 27 378 billion, co-funded by PTE 15 303 billion in Community aid and PTE 4 502 billion from the Portuguese government.

Of those 1 824 projects, 11 are for fishing port infrastructure, 844 for fishing effort adjustment, 211 for renewing and modernising the fleet, 18 for developing aquaculture, + one for protected marine parks,

634 for social and economic support, 40 for processing and marketing, six for the promotion of fishery products, 34 for fishing port facilities, four for surveys and research and 21 for vocational development.

Meanwhile 1 283 ICPECA projects were approved over the same period, 1 250 of them for industry restructuring. Together they represented some PTE 9 814 billion in public spending, with the Community providing PTE 6 723 billion and the Portuguese government PTE 3 090 billion.

Over the same period, Portugal granted exclusively domestic financial support for projects involving the construction and modernisation of fishing boats, and for one-off initiatives to help fishing communities. With regard to support, Order No. 57/98 of 21 August 1998 was adopted, approving the new SIPESCA regulations, a major contribution to the local and coastal fishing industry.

Combined expenditure (exclusively national expenditure on general services) for 1998 and 1999 amounted to PTE 8 750.9 million as follows:

Table 2. **Government financial transfers**

General services	1998	1999	Totals
Management	1 810.8	1 710.6	3 521.4
Control	449.9	420.2	870.1
Research	2 117.9	2 241.5	4 359.4

Social assistance

A variety of situations can affect the fishing industry and result in boats being laid up for reasons unrelated to the workforce, namely the weather or resource availability, make fishing an uncertain activity subject to factors that have nothing to do with a fisherman's willingness to work.

Hence the publication of Legislative Decree No. 311/99 of 10 August 1999, setting up the Wage Compensation Fund. This provides financial support for those in the fishing industry who, due to exceptional circumstances, are momentarily prevented from carrying out their work.

The ICPECA Initiative too promotes the maintenance and survival of certain fishing communities. The assistance it offers provides alternatives for fishermen in the same or other industries, to neutralise or attenuate the social and economic impact of restructuring in surplus-producing segments of the market.

Structural adjustment

To meet the objectives of MAGP IV for the reference period and within the framework of PROPECA, Portugal continued its drive to restructure and modernise the fleet and manage capacity. This included 137 permanent withdrawals, for a total of PTE 1 856 billion in support, and three new joint ventures, for a total of PTE 0.426 billion.

The rules were approved for an Action Plan for Small-scale Fishing (Ministerial Order No. 315/98, of 25 May 1998), laying down requirements for financial grants to local projects on the north and central coast, where safety conditions give greater cause for concern.

Post-catch policies and practice

Policy trends

Food safety

At national level, specific Community directives in the area of food safety/HACCP have been translated into domestic legislation:

- Legislative Decree No. 375/98 of 24 November 1998, which makes it compulsory for those in charge of firms or factory ships to carry out self-evaluation and identify critical points in their units, and to draw up and use monitoring and control methods for these critical points. It also makes it compulsory to introduce HACCP for the approval, registration and award of veterinary inspection numbers.

- Legislative Decree No. 548/99 of 14 December 1999, which sets out the animal health conditions governing market sales of aquaculture animals and products.

Information and labelling

Here, Portugal has translated Community directives into domestic legislation with Legislative Decree No. 560/99 of 18 December 1999, laying down rules for the labelling, presentation and advertising of foodstuffs for sale to the final consumer.

To enhance the quality and promote the development of fishery and aquaculture products, as well as regional and local products, several initiatives were undertaken to harmonise product evaluation procedures in this field.

Structures

The fisheries processing industry, in particular canning, is a major link in the national production chain. It combines a traditional image with features such as flexibility and embodied technology, on an open and highly competitive market.

To promote the sector, the new "Guide to the Processing Industry" is the first publication to cover the entire manufacture of fishery products for human consumption. The aim is to continue demonstrating the important role that the fish processing industry plays in the economy.

In 1998 a study was conducted into the canning industry (sardine, tuna and mackerel) to gain greater insight into the economic and social realities of this sub-sector. One aspect was an assessment of the economic impact of a possible shortage of sardines. Another study looked at the work of producer organisations (POs) as background for measures to step up the management and organisational capacity of these POs.

Processing and handling facilities

At end-1999, Portugal had 224 fishery processing units (39 for canning and semi-preserves, 120 freezing plants, 41 drying and salting units, four smoking units and 20 other industries). There were also 54 duly authorised factory ships, each with its own veterinary inspection number.

On the basis of information supplied by the Directorate-General for Fisheries and Aquaculture regarding industrial facilities authorised to operate in 1998, the processing industry was estimated to be employing around 7 300 people. The majority of these were women.

In the processing industry, data availability restricts analysis to the canning and semi-preserve industry. Between 1997 and 1998, total output rose from 48 449 tonnes to 53 566 tonnes, up 10.6%.

The rise over the reference period stems mainly from an increase in sardine-canning (up 18.2%), but also tuna-canning (up 7.8%). For sardine this is the highest figure in the last five-year average, whereas tuna has moved back up to the average for the reference period.

The output of semi-preserves underwent a significant decline of some 58.4% and is now practically residual, with an annual output of only 112 tonnes.

Between 1998 and 1999, however, available data show a further overall decline in canning of around 7%, to a total of some 50 000 tonnes. The decline stemmed largely from sardine (down 13%), although tuna output also fell by some 4%.

Markets and trade

Markets

Trends in domestic consumption

Of the 15 European countries, Portugal is the largest consumer of fish, with some 62 kg per head, well above the Community average.

Promotion

To raise awareness among local producers about the benefits to and challenges for producer organisations on an open market in terms of competitiveness and broader scope, several meetings were held in the course of 1999.

There were also a number of explanatory sessions for small fishing communities as part of the "Pilot Scheme for Small-Scale Inshore Longliners", the aim being to promote partnerships with the potential to develop products from their catches.

Similarly, there have been campaigns to promote frozen fish and canned sardine.

Trade

Portugal's trade balance for fishery products remained in the red and, between 1998 and 1999, the deficit increased by some 253 000 tonnes in volume and some PTE 140 billion in value.

Over the same period, the volume of imports increased by 20 000 tonnes, and the value by PTE 21 billion. Almost every group of products contributed to the increase, but in particular frozen fish and salted fish (cod).

Nevertheless, exports over the same period increased by 2 000 tonnes, corresponding to a 3% rise in value; this was due partly to the fresh and frozen sub-sector and the canning industry's traditional vocation as an exporter (in spite of a downward trend in recent years).

Policy trends

Cod is the main fishery product imported to Portugal, most of it destined for the processing industry.

These imports are subject to a system of quotas and suspension of tariff duty under the EU's common organisation of the market in fishery products.

For fresh, chilled or frozen cod (*Gadus morhua*, *Gadus ogac*, *Gadus macrocephalus*), the 1999 quota was 67 000 tonnes at a reduced rate of 3% (instead of the usual 12%), although Portugal used only around 34% of its quota.

For frozen cod, the quota was 8 000 tonnes, exclusively for the salting/drying industry, at a reduced rate of 2.5%; here, Portugal used some 87.5% of its quota.

Portugal was also the main user (90.6%) of the quota for wet salted cod, set at 8 000 tonnes at a reduced rate of 2.5%.

Domestic consumption of dried salt cod stood around 90 000 tonnes per year (the equivalent of 270 000 tonnes of fresh fish), and sales at over PTE 120 billion.

Per capita consumption of cod (or its equivalent in fresh fish) is an estimated 30 kg per year.

Outlook

Sectoral policy will continue to promote the sustainable development of resources over the long term and hence social and economic stability in communities that depend on fishing.

In this regard, sectoral policy will be largely based on the following objectives:

- To optimise the use of resources available in the national EEZ, while respecting environmental quality and ecosystem balance and seeking innovative solutions in fishery and aquaculture production.
- To achieve greater competitiveness and better quality fishery products by upgrading productive structures, enterprises and the labour force.
- To minimise the adverse social impact of fishery fleet adjustment, upgrade vocational skills, promote alternative jobs in stable, sustainable enterprises for fishermen's families, either in fishing or other branches, and provide producer organisations and other bodies in the industry with greater scope for action.

- To strengthen intersectoral ties and institutional co-operation both nationally, at Community level and internationally.

Special topic: Fishing Capacity

Basic statistics

Capital

To achieve the objectives set in the MAGP, the Portuguese fishing fleet underwent cuts of some 2.7% in the number of boats and some 1.4% in grt between 1998 and 1999.

The downward trend of the past few years is attributable not only to the need to downsize the fleet and adapt its capacity to available resources but also to the fact that many fishermen have left the industry through retirement or for other reasons.

Labour

The number of fishermen registered with port authorities on the mainland and in the autonomous regions has been on the decline for some years. Between 1994 and 1999 there was a fall of some 16%, as can be seen from the table below:

Table 3. Number of fishermen

1994	31 721
1995	30 937
1996	28 458
1997	27 347
1998	27 199
1999	26 660

Although the trend has not affected every region in the same way, the fishing industry is characterised by an ageing workforce and low educational achievement. Most people in the industry have completed compulsory education but illiteracy has become quite significant. Those in the autonomous regions of Madeira and the Azores are much younger than elsewhere, followed by those on the northern and central mainland coast.

Furthermore, a comparison of educational achievement and the age structure shows that those aged over 50 are the least educated, while younger people are usually more highly skilled.

Vocational training has been taking on a higher profile in recent years. New demands on the industry have led not only to the renewal and technological upgrading of fishing boats but also to more training courses, enabling the workforce to cope with the new skills required. Take-up for these courses has in fact been very high.

Furthermore, the 1991 census revealed that most people in the industry are salaried workers (72.5%). 18.7% are self-employed, and only 6.8% are employers.

These indicators reveal how little capacity the industry has for entrepreneurship. They also show that most workers are dependent on a relatively small number of employers. The financial effort required to purchase a boat, combined with low educational achievement in the labour force, are two possible reasons for this situation.

SPAIN

Summary

The objective of Spain's policy initiatives is to find a way of managing fisheries that is consistent with sustainable exploitation of resources and ensures the continuation of fishing operations. In short, the objective is responsible fishing.

The main policies implemented in 1998 and 1999 can be summarised as follows:

- In the field of enforcement and surveillance, Law 14/98 was adopted on 1 June 1998, laying down control measures for the conservation of fishery resources, and initiating the basic regulations – *i.e.* the unitary framework for application throughout national territory – governing violations and sanctions related to the development of the fisheries sector and the marketing of fishery products.
- Still in the field of enforcement and surveillance, attention should be drawn to work by the authorities in establishing a new centre for monitoring fisheries by satellite (FMC), covering around 1 800 Spanish vessels, and in substantially increasing sea-borne and air-borne control resources.
- The Spanish fishing authorities, both within the EU and in international fora, have been fighting for years for the elimination of drift-nets. In this connection a major victory was achieved with the adoption of Council Regulation (EC) N 1239/98, of 8 June 1998, which provide that from 1 January 2002 member countries' fishing vessels could not use drift-nets to catch certain species.
- In accordance with the position, Spain has traditionally upheld in all multinational fora – *i.e.* opposition to fishing by vessels using flags of convenience and support for the implementation of conservation measures agreed multilaterally – Spain adopted Royal Decree 1797/98 of 26 November 1998 on controlling fishing operations in sovereign Spanish waters or waters subject to Spanish jurisdiction by vessels from third countries.
- As to the management of the Spanish fleet operating in international waters, the Spanish authorities have developed a framework in which the provisions adopted by regional fishing organisations can be strictly applied. In order to ensure compliance with Atlantic swordfish quotas allocated to Spain in the ICCAT fisheries, a system of individual quotas for ships, which are set down in special registers for fleets fishing for this species has been adopted. As a result, vessel owners share responsibility for management, and the control and inspection is made easier.
- Similarly, new conditions have been adopted for the fleet operating in the area regulated by NAFO. A new ministerial order regulates the activity of the Spanish fishing fleet in this region. In addition to establishing a register of the freezer vessel fleet operating in the cod fisheries vessels in the NAFO waters, the order lays down criteria for access and where appropriate, for the distribution of Spain's quota of permits among the enterprises that operate in this fishery.
- In connection with the European Union's fishing agreements with third countries, the strong element of cooperation and continuous transfer of know-how and training, which would otherwise be beyond the reach of developing countries should be highlighted. They therefore provide for a mutually beneficial way of finding a use for surplus resources that would otherwise be lost. As in previous years, there has been increasing scientific research, which aims to identify new fishing areas and new species with a view to diversifying the fleet's activity, and to monitor the fisheries currently being exploited by the Spanish fleet.

- Royal Decree 798/95 laid down a new model for managing structural support in the fisheries and aquaculture sector, and for the processing and marketing of its products, thereby bringing the authorities into closer contact with the sector.
- In connection with the management of the activity of the Spanish fleet in national waters, attention should be drawn to the adoption of Royal Decree 71/1998 of 23 January 1998, which regulates the practice of fishing for tuna and similar species in the Mediterranean. It provides the overall regulatory basis for this fishery, stipulating the authorised gear, technical conservation measures, and management and monitoring of the fishery, and establishing a register of seiners authorised to fish for bluefin tuna.
- In the 1998-1999 period, the number of vessels in the Spanish fishing fleet was reduced by 812. This represented a decrease in tonnage of 38 861 GRT.

Legislative and institutional framework

Fisheries jurisdiction

As Spain is a member of the European Union, the management and conservation of marine fishery resources is in line with EU regulations. National policy in these fields therefore complies with the requirements of the Common Fisheries Policy (CFP).

As for the assignment of domestic responsibilities, the Spanish Constitution defines the competence of the State and that of the Autonomous Communities. The State has exclusive competence in the area of maritime fishing, “subject to the powers that may be delegated to the Autonomous Communities regarding the management of the fisheries sector”. Central government therefore has complete competence in matters relating to maritime fishing and its supporting legislation and its implementation. However, in the areas of fisheries management and commercial activity, the State only establishes “basic legislation”, *i.e.* the fundamental principles governing them. The Autonomous Communities, for their part, can adopt provisions that complement or develop legislation in these two areas and proceed to implement them. Furthermore, the Autonomous Communities have exclusive competence in the areas of “fishing in interior waters, the harvesting of shellfish, and aquaculture”. Fishing in interior waters is thus the responsibility of the 10 coastal Autonomous Communities. Supervision of control measures stipulated under Community regulations in the framework of the CFP is the responsibility of the EU Commission.

The inspection and supervision of fisheries in waters and ports under Spanish jurisdiction is the responsibility of the Spanish authorities, in accordance with national and community legislation. Central government authorities are responsible for the monitoring of catches in Spanish waters (*i.e.* in the EEZ and Spain's own territorial waters) and of operations by the national fleet in international waters.

In multilateral organisations that regulate fisheries in international waters where the EU is a contracting party and, like NAFO, have their own own inspection arrangements, the European Commission is the competent inspection authority and can, where appropriate, assign this task to national vessels and inspectors.

Capture fisheries

Manpower, structure and development of the fleet

The tables in the statistical annex show the composition of the Spanish fleet in terms of tonnage and activity on 31 December 1999.

- At that time, the total number of fishing vessels (including support vessels) amounted to 11 167, following a loss of 812 units during the 1998-99 period, representing a fall in tonnage of 38 861 GRT.
- There was no significant change in the structure of the fleet over this period.

Landings

The Spanish fleet's catches and their value are shown in the statistical annex (now being drawn up).

Stock status

Following the most recent assessments, the working groups and competent scientific panels believe that the following marine stocks sought by Spanish vessels are exploited beyond safe biological limits: Hake stock (ICES), angler fish (ICES), megrim (ICES), southern horse mackerel stock, Mediterranean cod (ICES), Atlantic bluefin tuna, Atlantic swordfish stock, bigeye stock and all cod stocks. The anchovy stock in the Bay of Biscay is expected to decline in 2000. There is little information on the situation regarding stocks of southern anchovy and Iberian sardines. The following are found to have been exploited within prescribed limits: Norway lobster (ICES), mackerel (ICES), Greenland halibut (NAFO), Atlantic long-finned tuna, yellowfin and skipjack.

Managing commercial fishing

Management instruments

For sea fishing, in accordance with the CFP, these instruments include; regulation of the ways and conditions in which fish are caught, together with the regime for the protection, conservation and improvement of fishery resources. The Ministry of Agriculture, Fisheries and Food, which manages all fishing activity on the high seas, regulates:

- Measures for the conservation of resources through restrictions: fishing gear, nets, lines, tools, instruments and fishing equipment, minimum size or weight of species, bans on fishing and exploiting certain depths.
- Measures for the protection and regeneration of fishery resources through protected sea areas, and activities liable to affect fishery resources.
- Conditions governing fishing activity.

It should be pointed out that Spanish Institute of Oceanography (IEO) is responsible for monitoring stock status in national and international waters. To that end it examines data provided routinely by scientific observers and producers' organisations. Once analysed, this information is used by administrators who then determine the annual breakdown of catch sizes and capture per unit of effort. Furthermore, IEO scientists carry out exhaustive monitoring of all new fisheries established by Spain in international waters as they develop, whether or not they are regulated by multilateral fisheries organisations.

The following four duties are discharged by the General Secretariat for Sea Fishing, which takes account of scientific recommendations and socio-economic factors of the sectors concerned to provide a framework in which the sector is an active participant. Registers of the active fishing fleet and special registers.

- Registers of the active fishing fleet and special registers.
- The *cedulas*: a document issued by the Spanish authorities, providing initial authorisation to engage in sea fishing.
- Fishing permits, which specify fishing zones, the conditions to which the activity is subject, temporary changes in activity, special fishing permits.
- Measures for regulating fishing activity, which may be direct (limitation of fishing time, temporary or permanent withdrawal of certain vessels) or indirect (limitation of catches).

In this connection special mention should be made of the Spanish authorities' adoption of Law 14/1998 of 1st June 1998, which established the control regime for the protection of fishery resources, defining the system of sanctions applicable in the case of minor, serious or very serious violations of fishing regulations applicable in offshore waters.

This law also lays down the basic legislation on violations and sanctions in the management of fishing and the marketing of its products, as well as providing a single framework for implementation throughout national territory. It strengthens the control regime by increasing fines for violations of the regulations and by giving the authorities greater powers to impose sanctions.

Access

For management purposes, Spanish marine fishing is divided into four distinct groups, depending on the zone of activity, *i.e.* fishing in community waters, fishing in third country waters, and fishing in international waters regulated by multilateral organisations, and in those that are not.

The table below shows the distribution of the Spanish fleet according to fishing zones and practices. Support vessels have not been taken into account.

Table I. Spanish fleet structure

Zone and method of fishing	Vessels	TJB	KW	Crew
National water	15 740	147 307.06	696 822.79	46 470
Trawl	1 417	75 772.55	295 588.97	9 509
Other	14 323	71 534.51	401 233.82	36 961
Community water	710	73 985.46	220 601.47	8 173
CEE-II				
Trawl	131	26 937.81	66 341.18	1 704
Other	579	47 047.65	154 260.29	6 469
International water	707	183 689.31	444 928.68	11 348
Tuna boats	40	51 576.57	109 983.82	906
Trawl	416	106 664.4	260 200.74	6 826
Fixed machines (Trawl line)	251	25 448.34	74 744.12	3 616
Total fishing vessels	17 157	404 981.83	1 362 352.94	65 991

Fishing in national waters

Fishing in national waters is carried out in accordance with regulations established by national authorities. Fishing vessels are registered, according to the method of fishing; the provisions of the national regulations are generally more restrictive than those laid down by the EU.

Of the more important developments to have occurred in 1998 and 1999 in this area, attention should be drawn to the following legislation:

- Royal Decree 1441/1999 of 10 September 1999, regulating fishing with bottom trawlers in the national zone of the Cantabrique sea [Atlantic] and the North-west.

This decree, apart from unifying various standards from hitherto disparate sources in a single text, brought national regulations into line with the new EU prescriptions by laying down the conditions that had to be fulfilled by vessels practising this type of fishing, and establishing their technical characteristics, fishing effort, minimum authorised depths, minimum mesh size, etc.

- Royal Decree 71/1998 of 23 January 1998, regulating the fishing of tuna and similar species in the Mediterranean.

This decree provides the basis for the overall regulation of this fishery, in which the following gear must be used: tuna traps, gill nets, purse seines and lines. It also lays down certain technical measures for the conservation, management and control of the fishery and establishes the register of seiners authorised to fish for bluefin tuna.

- Royal Decree 1440/1999 of 10 September 1999, regulating bottom trawling in the national Mediterranean zone.

As from 1 January 2000 owners of fishing vessels in the Mediterranean are required to have on board and to keep the EU log book. As a result, national regulations had to be adapted in line with the

modifications introduced by the EU. This decree sets forth the above-mentioned requirement and, given the short period of time that has lapsed since the previous decree on this matter, introduces certain technical variants intended to adapt this new provision to the current circumstances of trawling in the Mediterranean.

Marine reserves

The national authority [Ministry of Agriculture, fisheries and Food (MAPA)] has continued to implement a policy of maintaining and establishing marine reserves.

Over the past two years 1998-1999, it has begun to manage three marine reserves in the Mediterranean (*Isla de Alborán, Cabo de Gata, Níjar y Masía Blanca*) and continued to manage the five others it had established previously (*Isla de Tabarca, Islas Columbretes* and *Cabo de Palos* in the Mediterranean, and *La Restinga* and *Isla Graciosa* in the Atlantic). These reserves are managed jointly by central and regional government, except for *Tabarca* and *Masía Blanca*, which are now run exclusively by the MAPA.

The regional governments (Autonomous Communities) have pursued their own policy in this area by establishing four new marine reserves, three in the Mediterranean and one in the Atlantic. So eight marine reserves are now directly managed by these Autonomous Communities.

Lastly, it should be pointed out that in 1999 the General Secretariat for Sea Fishing (SGPM) organised the first international conference on marine reserves.

Artificial reefs

As part of the Sectoral Fisheries Plan, the SGPM was directly responsible for the construction and installation of artificial reefs in Andalusia (Conil and Torrox, IIIrd phase), in Catalonia (Maresme and Garraf-Penedès, Ist phase) and in the Balearic Islands (Lavante majorquin), in addition to the six reefs already installed.

In 1998 and 1999 more fishing vessels with wooden hulls were sunk to aid the formation of reefs.

Geographic information system (GIS)

The Government, with the assistance of the IEO, continued to establish its Geographic information system all along the south-east coast.

Fishing in community waters

Fishing activity in community waters has proceeded in strict compliance with the standards of the EU's CFP.

The Spanish fleet's quotas and catches in these waters are shown in Table I of the Annex.

Bilateral agreements

Bilateral fishing agreements with third countries are negotiated by the EU Commission.

In 1998-99 a new agreement was signed with Gabon and Protocols were renegotiated in the framework of agreements with Madagascar, the Comoro Islands, the Seychelles, Angola, Saõ Tomé e Príncipe and Mauritius.

The EC agreement with Argentina expired on 23 May 1999 and since then the European Commission has maintained contacts with the Argentine authorities with a view to negotiating a new agreement with them.

Likewise, the EC agreement with Morocco expired on 30 November 1999. Since then top-level contacts have been made with the Moroccan authorities, but so far it has not been possible to set a date for negotiating a new agreement.

The expiry of the EC agreement with Morocco has had a pronounced effect on the Spanish fishing fleet since 400 vessels and 4 500 fishermen had been operating in the Moroccan zone during the last year of the agreement. Given their aptitudes, it is difficult for the latter to operate in other fishing zones.

The only bilateral agreement in force to have been concluded directly between Spain and a third country is the agreement between South Africa and Spain, which is renewed annually with the authorisation of the EU Council. The most recent extension was for the period March 1999-March 2000.

In order to fish under the terms of the agreements between the EU and third countries, every vessel must obtain a licence, in accordance with the provisions of these agreements. The annexes to the protocols of application of agreements contain technical stipulations, such as authorised fishing equipment and minimum mesh size, authorised fishing zones, temporary suspension to allow stocks to be replenished, mandatory employment of fishermen from the third country, on-board scientific observers, declaration of catches, inspection and control, etc., and economic provisos which depend on the type of fishing.

Fishing agreements benefit both parties since surplus resources, which would otherwise be lost, can be put to use. This is actually set forth in article 68 of the UNCLOS. For the economies of the countries with which these agreements are made, the agreements mean that superior resources can be obtained through the system of access in exchange for private licences, since all agreements involve an important element of co-operation. Furthermore, the presence of the community fleet provides a continuous transfer of know-how and training, which would otherwise be beyond the reach of these countries.

Vessels operating in waters subject to the jurisdiction of a third country, with a private licence issued by the authorities of the third country in question must also obtain a temporary fishing permit from the Spanish authorities. This is why the vessels continue to be controlled by the latter, in addition to being monitored by the country in whose waters they are operating.

Fishing in international waters

All Spanish vessels operating in international waters, without exception, must obtain a temporary permit from the General Secretariat for Sea Fishing, authorising them to carry on their activity.

When a vessel has obtained a permit to fish in a zone regulated by a regional fishing organisation, it must observe the resource management and conservation measures and the monitoring and inspection measures stipulated by the relevant organisation. In certain cases issue of the permit is subject to the observance of additional measures that are more restrictive than those imposed by the EU or the Spanish authorities. The object of all these measures is to adapt the fleet to available resources and to ensure responsible fishing.

Apart from the mandatory presence on board of international observers as required by the regional fishing organisations, such as NAFO, CCAMLR, CIAT, and ICCAT, the Spanish authorities require fleets operating in certain international zones to have scientific observers on board to monitor fisheries, assess stock status and obtain other biological and environmental data. In the past few years, scientific monitoring of the fleet's activity has been conducted in the NEAFC, Hatton Bank and ICCAT waters and wherever experimental fishing initiatives were carried out. Furthermore, Spain has set up two fishery offices, one in the Ivory Coast and another in the Seychelles, to monitor and inspect Spanish fisheries providing tropical tuna and similar species in the Atlantic and Indian Oceans respectively.

Below, we outline the more important aspects of Spanish policy on the management of fleets operating in waters regulated by regional fishing organisations for the period 1998-99.

Adoption of Ministerial Decree of 21 December 1999 on the management of fishing by the Spanish fleet in the zone regulated by NAFO, which replaces the Decree of 17 October 1988.

The 1988 Decree needed to be revised mainly because of the development of fisheries where new species were fished, the virtual disappearance of the fleet of specialised vessels fishing for *potas* (squid) and the NAFO regulations on fishing for certain species, such as Greenland halibut and prawns.

The 1999 decree, supported by a consensus in the sector, in addition to establishing a register of the freezer-trawler fleet operating in NAFO waters, like the cod fishing vessels (which were already classified in a register), laid down criteria for access and, where appropriate, for assigning Spain's fishing entitlements to the different enterprises that own the vessels normally operating in this fishery.

Management of swordfish quota in North and South Atlantic

In order to improve management of quotas assigned to Spain by the ICCAT, the Spanish authorities, having consulted the relevant fishing sector, introduced a system of distribution of swordfish quotas by vessel, for Atlantic fleets operating to the south and to the north of 5°N. This distribution is made on the basis of various criteria, which take account of the need to ensure minimum economic viability for the enterprises and of past fishing practice on the part of different vessels. This system has had very positive results and has prevented quotas to be exceeded.

Management of recreational fishing

Recreational fishing is regulated by the State in offshore waters and by the Autonomous Communities in interior waters.

On 26 February 1999, a new ministerial Decree was issued, regulating recreational sea fishing.

In recent years, this type of fishing has undergone substantial development, calling for the updating of the regulations, which dated from 1963 and were obsolete.

The chief novelty of this decree is that the Autonomous Communities are now responsible for issuing fishing permits, except for certain species.

Research

Researchers from the IEO fisheries department have been regular participants in different international working groups that assess the stock status of hake, angler fish, megrim, sardine, mackerel, horse mackerel, cod, Greenland halibut and tuna, and have monitored six pilot programmes in experimental fishing, proposed by the General Secretariat for Sea Fishing with a view to discovering new fishing zones. Studies are also being conducted on the effects of fishing on the ecosystem as a result of the unintentional capture of reptiles, birds and mammals, and on the effects of reserves and artificial reefs.

Over the 1998-99 period, oceanographic programmes were conducted on Spanish oceanographic vessels, foreign commercial and oceanographic vessels, at an average rate of 1 700 sea days per year. Oceanographic researchers have also participated as observers in several international oceanographic programmes. The main stocks reviewed are shown below:

Table 2. **Main areas and fish stocks researched by Spain in 1998/99**

Area	Stocks evaluated
Eastern Atlantic Ocean ¹	Hake, angler fish, megrim, Norway lobster, blue whiting, anchovy, sardine, mackerel and horse mackerel
Mediterranean Sea	Hake, surmullet, shrimp and anchovy
Waters off North-West Africa and the Canary Islands	Cephalopods, hake, shrimp, sardine and sparidae
Mediterranean Sea, Atlantic Ocean and Indian Ocean	Bluefin tuna, white tuna, albacore, bigeye tuna, skipjack and swordfish
North Atlantic and Arctic Ocean	Cod (Svalbard), redfish (Reikjanes Ridge)
Angola	"Bottom" shellfish
Falkland Islands	Cephalopods and hake
Newfoundland	Cod, black halibut, American plaice, yellowtail flounder and redfish

1. From western Scotland to the Straits of Gibraltar.

Monitoring and enforcement

In 1998 and 1999 the competent Spanish authorities carried out monitoring and enforcement work in national waters and also in zones on the high seas (see Table 3).

Special mention should be made of the work conducted in 1998 on the design and development of the new centre for monitoring fishing vessels by satellite, making use of experience gained from the pilot projects of the previous years. This centre was commissioned in 1999 and will be fully operational in 2000 in accordance with EU regulations. This centre monitors around 1 800 Spanish vessels, so that it is possible to meet all the requirements of the regional fishing organisations regarding exchange of information and monitoring of fleet activity.

In 1999 there was a substantial increase in seaborne and airborne control equipment with the entry into service of a patrol boat the SALEMA, and an *Aviocar* 212-400, whose role was to inspect, support and monitor fishing. Moreover, another ocean-going patrol vessel and another fixed-wing aircraft are due to enter into service in 2000.

Lastly, attention should be drawn to the adoption of Royal Decree 1797/99 of the 26 November 1999 on the control of third countries fishing operations in waters over which Spain has sovereignty or jurisdiction. In accordance with Council Regulation (EEC) N 2847/93 which established a control system applicable to the Common Fisheries Policy and Council Regulation (EEC) N 1093/94 which set the terms under which fishing vessels of a third country might land directly and market their catches at Community ports. This new Royal Decree also ensures that measures adopted by the regional and sub-regional fishing organisations of which the EC is a contracting party are fully implemented.

Multilateral conventions

In 1988 and 1999 Spain continued to give active support to multilateral conventions. In this connection it is worth noting:

- The financing of the meeting of the first Working Group on the new criteria for determining the ICCAT quotas, held in Madrid between 31 May and 2 June 1999. Its headquarters is in Madrid.
- The financing of the XXIVth Session of the General Council of Mediterranean Fisheries, held in Alicante in July 1999.
- Active participation in the OECD Fisheries Commission with presentations of studies related to all the chapters in its work programme.
- Support for the informal consultative process on "Oceans and the law of the sea", established by the General Assembly of the United Nations in its Resolution of 17 November 1999 following a review of oceans and seas by the United Nations Commission on sustainable development, during which it was agreed that measures designed to improve international co-ordination and co-operation in the field should be promoted.

Aquaculture

Volume and value of production

Data on output and values for 1997 and 1998 are shown in the statistical annex. Those for 1999 will only be finalised once all the data from the Autonomous Communities have been received.

Aid to aquaculture

As in previous years, the object of this aid is:

- The construction, extension, fitting out, modernisation and purchasing of facilities.
- Developing or upgrading water circulation in aquaculture facilities.

Table 3. Spain's monitoring and enforcement activities in marine capture fisheries in 1998/99

Species and/or region	Activities
Albacore tuna fishing season	<p>Patrol vessels helped to avoid conflicts between Community fleets using different gear (traditional long-line vessels and pelagic vessels). No vessels were caught using or holding on-board drift nets exceeding the regulated length.</p> <p>Patrol vessels with Spanish and Community inspectors on board, which accompanied the tuna fleet during the 1998 and 1999 seasons, helped to avoid conflicts between Community fleets using different fishing methods (traditional gear using pole-lines trailing lines, and drift nets); technical and sanitary assistance was also given.</p>
Driftnet fishing in the Mediterranean Sea	<p>Efforts were increased around the Balearic archipelago to monitor the activities of non-Spanish vessels fishing for swordfish with extra long drift-nets. Several maritime and aerial operations were carried out.</p> <p>In 1998-99 there was increased surveillance, involving the use of boats and aircraft, of the protected fishing zone in the Mediterranean Sea. The object was to protect swordfish and bluefin tuna, which had been caught in the absence of controls in the previous years by fleets from third countries or by vessels using unauthorised gear. The result of the surveillance was wholly satisfactory since the vessels referred to virtually disappeared.</p>
NAFO region	<p>In their capacity as inspectors designated by the European Commission, Spanish officials participated in the inspection of vessels operating in this region. Furthermore, communications on the outputs and movements of Spanish vessels operating in this region were received and recorded according to the Hail system of communication.</p> <p>Furthermore, a Spanish surveillance vessel was in the zone between 15 October and 15 December as part of NAFO's multilateral inspection and surveillance scheme.</p>
ICCAT	<p>In accordance with the ICCAT mutual inspection programme, inspections were made of ports, and of landings of vessels that caught or transported species regulated by the ICCAT, in co-ordination with the tuna fishery inspection programmes.</p>
Surveillance of EEZ and Spanish ports	<p>Throughout 1998 and 1999, waters under Spanish jurisdiction were permanently patrolled by air and sea in order to monitor the fishing activity of Spanish and Community fleets, particular attention being paid to zones and periods in which fishing was forbidden.</p> <p>Inspection is also carried out in all ports where fish is landed, to ensure that fishing legislation is being applied, particularly the regulations on technical measures for the protection of resources.</p>
Other port inspection programmes	<p>In accordance with the EU's various commitments and agreements with third countries or multilateral bodies, and with Spain's and other member countries' obligations, port inspection programmes were carried out in 1998 and 1999 which targeted:</p> <ul style="list-style-type: none"> • Freezer vessels from NAFO, NEAFC, Hatton Bank, Norwegian, Svalbard et Barents fishing zones. • Vessels operating under the flags of other community nations and landing in Spanish ports. • Fishing vessels operating under agreements between the EU and third countries, notably Morocco and Mauritania.

- Purchase and installation of dedicated new equipment and machinery for aquaculture production, including vessels, IT and telematics equipment.
- Schemes designed to demonstrate on a similar scale to that of normal productive investment, the technical reliability and economic viability of the farming of species not yet marketed or exploited, or of innovative farming techniques, provided that they are based on research findings.
- Measures to promote the construction and application of statistical instruments for effective evaluation and monitoring of the investments mentioned above, as well as research initiatives, training in firms and consolidation of representative sectoral bodies.

Between 1994 and 1999, the period in which Council Regulation (EC) N 3699/93 was in force, the number of projects approved by the Autonomous Communities for funding by the FIFG rose to 1 085, and the investment amount to ESP 22 628 million. The FIFG's contribution was ESP 9 917.5 million, national aid was ESP 2 358.6 million, and the rest was from private sources.

Fisheries and the environment

Environmental threats exogenous to aquatic ecosystems

IEO researchers continuously monitor seawater contamination from a network of points distributed throughout national waters, and also study red tides to control the effects of pollution on the molluscs in Galicia.

Impact of fishing activities on the environment

A group of Spanish scientists is currently studying the effects of fishing on the ecosystem as a result of the unintentional catching of reptiles, birds and mammals, and the effects of reserves and artificial reefs. Spain participates in FAO working groups, responsible for following up these questions, and implements all recommendations issued by multilateral fishing organisations with a view to minimising the negative impact of fishing on the environment.

In this connection the arrangements for preventing the accidental capture of sea birds by vessels fishing in the regions of the Antarctic Ocean regulated by the CCAMLR and the programme to prevent the capture of dolphins in the tuna fisheries regulated by the CIAT should be mentioned.

The scientific observers assigned to vessels operating in international waters also assess, *inter alia*, environmental parameters.

The Spanish government does not believe that the production systems used in aquaculture have a negative impact on the environment.

Public financial support

Total support

Table 2 of the Statistical Annex provides a summary of transfers made in 1998 and 1999.

Total aid to the fisheries sector amounted to ESP 59 883 million in 1998 and to ESP 52 728 million in 1999. For the marine capture fisheries sector the aid amounted to ESP 43 928 million and ESP 41 647 million for the two years respectively, of which ESP 33 936 million and ESP 27 368 million was charged to IFOP. For the aquaculture sector the IFOP aid amounted to ESP 1 711 million and ESP 2 562 million in 1998 and 1999. For the post harvesting sector the aid amounted to ESP 14 244 million and ESP 8 519 million in 1998 and 1999, of which ESP 11 411 million and ESP 8 119 million was charged to IFOP.

Support for production and factors of production

Support for production and factors of production are granted in accordance with Royal Decree 798/1995 and Council Regulation (EC) N 3699/93, laying down the criteria and arrangements regarding Community structural assistance in the fisheries and aquaculture sector and the processing and marketing of its products.

As in previous years, the object of support for the construction of new vessels was to replace old ones with newly built ones, mainly for safety reasons. It is granted subject to the condition that it does not increase the fishing capability of the fleet as a whole. Thus, all new building projects include the obligation to break up one or more vessels of a tonnage and power equal to or greater than that of the vessel to be built.

In 1998 and 1999 the EU/Morocco Joint Committee established a supplementary fishing moratorium lasting two months per year to preserve stocks of cephalopods and black hake. In order to assist vessel owners and marine fishermen affected by this measure, Spain's ministerial council granted exceptional aid of ESP 743 million in 1998 and ESP 641 million in 1999, which benefited 103 and 88 vessels respectively.

Structural adjustment

In 1998 and 1999 support for the cessation of fishing activities was fully consolidated within the framework of the FIG. Royal Decree 785/95 introduced a new model procedure for supporting permanent cessation and thereby reconciled conflicts between the Government and the fisheries sector, since management of the latter had been decentralised and transferred from Community to national and in most cases even regional level. This new financing model has led to a significant increase in the amount of support granted. The imbalance between the number of requests for assistance presented to the government and the number approved has thus been reduced considerably.

Support for the permanent withdrawal of fishing vessels benefited 236 vessels, and the corresponding reduction in tonnage was 13 734 GRT.

Another factor in the structural adjustment was the Community initiative PESCA. The objectives of PESCA were to enable the fishing sector to finalise its transformation successfully, to help it cope with the ensuing social and economic consequences, and to contribute to the diversification of regions dependent on fishing by encouraging new industries that provided employment.

To begin with the development of this initiative was affected by a number of adverse factors, in particular the complexity of its administrative structure involving three structural funds (FIG, ERDF and ESF), which produced funding programmes that were complicated and difficult to manage. Subsequent modifications made its development viable.

The PESCA initiative will not be continued over the period 2000-2006. The last commitments incurred before 31 December 1999 will be honoured up until 31 December 2001. However, some of the PESCA measures will be incorporated into the new FIG regulations, which will be in force between 2000 and 2006.

Fishery products: policy and practice

Development of policy

Food safety

The Spanish Government has developed a new food safety model in collaboration with the anti-fraud services, who will have a central role in this area.

The aim of the project, now at the statutory consultation stage, is to defend consumers against fraudulent practice, such as misleading information, false identification of the product, and false information regarding nutritional value and quality, and also to assess food quality at each stage of the food chain.

Moreover, in 1999, the General Secretariat for Sea Fishing gave technical assistance on food safety to countries exporting fish to the EU, notably the developing countries of Africa and South America. The purpose of this assistance was to improve inspection and monitoring of fish at source in accordance with Council Directives, in particular Council Directive 91/493/EEC, which is continuously being renewed (the corresponding Spanish legislation being DR 1437/1992).

Information and labelling

Over the past eighteen months, the General Secretariat of Sea Fishing has been attempting to keep fish producers and consumers better informed by improving the information policy.

This has led to the approval of Royal Decree 1334/1999 of 31 July 1999, which contains general provisions on the labelling, presentation and advertising of food products and related to the latter, Royal Decree 331/1999 on the standardisation and classification of fish products, fresh, frozen and cooked.

It was felt that the necessary classification of fish products should be made by standardising the product in terms of quality, defined according to the categories of, freshness and size, manner of presentation, origin, commercial name and scientific name, net weight and identity of supplier. In the interests of greater market transparency and more precise identification of the product, it is also important that the consumer should know how the product was obtained and fish that have been caught should accordingly be distinguished from fish that have been farmed.

It is also worthwhile to include the common commercial names of certain species.

These products have been standardised to allow for differentiation, which enhances and guarantees market transparency. Marketing of fishery products is thereby encouraged, the confidence of the fishing sector is consolidated and the safety of the consumer is increased.

Labelling identifies a product and enables the consumer to distinguish it from others and so compare its quality – *i.e.* all the characteristics enabling it to satisfy the consumer's implicit demands – with that of others.

Furthermore, another Decree is being drawn up to regulate the classification of frozen fish products so that all products are fully identifiable from the moment they are put onto the market until they reach the end-consumer.

So that this provision might be applied throughout Spanish territory as quickly as possible, the Spanish authorities have drawn up a series of measures, which may be summed up as follows:

- Training courses on labelling fishing products along the whole of the Spanish coastline and in the major distribution centres (*Mercas*), 121 such courses have been organised. The purpose is to increase awareness of fishermen and of marketing agents, both in the port and in consignment areas.
- Through an agreement assigning "right to use", 212 printers and their software have been provided to facilitate this scheme.
- At the same time, by way of providing supplementary material, three-page leaflets and posters have been produced to explain the new developments and outline the advantages of accepting and adapt to the system of labelling fresh fish products in Spanish territory.

Moreover, several publications have been issued with a view to promoting better understanding between producers and consumers of fish. These include: (and are available from the Spanish Delegation to the OECD).

- Manuel del Consumidor de Pescado.
- Guía de las Principales Especies Pesqueras de Interés Comercial en España.
- Guía Técnica de Manipulación a Bordo de Productos Pesqueros.

Markets and trade

Markets

Changes in domestic consumption

The consumption of fish products in Spain, which amounts to 30.3 kg per person per year, increased by 6.3% in 1998 compared with 1997. Home consumption increased by 2.7% and by 18.1% for consumption outside the home, in terms of quantities purchased. Consumption can be broken down as a 4.5% increase in fresh fish, a 1.2% increase in frozen fish, a 1.0% increase in shellfish, and a 1.3% increase in canned products.

This increase represents a rise of 10.5% in the amount spent on food, with a rise of 7.4% for home consumption and of 19.0% outside.

The trend in fish consumption was still rising in October 1999, with a 4.68% increase in quantities bought for home consumption and a 5.54% increase in the price of these purchases.

Promotion work

The promotion programmes of FROM (fund for the regulation and organisation of the market in fish and marine culture products) for the financial years 1998 and 1999 were conducted in accordance with Council Regulation (EC) N 3699/93 of 21 December 1993. They consisted of measures to promote different species of fish caught, whether fresh, frozen or canned, and measures intended to protect species, in particular the prevention of the catch, sale and consumption of young fish. Furthermore, studies have been carried out on improving the marketing of fish products. Mention should also be made of participation in national and international exhibitions and fairs.

Trade

The trade balance for fish and fish products was unfavourable in 1998 and 1999. Import-export coverage was 43% in 1998, five per cent less than in the previous year.

Volume and values

See corresponding statistical annex.

Policy developments

As regards the marketing of fishery products, policies for the immediate future are focused chiefly on:

- The monitoring and co-ordination of fresh, frozen and refrigerated fish products.
- The continuation and extension of the network for controlling minimum sizes of fish carried by road, with the aid of senior officers of the *Guardia Civil* and the Autonomous Authorities.
- The forthcoming drafting of another Royal Decree on the classification of frozen fishery products so that all products may be fully identifiable from the moment they are put onto the market to the moment they reach the final consumer.
- The forthcoming drafting of a Royal Decree establishing control regulations, in line with Community policy, on the initial sales of fishery products.

As regards hygiene standards, regulations on the handling of food are now being prepared. They will amend Royal Decree 2505/1983 of 4 August 1983.

Their chief novelty consists in making manufacturers and entrepreneurs in general responsible for training in matters of hygiene, and not the State, as had previously been the case. However, the State reserves the right to exercise controls or operate by proxy. All this would allow for new arrangements to promote hygiene, which would be approved by Royal Decree 2207/1995.

This project updates this normative chapter in accordance with the recommendations of the *Codex alimentarius mundi*, as well as providing for control by producers on the basis of the new “Hazard Analysis and Critical Control Point” (HACCP) system.

Outlook

In order to adapt fishing fleet capacity to match available resources and to implement a responsible fishing policy, Spain will continue to:

- Renew and modernise the fleet along the lines established by the EU, without increasing fishing capacity.
- Diversify the activity of the fleet, by seeking new fishing zones and species.
- Encourage the permanent withdrawal of certain fishing vessels and thus make a real contribution to structural adjustment.
- Continue to participate in regional fisheries organisations and promote their pre-eminent role in conservation and stock management decisions.

In the field of aquaculture, work will focus on improving breeding techniques for industrially produced species and the development of breeding techniques for other species.

Promotion campaigns to orientate the consumption of fishery and aquaculture products will continue, the aim being to adapt demand to present supply and so promote responsible consumption.

A Royal Decree will be issued incorporating community regulations on structural funding into national legislation.

National legislation will be developed along the lines of Community policy, on control standards applicable to initial sales of fish products and the identification of products throughout the marketing chain from their appearance on the market to their purchase by the end-consumer.

Support will be provided for the development of the fishery sectors of developing countries, notably in South and Central America.

Special topic: Fishing Capacity

Adaptability of capital and labour allowing movement from one fishery to another and from unemployment to employment.

The European Community has exclusive competence over the conservation and development of fish resources. This power extends to fisheries under national jurisdiction and to the high seas.

As for the waters under national jurisdiction, the State has exclusive competence over sea fishing, subject to the Autonomous Communities' powers regarding the development of the fishing in inland waters and aquaculture. In Spain ships' registers are made out according to type of fishing, which leaves very limited scope under national legislation for changing from one fishery to another. A similar restriction applies in the waters of the EU.

Spanish vessels can only operate in fisheries in free waters, or those regulated by regional fisheries organisations, once they have obtained a temporary fishing permit, the issue of which depends on the available resources.

As for activity in third country fisheries, with the exception of specific isolated cases, changing from one fishery to another depends on the availability of resources to which the third countries grant to access under the terms of fishing agreements, temporary partnerships, joint ventures, etc.

As for mobility of labour, Spanish seamen, are free to stop working, subject to certain conditions.

When the causes of unemployment are beyond the worker's control, he/she is entitled to draw the benefit provided in such circumstances under the law. In most cases workers are entitled to this benefit, since they have been paying unemployment contributions in order to meet such an eventuality.

State and changes in the capacities of fisheries

As Stated above, the European Commission has exclusive competence over the management of fishery resources in Community waters.

In recent years the capacity of the Spanish fishing fleet has fallen and the number of vessels has been substantially reduced. The purpose of this has been to adapt the fleet to match available resources so that its activity can produce at maximum sustainable yield (MSY).

As from 1977, the year in which the creation of EEZs became widespread, two practices made such change and adaptation possible – the breaking up of vessels and the export of vessels in different forms to countries with surplus fishable resources.

Definition of fishing capacity

Spain, like all the other countries in the European Union, includes capacity as one of the parametres used in Community legislation to measure fishing effort [Regulation (EC) N 3946/92 and Regulation (EC) N 3760/92].

The fishing effort of a vessel using moveable gear is the product of the capacity measured in GT or kW and the number of days spent at sea during the year. The Spanish Register (of the operational fishing fleet) and the Community Register of fishing vessels measures the capacity in GT/GRT and HP/kW.

Fishing capacity, as the FAO understands it, cannot be dissociated from effort, and is defined as the capacity to catch fish in a given period of time, depending on existing amounts of biomass. But this way of measuring capacity is incomplete since capacity may exist without vessels (tuna nets, shore seines, pound nets, etc.).

Surplus capacity is defined as excess capacity, measured in the EU in terms of tonnage and power, which enables the fishery to set the MSY.

Policy for managing fishing capacity

The European Union manages fishing capacity by increasing or reducing it on the basis of tonnage and power parametres. The EU also manages this capacity by means of a common licensing system used to control access by vessels to Community fisheries according to their total capacity and the level of resources.

In February 1992 fisheries were included in the structural funds (Delors II Package and Council of Edinbourg), which led to the emergence of the Financial Instrument for Fisheries Guidance (FIFG); this was created by Council Regulation (EC) N 2080/93 of 20 July 1993, which enabled Spain to adopt a programme for renovating her fleet and adapting its capacities, which lasted from 1 January 1994 to 31 December 1999.

By approving the operational framework defining the sectoral plan for fisheries for six years (1994-1999) and by defining goals within this framework, *i.e.* reducing its capacity for the stipulated period, Spain embarked upon a substantial adjustment of its fishing capacities. Under this sectoral plan financed by the FIFG, eight areas of Community action were established, the first two accounting for the highest grant levels: 34% for the adjustment of the fishing effort and 30% for the renewal and modernisation of the fleet, and the support received for each is given in the plan; the Objective 1 regions are distinguished from the others.

The forecasts of the sectoral plan take the situation in the Spanish fishing sector at the beginning of the plan as their starting point and identify objectives to be met using the FIFG grant. In order to qualify for these grants, each State in the European Union, including Spain, presented the Commission with “overall programming frameworks” and MAGPs (Multi-Annual Guidance Programmes), used to determine target levels for the reduction of each country's fishing fleet.

Decision 94/624/EC established the “Community support framework” for structural intervention in the Objective No. 1 regions. The corresponding framework for the other regions having been approved

by the Decision of 22 December 1994. The operational programme for structural intervention in the fishing sector was laid down in the decision of 2 November 1994 and is incorporated in the Community support framework referred to above.

In 1994, with the entry into force of Royal Decree 2112/94, the management and payment of FIGF grants for the construction and modernisation of fishing vessels was decentralised and assigned to the Autonomous Communities.

MAGP IV (1 January 1997/31 December 1999), submitted by Spain for approval by the Commission, covers 1998 and 1999; amongst other things it envisages the restructuring of the fleet by segments. MAGP IV, unlike previous MAGPs, unifies and complements structural measures with resource management policies. It should be emphasised that Spain is one of the Community member countries to have achieved the reductions in capacity set forth in their MAGPs by a wide margin.

As for regions dependent on fishing, Regulation (EC) N 2719/95 of 25 November 1995 established a set of **socio-economic measures** in an attempt to mitigate the effects of restructuring the fishery sector. These were aimed mainly at sea fisher's whose vessels were to be broken up. This regulation provided for individual grant aid, early retirement, and the creation of funds to counter unemployment (**sphere of intervention 9**).

In this framework, therefore, two methods were used to manage fishing capacity in the period between 1994 and 1998; adjusting the fishing effort, and guiding activities.

The adjustment mainly involved breaking up vessels and/or temporary cessation of fishing while stocks were replenished.

Guidance was given to fishing activity through fishing agreements, joint ventures and temporary fishing partnerships.

Evaluation of the effects of capacity management on policy

The aim of the measures adopted under the PESCA Initiative was to ensure that the Community fishing sector was in a position to emerge unharmed from the necessary transformation process and help it cope with social and economic consequences, as well as to encourage diversification in the regions affected by developing activities that created jobs.

The PESCA Initiative was applicable to the Community fisheries sector for the period 1994-1999 by virtue of Council Regulation (EC) No. 4253/98, establishing the main lines of the general subsidies for integrated operational programmes.

On 28 October 1994, Spain asked the Commission to support an integrated operational programme as part of the PESCA Initiative, comprising measures with six lines of intervention:

- Axe I. Action for the complete redevelopment of zones dependent on fishing.
- Axe II. Restructuring the fishery sector.
- Axe III. Reconversion and diversification of the fishery sector.
- Axe IV. Infrastructures.
- Axe V. National and transnational projects.

The amounts given under the financial plan for the PESCA Initiative for 1998 and 1999 and for the whole of the period for which it was applicable (1994-99) were:

- 1998..... ESP 2 699 086 million
- 1999..... ESP 8 116 524 million
- Total 1994-99..... ESP 13 543 457 million

Effects of other policies on capacity

The instruments for managing Spanish fishing are given by the Community's structural, resource and market policies. These policies, which are interdependent, are geared to maintaining the maximum sustainable yield of fisheries.

Public financial support is available from the FIGF funds, the PESCA Initiative, and corresponding national funds.

These subsidies, called into question on many occasions, served to encourage a significant reduction in the fishing capacity of the Spanish fleet, and in many cases to make this reduction less painful. They were also used to improve the safety of vessels, to refit them, and to improve working conditions on board.

The total amounts paid in subsidies by the FIGF for 1998 and 1999 (Objective 1 regions and remaining regions) was as follows:

1998.....	ESP 47 058 889 millions
1999.....	ESP 38 048 377 millions

Implementation of FAO's plan of action

The immediate aim of the international plan of action (IPA) is to ensure that States and regional fishery organisations, acting within their sphere of competence and in accordance with international law, achieve efficient, equitable and transparent management of fishing capacity throughout the world, preferably by 2003, and no later than 2005.

A technical consultation, which had been recommended by the FAO to prepare the technical guidance for the application on the IPA, took place in Mexico on 29 November 1999. The resulting report advocated *inter alia* the analysis of capacity at national, regional and global level, the creation of national registers, the establishment of a data hierarchy, the use of uniform measures, and greater attention to the capacity of fleets of small vessels.

Spain has made an enormous effort to reduce its fishing capacity. This effort, although not fully appreciated, has made a decisive contribution to sustainability of resources at global level. Between 1978-1998, *i.e.* over a period of 20 years, Spain has reduced its fleet by nearly half a million tonnes, involving more than 1 140 fishing vessels of more than 100 GRT, this has caused the number of people employed directly in the fishing sector to fall by 40 000.

It should be mentioned that over a number of years, the Spanish fishing fleet has been renovated through a process of substitution, *i.e.* that before a new fishing vessel can be built, a vessel or vessels having at least the same tonnage and power as the vessel to be built must be decommissioned.

Knowledge of capacity is essential to development and control. Spain knows its capacity and the effort of its fishing fleets, and currently observes all the criteria laid down in the Code of Conduct for Responsible Fisheries (CCRF), the Implementation Agreement and the International Plan of Action, as set down below.

Points in CCRF affecting fishing capacity (summary)	Some action taken by the community and Spanish magps to this end (summary)
6.3 and 7.1.8 Avoiding overfishing and excess capacity	Multi-annual guidance programmes (MAGPs) for: <ul style="list-style-type: none"> • permanent and temporary cessation; • joint ventures; • redistribution of capacity; • temporary partnerships between enterprises; • renovation of the fleet by substitution.
6.10 and 6.11 Controlling activity of vessels	Registers and inventories Fishing log books Declaration of catches Declaration of transshipment Fishing licences Temporary fishing permits Control regulations Policing fisheries Assignment of tacs and quotas.
7.2.2.(A) Profitable fishing is ensured through scientific control	EU scientific and technical committee Oceanographic institutes Scientific and prospection programmes
7.4.3 Studies aiming to rationalise fishing	Market studies New preparation of products Models Training programmes
7.6.3 Mechanisms and aids to reduce capacity	Socio-economic support measures PESCA Initiative Fishing agreements Bans on fishing in certain areas and temporary fishing bans Temporary suspension to allow replenishment of stocks Labelling

SWEDEN

Summary

Sweden is a member of the European Union. In 1998 the catches reached an all time high of 400 000 tonnes. The main part was fish for reduction consisting mainly of herring and sprat caught in the Baltic Sea. In 1999 the catches were down to the 1997 level of about 350 000 tonnes. The landed value increased by about 5% in 1998 compared to 1997 and reached SEK 1 045 million (EURO 125 million). In 1999 the landed value is back to the 1997 level. The profitability increased in 1998 compared to 1997. The number of fishers decreases gradually and attained at the end of 1999 about 2 400 persons. The fleet capacity measured in kW (engine power) and tonnage (GT) decreased in accordance with the EU plans of the MAGP (Multi-Annual Guidance Programme). The increase of the production in the processing industry has levelled off and the sub-sector has in 1998 a turn-over of about SEK 2.8 billion (EURO 330 million). The employment is about 2 100 persons. Both imports and exports have increased both in 1998 and in 1999 and in 1998 the imports amounted to EURO 600 million and the exports to EURO 370 million. The environmental legislation has been reformed. The central environmental acts have been amalgamated into the Environmental Code, which came into force on 1 January 1999.

Legal and institutional framework

Sweden is a member of the European Union and therefore the Common Fishery Policy (CFP) and its legislation is directly applicable. The general principles governing the national fishery policy are to be established in a Parliamentary Act. This act also authorises the Government to issue legal acts in order to supplement the CFP and to regulate the fishery outside the CFP. The Government has forwarded this authorisation to the National Board of Fisheries together with some general principles and guidelines. The principal management instruments used are the same as in the CFP. As for concerns on foreign access and foreign investments, the rules of the CFP are followed.

Capture fisheries

Performance

The total landings reached an all time high in 1998 with 400 000 tonnes which was an increase by about 50 000 tonnes compared to 1997. The total increase of the volume as well as the main bulk (320 000 tonnes) of the total catches were used for reduction purposes and the species were mainly Baltic herring and sprat. The landings of cod in 1998 were down by 10 000 tonnes to 20 000 tonnes as were the landings of herring for consumption which reached about 35 000 tonnes. The reason for the cod decrease was mainly the poor state of the Baltic stocks and the market for herring was weak. The opposite prevailed for the fish meal and fish oil market, which was very strong. The final figures for 1999 are not yet available but it seems that the total landings will be of the same magnitude as in 1997 (350 000 tonnes). The reduction is attributed to the fodder fishery. The herring catches increased by about 10 000 tonnes to 45 000 tonnes and the cod stagnated as there was no recovery of the stocks. In addition to the stocks mentioned above, the catches of mackerel, *pandalus borealis* and nephrops are significant and rather constant. The coastal fishery is very dependent on eel.

The total landed value increased by about 5% in 1998 compared to 1997 and reached SEK 1 045 million (EURO 125 million). The value of the reduction landings increased by nearly 50% to

SEK 330 million (EURO 40 million) but cod decreased slightly due to the circumstances that the sharp declining volumes to some extent were compensated by rising prices. In 1999 the value seems to be of the same magnitude as in 1997 (SEK 1 000 million, EURO 118 million). The fodder landings dipped 40% to about SEK 200 million (EURO 24 million) due to the prevailing weak market. Cod prices increased also in 1999, which implied that the revenues increased by about 14%.

The profitability in 1998 increased compared to 1997 and especially the bigger pelagic vessels which achieved good economic results.

The employment of the catching sector decreases yearly by about 8% and the workforce attained at the end of 1999 was about 2 400 persons. The processing industry has slightly increased the number of employed and in 1999 the figures reached about 2 100 persons. Both for the catching and the processing industry the employment is calculated as Full Time Equivalent (FTE). There is no statistical collection of the figures covering the employment in the aquaculture sector but the number of employees is estimated to be 400 persons but the FTE is lower because of the seasonal character of the sector.

The number of vessels decrease yearly by about 7% and in 1999 there were 1 976 licenced vessels. The tonnage measured as GT (Gross Tonnage) and the engine power (kW) is subject to the reductions foreseen in the MAGP (Multi-Annual Guidance Programme) of the CFP. The total GT and kW in 1999 were 46 000 and 230 000 respectively. The single biggest GT-group is the one between 250 and 499.9 which equals 31% of the total. In 1999 the average vessel had the following characteristics:

1. Tonnage: 23 GT.
2. Engine power: 116 kW.
3. Length: 10 metres.
4. Age: 25 years.

As can be concluded from the figures, small coastal vessels dominate the fishing fleet. Compared to 1998 the age was one year less, which implies that the renewal is not keeping pace with the ageing.

Status of fish stocks

See EU chapter.

Management of commercial fisheries

The management of the commercial fishery is a mixture of measures decided by the National Board of Fisheries (NBF) and the Fishermen's Associations. For some species the principle of free entry for all licenced vessels is also applicable. Concerning cod in the Baltic Sea the NBF has issued a decree specifying the maximum vessel landings per week. The landed quantities are differentiated according to length and tonnage of the vessel. For salmon in the Baltic the NBF has divided the Swedish quota into regional and seasonal sub-quotas.

The Fishermen's Associations have imposed quota regulations on their members covering the fisheries for *pandalus borealis* in the North Sea and the Skagerrak, demersal fishery in the North Sea, Skagerrak-Kategatt and the herring fishery in the Skagerrak. These quotas are dependent on the size of the crew for (*pandalus borealis*) or the size of the vessel (other fisheries).

Management instruments

The management of fishery resources shall aim not only to ensure sustainable development, but also at a rational exploitation, responsible fishing and higher stability (or at least reduced year-to-year fluctuations) in fishing possibilities. Sustainable fishing does not only cover the quantities of fish taken from the sea, but also the species and the size of the fish, the technique used in the fishery and the area where the fishery is conducted.

The main management measures in force are the total allowable catches (TAC), fishing effort and licence, technical measures and co-operation on control and enforcement. During the past few years the need for developing long term management strategies in various fisheries through international co-operation has become increasingly obvious. The aim is to restore depleted stocks and, additionally, to reach a more pronounced stability in fishing opportunities. In this context the introduction of the Precautionary Approach concept in the fishery management is of vital importance.

The setting of total allowable catches and national quotas

On the basis of scientific advice from the International Council for the Exploration of the Sea (ICES), the total allowable catches are fixed annually for the different fishing areas. The allocation of the TACs between Contracting Parties is set within international organisations. For Sweden, as an example, one of the most important organisations is the International Baltic Sea Fishery Commission (IBSFC) where yearly TACs for cod, salmon, sprat and herring are decided upon.

As the Community is one Contracting Party to the IBSFC, the EU quota is divided between the four member states, Finland, Denmark, Germany and Sweden following the principle of relative stability. The relative stability is a fixed percentage of the Community quota, one percentage for each member state, each species and each fishing area.

Fishing effort and licence to fish

The limitation of fishing effort is one way to restrict fisheries and is defined as capacity, in tonnage or engine power, multiplied by activity expressed in days at sea. Since 1995 all vessels fishing in Community waters and EU vessels operating outside Community areas have required a licence. Fishing effort can be regulated through the allocation of special fishing permits stating the terms of access, time and specific fisheries.

Selectivity and conservation

Reducing fishing effort and controlling the volume of catches cannot prevent the capture of small fish and fish which have no commercial value. Additional measures are needed to ensure the selectivity of fishing gear in order to leave the unwanted fish in the sea. This is the role of technical measures. The basic aim of technical measures is to avoid or limit the capture of:

1. Immature fish to allow them to contribute to stock renewal as adults.
2. Unwanted fish because of their lack of commercial value or fish for which fishermen have no more quotas.
3. Marine mammals, birds and other species such as turtles.

Technical measures

The technical measures are generally defined by geographical areas and include:

1. Minimum mesh sizes.
2. The use of selective gears.
3. Closed areas and seasons.
4. Minimum landing sizes for fish and shellfish.
5. Limits on by- or incidental catches.

Co-operation on control and enforcement

To follow up the international rules and agreements, the co-operation on control and enforcement is very important. This co-operation is established by an international network between the control authorities in these states, which have fishing in each other's areas. A frequent reporting of landings also follows up the control.

Access

See EU chapter.

Management of recreational fisheries

The difference between a professional fisherman and a recreational one is the possession of a professional fishing licence. In public waters, professional fishers may use all types and an unlimited number of gears if not otherwise stipulated in any conservation regulation. A recreational fisherman may in public waters only use a limited number of gears and not all types. An example of limitations, is that the total length of the nets are not allowed to exceed 180 metres and the number of pots must not exceed six. There are no restrictions concerning the sale of the catches. In private waters there are no restrictions on the number and types of gears, if not otherwise stipulated in any conservation regulation.

In principle all waters around the coast and in the lakes are privately owned up to 300 metres from the shoreline. A fisher is allowed to fish in private waters only with the consent of the owner. The responsibility for conservation and management in these waters rests on the owners. Many private water-owners have, with state support created fishing management areas with uniform fishing rules and marketing of recreational fishing opportunities for the public. There are, however, some important exceptions to the general rule of the owner's sole right to dispose the waters. Angling is allowed along the coast and in the four big lakes. In the western and southern coasts fishing is allowed on privately owned waters for the public with a limited number of other gears as well as for professional fishers.

In 1999 a mail survey was launched in order to picture statistically recreational fishery. The aim of the survey was to obtain answers to the following questions:

1. Catches and their composition?
2. Number of fishing days (effort)?
3. Number of fishers?
4. The money spent by the fishers?

Aboriginal fisheries

The Lappish populations living on reindeer breeding in the northern part of Sweden have special fishing rights in the areas allocated to their profession.

Monitoring and enforcement

A special logbook for the coastal fishery has been introduced during 1999. This logbook is simplified both in content and the obligations to transmit information to the NBF compared to the ordinary EU logbook. The responsibility to control the marketing standards has been removed from the NBF to the Coast Guard as from 1 January 2000. For other control measures see EU chapter.

Multilateral agreements and arrangements

See EU chapter

Aquaculture

Policy changes

A new environmental law has been adopted by Parliament, for further information see the chapter on Fisheries and Environment. Concerning aquaculture no changes in substance have been made.

Table 1. Number of farm sites

Species	1997	1998
Rainbow trout	154	131
Eel	4	3
Arctic Char	19	25
Blue mussel	16	10
Crayfish	127	124
Total	320	293

Source: Statistics Sweden.

Table 2. Production volume (tonnes)

Species	1997	1998
Rainbow trout	5 029	4 457
Arctic char	105	347
Eel	182	232
Blue mussels	2 095	455
Crayfish	10	9
Total	7 428	5 500
Fish for release		2 500

Source: Statistics Sweden.

Table 3. Production value, SEK million (EURO millions)

Species	1997	1998
Rainbow trout	102 (12)	96 (11)
Arctic char	6 (0.8)	12 (1.4)
Eel	13 (1.5)	14 (1.6)
Others	7 (0.8)	5 (0.6)
Total	128 (15)	124 (15)

Source: Statistics Sweden.

Production facilities, values and volumes

The number of persons employed is estimated to be around 400 persons. As can be concluded from the tables, the Swedish aquaculture sector is rather small. It can also be stated that the figures for the crayfish production are an underestimation. According to surveys by the National Board of Fisheries the profitability of the sector is rather good. For many companies the local market is the most important one.

Fisheries and the environment

The environmental code

Swedish environmental legislation has been reformed. The central environmental acts have been amalgamated into the Environmental Code, which came into force on 1 January 1999. The Code constitutes modernised, broadened and tightened environmental legislation aimed at promoting sustainable development.

Contents:

1. Sustainable development.
2. The role of legislation.
3. The aim of the Environmental Code and its scope of application.
4. General rules of consideration.

5. Objectives and goals for environmental quality.
6. Laws replaced by the Environmental Code.
7. Environmental quality standards.
8. Area and species protection.
9. Environmental sanction charge.

Sustainable development

For a long time, legislation has been the central tool with which principles of environmental policy have been transformed into practical measures. The principle of sustainable development has had an increasingly greater impact on both national and international environmental protection since it was introduced by the Brundtland Commission in 1987. At the UN Conference on Environment and Development in Rio in 1992, the concept won recognition as a central point of departure for the future development of society. With the Amsterdam Treaty of 1997, the principle has been written into the EC constitution as one of the goals of the European Union.

Swedish environmental quality objectives

Parliament has established 15 objectives for environmental quality that describe the qualities our environment and our common natural and cultural resources must have in order to be ecologically sustainable. The overall aim is for us to be able to hand over a society to the next generation in which the major environmental problems have been solved.

The 15 objectives:

1. Clean air.
2. High-quality groundwater.
3. Sustainable lakes and watercourses.
4. Flourishing wetlands.
5. A balanced marine environment, sustainable coastal areas and archipelagos.
6. No eutrophication.
7. Natural acidification only.
8. Sustainable forests.
9. A varied agricultural landscape.
10. A magnificent mountain landscape.
11. A good urban environment.
12. A non-toxic environment.
13. A radiation-safe environment.
14. Protective ozone layer.
15. Limited influence on climate.

Environmental quality objective:

A balanced marine environment, sustainable coastal areas and archipelagos

The North Sea and the Baltic Sea must have a long-term sustainable production capacity and their biological diversity must be protected. Coastal areas and archipelagos must have a high degree of biological diversity, opportunities for aesthetic experiences natural and cultural values. For industrial activity, recreation and other uses of the sea, coastal areas and archipelagos must be carried out in a way that promotes sustainable development. Especially valuable areas are to be protected against encroachment and other disturbances.

The living resources of the sea are used in a way that preserves the water's long-term production capacity and biological diversity.

(The National Board of Fisheries is responsible) This means that:

1. Fishing is conducted responsibly in accordance with the Precautionary Principle (Rio Declaration 1992).
2. Fisheries do not influence the natural areas of distribution for fish, crustaceans and molluscs and do not damage the marine archaeological heritage.
3. Catches of young individuals of the target species, other unwanted incidental catches and the incidental catches of marine mammals and sea birds are minimised.
4. Fish, crustaceans and molluscs are released in a responsible manner and with special regard for waters valuable for nature conservation.
5. Aquaculture constructions are located with regard for natural and cultural values and so as to minimise the risk of fish escaping.

Government financial transfers

Transfer policies

The transfers to the sector are in accordance with the EU regulation. There are hardly any supports to the sector outside this framework. The administration of the support is shared between the National Board of Fisheries (NBF) and the regional county administrations. The NBF has the responsibility for the disbursement of transfers and issues general guidelines to the county administration, which have the responsibility for aquaculture, the processing industry and equipment in harbours. The NBF is also responsible for control and surveillance. Below is a table with the target objectives and the sum-disbursed amount.

Table 4. **Revenue enhancing direct payments**
Disbursed amounts in SEK 1 000 (Swedish crowns)

Target area	1998 National co-financing	1998 EU-FIFG	1999 National co-financing	1999 EU-FIFG
Catching sector	8 228	21 371	7 909	27 043
Aquaculture	1 676	7 137	2 151	8 558
Processing industry	3 833	12 646	5 536	21 006
Others	10 263	9 842	18 404	17 933
Total	24 000	50 996	34 000	74 540

Table 5. **Revenue enhancing direct payments**
Disbursed amounts in 1 000 euros

Target area	1998 National Co-financing	1998 EU-FIFG	1999 National Co-financing	1999 EU-FIFG
Catching sector	968	2 514	109	3 182
Aquaculture	197	840	253	1 006
Processing industry	451	1 488	651	2 471
Others	1 208	1 158	2 165	2 110
Total	2 824	6 000	4 000	8 769

Revenue enhancing market price support in '000 euros :

1997	435
1998	400
1999	294

General service

The total turnover of the National Board of Fisheries was SEK 188 million in 1999. The consultative activities (international and national) have altogether a turnover of SEK 36 million. The remaining activities amounted to SEK 152 million, which includes management, promotion, research, control and fish enhancement. The costs are financed by the state budget, research funds and the EU. The Coast Guard is responsible for the surveillance and control at sea and in harbours. The total costs in 1999 amounted to SEK 471 million; however it is not possible to estimate the separate costs for fishery surveillance.

Social assistance

There are special unemployment funds for fishers. As a general rule, an unemployed person must be at the disposal of the labour market. It is possible for a fisher to receive unemployment benefits in the following circumstances:

1. Ice, preventing fishing operations.
2. Other weather and climatic circumstances.
3. Engine or hull damages.
4. Change of engine or winch.
5. Lack of fuel due to import restrictions.
6. Catch limitations imposed by EU or the National Board of Fisheries.

In 1998 a total amount of SEK 25.8 million (EURO 3 million) was paid to fishers.

Post-harvesting policies and practices

Policy changes

Food safety

There have been no major changes in the Swedish rules but see also EU chapter.

Information and labelling

A private organisation called KRAV has launched a labelling system for food in general targeting organic farming. The National Food Administration has also introduced labelling for food with low fat and sugar content. Both systems are voluntary for the producers. At the moment there are no national labelling systems for fish or fish products. Within the Nordic Council of Ministers there are discussions on how to create a green labelling system for fish.

The sector made in 1999 a voluntary agreement on the use of marketing names for the different species.

Processing and handling facilities

There have been no major changes in the industrial structure during the past two years. Since the accession of Sweden to the EU, the production and exports of the processing industry has increased due to the extended market and also due to a relocation of production facilities from the EU-12 area to Sweden. The increase of the production seems however to have slowed down during the last two years. The total turnover of the processing sector is about SEK 2.8 billion (EURO 330 million) which is three times the turnover of the catching sector. The number of production units is about 180 and the workforce is about 2 100 persons, mainly concentrated to the northern part of the West Coast.

Due to the diversified structure of the processing industry and the lack of supply of required species in the Swedish fishing waters, imports cover a large portion of the supply of raw material. On

average, 55% of the raw material was imported according to a survey made by the National Board of Fisheries.

The main outputs are products of herring and cod but also to a certain degree, prawn, salmon, mackerel and haddock.

Markets and trade

Markets

Trends in domestic consumption

The National Agriculture Board estimates yearly the consumption of food items by the Swedish households. For 1999 the figures are not yet ready. It is to be noted that small changes do not necessarily imply a change of the consumer preferences but can instead be a statistical variation.

Table 6. Consumption in kg per person

	1997	1998
Fresh fish	5.9	5.5
Frozen fish	2.1	2.0
Tinned or otherwise prepared	6.0	6.0
Crustaceans	3.1	2.9

For many years the tendency inclines to a dwindling consumption of fresh fish which seems to continue in spite of the increased supply of farmed fish. For other product items there are probably no changes.

Promotional efforts

A semi-public organisation called Svensk Fisk is responsible for the promotion of fish and fish products. In 1998 a total amount of SEK 9.3 million (EURO 1.1 million) was spent on promotional activities. The corresponding figure for 1999 was SEK 4.4 million (EURO 0.5 million). Parliament has decided that the fishers, processing industry and trade together must take over the responsibility of this organisation. At the end of 1999 there were still discussions of how to arrange this take-over.

Trade

Volumes and values

Sweden has a negative trade balance in fish and fish products and the deficit grows from year to year. In 1998 the imports amounted to SEK 5.1 billion (EURO 600 million) and the exports to SEK 3.1 billion (EURO 370 million). The figures for 1999 are not yet ready but for the first eleven months of the year the value has already exceeded the figures for the whole year of 1998. Both the exports and the imports will grow in 1999 with a pace of five to 7% compared to 1998. Both the exports and the imports are dominated by fresh fish and an important import item is also crustaceans in different product forms. A long-term tendency is the reduced imports of fishmeal, which is due to increased domestic production, and a change of demand from the agricultural sector.

Policy changes

See EU chapter.

Outlook

In the EU context, new regulations covering the market and the structure has been adopted. For further information see the EU chapter.

Due to technical developments and the poor state of most of the stocks, this implies that the manpower needed in the catching sector will gradually decrease. For the Swedish catching sector, the fishery for reduction is very important for the pelagic fleet, as it concerns the volume of the catches but not from an employment point of view. The prices of fishmeal have dropped considerably during the past year, at the same time fuel prices have increased. This will mean a substantial reduction of the profitability of this sub-sector. An alternative market for these vessels is to sell herring and sprat for consumption purposes to the east European market. There are some signs that the Russian market is somewhat improving. The cod fishery, which is very important for the economy and employment, has had to face some bad years due to the limited stock situation in the Baltic Sea. The coastal fishery will probably also have some bad years ahead due to the diminishing eel stock.

The growth the processing industry seems to have levelled off as the positive results of the EU accession have been harvested. The continued growth of this sub-sector will be dependent on product development and marketing efforts. The general promotion activities, up to now carried out jointly by the state and the industry, will probably cease during the year 2000.

Special topic: Fishing Capacity

Basic statistics

Capital

Table 7. Fleet data

Vessels with engines	Number	kW	GT	Number	kW	GT
0-24.9 GT	1 829	105 731	8 018	1 685	99 073	8 319
25-49.9 GT	100	20 530	3 434	95	19 277	3 295
50-99.9 GT	83	25 698	6 040	76	23 011	5 521
100-149.9 GT	34	15 608	4 300	34	15 417	4 292
150-249.9 GT	34	22 586	6 833	33	21 883	6 569
250-499.9 GT	40	34 174	13 396	42	35 986	14 214
500-999.9 GT	7	14 472	4 987	8	15 572	5 513
Vessels without engines	0	0	0	0	0	0
Total vessels	2 127	238 799	47 008	1 973	230 219	47 723
MAGP target as of 31 December 2001					261 856	51 159

The MAGP target included in the table above is the upper limit of the Swedish capacity measured in kW and GT according to the EU regulations. Excluding the vessels below 12 metres of length the replacement value is estimated to be EURO 200 million in 1999. As there are no ITQ (individual transferable quotas) nor are there any figures reflecting the scarcity of fishing opportunities. However, when new vessels are entering the fleet, the capacity is not allowed to increase. As a consequence, vessels being scrapped are often first sold to fishers in need to compensate their increased new tonnage by buying additional capacity. The licence authority (NBF) mostly approves this "trade".

Labour

The number of fishers constantly decreases in accordance with the following table:

Year	Number of fishers
1995	2 799
1996	2 862
1997	2 893
1998	2 801
1999	2 576
2000	2 335

Table 8. The age structure of fishers is as follows in number

	Classification of fishers by age (1999)		
	Under 25	25-54	Over 54
Kalmar	5	143	89
Gotland	3	71	31
Blekinge	7	182	98
Skaane	11	204	101
West Goetaland	52	566	326
Total Sweden	96	1 619	927

Table 9. The education level of the whole fishery sector is as follows in % (1996):

Region	No studies	Primary	Secondary	Further
Kalmar		68	27	5
Gotland		71	29	
Blekinge		60	33	7
Skaane		45	40	15
Goeteborg and Bohus		48	41	11
Swedish population		32	44	24

The figures are to be considered as full time equivalent (FTE). There are no figures for part-timers.

It can be noted that the age structure is rather normal for the Swedish workforce in general. The educational level is characterised by a lesser degree of formal education compared to the Swedish population as a whole.

The catching sector is normally very flexible in changing the target species. However there are naturally limitations to the flexibility. The smaller vessels can not in a profitable way fish for the pelagic species (herring, sprat and mackerel). It is also difficult for the bigger pelagic vessels to fish in a profitable way for cod in the Baltic Sea. The flexibility to move from an active fishery activity to another sector of the economy is not very high. Such a move presupposes that the vessel can be sold without losses and that there is a suitable alternative employment. As the crew size of the fishing vessels has been reduced due to technical progress, many fishers have however found employment in the merchant fleet or at the ferries. The uptake of new technology is normally very high and very fast and it seems that when the fleet is profitable the speed accelerates. Sweden has started a pilot project in order to collect economic data from the catching sector. It seems that the capacity development of the fleet can mostly be explained by economic factors.

In the EU the adopted plan to cut down the capacity is called MAGP (Multi-Annual Guidance Programme). For further information see the EU chapter.

UNITED KINGDOM

Summary

During 1998 and 1999 the United Kingdom (UK) Government sought to improve fisheries management while ensuring the sustainable exploitation of fish stocks. A system of fixed quota allocation was introduced from 1 January 1999, replacing arrangements under which allocations had been based on landings in the three years preceding any quota year.

The volume of total landings by UK vessels in domestic ports fell by 8% to 553 000 tonnes in 1998, worth GBP 484 million.

Legal and institutional framework

Responsibility for fisheries in the United Kingdom rests with the Minister for Agriculture Fisheries and Food and the Scottish Executive, the National Assembly for Wales and the Secretary of State for Northern Ireland. The Principal power governing the regulation of fisheries are set out in the Sea Fish (Conservation) Acts 1967 and 1992; the Sea Fisheries Act 1968; the Fishery Limits Act 1976; the Fisheries Act 1981; and the Sea Fisheries (Shellfish) Act 1967. Responsibility for these functions in relation to Scotland and Wales were transferred to Scottish Executive and National Assembly for Wales respectively by virtue of Scotland Act 1998, the Government of Wales Act 1998 and the National Assembly for Wales (Transfer of Functions) Order 1999.

Any person wishing to fish under the British Flag and against UK quotas may only do so with a fishing vessel, which is both registered and licenced by the UK authorities. In order to register a fishing vessel the owners must be resident in the UK or in the case of a company incorporated within the European Union, with a place of business in the United Kingdom. As a condition of registration all fishing vessels must be managed, controlled and directed from the UK. A restrictive licence scheme operates and no new licences are issued by the UK authorities. Anyone wishing to fish for profit must acquire a licence from an existing fishing vessel. From 1 January 1999 the owners of all vessels fishing against the UK's quotas have to maintain a genuine economic link with the UK. This may be achieved through landing quota catches into the UK, employing crew resident in the UK, or other measures sufficient to ensure that a satisfactory economic link is maintained.

In the UK over 95% of quotas in EU waters were allocated through Producer Organisations ("the sector"). Remaining quota was divided between the "non-sector" (vessels over ten metres in overall length but not members of a producer organisation) and vessels of ten metres and under. In 1998 and 1999 guaranteed minimum allocations continued to apply to a range of quota allocations for the non-sector and vessels of ten metres and under.

Capture fisheries

Employment and the structure and performance of the fleet

In 1998, 17 850 people were employed in the fisheries sector; 750 fewer than in 1997. This fall was mainly among full time fishers, where the number employed dropped by 540.

At the end of 1998, 7 639 vessels were in the UK (excluding the Isle of Man and Channel Islands) fishing fleet; 170 fewer than at the same time in 1997. However, the registered gross tonnage of the fleet

increased to 209 638 tonnes. The change in the structure of the fleet continued with smaller vessels leaving the fleet and larger vessels joining. The number and size of vessels less than 250 gross registered tonnes fell by 180 vessels and 6 850 tonnes respectively. But the number and size of vessels greater than 250 gross registered tonnes increased by ten vessels and 10 000 tonnes, respectively.

Landings

The volume of total landings by UK vessels in domestic ports fell by 8% to 553 000 tonnes, worth GBP 464 million.

Cod landings increased to GBP 80 million, remaining the most valuable component of domestic landings by UK vessels. Of the other main commercial finfish species the value of haddock landings increased from GBP 45 million to GBP 57 million; the value of mackerel landings rose from GBP 20 million to GBP 22 million; and the value of plaice landings fell from GBP 15 million to GBP 13 million. In volume terms haddock remained the most important species with landings unchanged from 1997 at 83 000 tonnes.

Mollusc and crustacea landings fell slightly to 124 000 tonnes in 1998. The value of landings rose to GBP 161 million. With landings of 29 000 tonnes worth GBP 57 million, Norway lobster was the most valuable species.

The volume of landings by foreign vessels into the UK rose by 16% to 61 000 tonnes in 1998. The total value of these landings rose 37% to GBP 59 million. The volume of landings by UK vessels into foreign ports increased by 30% to 371 000 tonnes while the value increased by 15% to GBP 177 million. In 1998, 27% of the UK catch by value and 40% by volume was landed into foreign ports.

Resource management

During 1998 and 1999 the Government continued to operate a restrictive licensing scheme in which licences were used to control the number of vessels fishing and stocks caught. Capacity reduction penalties were applied where licences were transferred or aggregated. These licence arrangements have contributed to achieving the UK's MAGP objectives. Additional licensing requirements were introduced in April 1998 for vessels over ten metres in overall length targeting pelagic stocks and in April 1999 for such vessels targeting scallops using mechanical dredging gear. During 1998 and 1999 a phased programme of action was introduced to link the registration and licensing of fishing vessels to the declaration of maximum continuous or permanently derated engine power of such vessels.

A consultation paper on the future management arrangements for the under ten metre fleet was issued in March 1999.

Assistance for capture fisheries

Government funding of marine fisheries research and development through MAFF (Ministry of Agriculture, Fisheries and Food) was GBP 4.1 million in 1998-1999. SERAD (Scottish Executive Rural Affairs Department) funding for 1998-1999 was GBP 1.0 million and funding from DARD (Department of Agriculture and Rural Development) was GBP 0.2 million. In addition, GBP 4.64 million and GBP 7.0 million was spent on fish stock assessments by MAFF and SERAD respectively, in 1998-1999.

Enforcement and control

The UK authorities continue to give high priority to fisheries control and enforcement and in 1999 spent some GBP 24 million on an integrated programme of aerial, surface and port surveillance. A number of measures were adopted to strengthen the effectiveness of enforcement activity. A system of designated ports was introduced in January 1999 for whitefish landings by UK vessels over 20 metres, with a minimum of four hours notice of landing having to be given where the catch is discharged at non-designated ports or outside specified times at designated ports. Fisheries Monitoring Centres were established in London, Edinburgh and Belfast to track the movements of vessels over 24 metres by

satellite. Guidance notes were issued to industry on changes to the EU's control regulation, in particular on the requirements for logbooks to be submitted for all trips undertaken vessels of ten metres and more and for details of species caught to be entered in logbooks and landing declarations.

Aquaculture

Production facilities

Aquaculture production in the UK is concentrated on Atlantic salmon, rainbow trout and mollusc shellfish, such as mussels and Pacific oysters. Pilot trials of farming non-salmonid finfish species, such as turbot, halibut and cod, have produced encouraging results. Production facilities changed little since 1997. Approximately 3 000 people are employed in the aquaculture sector.

Production volume and values

In 1998, the volume of aquaculture production increased by 9% over the previous year to reach 139 000 tonnes. Most of this increase was in salmon production and was due to the improved efficiency of existing production sites. The value at first sale of aquaculture products was GBP 289 million.

Policy development

During 1998 an outbreak of infectious salmon anaemia occurred in Scotland and appropriate control measures were implemented. Further efforts were made to investigate the defect fish and shellfish diseases in order to preserve UK's fish and shellfish status. Joint government/industry research continued to promote the sustainable development of the industry, including the evaluation of alternative species for cultivation, such as halibut, cod and scallops.

Environmental protection

Disposal of waste at sea in UK waters is subject to strict licensing controls under the Food and Environment Protection Act 1985. The Minister of Agriculture, Fisheries and Food is the licensing authority for disposal proposed in waters around the coast of England; similar powers are devolved to the Scottish Executive, National Assembly for Wales and the Secretary of State for Northern Ireland. It is the UK Government's policy not to permit disposal at sea of any waste if an alternative safe and practicable land-based method is available. All licence applications are carefully examined to assess, among other things, whether disposal at sea might interfere with other legitimate uses of the sea (including fishing). Licences are only granted after detailed scientific consideration and compliance with relevant international agreements. From 1999, the only type of waste that is routinely considered for disposal at sea is dredged material from ports and harbours.

The discharge of radioactive waste to the marine environment is also strictly controlled by national legislation. Sites are regularly inspected and authorisations reviewed to ensure that discharges are kept as low as is reasonably achievable.

Since the introduction of the Environment Act 1995, sea fisheries regulators have had the power to manage fisheries for environmental as well as for traditional fisheries management purposes.

No significant environmental issues arose in connection with aquaculture in 1998. Fish farm effluents are monitored by the Environment Agency which enforce strict discharge consents to protect the quality of effluents.

The Surface Waters (Shellfish)(Classification) Regulations 1997 transpose Directive 79/923/EEC into UK law. These regulations prescribe a system for classifying the quality of controlled coastal or brackish waters which need protection or improvement in order to support shellfish life and growth.

Processing, handling and distribution

During 1998 there was a slight increase in the total supply of fish available for domestic use. The majority of this increase was destined for the processing industry.

Government financial transfers

In 1999, total EU and government financial transfers associated with the Common Fisheries Policy and the United Kingdom's fishery policies were GBP 62.8 million – 2% less than in 1998.

Table 1. **Total EU and government financial expenditures associated with the Common Fisheries Policy and the UK's fishery policies, 1998 and 1999¹**

GBP million

Nature of transfer	1998		1999	
	UK contribution	EU contribution	UK contribution	EU contribution
MARINE CAPTURE FISHERIES TOTAL	46.63	11.6	44.7	11.6
(Percentage of Total Landed Value)	10.8%	2.2%	11.5%	3.2%
<i>Direct payments</i>				
Payments for the permanent withdrawal of fishing vessels	–	–	–	–
<i>Cost reducing transfers</i>				
Support for vessel modernisation ²	0.7	1.5	0.4	1.0
Support for vessel modernisation ³	0.8	0.5	0.4	0.5
Support for port facilities for fishers ⁴	0.1	0.4	0.4	1.0
Support to reduce restructuring costs ⁵	0.2	0.5	0.5	1.0
Support for Access to third country waters	–	–	–	–
<i>General services</i>				
Support for producers organisations				
Research	17.1	–	16.1	–
Management	–	–	–	–
Enforcement ¹²	23.0	3.2 ¹³	23.7	0.4 ¹³
Market intervention ⁶	–	2.3	–	2.3
Support for port facilities ⁷	4.2	–	1.2	–
AQUACULTURE TOTAL	4.9	0.8	5.4	1.1
<i>Cost reducing transfers</i>				
Support for aquaculture ⁸	0.3	0.8	0.3	1.1
<i>General services</i>				
Aquaculture research and development ⁸	4.6	–	5.1	–
MARKETING AND PROCESSING				
Support for processing and marketing ¹⁰	0.5	3.0	1.0	5.0
Support for promotion ¹¹	0.03	0.2	1.0	0.4
GRAND TOTAL	51.53	12.4	50.1	12.7

– Zero

- This table shows the main elements of support (combining the EU and UK contributions), and is not necessarily comprehensive.
- EU and national schemes that provide funds to meet the costs of safety equipment necessary for a vessel to obtain a safety certificate.
- A vessel modernisation scheme that operates in Northern Ireland and parts of Scotland. Vessels may be modernised provided such modernisation does not result in an increase in fishing capacity or fishing effort.
- EU scheme to improve facilities for fishers at ports.
- EU PESCA scheme – designed to assist restructuring of the fisheries sector and to encourage the diversification of economic activities in areas dependent on fishing.
- Represents money spent purchasing fish and fish products to support prices at fish auctions (EC withdrawal scheme).
- UK scheme for the construction, improvement and repair of fishing harbours.
- EU scheme for investments in fish farming and protection of enclosed coastal waters. The scheme presently only operates in Scotland, Wales and Northern Ireland.
- Includes 20% of GBP 10 million budget of a five year Government/industry research programme.
- EU scheme for processing and marketing of fisheries and aquaculture products.
- EU scheme for promoting new market outlets for sea fish and fresh water aquaculture products.
- Excluding Sea Fishery Committee expenditure and EU enforcement aid.
- Including EU enforcement aid paid to the Royal Navy for Fishery Protection Vessel refits.

Structural adjustment

The EU's Financial Instrument for Fisheries Guidance (FIFG) maintains CFP funding for structural measures covering the industry as a whole. In June 1995 the Fisheries and Aquaculture Structures (Grants) Regulations were introduced providing for national back-up aid to enable the industry to obtain funding for measures set out in the UK's Sectoral plan. This indicated that aid would be available for vessel modernisation (mainly safety work), decommissioning, constructing port facilities, developing aquaculture, building artificial reefs, promoting fish consumption and assisting marketing and processing. The regulations provide for the implementation of the UK's programme for implementing PESCO which was adopted by the Commission on 20 June 1995.

The Fisheries and Aquaculture Structures (Grants) Regulations (NI) 1995 provide national back up aid in Northern Ireland to fund measures in the Northern Ireland Single Programming Document. Under this regulation, grants for marketing, processing and aquaculture have been approved. Grants also have been made available in Scotland for vessel modernisation, development of aquaculture, and for assisting marketing and processing.

Assistance for aquaculture

Government funding for aquaculture research and development through MAFF was around GBP 1.9 million in 1998, excluding the Aquaculture LINK programme. SERAD research and development funding for 1998 was GBP 538 000 and funding from DARD was GBP 8 000. In addition there was ongoing funding of a five year, GBP 10 million Aquaculture LINK programme for collaborative research between Government and Industry on fish and shellfish farming.

Markets and trade

Domestic market

The results of the National Food Survey show that household purchases of fish and fish products fell to 7.4 kg per capita in 1999 the value of those purchases rose to GBP 42.02 per person. In value terms fish fell to 5.5% of total UK food consumption in the home.

The Fish Health Regulations 1997, which apply to Great Britain, came into effect on 21 August 1997. They consolidate all of the amendments made previously to the Fish Health Regulations 1992 and give legal force to further changes to the EC's fish and shellfish health regime. The regulations also implement certain provisions of Council Directive 95/70/EC, which sets out Community-wide rules for dealing with outbreaks of the most serious diseases affecting bivalve molluscs. The new measures:

1. Specify that several additional mollusc diseases, currently exotic to UK, are notifiable.
2. Require registered shellfish farmers to keep records of observed abnormal mortalities in shellfish stocks.
3. Empower Fisheries Department veterinary inspectors to: investigate suspected outbreaks of mollusc diseases; carry out sampling and testing; and if needed take disease containment action.

In the UK withdrawals from the market under EC support arrangements fell from 12 125 tonnes in 1997 to 4 179 tonnes in 1998, but increased to 4 620 tonnes in 1999.

Sanitary regulations

EC legislation sets minimum hygiene standards for the production and marketing of fish and shellfish. These standards are transposed into UK legislation. Live bivalve molluscs can be marketed only if they come from classified harvesting areas. The areas are classified according to the microbiological quality of shellfish samples taken from the area.

Outlook

Review of the marketing regime

In the EU, the Fisheries Council agreed a marketing regime for fisheries products. Council Regulation 104/2000 of 17 December 1999, reforms the fisheries marketing regime so that it is more able to match supply with the requirements of the market. In particular, the Regulation enhances the role and structure of producers organisation so that they can be more active in the market, while providing greater access to third country raw materials, by a relaxation of tariffs. The regulation enters into force with effect from 1 January 2001.

ICELAND

Summary

The total Icelandic catch was 1.7 million tonnes of fish, shellfish and crustacean in both 1998 and 1999 – a decrease of 23% from 1997 to 1998. Year 1997 was in historical aspects the top catch year in Icelandic history. The decrease was primarily attributable to a decreased pelagic catch. The total first-hand value of the catch was ISK 59.3 billion (USD 834 million) for 1998 and 59.8 billion (USD 826 million) for year 1999 – an increase of 5% from 1997 to 1998 and an increase of 1% from 1998 to 1999.

In 1998, the total volume of marine products exported was 718 000 tonnes – a decrease of 11% from 1997. The value of exported marine products increased by 5% from 1997 to 1998 and amounted to ISK 101.8 billion (USD 1.4 billion). The export value in 1999 was ISK 97.7 billion (USD 1.3 billion), a decrease of 4% over 1998. The total export value of catch outside Iceland's waters was in 1998 about 8% of the value of export production, compared with 6% in 1997. In 1999 the total export value of catch outside Iceland's waters was about 9% of export production.

According to the National Economic Institute, regular operational losses of fishing undertakings in 1997 were 0.4% of income and in year 1998, 1.4%. If irregular net income is included, the profit was 6.1% of income in 1997 and 2.5% of income in 1998.

Legal and institutional framework

The Fisheries Management Act of 1990 is the cornerstone of the present fisheries management system although it has undergone a series of later adjustments. The Act establishes the system of individual transferable quotas (ITQs) that are allocated to fishing vessels was established for most of the commercial fisheries. By the 1990 Act the fishing year was set from September 1 to 31 August in the following year. This was an effort to channel fishing away from the summer months, when quality suffers more quickly and regular factory workers are on vacation. The Minister of Fisheries determines the Total Allowable Catch (TAC) for individual species annually on the basis of scientific advice from the Icelandic Marine Research Institute (MRI). Some 98% of catch landed are subject to ITQs. Cod is the most important species in Icelandic waters and a specific catch rule has been used to determine the TAC since 1995. Under this rule, 25% of the fishable stock (fish aged four years and over) may be caught annually.

In addition to the TACs, various rules encourage the optimal exploitation of fishing stocks. These include closures of fishing areas, division of fishing areas according to the type of vessel and fishing gear, and measures to encourage introduction of fishing gear with increased selectivity. Foreign ownership of quotas is prohibited and, apart from those authorised under bilateral fishing agreements, no vessel owned or operated by a foreign party may engage in fishing or fish processing.

Fishing by small crafts (six GRT or less) is still partly effort based. Four different management options apply to the large number of these small boats. Their allocated share in the TAC for cod is 13.75%.

Capture fisheries

Landings

The total catch was in both 1998 and 1999 1.7 million tonnes but was in 1997 2.2 million tonnes, which was the top catch year in Icelandic history. The decrease was almost exclusively due to a smaller pelagic catch. Catches of demersal species increased by 9% over 1997.

Catches outside Icelandic waters were substantially lower in 1998 compared with 1997. Icelandic demersal catches in the Barents Sea decreased by 76% to only 1 500 tonnes. Shrimp catches in the Flemish Cap banks were 6 600 tonnes in 1998 and growing to 9 100 tonnes in 1999. Catches of oceanic redfish increased by 20% over 1998 to 46 200 tonnes but in 1999 catches dropped again by 7% to 43 000 tonnes. The Atlantico-Scandic herring (Norwegian Spring Spawning herring) spawning stock has been growing and in 1994, 21 000 tonnes were caught, the first time in 27 years. In 1996 the catches were 220 000 tonnes – 33% higher than in 1996, but in 1998 the catches were 200 100 tonnes and in 1999 the catches were 203 500 tonnes. International catches of blue whiting in the NE-Atlantic were over 1 million tonnes in 1998. Landings from Icelandic waters have been very low, *e.g.* only 500 tonnes in 1996, but in 1997 the catch was 11 000 tonnes, in 1998 69 000 tonnes and in 1999, 160 400 tonnes.

Table 1. 1997, 1998 and 1999 catches – all banks

	Catch (000 tonnes)			Percentage change	
	1997	1998	1999	1997-98	1998-99
Cod	209	243	260	16.3	7.0
Haddock	43	41	45	-4.7	9.8
Saithe	37	31	31	-16.2	0.0
Redfish ¹	112	116	110	3.6	-5.2
Herring	291	276	297	-5.2	7.6
Capelin	1 319	750	704	-43.1	-6.1
Crustacea	84	64	44	-23.8	-31.3
Other	105	157	246	49.5	56.7
Total	2 200	1 678	1 737	-23.7	3.5

1. Oceanic redfish included.

Employment

There has been a reduction in employment in fishing and fish processing since 1997. In 1997 fisheries employed 10.0% of the workforce; in 1998 it employed 9.2%. The number of man-years in harvesting and processing is provided in Table 2.

Table 2. Man-years in harvesting and processing

	1997	Est. 1998
Harvesting	5 967	5 667
Processing	7 598	7 573

Table 3 gives the gender breakdown of employment in harvesting and processing.

Structure and performance of the fleet

The number of fishing vessels fell to 1 644 in 1998 and to 1 604 in 1999, from 1 993 in 1996 – an 18% decrease from 1997 to 1998. In both years decked vessels were 795 but the number of active small

Table 3. **Employed persons in harvesting and processing**

	1997	1998
<i>Employed,¹ total</i>		
Harvesting	6 300	6 200
Processing	7 900	7 400
<i>Males</i>		
Harvesting	5 900	5 600
Processing	3 800	3 500
<i>Females</i>		
Harvesting	400	600
Processing	4 100	3 900

1. Employed: Persons are classified as employed if they worked one hour or more in the reference week or were temporarily absent from their work during that week (ILO definition).

Source: Statistics Iceland, labour force survey.

boats was 1 644 in 1998 and 1 604 in 1999. Total capacity of decked vessels, as measure by gross registered tonnage, was 120 742 GRT in 1998, a 3% decrease over 1997.

Status of fish stocks

- Cod

Cod year classes between 1985-1996, with the exception of 1993, have been below the long-term average in terms of numbers. The 1993 year class is estimated to have been at the average. The 1997 year class is estimated at about average size and although the size of the 1998 year class is not well estimated at present, the 1998 0-group index is among the highest observed. The success achieved in rebuilding the cod stock, especially with regard to sexually mature fish, is primarily due to the setting of conservative TACs in recent years. The health of the stock is good; the probability of collapse in the long term is estimated to be less than 1%.

- Haddock

For several years the fishing mortality has been high but now signs from early 1999 indicate that the mortality is decreasing. The MRI recommendation of TAC of 35 000 tonnes for the 1999-2000 fishing year was accepted by the government as was the MRI advice for the fishing year 1998-1999 for the same level.

- Saithe

Harvesting of saithe is no longer economically viable and the stock is smaller than the size that will produce the long-run maximum sustainable yield. The TAC for 1998-1999 was set in line with the MRI recommendation, at 30 000 tonnes. The MRI recommended TAC of 25 000 tonnes for the 1999-2000 fishing year but this was not heeded by the Government and the TAC remained at the 1998-1999 level.

- Redfish

The effort and CPUE in exploitation of redfish stocks have declined during the past decade, but CPUE has remained stable at a low level in the past years. MRI recommendations for TACs have reflected this and TACs have been set at the recommended levels. Although the stock size is considered to be small, a groundfish survey indicates increasing recruitment in the last few years.

- Capelin

The total capelin catch during the 1998-1999 fishing season (July-March) was 1 100 000 tonnes of a TAC of 1 200 000 tonnes. The Icelandic catch was about 900 000 tonnes. The stock is inside safe biological limits.

- Herring

The 1998 spawning stock for herring (the Icelandic summer spawning herring) was about 495 000 tonnes in size – an increase from 435 000 over 1997. It was expected that the size of the 1999 spawning stock would be similar.

Management of commercial fisheries

Management instruments

In August 1998 a new regulation was adopted providing use of sorting grids in fishing by trawl and Danish seine on a much larger fishing region than before.

Changes were made in the Fisheries Management Act in January 1999 due to a Supreme Court Ruling that it is contrary to the Icelandic constitution to limit access to fishing licences. Before, new vessels could not get fishing licences unless other vessels of similar sizes with fishing licences were taken out of action. Now all Icelandic vessels have the right to get fishing permits.

At the beginning of the fishing year, which commenced on 1 September 1998, the TAC for cod was increased by 32 000 tonnes over the previous year. The fishing year, which commenced on 1 September 1999, the TAC for cod was set at the same level as in the previous year according to the cod rule. This result was in line with the expectations of MRI scientists. Lemon sole was made subject to TACs for the first time 1999. The allocation of ITQs for lemon sole to individual vessels is based on catch history for the period June 1996 to June 1999. Table 4 shows TACs for 1997-1998, 1998-1999 and 1999-2000, together with MRI proposals for the 1999-2000 TACs.

Access

At the beginning of both 1998 and 1999 agreements were reached between Iceland and the Faroe Islands on reciprocal access to fish in each other's zone. Faroese demersal fishing rights in Icelandic waters totalled 5 500 tonnes in 1998 and 5 600 tonnes in 1999, a change from 5 000 tonnes in 1996. Reciprocal rights to pelagic fishing in each other's fisheries jurisdiction are unchanged from 1996 except for mackerel fishing in the Faroese EEZ which was increased by 300 tonnes.

Management of recreational fisheries

Leisure fishing for personal consumption is authorised without special permit. Such fishing may only be pursued with handline without automatic jigger. Catch may not be sold nor used for financial gain by any other means. The Minister may each year decide that at a specific number of public ocean rod and reel fishing derbies the catch shall not be included in the catch quotas and the fishing days not included in fishing days, provided the catch is not used for financial gain but only to pay for the cost of the competition. Multilateral agreements

In an agreement between Iceland, Norway, the Faroe Islands, Russia and the European Union (EU) on the fishing of Atlantico-Scandic herring the TAC in 1998 and 1999 was set 1 289 000 tonnes in both years. Iceland's share is 202 000 tonnes. In October 1999 an agreement was reached for fishing in 2000. The TAC was reduced by approximately 50 000 tonnes over 1999. Iceland's share is 194 230 tonnes. For the first time in international conventions a long-term management plan that should be used to decide the TAC is included in the agreement. From the year 2001 it was decided to keep the spawning stock biomass over 2.5 million tonnes by using a fish mortality rate of 0.125.

In April 1999 an agreement was reached between Iceland, Norway and Russia regarding Icelandic cod fishing in the Barents Sea. In 1999 Iceland is allowed to fish 8 900 tonnes, which is 1.86% of total TAC for cod in the Barents Sea. Allowance for 30% by-catch is made in the agreement. Norway is allowed to fish 500 tonnes of ling, tusk and blue ling and 17 000 tonnes of capelin in the Icelandic EEZ. It is included in the agreement that if the total TAC for cod in the Barents Sea is less than 350 000 tonnes, the agreement of fishing in each others EEZs will expire.

Table 4. **Total Allowable Catches (TACs) for 1997-1998, 1998-1999 and 1999-2000, marine research institute recommendations**

Tonnes				
Species	National TAC 1997-1998	National TAC 1998-1999	Proposals of the MRI 1999-2000	National TAC 1999-2000
Cod	218 000 ¹	250 000 ¹	247 000 ¹	250 000 ¹
Haddock	45 000	35 000	35 000	35 000
Saithe	30 000	30 000	25 000	30 000
Redfish	65 000 ²	65 000 ²	60 000 ²	60 000 ²
Greenland halibut	10 000	10 000	10 000	10 000
Plaice	9 000	7 000	3 000	4 000
Dab	7 000	7 000	7 000	7 000
Wolffish	1 000	13 000	13 000	13 000
Witch	1 100	1 100	1 100	1 100
Long rough dab	5 000	5 000	5 000	5 000
Icelandic summer-spawning herring	100 000	90 000	100 000	100 000
Capelin	1 265 000	1 200 000	1 040 000 ³	89 500
Offshore shrimp	75 000	40 000 ⁴	20 000 ³	20 000 ³
Nephrops	1 200	1 200	1 200	1 200
Inshore shrimp	6 650	6 920	3 300 ³	3 250
Icelandic scallop	8 000	9 800	9 800	9 800

1. Calculated according to catch rule for cod.

2. National TAC applies to both golden redfish and deep-sea *S. mentella*.

3. Provisional TAC.

4. Initial recommendation. Initial TAC.

Aquaculture

Total production of Icelandic aquaculture in 1998 was some 3 900 tonnes. The important species were:

- Salmon 2 800 tonnes.
- Arctic char 730 tonnes.
- Rainbow trout 370 tonnes.

There was a substantial decrease in production of salmon from ocean ranching from 1996 to 1997. This trend has continued as only 35 tonnes were retrieved in 1998.

In 1997, 44 production facilities were licenced in Iceland including four experimental facilities and three facilities with ocean ranching of salmon. In 1998 the production facilities numbered 48, including four experimental facilities and two ocean ranching of salmon. Some 150 full-time jobs are provided in the sector.

The total value of exported aquaculture products was in 1998 ISK 880 million and the total value of domestic consumption was ISK 380 million. The gross value was similar to the previous year.

Government financial support

Total transfers

This section describes transfers to the harvesting and fish processing sectors in Iceland. The aquaculture sector is minor in Iceland. No direct transfers are available to fishers or the processing sector. The Government funds general services such as the Marine Research Institute and the Directorate of Fisheries. The Government also funds the Coast Guard and it is estimated that 75% of its total cost is for fisheries. Total transfers associated with Iceland's fishery policies amounted to ISK 1 463 million in 1998 (USD 20.6 million) and ISK 1 362 million in 1997 (USD 19.2 million). These figures do not include tax deductions for fishers. Transfers to the fisheries and processing sectors are summarised in Table 5.

No national government grants are provided to marine product processing enterprises. However, the Ministry of Fisheries, in co-operation with associations of employers and employees in fish

processing, has supported occupational training for workers in fish processing. In 1998, the Ministry allocated a contribution of ISK 11.8 million (USD 0.2 million) to this project.

The sectors are paying for some services they receive from *e.g.* Directorate of Fisheries. The harvesting sector is also paying a surveillance fee to the Directorate. The fee is an annual levy on ITQ and paid by ITQ owners. In Table 5 the financial transfer to the Directorate of Fisheries is the amount that the government is paying after deducting the Directorate's special incomes. ITQs owners are also paying levy to the Development Fund. The Fund is used to finance loans for the harvesting sector *e.g.* buy-back programmes of vessels (which are no longer relevant) and to finance the building of a new research vessel for MRI. In 1998 the ITQ owners paid some ISK 600 million to the Fund and vessel owners paid some ISK 80 millions. Vessels owners are paying according to the size of the vessel.

Table 5. **Government financial transfers associated with fishery policies**

ISK million

Type of transfer	1997	1998
Revenue enhancing transfers (from consumers) – market price support	0	0
Revenue enhancing transfers (from government budget) – direct payments	0	0
Cost reducing transfers		
Income tax deduction for fishers ¹	1.274	1.194
Training of fish processing workers	10	12
General services		
Directorate of fisheries ²	146	114
Marine research institute	670	696
Coast guard ³	536	641

1. Is available to all persons working on sea-going vessels. About 95% are fishers.

2. For harvesting and processing sectors.

3. It is estimated that 75% of total cost is for fisheries.

Social assistance

No social assistance is provided to fishermen or fish processing workers in Iceland. Nevertheless, fishers enjoy a special income tax deduction linked to the number of days spent at sea.

Processing, handling and distribution

In 1998, for the first time since freezing on-board started, on-shore freezing of demersal species increased more than freezing on-board. It increased by 8.9%, in volume terms, from 1997 but freezing on-board increased only 0.1%. From 1998 to 1999 there was a slight decline in both on-shore and on-board freezing. Salting of demersal species increased by 2% from 1997 to 1998 and again by 2% from 1998 to 1999. Exports of chilled fish decreased by about 17% from 1997 to 1998 continuing a trend, which has been evident since 1990. But in 1999 this trend changed, export of chilled fish increased by about 14%. Exports of fresh fish fillets have increased last year and from 1997 to 1998 it increased by about 14% and again by 26% over 1998. Freezing of shrimp at sea contracted by 44% and 46% in 1998 and 1999 respectively. Shrimp freezing on-shore decreased less or 10% and 8% 1998 and 1999 respectively. Export of frozen herring declined in 1998 by almost 70% from 1997. Export of frozen capelin declined in 1999 by almost 58% from 1998.

Markets and trade

Volumes and values

The total quantity of marine products exported in 1998 was 718 000 tonnes, with a value of about ISK 101.8 billion (USD 1.4 billion) – a 5% increase over 1997. In 1999 the estimated export value of marine products was about ISK 97.7 billion (USD 1.3 billion). The Value of fishmeal and oil exports declined

from 1998 to 1999 by 34%. In 1997 and 1998 the price of fishmeal and oil were high because of little exports from South-America.

Outlook

In January 2000 the minister of fisheries decided to change the TAC for plaice for the ongoing fishing year. Due to a bad condition of the stock it was decided that the TAC for plaice this fishing year should be 3 000 tonnes, a decline from 7 000 tonnes from the previous fishing year. However, this decision has created problems because of by-catch of plaice. MRI has calculated that by-catch of plaice is 3 500 – 4 100 tonnes. Because of this the TAC was changed to 4 000 tonnes. It is estimated that by changing the TAC to 4 000 tonnes the spawning stock will grow about 25% from 1999 to 2000.

In 1998 the Supreme Court of Iceland ruled that it is contrary to the Icelandic constitution to limit access to fishing licences. This raised some questions about the legal status of the quota system itself. In April 2000 the Supreme Court ruled against these questions and it was recognised that the authorities have the legal right to limit access in commercial species by quota.

In May 2000 a new research vessel for MRI arrived in Iceland.

JAPAN

Summary

In January 1999, a new fisheries agreement between Japan and the Republic of Korea entered into force. The conservation and control system for this fisheries agreement has been arranged in accordance with the content of "United Nations Convention on the Law of the Sea".

In application of the "International plan of action for the management of fishing capacity" adopted by the FAO Fisheries Committee in February 1999, Japan scrapped 132 tuna longline fishing vessels or about 20% of the fleet segment.

Many fish products provided from the flag of convenience vessels etc. are imported into Japan. This situation encourages irregular fishing operations. In order to prevent this, on the basis of the "Law Concerning Special Measures to Strengthen Conservation and Management of Tuna Resources", the Japanese Government has imposed the obligation that the merchant importing the tuna must submit a report indicating the fishing vessel name etc. Furthermore, the Japanese Government strengthened measures for the flag of convenience vessels by appealing to the tuna merchants to self-restrain the imports of fish products from flag of convenience vessels.

Fisheries management

Japan manages its fisheries through effort regulation; for example, through the number of permissions issued and restrictions on fishing methods because of the many kind of fishing method and fish subject to harvest. The principal laws are "The Fisheries Law", "Living Aquatic Resources Protection Law" and "Law Concerning Conservation and Management of Marine Life Resources".

The regulation of fishing effort is conducted by central and prefecture government in terms of fishing method. The TAC system assigns TAC allocation to each fishery separately, not to individual fishers. Seven fish species are subject to the TAC system covering about 20% of the total fishing in Japan in 1998.

Operations by foreign fishing vessels are prohibited except when based on bilateral fisheries agreement.

Marine fishing

The quantity of fisheries production (including marine fisheries, inland-water fisheries, aquaculture) has decreased since 1989. The production in 1997 was 7 411 000 tonnes, and in 1998 it decreased to 6 684 000 tonnes (down 10% from the previous year).

The value of fisheries production in 1997 increased to JPY 2 223 billion, up 1% from the previous year, but decreased to JPY 2 029 billion in 1998, or down 9% on 1997.

The employment situation

Due to the severe situation in the fishing industry the number of fishers has declined in recent years. Also, the ageing problem of fishers has become more problematic. The number of fishers (including aquaculture) in 1998 was 277 000 less than five years ago (special surveys are carried out only every five years). The proportion of 60+ years old increased to 42% of the total, an increase of eight percentage points

from the previous survey. Also the number of persons engaged in fisheries processing decreased 205 000, or 7% down compared to five years ago.

Fishing fleet

In 1998 the number of powered marine fishing vessels stood at 236 000, down 12% compared to five years ago. Small fishing vessels, less than ten tonnes, make up 95% of the fleet with a total of 225 000 in this vessel group.

Resource condition

The resource condition of the main stocks of fish has been monitored during the past 20 years. The resource condition for horse mackerel, skipjack, chum salmon etc. are good, but the resources level of many fish stocks such as sardine, mackerel, saury and many bottom fishes are poor. Furthermore, many stocks have been stable or decreasing.

Access agreements

The agreements permitting Japan's vessels access to fishing in foreign waters are as follows. Russia (1994), Canada (1978), China (1975), Republic of Korea (1965, the new agreement started from 1999), Kiribati (1978), Solomon Islands (1978), Marshall Islands (1981), Micronesia (1992), Palau (1992), Tuvalu (1986), Nauru (1994), France (1979), South Africa (1977), Australia (1979), Morocco (1985), Senegal (1991), Seychelles (1988), Sierra Leone (1990), Gambia (1992), Mauritania (1995), Guinea Bissau (1993), Cape Verde (1996), Madagascar (1997), Mozambique (1997), Fiji (1998). Some arrangements are concluded as Government to Government arrangements others are concluded between Japanese private sector and foreign Governments.

Among them, the agreements with Russia, China, Korea are mutual fishing access agreements.

A new agreement entered into force in January 1999 with Korea, and the scheme for the conservation and management of fisheries resources has been set up in accordance with "United Nations Convention on the Law of the Sea". As a result, Japanese and Korean fishers, who are provided with permission and quota, conduct fisheries operations in each country's water within the restriction.

With the exception of the agreements with Russia, Canada, China and Korea, the agreements are for access of tuna fishing vessels. The conditions of the agreements vary.

Control of recreational fishery

Based on articles of "The Fisheries Law" and "Living Aquatic Resources Protection Law" the prefecture governors issue regulations for the control of recreational fishing. Fishing gear and method used by recreational fishers are regulated.

The catch by recreational fishing is unclear. However, there are cases where the catch by recreational fishing is more than that of commercial fisheries.

The number of persons who engage in recreational fishing in the sea has reached 39 million man-years (1998). As recreational fishing and fishing industry use the same waters, many user conflicts occur. These conflicts concern in particular issues of navigation and moorage, etc., between commercial fishing vessels and recreational fishery ships, etc.

In order to resolve conflicts, each prefecture takes measures. For example, prefectures may host conferences on marine utilisation in order to promote rule making for the marine area.

Surveillance and regulation

One more species has been added to the TAC system since 1998, which now includes seven species. In the application of the TAC system in Japan, compulsory measures of the law have not yet been applied. However, when the new fisheries agreements between Japan and Korea, and Japan and

China enter into force, Japan implements fisheries resource management measures in its EEZ in accordance with the “United Nations Convention on the Law of the Sea” and compulsory measures of the law applies. Japan has established a system to monitor the quantity of fish being taken.

International conservation agreements

Japan is a member of ICCAT, IATTC, CCSBT, IOTC etc. – each an international framework for the conservation and management of particular fish stocks.

The government of Japan participated in the “Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific” and proceeded with establishing a framework for the management and conservation of tuna and tuna-like species. Also, regarding the north Pacific, Japan participates in the “Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean” and carries out resource evaluation, etc., of tuna and like species in this sea area.

Aquaculture

Change of policy

In the aquaculture sector, the environmental deterioration of the aquaculture grounds occurs due to excessive stocking intensity. Also, the possibility that diseases are brought from foreign countries is increasing with the increasing import of seed of yellowtail and similar species, *e.g.* “kanpachi”.

In order to resolve these problems, the “Sustainable Aquaculture Production Law” was established in May 1999. This law provides a framework for a secure and sustainable aquaculture. The law includes systems for planning and improvement of aquaculture grounds to maintain and improve the aquaculture environment and measures for the prevention of specific fish diseases.

The number of enterprises in marine aquaculture has decreased to 28 000 establishments corresponding to a 16% decrease compared with five years ago.

Production

Table 1. **Aquaculture industry profile**

Type of enterprise	Current number of enterprises
Nori production (a kind of seaweed)	8 000
Yesso Scallop production	4 000
Oyster production	3 000
<i>wakame</i> (a kind of seaweed) production	3 000
Pearls	2 000

Also, the number of enterprises of inland-water aquaculture decreased to 6 000, a 21% decrease compared with five years ago.

The amount and quantity of aquaculture production (mainly marine aquaculture) has increased steadily; due to increasing consumer demand for high valued fish species. However, the production is limited by availability of suitable production sites.

The value of aquaculture production is JPY 624 billion (amount of marine aquaculture is JPY 546 billion and inland-water is JPY 78 billion), more than 8% down the previous year. However aquaculture contributed 31% of the total fisheries production in Japan.

The quantity of aquaculture produced decreased to 1 291 000 tonnes (quantity of marine aquaculture is 1 227 000 tonnes and inland-water is 64 000 tonnes), 4% down from the previous year (19% of the total quantity of fisheries production in Japan).

Fisheries and environment

Marine ecosystem

Seaweed land and tidal land function as a purification of water quality, and as a place of growth and spawning. Also the beach and reef, etc., is the habitat and growth area of marine species.

In the past, the natural condition of the seashore (seaweed land, tidal land, sandy beach) deteriorated sharply through reclamation for the development of industrial sites, etc. The degree of the deterioration has continued albeit slowed down. To resolve this problem, the "Environmental Assessment Law" was enacted in 1999 in order to ensure proper consideration of the environment in decision making for development.

The possibility that chemical substances in the marine environment are affecting humans and the ecosystem is taken seriously. It is reported that organic tin affects the genital organs of conch. Additional effects are possible. However, further inquiries (kind of substances, actual effect on the ecosystem, the mechanism of disturbance) are needed. From 1999, the government of Japan started surveys on the influence on aquatic animals.

Effect of the environment on aquaculture

In aquaculture, the environmental side effects have worsened by the over-population in aquaculture sites and over-feeding in order to increase the production. In turn this causes fish disease. In 1999, the "Aquaculture Security Law" (see above mentioned) was established in order to deal with this situation.

Financial support

The government of Japan expended JPY 321 billion in the fiscal year 1997 and JPY 294 billion in fiscal year 1998 on financial transfers. The details are as follows:

Table 2. Government financial transfers

	Unit: million yen	
	1997	1998
Marine capture fisheries	314 832	288 571
Direct payments	3 800	3 200
Payment for fleet reduction		
Cost reducing transfers	7 111	5 797
Support for introduction of vessels and gear		
General Services	303 921	279 574
Resource management costs, including		
– Support for strengthen community-based fisheries management		
– Surveillance and enforcement		
– Support for the improvement of national and prefecture Fish		
Farming centres/release of seedlings		
Support for fisheries facilities and infrastructure, enhancement of fishery communities environment, including		
– Support for construction of fishing ports		
– Support for establishing artificial reefs		
Research and development of fishery technologies		
Research on deep-sea fisheries resources		
Promotion of international fisheries co-operation		
Cost Recovery Charges	0	0

Table 2. **Government financial transfers** (cont.)

	Unit: million yen	
	1997	1998
Aquaculture	1 395	1 119
Direct payments	0	0
Cost Reducing Transfers	0	0
General Services	1 395	1 119
Advancement		
Prevention of epidemics		
Cost Recovery Charges	0	0
Marketing and Processing	4 579	4 391
Direct payments	0	0
Cost Reducing Transfers	87	70
Support for management of processing enterprises		
General Services	4 492	4 321
Research and development of fishery technologies		
Advancement of distribution, processing and consumption		
Cost Recovery Charges	0	0
GRAND TOTAL	320 806	294 081

Philosophy of expenditure

Support for the market prices

There are no market price support payments to marine products. The average customs tariff of the fishery products is 4.1%.

Direct payments

There are no direct payments to the fishermen, aquaculture enterprises and processors, except for support for vessel reduction. This transfer is contributing to the structural adjustment of the fishing industry.

Cost reducing

Low interest loans (in order to introduce fishing vessel and gear, etc.) are available. Loan guarantees and insurance schemes are available so that fishers are able to receive necessary funding smoothly.

General services

Financial transfers contributing to the resources management in the EEZ and to secure the operation of fishing vessels and enforcement are in place. These transfers are contributing to the revitalisation of the fishing communities.

Financial transfers are available for:

1. Support to the self-management of resources by fishers.
2. Management and enforcement.
3. Hatchery operation and fry release.
4. Improvement of the environment of fisheries communities, and fisheries infrastructure including repair of fishing port and construction of artificial reefs.
5. Research and development of fisheries technology.
6. International co-operation.

Social support

The unemployment insurance and pension system for the fishing industry is almost the same as in other industries. Exceptionally, fishers who lose their job due to restructuring receive a special allowance in order to promote transfers to new jobs and advice for finding employment, in addition to the standard unemployment allowance.

Structure adjustment

Restructuring of the fishing industry is carried out through vessel reductions and downsizing of fishing vessels in order to strengthen the profitability of fishing enterprises (improvement of profit per enterprise by the reduction of the total fishing effort).

In accordance with the "International plan of action for the management of fishing capacity" adopted in the Fisheries Committee of FAO, in February 1999, Japan scrapped 132 tuna longline vessels corresponding to about 20% of the vessels in this fleet segment (the financial transfer was expended in fiscal year 1998).

Post-harvesting policies

The surveillance of the bacteria number, anti-bacteria substance and environmental pollutants in food and the proper utilisation of food additives are conducted by inspectors of food hygiene. Self-governing bodies appoint these at each stage of wholesale market, cold storehouse, retail store, etc., on the basis of the "Food Hygiene Law." All the marine products (domestic products or imported products) are subject to surveillance.

Recently, mainly large fish processors have started to introduce the HACCP system for quality and sanitation control purposes. It is necessary for these enterprises to station quality and sanitation control experts. Furthermore, it is important for the enterprises to invest in the facilities. These factors are the problem for small and medium sized processors to introduce the HACCP system. To resolve these problems, the Government introduced loans for the introduction of the HACCP system and support projects to make manuals of quality management of HACCP.

All food including seafood shall display the origin, etc., introduced by the "Law Regarding the Adjustment of the Standardisation and Quality Display for the Agriculture and Forestry Goods", which was revised in 1999.

Processing

The principal marketing channel for fisheries products, is as follows: after landing, price setting and classification according to utilisation and transportation to the wholesale market in producing area, the fish is provided to consumers through the wholesale market in consuming area. The number of wholesale markets authorised by governor of prefecture based on "Wholesale Market Law" that deal with fisheries products is 747 in 1999.

In recent years, imports and direct purchase from the wholesale markets in producing area by retailers (*e.g.* supermarket and restaurant chain) have increased.

The Government of Japan supports the improvement of market facilities. A plan to unify local wholesale markets (which occupy 93% of total number of wholesale markets) for a smoother and more effective distribution of fisheries products is in place.

The number of fisheries processors has decreased recently with a total of 15 000 in 1998, the same as the previous year. Small-scale operators, which employ less than 20 people, account for 74% of the total number of processors.

Market and trade

Domestic consumption

In Japan, the demand for edible fisheries products had increased due to increasing income. Total demand reached 8 000 000 tonnes to 9 000 000 tonnes. But the supply of the fisheries products decreased to 8 142 000 tonnes in 1998, down 2.8% from the previous three years.

On the other hand, the demand for non-edible fisheries products which topped in 1989 at 4 436 000 tonnes has been decreasing since then. The demand reached 2 610 000 tonnes in 1998, down 12.7% from the previous year.

Trade

Due to increasing demand, imports have augmented. By quantity, imported fisheries products make up 40% of the total supply in Japan.

Meanwhile the quantity of imported products (measured as product weight at customs clearance, the same hereafter) has decreased since 1996 because of stagnating domestic demand (recession) and the low production of fishmeal in Peru and Chile. The amount of imported fisheries products decreased 10% from the previous year.

The fisheries export decreased after three years due to limited production of tuna, salmon and mackerel.

Table 3. Fisheries trade

	1997	1998
Quantity of import	3 411 000	3 103 000 tonnes
Value	1 946	1 742 billion yen
Quantity of export	343 000	281 000 tonnes
Value	170	152 billion yen

Policy

To promote international co-operation in resources management, Japan has prohibited the import of Atlantic bluefin tuna from Belize, Honduras and Equatorial Guinea in accordance with the ICCAT recommendation. In 1999, importers were required to report the name of the fishing vessel which caught the imported tuna on the basis of the "Law Concerning Special Measures to Strengthen Conservation and Management of Tuna Resource". Also, the Government of Japan appealed to self-restraint of imports of fish caught by "Flag of Convenience" fishing vessels.

The Government of Japan abolished the "Pearl Aquaculture Law" as a result of the increased domestic consumption of pearls and a decline in the proportion of pearl exports. Accordingly, the national quality inspection for the pearl for export was abolished in the end of 1998.

The Government of Japan abolished the "Pearl Aquaculture Law", corresponding to the change of the situation that the domestic consumption of pearl rises and proportion of export falls off. Accordingly, the national quality inspection for the pearl for export was abolished in the end of 1998.

There is no new legislation regarding the sanitation control standards with regard to fisheries trade in 1998 and 1999.

Outlook

The ratification of "United Nations Convention on the Law of the Sea" in June 1996, brings the 200 nautical miles era. Japanese fisheries are faced with a severe situation with a falling fisheries production, further ageing of fishermen and a declining vitality of fishing communities.

Against this situation, and in order to secure a sustainable development of Japan's fishing industry, Japan is required to establish a new basic fisheries policy corresponding to the new maritime order. This will take place in 2001 when the Diet is expected to discuss the framework for the Japanese fisheries policy.

Table 4. **Powered fishing vessel numbers in terms of tonnage class**

Tonnage class	1997	1998
0-4.9	321 972	317 505
5-9	18 119	18 117
10-14	6 117	6 084
15-19	4 975	4 908
20-29	59	49
30-49	328	296
50-99	943	870
100-199	965	937
200-	1 211	1 188
Total	354 689	349 957

Data: Fisheries Agency "Fishing Vessel Statistics".

Table 5. **Powered fishing vessel horsepower numbers in terms of tonnage class**

Tonnage class	1997	1998
0-4.9	11 345 267	11 118 113
5-9	1 573 267	1 585 349
10-14	698 871	698 916
15-19	750 047	743 755
20-29	13 345	11 195
30-49	98 320	89 940
50-99	375 410	350 080
100-199	475 200	462 270
200-	877 480	837 880
Total	15 969 243	15 897 498

Data: Fisheries Agency "Fishing Vessel Statistics".

Table 6. **Employee numbers in terms of age layer**

Age	1993	1998
Male total	267 863	230 599
15-24	10 050	6 966
25-39	44 475	32 040
40-59	122 569	94 207
60-	90 769	97 386
Woman	57 023	46 443
Total	324 886	277 042

Data: Ministry of Agriculture, Forestry and Fisheries "Fishing Census".

KOREA

Summary

In 1999 fishery production was 2 910 569 tonnes valued at 4 444 billion KRW, an increase of 76 154 tonnes (2.7%) from 2 834 415 tonnes in 1998 due to an increase in the squid catch of 196 663 tonnes in distant waters. However, the production in coastal and offshore waters was stagnant due mainly to depleted fishery resources and the reduction of fishing grounds caused by the newly established Korea-Japan Fishery Agreement which came into force in 1999 (Table 1).

Total export value of fishery products was USD 1 521 million (475 644 tonnes) in 1999, an increase of USD 152 million (11%) from USD 1 369 million (590 390 tonnes) in 1998. Total import value of fishery products in 1999 was USD 1 179 million (746 327 tonnes), an increase of USD 592 million (up 100%) from USD 587 million (375 224 tonnes) in 1998, as a result of recovery from the economic crisis which necessitated International Monetary Fund (IMF) emergency loans. The economic crisis also resulted in a drastic decrease of 10.6 kg (24%) in fishery product consumption per capita from 43.6 kg in 1997 to 33.0 kg in 1998.

A Special Act was enacted in 1999 to assist fishermen affected by international fishery treaties, as well as to promote national fisheries. In accordance with this Act, the Korean government plans to buy 668 vessels from those who gave up fishing operations as a result of the Korea-Japan Fishery Agreement in 1999. Government financial transfers totalled 543 billion KRW in 1999, an increase of 218.7 billion KRW (67%) from 324.4 billion KRW in 1998, mainly due to the fleet reduction programme.

To address chronic over exploitation of marine fishery resources in coastal and offshore waters, the fleet reduction programme has been strengthened since 1994. In addition, to figure out an optimal management system for sustainable fisheries, a Total Allowable Catch (TAC) system, an alternative to the current fishing licence system, has been implemented for four species for 1999-2000 on a trial basis.

Legal and institutional framework

Korean fisheries management is based on the Fishery Act together with many related acts and regulations. According to the Act, the Ministry of Maritime Affairs and Fisheries (MOMAF) is largely responsible for fishing of vessels in offshore and distant waters and foreign-flagged vessels fishing within the Korean EEZ, while local governments at province, city and district levels are mainly responsible for fishing licences of vessels in the coastal area. Fisheries resources have been protected mainly through governing the mesh size of fishing nets, fishing grounds, fishing seasons, etc.

In addition to the licence system, a TAC system was introduced in the Fishery Act in 1995. The Committee for TAC and the Central Committee for Fisheries Co-ordination, whose members are drawn from academia, the business sector and other professions, set TACs. The TAC system is currently undergoing a trial period, with four species (Mackerel, Sardine, and Jack Mackerel in large seine fisheries, and Red Large Crab in the offshore fish pot fisheries), having been put under the system for 1999-2000.

Foreigners can gain access to the Korean EEZ in two ways: one is to enter into a contract with the Korean government, and the other is to obtain a licence from the Minister of Maritime Affairs and Fisheries under the "Act on the Exercise of Sovereign Rights on Foreigners' Fishing, etc. within the Exclusive Economic Zone" (EEZ Act), which came into force on 7 August 1997. Currently, only Japanese vessels enter the Korean EEZ in accordance with the bilateral fishery agreement of 1999. Terms and conditions for fishing are decided on an annual basis.

Table I. Fishery production for 1998-1999

			1998		1999	
			MTs	Million won	MTs	Million won
Capture Fisheries	Marine	Coastal and offshore	1 308 336	2 293 637	1 336 062	2 280 019
		Distant waters	722 597	1 155 813	791 409	1 217 876
		Sub-total	2 030 933	3 449 450	2 127 471	3 497 895
Aquaculture	Inland	Sub-total	6 850	28 990	6 317	27 920
		Marine	2 037 783	3 478 440	2 133 788	3 525 815
		Inland	776 631	949 502	765 252	831 903
		Sub-total	20 001	114 572	11 529	86 235
		Sub-total	796 632	1 064 074	776 781	918 138
Total			2 834 415	4 542 514	2 910 569	4 443 953

Furthermore, a Special Act was enacted in 1999 to assist fishermen affected by international fishery treaties and to promote national fisheries. According to this act, the Korean government plans to buy 668 vessels from those who gave up fishing operations as a result of the Korea-Japan Fishery Agreement of 1999.

Meanwhile, the Korean government initialled the draft of the Korea-China Fishery Agreement on 11 November 1998 to set a new fishing order, based on the EEZ regime, for both countries' fishermen in the Yellow Sea and East China Sea but negotiations between the two governments are still under way to conclude the agreement.

Capture fisheries

Performance

Catches from coastal, offshore, and distant waters were 2 037 783 tonnes (3 449 450 million KRW) in 1998 and 2 133 788 tonnes (3 525 815 million KRW) in 1999. The main factor in the increase of capture production was the increase in squid production, in particular, in the waters around the Falklands in the south-west Atlantic, where the production of squid in 1999 was approximately 309 154 tonnes, an increase of 196 863 tonnes from 1998 (112 291 tonnes).

In coastal and offshore fisheries, the production in 1999 accounted for 1 336 062 tonnes, an increase of 2.1% from 1998 (1 308 336 tonnes), but the value during the same period decreased by 0.6% from 3 449 450 million KRW in 1998 to 3 368 654 million KRW in 1999. This decrease occurred because of the drastic decline of wholesale fish prices in 1999. The major species in coastal and offshore fisheries were Alaskan pollock, hairtail, mackerel, anchovy, squid, horse mackerel and shrimps.

In distant water fisheries, production in 1999 accounted for 791 409 tonnes, an increase of 68 812 tonnes from 722 597 tonnes in 1998. The increase in production resulted from a drastic increase in squid catch of 196 863 tonnes. Increased-catch species also included horse mackerel, yellow croaker, etc. and decreased-catch species were Alaskan pollack, tuna, etc.

The population in fisheries has continuously dropped since 1982. The number of fisheries households also dropped 1.2% from 98 972 in 1998 to 97 754 in 1999. The main factors in the decrease in the fisheries population were movement to cities (0.9%) and transfer to other industries (0.1%). The number of fisheries households in 1999 can be broken down to 39.1% with fishing vessels, 27.8% without fishing vessels, and 31.1% in aquaculture. The number of households in 1999 in capture fisheries is almost the same as the previous year but that of aquaculture decreased by 3.7% (1 234 households) because of losses of farming grounds as a result of reclamation, environmental degradation, etc.

Table 2. Fishing vessels by size for 1998-1999

Internal Size(tonnes)	1998			1999		
	Numbers	Gross tonnes	Horse power	Numbers	Gross tonnes	Horse power
Powered	82 803	971 704	13 067 043	87 502	986 339	11 796 089
0-24.9	77 834	196 700	7 963 098	82 675	205 783	8 443 056
25-49.9	1 712	59 473	1 099 476	1 662	57 703	636 882
50-99.9	1 950	151 450	2 234 761	1 872	144 520	936 735
100-149.9	442	56 141	420 443	425	53 940	415 071
150-249.9	234	44 363	216 892	236	44 925	220 812
250-999.9	480	186 132	665 072	473	183 784	653 232
500-999.9	65	48 533	141 775	67	49 981	146 465
1000-1999.9	45	61 449	144 076	48	66 386	153 526
2000+	41	167 463	181 450	44	179 317	190 300
Non-powered	8 194	6 630	–	7 350	5 617	–
Total	90 997	978 334	13 067 043	94 852	991 956	11 796 089

The number of fishing vessels increased by 3 855, from 90 997 vessels (978 334 GT) in 1998 to 94 852 vessels (991 951 GT) in 1999. The increase in number and gross tonnage was the result of registering previously unauthorised fishing vessels of less than 10 GT. However, the number of fishing vessels of more than 10 GT was reduced by 167 (11 416 GT) during the same period due to the government's fleet reduction programme. The composition of the fishing vessels in number and gross tonnage in 1999 is shown in Table 2.

Status of fish stocks

Fishery resources in the waters around the Korean peninsula have been over exploited, particularly in commercially important species such as hairtail, redlip croaker and Alaskan pollock. Fishery production in 1998 and 1999 decreased by 100 – 200 thousand tonnes from the 1990 to 1995 period because of over exploitation of fishery resources. Catches have been stagnant during recent years with no sign of recovery. Table 3 shows CPUE (catch per tonnage) in coastal and offshore fisheries.

Table 4 shows catches by major species. Pelagic species such as mackerels, anchovies, squids, etc. have been found to be abundant while demersal species such as Alaskan pollock have declined due to increased water temperature.

Table 3. CPUE in coastal and offshore fisheries

	Catches (thousand tonnes) (A)	Vessel tonnage (thousand tonnes) (B)	CPUE (A/B)
95	1 425	445	3.20
96	1 400	439	3.70
97	1 367	439	3.11
98	1 308	438	2.99
99	1 336	434	3.06

Management of commercial fisheries

Management Instrument

Major management instruments in coastal and offshore areas include: maximum number to be licenced, minimum size of net, engine power by fisheries, fishing grounds, fishing seasons and size of fish. Maximum permissible number is set for fisheries with intensive fishing capacity in order to protect fishery resources (see Table 5).

Table 4. Catches by major species in the coastal and offshore fisheries

Unit: Thousand tonnes

	1995	1996	1997	1998	1999
Alaskan pollock	6.9	4.4	6.4	6.2	1.4
Hair tail	94.6	74.5	67.2	74.9	64.5
Other croakers	45.2	42.6	34.9	27.5	28.0
Mackerels	200.5	415.0	160.4	172.9	177.6
Anchovies	230.7	237.1	230.9	249.5	241.3
Sardines	13.5	18.6	9.0	7.6	17.0
Flounders	13.7	18.1	18.1	20.1	19.6
File fish	1.8	1.8	16.3	10.0	2.6
Squids	200.9	252.6	225.0	163.0	238.7
Cuttle fish	2.6	1.5	2.1	3.0	5.8
Redlip croaker	25.2	22.9	21.8	15.0	13.5
Jack mackerel	12.3	14.5	22.8	22.1	13.6
Saury	6.5	9.7	18.6	4.6	11.4

Table 5. Maximum number of licences

Fishery types	Number of licences	Major target species
Danish Seine	80	Hair tail, Flounder, File fish
Pair Trawl	180	"
Middle-sized Eastern Sea Danish Seine	42	Alaskan pollack, Cod, Shrimp
Middle-sized Western Southern Danish Seine	65	File fish, Flounder, Hair tail, Blue crab
Off-shore Eastern Sea Trawl	43	Alaskan pollack, Herring
Large Otta Trawl	60	Shrimp, Mackerels, Hair tail
Anchovy Drag Nets	150	Anchovy
Diving	249	Oyster, Hen cockle, Pen shell
Offshore Stow Net	850	Hair tail, Croaker, Pomfret
Offshore Drift Gill Nets	2 200	Croaker, Anchovy, Saury
Offshore Dredges	540	Hen cockle
Offshore Powered Purse Seine	35	Hair tail, Sardine, Mackerels
Offshore Eel Trap	300	Sea eel
Coastal Trap (newly set in 1999)	11 920	Sea eel, Blue crab

A major policy change was to experiment with a TAC system for four species on a trial basis. The result is shown in Table 6. The Korean government will try the TAC system in 2000 and review the results to determine optimal fishery management for sustainable fisheries.

Table 6. TACs and catches in 1999

Fishing type	Species	TAC (Tonnes)	Catch (Tonnes)	%
Large Purse Seine	Mackerel	133 000	152 640	115
"	Sardine	22 600	14 447	64
"	Jack mackerel	13 800	6 449	47
Offshore Trap	Red large crab	39 000	25 319	65

Korea announced an ordinance by the Minister of Maritime Affairs and Fisheries to implement marine conservation measures including Vessel Monitoring System (VMS) equipment, adopted by regional fisheries management arrangements such as ICCAT and CCAMLR. In addition, Korea introduced the Catch Documentation Scheme as of 8 May 2000 according to the request of CCAMLR, and the Trade Information System as of 1 June 2000 at the request of ICCAT.

Access

Table 7 lists bilateral fishery agreements with Korea and status of access to foreign waters. Access to Korean waters by foreign-flagged vessels was allowed only for Japan, according to the bilateral fishery agreement. In 1999, 1 061 Japanese fishing vessels were allowed to fish 93 773.5 tonnes but caught only 22 118 tonnes (23.6% of the quota) from 497 vessels. This permission was granted on a mutual basis in that Korean vessels also entered into Japanese waters in the same year.

Table 7. **Korea's bilateral fishery agreements and access to foreign waters**

Country	Date of effectuation of agreement	1999			
		Quota (Tonne)	Catch (Tonne)	Fishing fee (USD)	Species covered
Japan	22 January 1999	149 218	27 335	–	Mackerels, Squid, etc.
Iran	1 April 1978	–	–	–	–
Tuvalu	18 June 1980	–	101	150 000	Tuna
Cook Islands	25 August 1980	–	–	–	–
France	19 December 1980	3 000	3 000	1 448 000	Tuna
Solomon Islands	12 December 1980	–	955	61 564	Tuna
Kiribati	18 December 1980	–	16 049	3 880 525	Tuna
Australia	24 November 1983	–	–	–	–
Mauritania	8 January 1984	–	–	–	–
Ecuador	19 September 1984	–	–	–	–
Russia	22 October 1991	56 000	55 387	9 016 000	Alaskan Pollock, Herring
Papua New Guinea	15 April 1992	–	–	–	–
Peru	None	–	19 728	1 153 670	Squid
Argentina	None	–	11 844	1 608 000	“
UK (Falklands)	None	–	265 408	10 687 844	“
FSM	None	–	63 315	2 368 750	Tuna
Nauru	None	–	14 850	776 370	Tuna
Seashell	None	–	181.4	36 920	Tuna

Management of recreational fisheries

The Recreational Fishing Boats Operation Act (RFBOA) and the Fisheries Act regulate recreational fishing in Korea. The Fisheries Act is applied to recreational fishers in terms of seasonal and area closure, minimum size limit, etc. The Recreational Fishing Boats Operation Act is applied to operators of recreational fishing boats. Local governments are responsible for operators and any person who intends to operate recreational fishing boats should report to the local government concerned. As of December 1998, 1 086 boats had been reported to local governments.

RFBOA focuses on recreational fishers' safety and prevention of discarding of wastes by anglers. Accordingly, recreational boats must be inspected for safety every five years and waste-treating equipment on boats is required.

Monitoring and enforcement

Monitoring and enforcement are conducted by the Ministry of Maritime Affairs and Fisheries, Maritime Police and local governments, which mobilised 89 patrol vessels, 168 guard-ships, 9 helicopters, and 4 480 staff in 1999. They found that 3 157 national vessels and 84 foreign-flagged vessels violated Korean laws and regulations in 1999.

Multilateral agreements and arrangements

During 1998 and 1999, no specific changes were made to the status of entry into or accession to multilateral agreements or arrangements.

Korea hosted the Fourth Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea from 8 to 12 November 1999 in Busan. The Parties (China, Korea, Japan, Poland, USA, and Russia) failed to reach a consensus on reopening of fishing activities in the convention area due to the low level of stock estimation. The parties will hold a workshop in 2000 to study the reasons that the moratorium of the past seven years did not contribute to stock recovery.

Aquaculture and environment

Policies changes

As of 28 January 2000, the Farming Ground Management Act was newly enacted to build a sustainable fishery and to improve the productivity of fishing grounds. The Act introduces a system of sabbatical years for mariculture grounds for efficiency, inspection and standardisation of environment of fishing grounds, etc.

Production facilities, values and volumes

The area of mariculture in 1999 was 116 443 ha, a decrease of 601 ha (0.5%) from 117 044 ha in 1998. Also, production and number of households engaged in mariculture reduced slightly. Production in 1999 was 765 252 tonnes (831 902 million KWN), about a 1.5% decrease from 776 631 tonnes (950 315 million KWN) in 1998 and the number of households in 1999 was 33 360, a 0.7% decrease from 33 594 in 1998. The major species in mariculture are bastard, jacoever, and large shrimp, oyster, short neck clam, arkshell, sea mussel, laver, and sea mustard.

Fisheries and the environment

To inspect the environmental impact on fishing grounds of aquaculture and to estimate the environmental capacity for sustainable fisheries, an assessment including water quality, sediments, distribution of benthos, the status of the use of fishing grounds, etc. has been continuing since 1999.

The Wetland Conservation Act was enacted as of 2 February 1999 and enforced as of 9 August 1999 to conserve and manage wetlands for the purpose of preserving biodiversity and habitats for birds. MOMAF and the Ministry of Environment share the management responsibility to designate a wetland sanctuary, which restricts human activities such as fishing, building, dredging, etc.

Government financial transfers

Total transfers in 1999 were 543 billion KRW, an increase of 218.7 billion KRW (67%) from 324.4 billion KRW in 1998 (Table 8). The major part of these transfers was used for reducing the fleet size in coastal and offshore waters, which was inevitable because of the contraction of offshore fishing grounds resulting from the Korea-Japan Fishery Agreement, and to construct fishing ports and promote fishing communities' environments. In 1999, the Korean government allocated 196 billion KRW to assist fishermen affected by the Agreement.

It is generally recognised that fisheries resources in coastal and offshore areas have been depleted by competitive exploitation among fishermen, marine environmental degradation, etc. Furthermore, the fishery agreement between Japan and Korea institutionalising the EEZ system in 1999 resulted in many fishermen losing their traditional fishing grounds near Japanese waters. To address this issue, the government has carried out the fleet reduction programme since 1994 aimed at rationalising the fleet size to the level where economically viable fishing operations in coastal and offshore waters are sustainable, thereby contributing to an increase in fishermen's income.

The Korean government reduced the fleet by 614 vessels (22 654 GT) from 1994 to 1998 and by 92 vessels (6 430 GT) in 1999, and plans to reduce the fleet by 2 329 vessels (85 953 GT) from 2000 to 2004 in coastal and offshore areas.

Table 8. Total government financial transfers associated with Korea's fishery policies, 1997-1999¹

KRW billion

Type of Transfer	1997	1998	1999
MARINE CAPTURE FISHERIES	324.9	297.0	515.9
<i>Direct payments</i>	31.3	35.3	241.3
To reduce fleet size	28.4	30.9	236.9
To support crew insurance	2.9	4.4	4.4
<i>Cost reducing transfers</i>	43.0	37.9	57.2
To improve fishing equipment	3.9	3.3	3.0
To legalise illegal fisheries and reduce unemployment	0.5	0.4	0.3
Other cost-reducing transfers	38.6	34.2	53.9
<i>General services</i>	250.6	223.6	217.4
To improve fishing ports and the environment of fishing communities	184.6	166.7	172.0
Fishery resources enhancement programmes including installation of artificial reefs	56.2	49.5	39.5
Fishing technology research and development	0.9	5.9	5.4
Other general services (Support for fishery facility operation, etc.)	8.9	1.5	0.5
AQUACULTURE	24.8	22.6	22.2
<i>Cost reducing transfers</i>	7.6	6.0	5.7
To develop aquaculture	7.6	6.0	5.7
<i>General services</i>	17.2	16.6	16.5
To clean and consolidate aquaculture grounds	17.2	16.6	16.5
MARKETING AND PROCESSING	9.4	5.0	5.0
Cost Reducing Transfers	9.4	5.0	5.0
To build fishery products processing facilities	9.4	5.0	5.0
GRAND TOTAL	359.1	324.4	543.1

1. Table lists main transfers and is not necessarily comprehensive.

Post harvesting policies and practices

Policy changes

Food safety and labelling

To protect consumers, the Food Sanitation and Safety Act regulates labelling on fishery products with regard to expiry dates, chemical and nutritional composition of the products, etc. Furthermore, almost all fishery products traded in and imported to Korean markets have their origin displayed on the label. The government also samples and inspects fishery product samples circulated in the markets to check whether they contain bacteria, anti-bacteria materials, heavy metals, etc. The Hazard Analysis Critical Point system is applied to products to be exported to the USA.

Structure

It was identified that the redundant market system for fishery product distribution was a major factor in product price increase. Therefore, the government is planning to improve the system with the aim of reducing trading phases and costs.

Processing and handling facilities

Nationally, 210 consignment sites operated by fishermen's co-operatives in 1999 handled fish and shellfish landed. The total number of fishery processing facilities including freezing and refrigerating facilities in 1998 was 738, a decrease of 28 from 766 in 1997, due to a decrease of 33 from 121 in 1997 to

88 in 1998 in processing and handling facilities onboard ships, but among these the number of freezing facilities increased by seven during the same period, due to the demand for high-valued products such as canned and ground fish meat.

Market and trade

Markets

Table 9 and Table 10 show the trend of supply and demand and consumption for fishery products. The sharp decrease in consumption per capita in 1998 was estimated to have resulted from the worsened economic situation, which resulted in emergency loans from the IMF from late 1997.

Table 9. Trends of supply and demand for fishery products

		Unit: Thousand tonnes		
		1997	1998	1999
Supply	Production	3 244	2 834	2 909
	Import	1 189	753	1 332
	Carryover from the previous year	427	480	319
TOTAL		4 860	4 067	4 560
Demand	Consumption	3 187	2 394	2 746
	Export	1 193	1 354	1 232
	Carryover to next year	480	319	582

Table 10. Trend of fishery product consumption per capita

	1994	1995	1996	1997	1998	1999
Total (Kg/yr)	44.9	45.1	43.7	43.6	33.0	N/A
Fish and shellfish	32.5	33.4	34.4	32.0	25.9	N/A
Seaweed	12.3	11.7	9.3	11.6	7.1	N/A

Trade

Total export value of fishery products was USD 1 521 million (475 644 tonnes) in 1999, an increase of USD 152 million (11%) from USD 1 369 million (590 390 tonnes) in 1998. The main species were tuna, fish meat, oyster, squid, and arkshell and the main countries exported to were Japan (76%), USA. (5%), and China (4%).

Exports of fishery products in 1998 amounted to USD 1.3 million, an 8.2% reduction from USD 1.5 million the previous year. The causes of this reduction were considered to be the Asian foreign exchange crisis and the decrease in Japanese seafood consumption.

Imports of fishery products in 1999 rose 100% in value to USD 1 179 million (746 327 tonnes) from USD 587 million (375 224 tonnes) in 1998. This sharp increase reflects economic recovery from the Korean financial crisis of late 1997. The leading import items were Alaskan pollock, yellow croaker, shrimp, flavoured squid, hairtail and eel, and the leading countries imported from were China (35%), Russia (17%) and the USA (11%).

Outlook

The Korean Government has made and will continue to make efforts to improve both fishermen's and consumers' welfare. For fishermen, efforts to build economically viable fisheries are in progress through the fleet reduction programme and fishery resource-fostering efforts such as installing artificial reefs, the prevention of marine pollution, etc. In addition, the government is in the process of

establishing a Special Act for Culture-based Fisheries in order to respond to the contraction of coastal fishing grounds following the introduction of EEZ systems by Japan and China, as well as to meet increasing future demand for fishery products. Also the TAC fishery management system may be expanded to include other species.

To protect consumers, the Korean government will put emphasis on the quality of fishery products by promoting value-added fishery products, reinforce rules and regulations relating to seafood sanitation, and devise a better system to eliminate redundant phases in fishery markets.

Finally, Korea will continue making efforts to observe international regulations and to share in international efforts for the optimum management and sustainable use of marine resources.

Special topic: Fishing Capacity

Basic statistics

Table 2 outlines the Korean fishing fleet by number of vessels and tonnage for the last two years. Total number of fishery households decreased but full-time households increased in 1999. Most part-time fishery households were in agriculture (75%) (Table 11). The composition of fishery households was 39.1 % with vessels and 27.8 % without vessels for capture fisheries and 33.1% for aquaculture in 1999 (Table 12). Table 13 shows that fishery workers are ageing and those over 50 years of age accounted for 57% in 1999. Also, approximately 48 % of those engaged in fisheries were in 1999 women.

Table 11. Fishery households for 1998-1999

	Total	Full time	Part Time				
			Total	Agriculture	Wholesale or retail	Manufacture	Others
1999	97 754	23 569	74 185	55 091	3 816	2 591	12 686
Component Ratio (%)	100%	24.1	75.9 (100%)	(74.3)	(5.1)	(3.5)	(17.1)
1998	98 972	22 671	76 301	55 912	4 188	2 232	13 974
Percentage change 1998-1999	-1.2	4.0	-2.9	-1.5	-8.8	16.1	-9.2

Table 12. Households by fishery types

	Total	Capture fisheries without vessels	Capture fisheries with vessels	Aquaculture
1999	97 754	27 178	38 216	32 360
Component Ratio (%)	100	27.8	39.1	33.1
1998	98 972	27 359	38 019	33 594
Percentage Change 1998-1999	-1.2	-0.7	0.5	-3.7

Table 13. Fishery workers by age and gender

Age interval	Total	15-19	20-29	30-39	40-49	50-59	60-69	70+
1999	170 059	239	6 404	22 806	43 770	51 316	38 050	8 005
Component Ratio (%)	00	0.1	3.7	13.4	25.7	30.1	22.3	4.7
1998	172 701	459	6 536	23 811	45 637	52 180	36 413	7 665
Percentage change 1998-1999	-1.2	-47.9	-2.0	-4.2	-4.1	1.7	4.5	4.4
Male in 1999	89 026	205	4 915	11 976	22 450	25 698	19 760	4 022
Female in 1999	81 564	34	1 490	10 830	21 320	25 618	18 290	3 983

Definition of fishing capacity

Korea has not developed a specific definition of fishing capacity yet. Before dealing with any precise definition, it rather focuses on ways to reduce catches in fisheries, recognising that fishery resources in Korean waters are being overexploited.

Policies to manage fishing capacity

Major policies employed in fisheries to manage fishing capacities are the fleet reduction programme, the fishery licence system and TACs. The fleet reduction programme was developed in 1994 with ten-year time frame. Under this programme, 706 fishing vessels were scrapped at a cost of 118 billion KRW, of which 83 billion KRW was supplied by the Korean government, from 1994 to 1999. 2 329 vessels will be scrapped at a cost of 361 billion KRW, of which 277 billion KRW will be supplied by the government, in the period 2000 – 2004. In addition, the government plans to buy and then scrap 668 vessels from fishermen affected by the Korea-Japan Fishery Agreement.

The current fishery licence system to limit entry into fisheries is the main tool of Korea's fishery management, enforcing closed seasons and areas, regulation of mesh size, etc. In addition, a TAC system to control fishing quotas has been introduced for four species (Mackerel, Sardine, and Jack Mackerel in large seine fisheries, and Red Large Crab in the offshore fish pot fisheries) for 1999-2000 on a trial basis. TACs are designed to take not only biological but also economic and social consequences into consideration.

Implementing the FAO plan of action

A National Plan of Action is being considered in a study conducted by the Korea Maritime Institute, a research institute in fisheries and maritime affairs, in order to comply with the International Plan of Action for the Management of Fishing Capacity adopted by FAO. The study will be completed by the end of 2000. Main items of the study include the method of assessment of fishing capacity, fishing capacity by fishery, a proposed National Plan of Action, etc. Based on this study, Korea will develop a National Plan of Action for the Management of Fishing Capacity.

MEXICO

Summary

Fisheries production totalled 1.2 million tonnes in 1998, of which 1 074 thousand tonnes (87%) were of marine origin and 160 thousand tonnes (13%) came from aquaculture. In 1999 (preliminary figures) total fisheries production was 1.3 million tonnes, of which 1 122 thousand tonnes and 151 thousand tonnes came from catches and aquaculture respectively.

The sector's trade balance for 1999 was USD 516 million and exports of fish and fish products were valued at USD 672 million and imports totalled USD 156 million. A positive balance for 1998 totalled USD 542 million, in which exports reached USD 676 million and imports USD 134 million.

During the period of 1998-1999, aquaculture was promoted in an industrial and high-yield nature, reinforcing the actions of support for rural aquaculture as a result of their social impact. In 1999, total production in aquaculture was 151 thousand tonnes, of which the highest production was mojarra (62 thousand tonnes), followed by oyster and shrimp with 37 thousand and 23 thousand tonnes respectively.

With regard to the marketing and processing of fisheries products, actions are being carried out to restructure traditional forms of marketing so as to increase domestic consumption of fisheries products and the export capacity of national products by improving processing systems, infrastructure and hygiene conditions. During the 1998-1999 biennium, the fisheries industrial plant produced an average of 327 thousand tonnes of finished product.

During this biennium, within the framework of the 1995-2000 Fisheries and Aquaculture Programme, there are a series of programmes and sub-programmes aimed at promoting the sustainable development of fisheries activities. Work has continued on the Administration of Fisheries, through the Fisheries Ordering Programme and the Programme for Normalisation of Responsible Fishing.

In regard to the International Fisheries Co-operation, during the 1998-1999 biennium, actions were initiated for promoting and co-ordinating scientific-technological and economic-commercial programmes. Organising projects with other countries is to strengthen Mexico's participation in the main international fisheries forums and to develop a World Fisheries Order that complies with sustainability criteria. The most important of these actions was Mexico's incorporation into the Inter-American Tropical Tuna Commission (IATTC) in June 1999, ratification of the Agreement on the International Dolphin Conservation Programme in April 1999 and the approval by the Mexican Senate of the Inter-American Convention on the Protection and Conservation of Marine Turtles. Similarly, it is worth noting the conclusion of these negotiations is for a Free-Trade Agreement with the European Union toward the end of 1999.

Legal and institutional framework

The fisheries sector in Mexico comprises a set of activities that encourages the development of aquatic flora and fauna resources. These activities include the capture and cultivation of these resources and their processing and marketing. Fishing forms an important part of the economic activity and regional development of the country. It contributes to food for the population, inputs for industry, foreign exchange from exports and direct and indirect employment in various levels of production.

Fisheries policy responds to a comprehensive view of the administration of aquatic flora and fauna resources based on the principle of responsible fishing. For this reason, the legal framework for fishing

in Mexico lays the foundations for the administration and development of fisheries resources and activities and in order to ensure the conservation, protection and efficient utilisation of those resources.

In this regard, the federal government is responsible for the administration of fisheries resources from both marine and inland waters. The corresponding legal ordinance is based on the Fisheries Law, published in the Official Gazette of the Federation on 25 June 1992.

Based on the experience gained from the implementation of the Fisheries Law and its Regulations 1992, the proposals of the social and private fisheries sector, the scientific and academic community, the state and municipal governments and the corresponding committees of the Honourable Congress of the Union, the new Regulations of the Fisheries Law was issued and was published in the Official Gazette on 29 September 1999.

These Regulations further establish the elements of the National Fisheries Charter, which will contain indicators on the availability and conservation of fisheries resources, which is essential information for decision-making on the administration and management of resources. By establishing criteria requirements and deadlines for replies this will eliminate discretionary authority to resolve applications for concessions, permits and authorisations provided for by the Fisheries Law. Furthermore, it determines the conditions that provide the authority with more information to check the legal origin of fisheries products, which is to the advantage of conservation and sustainable development of aquatic flora and fauna resources and of those who devote themselves to fisheries activities within the framework of the Law.

The regulatory framework for fisheries has been strengthened by incorporating guidelines that make the actions of the authority *vis-à-vis* the individual more precise and transparent. These regulations also establish expeditious procedures and separate through a new structure, the specific provisions applicable to extractive fishing from those applicable to cultivation. Thus the Regulations of the Fisheries Law are directed to full and sustained development of fisheries and aquaculture activities, within the framework of sustainability, and will provide certainty to those who participate in them throughout the chain of production.

Capture fisheries

Performance

Fisheries production in 1998 totalled 1 233 292 tonnes, of which 1 073 511 tonnes (87%) were marine and inland catches, and 159 781 tonnes (13%) came from aquaculture. According to preliminary figures for 1999, fisheries production registered a total of 1 273 000 tonnes, of which 1 121 984 and 151 016 tonnes came from catches and aquaculture respectively.

This means that there was an increase of 3% in marine catches and a decrease of 5.4% in aquaculture in comparison with 1998. The increase in marine production for 1999 was mainly due to the increases in catches of Spanish mackerel (23%), algae and sargasso (180%), grouper (6%), octopus (12%), and tuna (4%). Table 1 shows volume of fisheries production by main species 1998-1999.

It should be noted that fisheries production has begun to recover after having suffered from strong negative impacts owing to the presence of the "El Niño" phenomenon in late 1997 and during 1998, whose effects were more intensive than on previous occasions.

State of fisheries

As of and from 1997, the National Fisheries Institute began a study on "Sustainability and Responsible Fishing in Mexico". This study presents a historical description of the situation of standards over the past 20 years for the 18 main fisheries. A quantitative approach was based on world trends (precautionary approach, points of reference, explicit consideration of risk and uncertainty in management, among others) and a section on management strategies and alternatives for each fishery, according to its condition. The analysis of these 18 fisheries included more than 31 fishery resources corresponding to 109 species that inhabit 16 regions of the Pacific Ocean, the Gulf of Mexico, the Caribbean Sea and inland waters.

Table 1. Volume of fisheries production by main species 1998-1999

Item	Tonnes		Variation % 99/98
	Volume		
	1998	1999	
Total Production	1 233 292	1 273 000	3.22
Total Catch	073 511	1 121 984	4.51
Sardine	100 727	95 540	-5.15
Tuna ¹	138 137	143 088	3.58
Grouper	11 741	12 400	5.61
Shrimp	90 335	93 540	3.54
Algae and Sargasso	12 443	35 013	181.38
Shark and Dogfish	24 383	26 178	7.36
Octopus	17 233	19 336	12.20
Crab	19 423	19 446	0.11
Clam	8 943	7 963	-10.95
Spanish mackerel	11 277	13 873	23.02
Others	612 215	655 607	7.08
Aquaculture	159 781	151 016	5.48

1. Includes the species Bonito and Skipjack Tuna.

Source: Department of the Environment, Natural Resources and Fisheries (SEMARNAP).

The study has shown that fisheries in Mexico has not in general reached a critical stage, but the excess effort for some has led them to a state of deterioration that requires recovery strategies. Such is the case of the anchovy in the western coast of the Baja California peninsula, the abalone, the sea urchin and sea cucumber, the pink conch, the grouper and the fisheries of Lake Pátzcuaro.

Furthermore, updating work was carried out on the resources covered and studies were made on long-snouted fish in the Gulf and the Pacific, scale fish and inshore fishing, sea turtles, black cod and fisheries of Lake Chapala and the Aguamilpas Dam, making a total of 14 new fisheries. The results of which are due to be published this year.

The importance of this work lies in the fact that it has made it possible to identify the fisheries that already require recovery strategies, those that are at an adequate level of development and those that still show an additional margin for tapping resources.

Management of commercial fisheries

During the 1998-1999 biennium, within the framework of the 1995-2000 Fishery and Aquaculture Programme, work continued on administration of Fisheries through the Fisheries Ordering Programme and the Programme for Normalisation of Responsible Fishing.

The long-term objective of the Fisheries Ordering Programme is to ensure the sustainable use of fishery resources by establishing mechanisms that bring fishing practices into line with the regulations in force and by applying the precautionary approach aimed at the development of responsible fishing with broad social benefits.

Decision-making with regard to fisheries ordering has been carried out according to the principles of sustainability and responsible fishing and is based on increased scientific information in the evaluation of fishery resources and the precautionary approach. With the result that it is now possible to gauge and maintain fishing efforts, regularise the legal situation of social organisations, establish fishery administration instruments, carry out ordering actions as part of the National Programme for Normalisation of Responsible Fishing and at state level in the Fisheries and Marine Resources Committees and to carry out the important work of identifying those who participate in this activity through censuses of fishermen, vessels and fishing equipment. All the above is carried out in a co-ordinated manner agreed upon by the three levels of government, the scientific community and the fisheries productive sector.

During the course of 1999, progress was made on ordering the country's main fisheries by regularising producers' organisations, quantifying vessels, weeding out and systematising files related to applications for permits and concessions, identifying participants in fishing and promoting a number of amendments to regulatory provisions.

With regard to fishery regulations, the closed season on abalone fishing in zone I of the Western Coast of Baja California was modified by extending the fishing season by one month. The preliminary draft amendment to Official Mexican Standard-003 was concluded to update the minimum sizes of catches and the measuring method for sardines, anchovies and mackerel (Northern Pacific Ocean).

Official Mexican standards were approved for the following dams: Vicente Guerrero in Tamaulipas, Luis Donaldo Colosio Murrieta (Huites) in Sinaloa and Sonora, and Aguamilpas in Nayarit within the framework of the programme for Normalisation of Responsible Fishing, through the National Consultative Committee for Normalisation of Responsible Fishing. Furthermore, draft standards were approved for sharks and similar species and for Zimapán Dam in Querétaro and Hidalgo, and El Infiernillo Dam in Michoacán and Guerrero.

On 30 July 1997, an amendment to Official Standard 002-PESC-1993 was published in the Official Gazette of the Federation, which makes the provision on the use of the turtle-excluding device (TED) of a permanent nature both in the Gulf of Mexico and the Caribbean, and in the Pacific Ocean. It also establishes the compulsory use of rigid turtle-excluding devices for the Gulf of Mexico shrimp fleet as of 1 January 1998.

For tuna fisheries, the provisions in the fleet aimed at protecting dolphins were consolidated and new regulations were incorporated into an Official Mexican Emergency Standard (NOM-EM-002-PESC-1999), published on 29 December 1999 in the Official Gazette of the Federation. These regulations are designed to ensure sustainable development of tuna species within the framework of the agreements signed by the Government of Mexico in regional fisheries ordering organisations.

After the preparation of diagnoses of scale fish and shark fisheries, administrative provisions were established in some fisheries, such as the implementation of a closed season for the species "bandera" (marine catfish) and snook, the standardisation of technical specifications for fishing gear and tackle to conserve and protect the resource and the progress made on preparing the draft Official Mexican Standard for shark fishing.

It should be pointed out that in the work to prepare the standard for sharks, certain provisions have been envisaged in accordance with the guidelines established in the Plan of Action on Sharks implemented by FAO.

Progress was made on preparing biological and fisheries studies to regulate management measures for fishing in Lake Chapala and a draft official standard and/or administrative provisions are under way to regulate grouper fisheries.

The amendments to the Regulations of the Fisheries Law, published on 29 September 1999 in the Official Gazette, strengthened legal certainty for fishermen and investors by ensuring greater transparency in steps to obtain permits, concessions and authorisations.

The formalities for issuing fishing permits, concessions and authorisations were simplified. The policy adopted by this administration of issuing concessions and permits for the maximum legal period was continued. In 1999, 1 254 permits for commercial fishing were granted, 931 for large vessels and 323 for smaller ones and a total of 484 (38.5%) permits were issued for a 4-year period, 374 (29.8%) for two years and 396 (31.6%) for one year. Additionally, the systematisation and modernisation of the process for issuing permits, concessions and authorisations was continued by locating the files available in the central offices and the design and operation of a database by fishery was carried out, and support was provided for by the regularisation of more than 300 fishery social organisations.

In accordance with its guidelines and with the support of the Department of the Environment, Natural Resources and Fisheries (SEMARNAP), and with the participation of fishery social organisations, the foundations were laid for the process of issuing identification cards to fishermen, which began with the states of Oaxaca and Tamaulipas.

The Interdepartmental Commission on Maritime and Port Security and Vigilance (CONSEVI) advanced in the process of registration and issuing of licence plates for vessels, which will facilitate the identification and ordering of national fisheries efforts.

In this regard, by the end of 1999, the registration process showed significant progress, since 55 500 vessels (50.6% of the total) had been registered, and special mention should be made of the states of Quintana Roo (100%), Sinaloa (93%), Tamaulipas (86%), Yucatán (83%), Colima (73%) and Veracruz (68%).

Moreover, in support of the activities carried out by CONSEVI, budget resources were provided for the training programme on Safety of Human Life at Sea. Under this programme, 9 000 fishermen were trained in different techniques to avoid marine hazards, identify natural phenomena, provide first aid, prevent fires and advancement on implementing the concept of fisheries ordering. The fishermen who received these courses were able to obtain or renew their "*tarjetones*" (register card) and logbooks, an essential requirement for carrying out fishing operations at sea.

With regard to fishing gear, the Programme of Experimental Fishing of deep-water shrimp in Bahía Magdalena-Bahía Almejas was continued in order to find alternatives to replace the fishing gear known as "*chango*" (small trawl net). The aim is to strengthen ordering actions through the identification and regularisation of fishermen's organisations, registration of vessels and legal accreditation of vessels in favour of legitimately established organisations.

Prohibition of the use of hooks and diving was reiterated, based on a model of technical and biological information on octopus (Campeche and Yucatán). The Prospecting Programme for the use of the boulder in swordfish fishery (Pacific Ocean) was implemented and the prospecting Programme in tuna fisheries (Pacific Ocean) was continued also, in order to know the effects of the use of the boulder.

These efforts have made it possible to care not only for fishery resources but also for the balance of the ecosystems in which these resources develop. In this regard, the species protection policy has been consolidated. Furthermore, in the context of shrimp and tuna fisheries, the incidental catch or death of turtles and dolphins has been drastically reduced.

Recreational fisheries

As part of the 1995-2000 National Fisheries and Aquaculture Programme, the sub-programme for recreational fisheries constitutes an aspect of the current policy to foster this practice in national tourist centres and the generation of greater benefits by promoting related productive activities and fishing equipment and inputs that in turn support the development of tourism.

Some of the advances in this sub-programme include: preparation of Official Mexican Standards (NOMs) for the ordering of inland water reservoirs; the formulation and evaluation of the "Revillagigedo Archipelago" Biosphere Reserve Management Programme and other strategies for identifying our country's natural riches, such as the study by CONABIO on Mexico's bio-diversity. Thus, consultations with the Department of Tourism (SECTUR) were concluded for the implementation and signing of Execution Annex III for the Promotion of Recreational Fisheries.

In regard to recreational fisheries, during the period mentioned efforts were aimed at co-ordinating the elements of the National System of Information on this category of fishing. The Department of Tourism and SEMARNAP are working on improving this system in conjunction with SEMARNAP's Federal Delegations, state and municipal governments and the productive and services sectors, in order to upgrade its structure and content.

In co-ordination with the National Ecology Institute's Protected Natural Areas Co-ordinating Unit, the criteria for the development of this activity in the Revillagigedo Biosphere Reserve were established, bearing in mind the elements of the National Ecology Institute's proposed Management Programme for this area. The work is being done by taking into account the activities carried out by sports fishermen in the Reserve, the catch volumes obtained, the composition of catches, the fishing areas and in general, all useful information for knowing the impact of these activities on the resources and habitats of the Reserve so as to support the planning of the following season.

Monitoring and enforcement

The Federal Environmental Protection Bureau (*Procuraduría Federal de Protección al Ambiente: PROFEPA*), through its Marine and Fishery Resources Inspection and Surveillance Office (*Dirección General de Inspección y Vigilancia de los Recursos Pesqueros y Marinos*), is responsible for drawing up and implementing policies and standards in the area of inspection and surveillance.

Monitoring activities related to fisheries that are the responsibility of the Bureau are effected on the basis of the Programme for Inspection and Surveillance of Fishery and Marine Resources, a fundamental instrument for carrying out of the said activities and the result of a long process of consultation between the agencies of the Public Administration involved in the exploitation and protection of fishery and marine resources, the State governments and the productive sector. The programme addresses problems affecting the 17 coastal states and carries out priority actions of inspection and surveillance in order to combat it. This programme is updated annually with the opinions of the participants themselves.

The Bureau thus carries out the following fundamental activities directed at verifying the legal origin of fishery products.

Inspections: which are acts of authority, generally corrective, aimed at verifying boats, installations, storage depots or warehouses, collection centres or markets and road or air transport where it is believed that fishery products of illegal origin are to be found. During inspections the product is examined physically to check species, size, and other relevant physical characteristics. Documentation proving the legality of the product is checked and an official report is filed testifying to the facts and the circumstances of the act of inspection. If during the course of the inspection it is not possible to establish the legality of the product, it is impounded and an administrative procedure is then set in motion to study the evidence and allegations presented and to establish the legality or illegality of the fishery product. If the product turns out to be illegal it is confiscated and a sanction is imposed which in certain cases includes a fine. The inspection is carried out exclusively by staff of the Bureau duly accredited and with an inspection warrant signed by the competent authorities. Acts of inspection constitute the central element in the PROFEPA's activities.

Surveillance: which is an act aimed at preventing the committing of illegal acts and consists basically in maintaining a constant presence in fishing zones and at places where fishery products are unloaded or traded.

Operations: which are actions of inspection and surveillance on a larger scale, and may include several visits to a particular zone carried out in co-ordination with authorities such as the National Defence Ministry, (*Secretaría de la Defensa Nacional: SEDENA*); the Navy Ministry (*Secretaría de Marina*); the Attorney General of the Republic (*Procuraduría General de la República*); local and municipal police forces etc., in order to verify the legality of activities.

Thus such actions and the results of inspections and surveillance carried out by the PROFEPA in the area of fishery and marine resources for the period between January 1998, and September 1999, have included a total of 12 485 inspection activities and 7 928 larger-scale operations.

As a result of such actions, 3 731.25 tonnes of fishery products, 1 154 vehicles and vessels, 48 290 items of fishing tackle and equipment have been impounded and 4 838 administrative proceedings have been set in motion. Training of personnel from other departments of the Federal Government and a number of different social organisations has been implemented. A total of 3 324 members of 64 military units of the National Defence Ministry from 18 different states have been given training.

At present there are 218 committees and sub-committees on Marine and Fishery Resources involved in inspection and surveillance along our coastlines and at least 1 005 individuals have been added to the community watch brigades, assuming the responsibility of assisting the authorities in conserving fishery resources.

At the same time, five agreements and conventions exist with state and municipal governments and fishery organisations over protection and the legal exploitation of these resources.

Concerning marine resources and shrimp and prawn fishing on the basis of the provisions of NOM-002-PESC-1993 – relating to the mandatory use of devices to prevent the entry of marine tortoises into the shrimp dragnets during commercial shrimp and prawn fishing operations in the Pacific Ocean, the Gulf of Mexico and the Caribbean – the PROFEPE has the obligation to check both on the presence of these devices in the shrimp fishers' dragnets and on the compliance of such devices with the specifications, *i.e.* components, materials of manufacture, structure and installation, as well as the previous physical examination of the vessel.

Verification and certification, as the case may be, is carried out during two periods of the year, March-April and August-September, throughout the country's entire shrimping fleet. It is a requirement that certification be issued by the PROFEPA before the port authorities, which come under the Ministry of Communications and Transport (*Secretaría de Comunicaciones y Transportes*: SCT) give the go ahead to the "Vía la Pesca" office to grant permission for these boats to leave port and embark on their fishing activities.

A significant advance is the certification given by this Institution on the installation of Marine Turtle Excluding Devices in the dragnets of the shrimping boats along the whole length of the Mexican coasts. As in Table 2 during 1998 and 1999 a total of 4 104 certifications were carried out on the national fleet consisting of 2 052 shrimp boats, and over that period the installation of marine turtle excluding devices (TEDs) has thus been certified for 100% of the national fleet. It may thus be affirmed that the Mexican regulations and the international legislation in this matter have been fully complied with.

Table 2. **Actions and results carried out in 1998 and 1999**

	Actions			Results			
	Inspections	Operations	Administrative proceedings begun	Fishery produce impounded (tonnes)	Vehicles and vessels impounded	Equipment and fishing tackle impounded	Number of vessels inspected for DETs
1998	3 362	3 523	2 154	2 009.55	323	6 856	2 052
1999*	9 123	4 405	2 684	1 721.70	831	41 434	2 052
TOTAL	12 485	7 928	4 838	3 731.25	1 154	48 290	4 104

1. Preliminary figures to September 1999.

Multilateral agreements

Over recent years, Mexico's international fishery policy has been directed toward the development of a world fishing order responding to the criteria of sustainability, as well as satisfying different countries' needs of food, employment and income. Mexico's participation in international fora has contributed, since 1995, to the formulation of the Code of Conduct for Responsible Fishing, in the FAO.

Mexico has endorsed actions such as the creation and application of multilateral mechanisms for the protection of marine species, the rejection of the implementation of trade sanctions and the suppression of tariff and non-tariff barriers to trade in fishery products, and has also promoted responsible fishing practices before authorities such as the Working Group on Fisheries of the Asia Pacific Economic co-operation Forum (APEC), the Latin American Organisation for Fisheries Development (Oldepesca), the Fisheries Committee of the Organisation for Economic co-operation and Development (OECD), the International Whaling Commission (IWC), the Inter-American Tropical Tuna Commission (IATTC) and the International Commission for the Conservation of Atlantic Tunas (ICCAT), among others.

In this context, and in harmony with the aims set forth in the 1995-2000 Programme on Fisheries and Aquaculture, Mexico has made efforts to resolve, for example, the problems generated by unilateral measures related to the incidental mortality of marine species. The embargo on tuna is a case in point that has been affecting the development of the Mexican tuna fleet and industry.

With regard to this commercial sanction, on 15 August 1997, the United States promulgated the amendments to the Marine Mammals Protection Act and in January 2000, regulations for applying these amendments are to be published, which means that by the beginning of 2000 the trade sanctions on tuna will have been virtually eliminated. Likewise in April 1999, the United States' Information and Consumer Protection Act was modified, introducing a new definition of the "dolphin-safe" concept, which means that it will be possible for this label to be borne by tuna where no dolphin mortality resulted from the actual process of catching the fish. Likewise, Mexico and the United States are working to obtain more scientific information on the impact of tuna fishing on dolphin populations, for which purpose a Programme of joint information-gathering cruises has been organised.

On 15 February 1999, the Agreement on the International Dolphin Conservation Programme came into force. This agreement is legally binding in nature and obliges Mexico and the Mexican tuna fleet to apply measures to reduce the incidental capture of dolphins during commercial fishing of tuna with the seine or ring nets associated with this marine mammal. Mexico ratified the agreement on 8 February 1999.

Likewise, on 30 April 1999, the Senate of the Mexican Congress approved the Convention for the setting up of the Inter-American Tropical Tuna Commission (IATTC), and on 4 June of the same year the Mexican Government joined the Convention, announced in decrees published in the government's Official Gazette (*Diario Oficial de la Federación*) on 3 June and 19 July 1999 respectively. One of the objects of this was to establish measures for conserving and managing the populations of the various tuna species and other *Scombridae* in the eastern Pacific Ocean, in order to ensure their sustainable exploitation.

Mexico has also played a leading role regarding the protection of marine turtles, which are associated with shrimp and prawn fishing. This action has taken the form not only in the setting up of the National Programme for Protection of the Marine Turtle and the use of Marine Turtle Excluding Devices (known by their abbreviation in Spanish as DETs) throughout the entirety of the shrimping fleet, but also on the insistence at regional level on the creation of the Inter-American Convention for the Protection and Conservation of Marine Turtles. In December 1998, Mexico signed the Convention and on 28 April 1999, it was ratified in the Mexican Senate. The Convention, besides guaranteeing the entry of Mexican shrimps and prawns into the United States market, will furnish us with an instrument giving adequate protection to marine turtles under a multilateral mechanism that avoids the application of unilateral commercial initiatives and sanctions in connection with the protection of the *Cheloniidae*.

Such actions complement the efforts made by Mexico in the framework of bilateral agreements. For several years Mexico has been co-operating with the United States on matters related to diseases affecting shrimps and prawns; on how to achieve compatibility between different standards for control of quality and the public health aspects of fishery products; on how to ensure observance of legal provisions concerning the regulation of fisheries in both countries; and on intensifying efforts in favour of the marine turtle, the smaller pelagic fauna, marine mammals and sharks.

During 1999, Mexico took part in the formulation of measures to regulate the different fisheries and initiatives related to the "management of fishing capacity", "conservation and management of shark" and for "reducing incidental catch of seabirds in longline fisheries", held under the auspice of the FAO. In view of the importance of the subject of fishing capacity management, Mexico was host to a Technical Consultation in December 1999, from which recommendations arose regarding the elements to be taken into consideration when measuring fishery capacity.

Along with Oldepesca, Mexico continued vigorously to promote the launching of the fishery development project entitled "Support for the Regional Implementation of International Fishing Instruments", through which an attempt is being made to advise the countries of the region on how to approach the responsibilities arising from the implementation of the Agreement on Deep Sea Fishing and from the Code of Conduct for Responsible Fishing.

As regards trade, in terms of bilateral and multilateral agreements, measures have been promoted in favour of diversification and the stepping up of fishery product exports to non-traditional markets by means of the negotiation of free-trade agreements and in this field the agreement with the European Union (EU) was finalised during 1999. This agreement has brought positive results for the fisheries sector. While by 2003 a proportion of 71% of the products imported from the EU will be free of tariffs, the

European Union will liberate from tariff protection, 88% of the products that Mexico exports to that region. Likewise Mexico has been working on the formulation of Free Trade Agreements with Panama and the Northern Triangle of Central America (Honduras, Guatemala and El Salvador).

In an attempt to complement national actions and efforts in the area of fisheries development, Mexico took part in the OECD's Fisheries Committee, where work was engaged in to achieve compatibility between quality control Programmes in fisheries and in a study of the costs of the transition toward responsible fishing.

In the APEC Working Group on Fisheries, a proposal was made to work on rendering compatible the regulations for attention to the presence of pathogenic viruses in aquaculture. For this purpose, Mexico will be hosting a meeting on the subject during the year 2000 (April-May).

In the area of scientific-technical and economic-commercial bilateral co-operation on fishing and aquaculture, during the 1998-1999 joint actions were implemented between Mexico and various countries of the Americas, Asia, Europe and the Pacific.

Along with nations such as the Bahamas, Belize, Colombia, Costa Rica, Cuba, Chile, Guatemala, Nicaragua and Panama, scientific and technical co-operation projects were implemented on the following subjects: cultivation and reproduction of shrimps and prawns, lobsters, sea urchin, cypriniformes, salmoniformes and mollusks; design and construction of aquacultural infrastructure; maintaining healthy environmental conditions in aquaculture; marketing of fishery products. Mexican technicians involved in the fishery sector also attended training courses in Japan and Peru on the subjects of planning fishery development and processing fishery products.

With the aim of promoting investment and technology transfer, co-operative bilateral actions on fisheries took place with Korea, China, Finland, Morocco, Spain and Canada.

Joint efforts continued with the United States in the conservation and protection of species and in attaining a more ordered approach to the exploitation of resources of common interest, especially sea turtles, dolphins and other pelagic fauna, marlins, sharks, whales, development and perfecting of selected types of fishing tackle, aquacultural health, processing of fishery products and in ensuring observance by fishermen of the legal provisions and standards associated with fishery activities. Likewise, requests from different North American institutions and specialists were attended to with regard to carrying out research work on subjects relating to freshwater fish, marine turtles, sharks and stingrays, as well as studies on dolphins and whales.

Aquaculture

Policies changes

As a strategy to alleviate poverty and a way of stimulating food production in rural communities, the Rural Aquaculture Programme was continued. This Programme offers one of the most important alternatives for both increasing national fish production and fostering improvements in the Mexican rural environment.

The Rural Aquaculture Programme is currently operating in all the states of the country. During 1998 a total of 2 255 communities in 580 municipalities were attended to and the corresponding figures for 1999 were 2 202 and 522. In 1998 this Programme benefited a total of 46 250 inhabitants. A figure, which increased in 1999 to reach a total of 52 001 inhabitants, with a production of 8 897 and 8 303 tonnes of fish meat, destined for consumption on the farm and secondly to the marketing of surplus.

In other aspects of the activity, during 1999 the following advances were registered:

On 19 March 1999, the Mexican Official Emergency Standard (NOM-EM-001-PESC-1999), was published in the Official Gazette, laying down the requirements and measures for preventing and controlling the introduction and dissemination of the viral diseases known as white spot baculovirus (WSBV) and yellow head virus (YHV). It was originally valid for six months, and was extended for a further six months on 24 September 1999.

Four issues of the National Programme on Aquacultural Health Bulletin were published and the Diagnosis Network was set up with the aim of disseminating among producers, researchers and other persons interested in the subject technical information on the prevention, diagnosis and control of the different pathogens causing diseases affecting, or liable to affect, organisms in cultivation.

A sampling programme in the collection zones of wild shrimp and prawn post-larvae continued, with the aim of identifying diseases. This was assisted by the Network System for Diagnosis and Prevention of Diseases in Aquatic Organisms at National Level, in which a number of the country's Universities were involved. The results obtained revealed the incidence of intra-cellular bacteria and those of the genus *Vibrio*, as well as the VP virus (*Vaculovirus penaei*), that of the white spot disease (WSBV) and that of the Taura syndrome (TSV). All these were found in a small number of shrimp and prawn farms in the states of Sinaloa and Nayarit.

Under the aegis of the research fund for the "Development of Aquaculture in Mexico" project, state-level committees were set up for the evaluation and selection of research protocols in the states of Oaxaca, Chiapas and Veracruz. Particular projects were supported including: Training and Diagnosis in Aquaculture Health; Research on Oyster Purging in Tamiahua, Veracruz; Technological Transfer for the Cultivation of Shrimps and Prawns in Extensive Systems in Oaxaca; Research for the Mar Muerto shallows on the Oaxaca coast; Research for Organising Fisheries at the Catazajá Beaches, Chiapas; and the contracting of technical assistance to install the Fisheries Department's Geographical Information System.

The 1999 National Register of Aquaculture Producers was set up, to serve as an input for the 1999 Statistical Fisheries Annual and, it is intended, for the edition of the National Directory of Aquaculture.

For a fuller understanding and stricter observance of the New Code of Regulations of the Fisheries Act, seven regional training workshops were set up, covering the 31 Delegations plus one more at central level, in which officers of the Secretariat participated in order to discuss and define with greater clarity the application of the Regulations in the area of aquaculture.

Production facilities

The inventory of aquacultural production units in national territory was brought up to date. Thus, at the end of 1998, on the basis of information sent by the Federal Delegations of the SEMARNAP, a total of 9 300 production units are now in operation, in the categories of Promotional Aquaculture, Aquaculture Fisheries and Controlled Systems.

Of these units, 1.1 million hectares (93.0%) correspond to interior bodies of water (reservoirs, lakes, coastal lagoons, etc.) where fishing is practised on the basis of periodic "seeding" with organisms (aquacultural fisheries); 58 000 hectares (5.0%) correspond to small productive units devoted to production for self-supply (promotional aquaculture); and 20 437 hectares (2.0%) correspond to commercial farms (controlled systems).

Of the area under exploitation in the category of Controlled Systems, 87% corresponds to 253 shrimp and prawn farms and the remaining 13% to units devoted to the commercial production of trout, *Catarina* clams, oysters, catfish, carp, tilapia, lobster, abalone, frogs, crabs, mussels, ornamental fish and sea bass, mainly.

Volume and value of production

As in Table 3, total aquaculture production for 1998 was 159 781 tonnes, consisting mainly of mojarra (a type of bream), 70 392 tonnes; followed by oysters, 33 486 tonnes. In 1999 production totalled 151 016 tonnes, the largest production being that of mojarra, 61 630 tonnes followed by that of oysters and shrimps and prawns at 36 776 and 22 737 tonnes respectively.

Table 3. Value and volume of aquaculture production by principal species for 1998-1999

Species	Volume Tonnes, live weight		Value Thousands of pesos	
	1998	1999*	1998	1999*
Shrimp/Prawn	23 749	25 437	1 149 054	1 220 976
Carp	24 659	21 713	71 683	91 411
Mojarra	70 392	61 630	403 431	517 076
Oyster	33 486	36 766	45 297	53 311
Others	7 495	5 470	106 635	90 166
TOTAL	159 781	151 016	1 776 100	1 972 940

* Estimated.

Source: SEMARNAP.

According to preliminary figures in 1999, the participation of commercial aquaculture in total national aquaculture production was close to 20%. Of this aquacultural production, that of shrimps and prawns is particularly prominent since the almost 25 400 tonnes produced at national level corresponds in its entirety to production by commercial aquaculture. It should be explained that there is a marked under-registering of the aquacultural production of shrimps and prawns, which is estimated at around 30 000 tonnes; and while Sinaloa has traditionally stood out for its production of this type of crustacean, it is worth pointing out that during 1999 this state raised its output by 20% compared to 1998, this being due to the intensification of cultivation and the diversification in sizes that this state's producers offer the market.

Total national aquacultural production of mojarra registered a 10% reduction as against 1998. This fall is attributed to the impact of the prolonged period of low water in the early months of 1999 on aquaculture production in reservoirs. Nevertheless, the production of mojarra by commercial aquaculture registered an increase in its share in the total national aquaculture production of this species, since in 1998 it only accounted for 0.1%, while in 1999 it was around 1.4%, which shows the advance of commercial aquaculture as against the extensive systems.

On the other hand, the share of oyster production by commercial aquaculture in overall national aquaculture production showed a reduction of around 2%, falling from 6% in 1998 to 4.3 in 1999. Nevertheless, the production by commercial aquaculture of oysters in 1999 was close to that obtained in 1998 (2 000 tonnes), which was severely affected in that year by the meteorological phenomenon known as "El Niño"; this shows the process of recuperation of the commercial aquacultural production of this mollusk.

Fisheries and the environment

Governmental financial transfers

As part of the 1995-2000 overall Fishery and Aquaculture Programme a component programme was established for the promotion of credit support to the Fishery and Aquaculture Sector, the purpose of which is to design and promote, in co-ordination with the competent authorities, the financial instruments appropriate to the characteristics of the sector, as well as to channel credit and risk capital resources, in a timely and sufficient manner and to improve on a long-term basis the financial structure and capitalisation of fishing organisations.

The achievement of these objectives is being aided by co-operation with the Ministry of Finance and Public Credit (*Secretaría de Hacienda y Crédito Público*: SHCP), the Promotion Funds of the FIRA-FOPESCA (Guaranty and Promotion Fund for Fishery Activities) and the National Bank for Foreign Trade (*Banco Nacional de Comercio Exterior*: BANCOMEXT), the Commercial Banks and other sources of finance, with the aim of getting credit resources flowing in a timely and sufficient manner, according to the specific needs of the sector.

For the above reasons Mexico is participating directly in the Technical and Administration Committees of FIRA-FOPESCA, BANCOMEXT and Ocean Garden, where monitoring and evaluation of the financial support programmes designed in co-ordination with the SHCP is being carried out, as well as the financial and credit management of investment projects specifically requested by the producers.

Thus, with the purpose of permanently strengthening the financial health and capitalisation of the organisations in accordance with the technical, economic and social development of the sector, for 1998 and 1999 the credit support channelled by the promotion funds rose to 1 317 and 1 895 million pesos respectively. An average of 50% over this two-year period was provided by the National Bank for Foreign Trade (BANCOMEXT) and the remaining 50% by FIRA-FOPESCA.

Another of the programmes managed with financial schemes was the Programme for Modernising the Fishing Fleet, which is aiming to bring the fleet into line with the most up-to-date standards in the international field.

Consequently, during 1999, FIRA-FOPESCA channelled financial resources worth 226 million pesos for the modernisation of 300 vessels, of which 291 were rehabilitated and nine replaced. The modernisation of these fishing boats contributed to the strengthening of the organisations that own them. While the safety and living conditions of the fishermen at sea during fishing trips were improved benefiting approximately 1 582 fishermen, rewarding economically industries such as shipbuilding, dry docks, equipment, parts, fuels, lubricants and others in the commercial sector.

An important point of the fleet modernisation programme is that it does not under any circumstances consider the granting of subsidies or economic resources on the basis of a life annuity. The modernisation of the vessels is a voluntary decision of the producers. Institutions participating in the programme can help them obtain financial resources in order to carry out this modernisation process and at the same time capitalise their organisations and stimulate their overall corporate development. It is for this reason that the decisions of the producers have tended towards rehabilitation rather than the replacement of their vessels.

Post-harvesting policies and practices

With the purpose of guiding and supporting the sector's industrial plant, in early 1995 the Modernisation Plan for the Fishing Industry was set in motion. Among the basic elements of this Programme is the recognition that sustainable development of fisheries implies, among other aspects, of having an efficient processing industry and making rational use of raw materials. For which reason, it is essential that the industrial plant should introduce systems to ensure quality in the processes for transformation of fishery products, focusing as a priority on the programme for sound hygiene and public-health practices as well as risk analysis and control of critical aspects.

Seafood safety

An important consequence of the programme for Modernisation of the Fisheries' Industrial Plant and the implementation of the public health standards, NOM-128-SSA1-1994 (which makes reference to the System of Risk Analysis and Control of Critical Points) was the publication of the decision (98/695) of the European Economic Community, which specifies the conditions regarding importation of fishery and aquaculture products originating in Mexico (24 November 1998). In addition, seven agreements were signed between the Health Ministry and the States of Baja California, Baja California Sur, Sinaloa, Sonora, Colima, Campeche and Yucatán for the decentralisation of the issuing of certificates for exportation fishery products.

Conversely, the Mexican Official Emergency Standards (NOM-EM-001-SEMARNAP-PESC-1999) was drawn up to establish the requirements and measures to be adopted for preventing and controlling the introduction and dissemination of the strains of the pathogenic agents known as White Spot Syndrome Virus (WSSV) and Yellow Head Virus (YHV), which pose a threat to both wild and cultivated populations as a result of imports into, and movements across, the national territory.

Processing and handling facilities

During 1998 and 1999 the issuing of recommendations to improve both infrastructure and health and hygiene practices in the processing of fishery products continued. Two courses in Sensory Evaluation for the Fishing Industry were held. At present there is a list of 59 companies holding certificates for exportation to the European Union, awarded on the basis of their sanitary conditions.

Similarly, during the period of March to December 1999, as part of the Modernisation Programme for fishing industry plant, 48 fishery product processing plants received recommendations through the self-evaluation guide for the fisheries industrial plant, while six plants received technical assistance and were evaluated *in situ* for the issuing of the recommendations necessary for compliance with the new standards issued by the Health Ministry, the Labour Ministry and the Ministry of Trade and Industrial Promotion. Both recommendations and technical assistance have been focused on specific actions used for diagnosis of the fishing industry plants both in terms of infrastructure, conditions of hygiene and the implementation of the HACCP Programme.

After five years of this programme certain areas have been identified in which the industry has worked to improve its conditions and thus to ensure compliance with government standards and also the requirements of the international market. This approach always takes into consideration the aim of providing consumers with healthy and high-quality fishery products.

It is worth emphasising that these actions have enabled Mexico to win the recognition of the European Union, which now regards Mexico as a permanent exporter of fishery products. A proof of this is the publication of the decision (98/695) of the European Economic Community to fix the particular conditions of importation of fishery and aquaculture products originating in Mexico (24 November 1998).

As shown in Table 4, during the two year period 1998-1999, the fisheries industrial plant produced on average 326 594 tonnes of finished product, while for products in the frozen food line and other processes a fall was observed for 1999 in comparison with what was registered during 1998. In the case of frozen products a reduction of 1.8% was registered, while for other processes the fall-off was 6.86% in the canned presentations and in reduction, however, an increase for 1999 of 1.53% and 11.11% was registered respectively.

Table 4. **Fishery industries production 1997 – 1999 (tonnes)**

	1997	1998	1999e
TOTAL	401 294	324 574	328 614
Frozen	203 768	169 652	166 591
Canned	120 647	100 060	101 588
Other processes	2 908	2 900	2 701
Reduction	73 971	51 962	57 734

e = estimated figures.

Markets and trade

Markets

Tendencies in internal consumption

The basic objective of fishery production is to provide food of high protein value to domestic consumers in accordance with their varying economic capacities.

To supply varied fishery products, which also means options viable in terms of price and availability in the market at the right time, is one of the challenges of fishery policy as is also the achieving of more extensive and better access of this country's products to foreign markets.

In this context we are continuing to work with the National Committee for the Promotion of Consumption of Fishery Products (*Comité Nacional para el Fomento al Consumo de Productos Pesqueros*), which operates throughout the year but intensifies its efforts during the seasons of greater demand, such as Lent, Christmas and the New Year.

It is important to point out that the National Committee has the participation of the production and marketing concerns of the Federal Government institutions. This Committee is of a permanent nature and takes in the whole national territory through the State Committees, which establishes their own working programmes in line with regional conditions. The aim of this committee is to achieve a sufficient and timely domestic supply at prices that enable the public to have access to these traditional foods during the above-mentioned seasons.

As a result of these efforts, during the Lenten period of 1999 a total of 124 304 tonnes of fishery products were marketed, representing a 5.27% over the same season of the previous year. Agreements were arrived at with the industrial and marketing firms of the sector to support the stability of prices and an adequate supply. The marketing system was also supported through the installing of 2 891 additional sales points complementing the established outlets.

It is necessary to stimulate changes of attitude regarding the consumption of fishery products. The education of the consumer to adopt patterns of consumption favourable to sustainability has an important role. In this direction, wide-ranging dissemination campaigns on radio and television have been implemented, informing the public of the nutritional properties, quality and prices of the different species, fresh and frozen, available on the market. At the same time the consumption of canned tuna is being promoted.

Promotion efforts

In order to improve the system of marketing and favour the access of the public to these products, in 2000 the creation of three new central markets for supply and distribution of fishery products is being promoted in order to complement the existing ones (La Nueva Viga and Zapopan) which is in the centre of the country.

The creation of these markets will facilitate an improvement in supply channels, reduce the present margins of the various intermediaries and favour the formation of a market offering a wide variety of species.

Through the Programme for Modernisation of Fisheries, in the period 1998-1999 training courses for retailers in fish and shellfish have been introduced to cover aspects such as health and hygiene in fishery products. Thus promoting the improvement in the operation and presentation of outlets dedicated to this trade so as to enhance their commercial practices.

One of the principal tasks is to consolidate and increase our traditional exports while promoting exports of new fishery products and incorporating added value thus allowing us to compete favourably in international markets.

The incorporation of greater added value to fishery products under strict sanitary and quality standards is a requirement for generating the sector to be more independent and able for competition in the national and international markets. For this reason the re-adaptation, modernisation and construction of processing plants is being promoted, in which new presentations, more attractive to the consumer, will be incorporated. An important consequence of greater added value in fishery products is that it generates employment and higher quality standards.

For the first time Mexico organised the International Food Fair, "Alimentaria México 1998", which took place in November. The aim of this fair was to promote opportunities for business, through the exchange of products and food technology among the markets of Europe and Latin America. The staging of this event promoted a wider and more detailed knowledge of the most recent technological advances, especially in the fields of production and marketing of seafood, as well as consolidating the exchange of products and technology between Europe and the Americas.

With the objective of satisfying the needs of the Mexican and Central American markets, the “Expo Marítima México 99” took place in April. This event brought together important entrepreneurs connected with fisheries and other activities, that take place on the seas and in adjacent zones, thus providing the opportunity to learn of the most recent advances, especially in the fields of production and marketing of sea food.

Trade

Table 5 shows the balance in trade in fisheries products. The sector's trade balance for 1999 registered a positive balance of USD 516 000 as a result of having carried out exports worth USD 671 821 000 and imports of USD 155 790 000. A positive balance was likewise registered in 1998, which totalled USD 541 930 000, in which exports reached USD 675 825 000 and imports USD 133 895 000.

Table 5. **Balance of trade in fisheries products**
'000 dollars

CATEGORY	1998	1999	99/98	99/98
	VAL.	VAL.	ABS. VAR.	REL. VAR.
BALANCE	541 930	516 031	-25 899	-4
EXPORTS	675 825	671 821	-4 004	-0.59
IMPORTS	133 895	155 790	21 895	16.335
EXPORT	675 825	671 821	-4 004	-0.59
Seaweed and gulfweed	314	1 253	939	298.96
Tuna and similar	56 733	33 663	-23 070	-40.66
Squid	10 560	16 262	5 702	54
Shrimp and prawn	436 811	455 184	18 373	4.21
Lobster	17 259	19 894	2 635	15.26
Octopus	14 839	7 116	-7 723	-52.05
Sardine and mackerel	16 468	14 808	-1 660	-10.08
Canned crust. and moll.	42 168	44 789	2 621	6.22
Other	80 673	78 853	-1 820	-2.26
IMPORTS	133 895	155 790	21 895	16.335
Tuna and similar	7 974	14 314	6 340	79.51
Cod	7 021	9 075	2 054	29.26
Squid	2 468	3 025	557	22.56
Shrimp and prawn	14 138	13 100	-1 038	-7.35
Salmon	4 081	6 129	2 048	50.18
Seaweed derivatives 4/	27 547	30 672	3 125	11.34
Fats and oils	1 055	14 991	13 936	1 320.94
Fishmeal	12 139	11 429	-710	-5.85
Other	57 472	53 055	-4 417	-7.69

ABS. VAR. = Absolute Variation.

REL. VAR. = Relative Variation.

VAL. = Value.

Source: Directorate of Fishery Registry and Statistics and the Ministry of Finance and Public Credit.

NEW ZEALAND

Summary

Economic returns to the New Zealand fishing sector increased relative to 1998. This was mainly due to the healthy state of the fish stocks coupled with higher export prices and a lower export dollar.

Legal and institutional framework

Laws and institutions

The Fisheries Act 1996 provides the overarching framework for fisheries management. The purpose of the Act is to provide for the utilisation of New Zealand's fisheries resources while ensuring they are maintained at a sustainable level and any adverse effects on the environment are avoided, remedied or mitigated. The Act provides for the fishing interests of all fishing groups, be they commercial, recreational or customary Maori. It thereby reflects the Government's intention to manage fisheries for the benefit of all New Zealanders within a framework ensuring sustainability of the resource for current and future generations.

The primary purpose of the Fisheries Act 1996 is to consolidate the range of modifications to the Quota Management System (QMS) and other fisheries management procedures which have been made since 1986, and to implement the results of recent reviews of fisheries legislation. Its intention is to facilitate the activity of fishing while having regard to the sustainability of harvest and the effects of fishing on the environment. The Act builds on the existing framework of the QMS while introducing a number of measures intended to resolve current and likely future difficulties associated with fisheries management.

The Ministry of Fisheries, created in 1995, provides policy advice and enforces management systems to ensure that the use of New Zealand's fisheries resources are in compliance with the Fisheries Act 1996. The Ministry of Fisheries has four core business units:

- Fisheries Policy provides fisheries policy advice to the Minister of Fisheries.
- Fisheries Compliance promotes compliance with fisheries law.
- Service Delivery purchases fisheries research and management services.
- Fisheries Services provides a range of administrative functions such as quota registration, data management, etc.

A National Rock Lobster Management Group, comprised of commercial, recreational, Maori and environmental interests, exists to promote an integrated and consultative approach in the management of the fishery. The group deals with all issues relating to the management of rock lobster nationally and makes recommendations to the Minister of Fisheries.

The New Zealand Seafood Industry Council (SeaFIC) carries out a broad range of promotional and representative functions on behalf of the fishing industry. SeaFIC is funded through a general fishing levy and a commercial fish levy on all fish sold or exported from New Zealand.

Commercial fisheries

All commercial fishing vessels must be registered. In addition, most commercial fishing is covered by the quota management system (QMS).

The quota management system

The QMS provides for the management of commercial fisheries on the basis of Individual Transferable Quota (ITQ). At its heart are two types of catch limits: the total allowable catch (TAC) and the total allowable commercial catch (TACC). The Minister first sets the TAC. From this the Minister quantifies the TACC for a particular fishing year, making allowance for recreational and Maori customary non-commercial fishing interests and all other sources of fishing. This includes the quantity required for research and an estimate of the amount taken illegally each year. Based on this allowance and the available scientific data the Minister decides what the TAC should be. Before setting or varying a TACC the Minister must consult with all interested parties, including representatives of Maori, commercial, recreational and environmental interests. A number of components of the QMS are reviewed annually, including the TACC, Government levies, deemed values¹ and conversion factors.

Total allowable catch (TAC) setting process

The TAC represents the assessment of the total amount of fish that can be sustainably removed from a stock in any one year. It encompasses all extraction from the sea by all users. Except in limited cases² it must be set by the Minister of Fisheries with reference to the maximum sustainable yield (MSY) or the greatest yield that can be achieved over time while maintaining the stock's productive capacity. The stock might be fished down to MSY or rebuilt to a level that can produce MSY.

Other sustainability measures include controls to avoid or mitigate bycatch of protected species such as albatross or Hooker sea lions. Technical measures, such as area closures and gear restrictions, are also used.

Annual Catch Entitlement

The Annual Catch Entitlement (ACE) represents the amount a fisher can physically catch in a particular fishing year. Each person's ACE is equal to his or her share of the TACC as determined by his or her quota holding. It is an offence to take fish in excess of ACE. For all stocks, the commercial fisher must balance the catch with ACE or satisfy a demand for the deemed values of the fish. A commercial fisher will be liable to pay deemed values for any catch in excess of his or her ACE (assessed on a monthly basis). A deemed value demand may be satisfied by acquiring ACE, entering into a bycatch trade-off, with ACE of another species or paying the amount demanded. If the TACC is exceeded in any given year, up to 25% of ACEs generated in the following fishing year will be withheld by the Government and not be available for fishing.

Aggregation limits

Restrictions are placed on the amount of quota that can be held by any one person, including their associates:³

Table 1. **Aggregation limits for New Zealand fish stocks**

Aggregation limit	Species
45%	Alfonsino, barracouta, blue warehou, gemfish, hake, hoki, jack mackerel, ling, orange roughy, oreos, packhorse rock lobster, red cod, silver warehou and squid
10%	Spiny rock lobster for any Quota Management Area
20%	Bluenose
35%	All other species

Individual quota and non-ITQ fisheries

The Minister of Fisheries may set a catch limit or quota for any fishery outside the QMS, either as a competitive TACC or by allocating the TACC as Individual Quota (IQ). Permit holders allocated IQ can only fish IQ. IQ are not transferable and cannot be leased or fished on behalf of another IQ holder in the same manner as ITQ.

Access

A commercial fisher is required to have an appropriate fishing permit before going fishing. For QMS species there is also a minimum quota holding requirement. Permits are not transferable. There is currently a moratorium on the issue of new permits for non-quota management stocks (there is, however, an exemption for tuna). This measure is considered necessary to control the expansion of effort in these fisheries until they can be moved to the QMS. Special permits can be issued for research, education and other approved purposes. New Zealanders may only hold quota or New Zealand controlled companies.

Foreign owned fishing vessels might be used in New Zealand waters if they are either:

- licenced foreign fishing vessels.
- Chartered fishing vessels, registered with a New Zealand permit holder.

Recreational fishing

The 20% of New Zealand's population that engage in recreational fisheries target some 40 species. Recreational fishers have traditionally had strong, if not well defined, rights in the New Zealand fishery. Recreational fishers do not have quota (output controls), but are managed using catch limits (input controls) – namely, closed areas, size limits and closed seasons. An implicit allocation is, however, made to recreational fishers when the Government makes its TACC decisions each year.

Aboriginal fisheries

The Fisheries Act 1996 recognises Maori as one of the key stakeholder groups in New Zealand's fisheries, providing for the input and participation of *tangata whenua* (local tribes) in fisheries management decision making processes. Extensive consultation was carried out with *tangata whenua* at the end of 1996 over the setting of total allowable catch limits in the rock lobster fishery.

Recent changes

Concerns with the flexibility in the fisheries management regime led to an independent review of the operation of the quota management system. This review resulted in the enactment of amendments in 1999 to the Fisheries Act 1996. These amendments increase operational flexibility in the management of commercial fisheries through:

- Simplifying the catch-balancing regime with the aim of increasing voluntary compliance, including a shift from criminal prosecution to civil penalties as the main disincentive to over-fishing of a catch entitlement.
- A simplified cost recovery regime, which is based on the attributable costs.
- Providing for integration of fisheries management decisions through fisheries plans developed by stakeholders and/or the Ministry of Fisheries for individual fisheries.
- Enabling responsibility for registry services to be transferred from the Ministry of Fisheries to a quota holder organisation.

The 1999 amendment of the Fisheries Act 1996 also created a framework to control New Zealand fishing outside its Exclusive Economic Zone (EEZ) and manage international fisheries in co-operation with other states.

Capture fisheries

Landings

The New Zealand fishing industry can be broken down into several main categories based on the locations of the fish caught or the type of method used. These categories include the inshore fishery, the deep water fishery, the pelagic fishery and the crustacea and shellfish fishery.

Total landings totalled 577 130 tonnes. QMS species accounted for 530 728 tonnes and non-QMS, 46 402 tonnes.

Status of fish stocks

In 1999 there were 44 species (284 separate fish stocks) managed under the QMS. Some components of the QMS, including the Total Annual Commercial Catch (TACC) levels are reviewed annually. Sustainability decisions are made in relation to the purposes of the Fisheries Act 1996, especially those relating to its environmental and information principles, and the setting and amending of sustainability measures.

For the 1999-2000 fishing year the TACCs were increased for black cardinal fish and were reduced for spiny rock lobster, oreo and Southern blue whiting.

Foreign access

While New Zealand continues to accord a high priority to its bilateral fishing relationships, it let its bilateral agreements lapse in 1997 as they no longer reflected the extent of their economic interests in this area. Continuing expansion of New Zealand's catch capacity in relation to the available stock size has minimised the opportunity for surplus allocations. Should any surplus become available, New Zealand will offer it to other nations. The only fishery where this is likely to happen is the Southern bluefin tuna fishery.

Recreational fisheries

In fisheries where there is commercial and recreational fishing activity, concerns regarding allocation have arisen. In the case of one snapper fishery, commercial fishers have opposed reductions in the TACC because they consider that any improvements in the health of the fishery as a result of such TACC reductions will be captured by the recreational fishers who do not have an enforceable overall catch limit. The commercial fishing industry is therefore seeking Government consideration of how to effectively restrict the overall effort of recreational fishers and move to improve the interface between recreational rights and those of commercial ITQ holders.

New Zealand is in the process of developing a recreational fisheries policy that will seek to provide recreational fishers with a better specification of their recreational fishing rights.

Aboriginal fisheries

Following the comprehensive settlement of Maori fisheries claims against the Crown in 1992, and the passing of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, Maori have become the biggest player in New Zealand's commercial fishing industry, controlling well over half of all commercial fishing quota. Maori commercial fishing assets are currently managed by a central commission that has overseen a massive increase in the asset base since the 1992 settlement. The commission is also in the process of finalising a model for allocating a major proportion of the settlement assets to the Maori population, largely on a tribal basis. The commission currently leases its quota holdings to tribes on an annual basis and at discounted rates.

A regulatory framework providing for the customary non-commercial fishing interests of Maori has also been finalised following extensive consultation by the Crown with Maori tribal groups nation-wide. The customary fishing regulations, currently being implemented throughout the country, enable

customary fishing to be effectively managed by Maori communities at a local level. The regulations provide for customary food gathering by Maori through the establishment of a framework for the issuing of customary food gathering authorisations. The regulations also recognise the special relationship between Maori and their traditional fishing grounds by providing for the establishment of *mataitai* reserves – areas to be managed by local Maori through the making of bylaws governing the taking of fish within those areas.

In addition to the devolution of management authority contained in the customary fishing regulations, there are also a number of initiatives in progress that seek to increase the participation of Maori in wider fisheries management. These include structural changes within the Ministry of Fisheries to better provide for interaction with Maori at a regional level, and a move towards a collaborative planning approach for the management of specific fisheries and/or areas with an emphasis on Maori input and participation into the development of those plans. In the South Island an initiative between commercial and Maori customary interests has resulted in the development of a comprehensive management plan for the South Island eel fishery. The management plan facilitates the introduction of eels into the Quota Management System by 1 October 2000, provides for the enhancement of waterways, and suggests mechanisms for the allocation of 20% of the total allowable eel catch to commercial Maori interests and a further 20% for Maori customary use.

Multilateral agreements and arrangements

In 1998 and 1999 the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) endorsed a proposal by New Zealand for an exploratory toothfish fishery in the western Ross Sea. In the summer of 1998 two New Zealand flagged vessels entered the fishery and in the summer of 1999 three New Zealand flagged vessels returned to the Ross Sea to continue the exploratory fishery and the collection of research data. An important aspect of this fishery has been the successful implementation by New Zealand operators of a line-weighting regime to sink the longlines at such a rate so as to minimise the risk of seabirds taking baited hooks during the line setting operations. During the three seasons of fishing that has taken place in the Ross Sea the New Zealand vessels have reported zero seabird captures, this is in marked contrast to the level of seabird capture in some other toothfish fisheries.

In 1999 CCAMLR adopted a catch documentation scheme for toothfish and it is intended that the Scheme will be fully implemented by the parties to CCAMLR by May 2000. Once fully implemented by all CCAMLR members the scheme should greatly assist in preventing toothfish catch from illegal, unreported and unregulated fishing (IUU) operations from entering markets in CCAMLR member countries. The main markets for toothfish are all in CCAMLR member countries.

Aquaculture

Aquaculture is an important activity in terms of its contribution to the economy. Production from aquaculture activity has grown since its beginnings in the early 1970s. Aquaculture is based primarily on the farming of greenshell mussels. Other important farmed species include pacific oyster, abalone and salmon. Techniques are being developed to enable a variety of new species, like dredge oysters, sea urchin, scallops, seaweed, snapper and sponges, to be farmed. In the 1998 calendar year, exports of greenshell mussels were valued at NZD 118 million, ranking them as the second largest seafood export, after hoki.

The legislative framework under which aquaculture activity operates is currently being reviewed with the view of developing an integrated approach to aquaculture activity, including coastal planning and fisheries management considerations. The challenge identified by government is the need to develop a robust legislative framework that can better integrate all these interests and activities, as well as streamline the associated administrative and compliance regimes.

Most of the industry is operating under legislation that predates the introduction of the quota system for commercial fisheries in 1983, the introduction of the Resource Management Act in 1991, and

the settlement of Treaty fisheries claims in 1992. There continues to be strong demand for additional water space for new marine farm development.

The lack of integration between aquaculture activity, coastal planning and fisheries management has led to some uncertainty for all users of the marine resource. The fragmentation of aquaculture legislation has also made it difficult to operate from an administrative perspective. Administrators, as well as those who are required to comply with the existing regime, are looking to better define their rights, roles and responsibilities in this area.

Providing an updated legislative framework for aquaculture will provide more certainty to participants and allow the industry to move onto a more sustainable development path. This will allow the aquaculture industry to continue its contribution to the economy while not undermining other marine resource users or compromising the environment.

Government financial support

Total transfers

Since October 1994 the New Zealand Government has recovered the costs associated with fisheries management services and conservation services carried out for the benefit of the commercial sector.⁴

In 1998-1999, net expenditures in support of the fishery sector were NZD 25 million – 31% more than in 1997-1998. Most of the government's costs for research, management and enforcement are charged to the sector.

Table 2. **Total [net] government financial expenditures in support of New Zealand's fishery sector, 1997/98 and 1998/99¹**
NZD million

Nature of transfer	1997-1998	1998-1999
MARINE CAPTURE FISHERIES EXPORT VALUE	1 160	1 340
<i>Direct payments</i>	0	0
<i>Cost Reducing Transfers</i>	0	0
<i>General Services²</i>		
Fisheries policy advice	8	10
Enforcement of fisheries policy	15	17
Prosecution of offences	3	3
Fisheries services	14	11
Fisheries research	15	15
Sub-Total	55	56
<i>Cost recovery</i>		
Cost recovery levies	-36	-31
Total	19	25
(Percentage of Total Export Value)	2%	2%

1. Negative values refer to transfers from the industry to the Government.

2. The General Services figures reported in this table apply to the costs incurred in respect foreign ownership the commercial (capture and aquaculture), recreational and customary fishing in New Zealand. It is estimated that 77% of the reported costs can be attributed directly to the commercial sector. In 1997-98 and 1998-99 General Services totals attributable to the commercial sector are therefore NZD 39 million.

Critical to this approach is the annual consultation process that takes place between the Ministry of Fisheries and stakeholders on the nature and extent of fisheries service to be provided, the costs associated with those services, and their allocation between the commercial sector and the Crown. A summary of the levies charged to participants follows:

- Monthly levies on quota holders: the main levies to recover costs for management of fisheries within the quota system.

- Levies for non-ITQ species: the main levies to recover costs for management services in non-quota fisheries.
- Levies on individual catch limits: apply to permit holders where catch limits are specified on the permits and recover costs related to these fisheries.
- Aquaculture levies: levies to recover enforcement and research costs related to aquaculture and apply to holders of permits, leases or licences.
- Permit holders levy: applies only to permit holders, and recovers costs related to access to fisheries, and processing of fishing returns.
- Fisheries service levy: charged to all quota holders; recovers the costs of the operation of the Fisheries Service in the areas of information and education, storage and archiving and the invoicing, accounting, receipt and allocation of payments and debt collection.
- Licenced fish receivers levy: recovers the costs of processing all returns.
- Vessel monitoring levy: recovers the costs of the further development of the vessel monitoring system.
- Conservation services levy: intended to recover costs incurred by the Department of Conservation in researching the effects on protected species of bycatch resulting from commercial fishing, and measures to mitigate the adverse effects of commercial fishing on protected species.

Social assistance

New Zealand does not have a social policy with regards to the fisheries sector. Fishers are, like all other members of society, entitled to standard “social security” provisions.

Structural adjustment

When TACs are reduced for sustainability reasons, the necessary adjustment and rationalisation required is conducted by fishers and require no Government involvement or financial assistance.

Markets and trade

More than 90% of the New Zealand fishing industry's earnings were derived from exports. Following a decrease in export returns over the past few years, 1999 exports registered an 8% rise relative to 1998. Seafood exports reached NZD 1.34 billion and totalled 322 000 tonnes in 1999.

The main export performers were hoki (NZD 324 million), mussels (NZD 116 million), and rock lobsters (NZD 115 million). The key export markets for New Zealand were Japan (NZD 288 million), the USA (NZD 271 million) and the European Union (NZD 222 million).

Outlook

The primary focus of fisheries management in New Zealand will be the implementation of the Fisheries Act 1996. Other issues of interest to policy makers will include:

- Further devolution of management responsibilities to stake holders.
- To better specify and integrate all of the rights associated with the use of the resource.

In the international area, New Zealand will be focusing on the following activities:

- New Zealand will ratify the United Nations Implementing Agreement for Straddling Fish Stocks and Highly Migratory Fish Stocks (UNIA) in late 2000. The legislation will improve control of its nationals fishing outside New Zealand's Exclusive Economic Zone. This will enable New Zealand to fully meet its obligations as a signatory of the UNIA.

- New Zealand will continue to push for the responsible utilisation and conservation of tuna fisheries in regional fora such as the Convention for the Conservation of Southern Bluefin Tuna and the Forum Fisheries Agency.
- New Zealand will continue to promote the liberalisation of trade in fish products within the framework of international and regional fora such as the World Trade Organisation (WTO) and Asia-Pacific Economic co-operation (APEC).

Fishing capacity

New Zealand does not manage its fishing capacity. Under the Quota Management System a total allowable catch (TAC) is set annually. Individual quota allocations are denominated as a proportion of the TAC and increase or decrease proportionally to any change in the TAC level. It is then left up to quota holders to decide on the amount of capacity they wish to use to harvest their quota holdings. The only requirement is that vessels used to harvest fish inside the New Zealand EEZ are New Zealand registered fishing vessels. New Zealand registered fishing vessels can be either New Zealand flagged vessels or foreign flagged vessels (charter vessels).

An example of the use of charter vessels by New Zealand companies is the squid fishery. The annual squid fishery is highly variable and of relatively short duration. A significant part of the fishery can only be taken using the jigging method. The seasonality of the fishery and its annual variability makes it unprofitable for New Zealand companies to own their own specialised jig vessels. Chartering foreign vessels makes better operational sense. Charter vessels operate round by moving from fishery to fishery around the world. If New Zealand operators were compelled to own such capacity it would remain redundant through most of the year.

NOTES

1. Where catches of quota species are taken in excess of quota held, the Ministry of Fisheries invoices the quota holder for that amount of catch.
2. The exceptions are stocks whose biological characteristics mean MSY cannot be estimated (*e.g.* squid), enhanced stocks, and international stocks where New Zealand's catch limit is determined as part of an international agreement)
3. The Fisheries Act 1996 has relaxed aggregation limits relative to the Fisheries Act 1983.
4. At this point in time only commercial users of the resource, the most significant contributors to management costs, pay cost recovery levies.

NORWAY

Summary

Preliminary figures indicate that the total Norwegian catch, including seaweed, reached 3.0 million tonnes in 1998 and 2.8 million tonnes in 1999. The decrease in total catch from 1998 to 1999 equals 7%, and is generally a result of a reduction of cod, haddock and sandeel. The total catch of pelagic species decreased by 7.2% while the total catch of gadoid species decreased by 12.2% from 1998 to 1999.

The total first-hand value decreased by approximately 5%, from NOK 10.4 billion in 1998 to NOK 9.9 billion in 1999. The first-hand value of pelagic species decreased by 13.8% which was caused by a reduction of catch quotas of species like sandeel, blue whiting and capelin, combined with a small price reduction with respect to the important species such as herring and mackerel. The prices of the main groundfish species and shellfish have, on the other hand, had an increase.

The stock situation for the main species in the northern part of Norway is regarded as somewhat critical for species like cod and haddock. The mixed Norwegian-Russian Fisheries Committee decided therefore in 1999 to decrease the allowed quotas of these species for 2000.

Aquaculture production of salmon and trout is growing steadily, reaching a total of 410 000 tonnes in 1998 and 455 000 tonnes in 1999. In order to contribute to stabilising the market and the prices for salmon in the European market, the Ministry of Fisheries decided to introduce feed quotas in the salmon farming industry in 1996. The total value of the production of salmon and rainbow trout was NOK 10.3 billion in 1998 and NOK 12.6 billion in 1999.

Legal and institutional framework

Several administrative measures are applied to limit the fishing effort in the Norwegian fisheries. The Act of 1951 and the Act of 1972 were the basic legal instruments for the arrangement of fishing licences as well as other types of effort regulation introduced to the fishing fleet. The Acts of 1917, 1951 and 1972 were replaced by the Act of 1999 on the Regulation of the Participation in Fisheries as of 1 January 2000. In general, the registration of fishing vessels in the register, "Register of Norwegian Fishing Vessels", as well as the acquisition of an already registered fishing vessel, require a permit from the authorities.

All commercial fishing for whitefish by trawlers of any size; purse seiners longer than 90 feet catching herring, mackerel, capelin, sprat, blue whiting or saithe; shrimp trawlers longer than 65 feet operating North of 62°N; North Sea trawling and industrial trawling, all require a licence. Coastal fishing vessels, defined as vessels operating with conventional gear (nets, longline, hand line etc.), are in general not subjected to licensing. There are however exceptions also for this class of vessels, regarding certain pelagic species, where a licence system is established.

The Norwegian fisheries are regulated through annual regulations on the sharing of the Norwegian TAC on all regulated stocks amongst the different groups and amongst the participating vessels. The different regulations give specific rules on the implementation of the fisheries, and as a part of this (as mentioned) the division of the annual quota amongst the different vessel – and gear-groups. In addition there are rules pertaining to periodic regulations of outtake, by-catch-rules, start – and stop-dates, sanctions when the regulations are broken, and eventual criteria for exemptions from the main rules of the regulation.

Through the regulations, quotas are divided among groups of vessels. For some fisheries the group quotas are divided equally amongst the vessels, while for other fisheries the vessel-quotas are differentiated by vessel-length, tonnage or other technical criteria.

In addition to regulation of minimum fish size, minimum mesh size and bycatch rules, the most important instruments to secure a sound management of marine resources are as follows: discard ban, closure of fishing grounds with too high intermixture of undersized fish, and a requirement that a vessel has to change fishing grounds if the intermixture of undersized fish exceeds permitted levels. Another important measure is the use of catch sorting devices, *i.e.* grids.

In order to properly manage the different fisheries, an extensive system to control the fishing activity and the fishing fleet has been established. There are three corner stones of the control and enforcement system in Norway, *i.e.* the Coast Guard, the Directorate of Fisheries and the Sales Organisations.

General conditions regarding foreign access, and restrictions on foreign investment

Vessels from third countries are subjected to the same rules as Norwegian vessels as regards bycatch, discards, logbooks and use of technical devices such as sorting grids when fishing in Norwegian waters.

Foreign vessels fishing in the Norwegian economic zone are also obliged to send regular catch reports to the quota control system in the Directorate of Fisheries.

There are no special regulations on foreign investment in the processing industry.

According to the Norwegian law, the right to buy a fishing vessel can only be given to a Norwegian citizen or a body that can be defined as a Norwegian citizen. A company is regarded as having equal rights with a Norwegian citizen when its main office is situated in Norway and the majority of the Board, including the Chair of the Board, are Norwegian citizens and have stayed in the country the last two years. Norwegian citizens also have to own a minimum of 60% of the shares and have to be authorised to vote for at least 60% of the votes.

Obtaining concessions for owning fishing vessels

It is a part of the Norwegian policy that ownership to the fishing fleet shall be reserved for professional fishermen. Therefore, to obtain the right to own a fishing vessel, one has to have a record of active, professional fishing on a Norwegian fishing boat for at least three of the last five years.

When this legislation is being applied to companies, it means that at least 50% of a boat owning company has to be owned by persons who qualify for owning a fishing vessel.

Capture fisheries

Landings

Preliminary figures indicate that the total Norwegian landings in 1999, including seaweed, amounted to about 2.8 million tonnes – a 7% reduction compared to the 3 million tonnes landed in 1998. The total first-hand value was reduced by approximately 5%, from NOK 10.4 billion in 1998 to NOK 9.9 billion in 1999.

The total catch of groundfish species was reduced by about 12% in 1999 compared to 1998. Lower landings of important species like cod and haddock mainly caused the reduction. The total first-hand value was reduced by 3% indicating that the positive development in the prices for these species in recent years continued in 1998 and 1999.

The total catch of pelagic species was reduced by approximately 8% from 1998 to 1999 while the total first-hand value decreased by 15% in that period. The reduction in landings was mainly caused by lower catches of sandeel and blue whiting, *i.e.* species for reduction purposes. The prices on all main pelagic species were reduced in 1999 compared to 1998.

Table 1. Landings (first-hand value) by species group by the Norwegian fishing fleet 1996-1999

	Per cent			
	1996	1997	1998	1999
Gadoids etc.	56.2	55.0	60.5	61.7
Pelagic fish	35.7	37.6	31.1	28.2
Shellfish	7.8	7.1	8.1	9.8
Seaweed	0.3	0.3	0.3	0.3
Total	100.0	100.0	100.0	100.0

Employment, structure and performance of the fleet

The total number of commercial fishermen in Norway both in 1998 and 1999 were about 22 300, of which approximately 15 100 and 15 300 were full time fishermen in 1998 and 1999 respectively. Compared to 1997 the total number of fishermen has been reduced by about 700 persons while the number of full time fishermen has been reduced by approximately 1 300 persons, *i.e.* indicating that the number of part-time fishermen has increased in that period. The number of fishing vessels registered in the "Register of Norwegian Fishing Vessels" was reduced from about 13 600 vessels in 1997 to about 13 200 vessels in 1998/1999. The total number of fishing vessels in operation in 1998 and 1999 was about the same level as in 1997, *i.e.* approximately 8 200 fishing vessels. The number of fishing vessels operating more than 30 weeks each year is estimated to be about 2 700 vessels in 1998 of which approximately 2 400 vessels were above 8 meters; about the same number of vessels as in 1997.

The average age of the fishing fleet is high and was estimated at about 24 years both in 1998 and 1999. A total of 190 new fishing vessels were built in 1998 and 1999 of which 45 vessels were above 15 meters.

The annual profitability study of Norwegian fishing vessels indicated that the profitability in the fishing fleet was high in 1998. The total operating revenue for the fishing fleet of 8 meters and above, operating on a whole year basis, was estimated at to NOK 9.4 billion in 1998; while the total operating expenses were estimated at to NOK 8 billion. This resulted in a total operating profit just below NOK 1.5 billion this year. No major changes are expected as regards the profitability in the fishing fleet in 1999 compared to 1998.

Status of fish stocks

The scientific advice provided by the International Council for the Exploration of the Sea (ICES) in relation to total allowable catches (TACs) is fundamental to management decisions.

The precautionary approach (pa) has been introduced gradually following the advice from ICES since 1996. High fishing mortality has received more and more attention – even for fish stocks estimated to be within safe biological limits. In the autumn 1997 assessment, warning signals were given for several of the stocks not considered to be "precautionary". Precautionary reference points were introduced following the advice from ICES in 1998. At the same time ICES decided to define "safe biological limits" both in relation to the size of the stock (B_{pa}) as well as to the fishing mortality (F_{pa}).

Assessments, whether stocks were considered to be within or outside "safe biological limits" in earlier years, before the introduction of the pa-terminology, were mainly defined in relation to the size of the spawning stock biomass (SSB). By introducing new precautionary reference points, taking into account both the size of the spawning stock (B_{pa}) and the fishing mortality (F_{pa}), stocks, which were earlier assessed to be within "safe biological limits", were considered to be outside safe biological limits, even without any significant changes in the spawning stock biomass. Further discussions will have to be held between scientists and managers when it comes to implementing the new reference points.

Table 2 gives the latest assessments, November 1999, prepared by the ICES Advisory Committee on Fishery Management (ACFM) regarding fish stocks important to Norway. The table gives information on the stock situation, spawning stock biomass (SSB) and spawning stock reference points (B_{pa}), the catch, actual fishing mortality and fishing mortality reference points (F_{pa}) proposed by ACFM.

Table 2. **Biological status for some of the most important species in Norwegian fisheries**

Species	Spawning stock biomass (1000 tonnes)		Spawning stock reference point (B _{pa}) (1000 tonnes)	Estimated Fishing mortality		Fishing mortality reference point (F _{pa})
	1998	1999		1998	1999	
Groundfish species						
North-east Arctic Cod	419	298	500	0.910	0.73	0.42
North Sea Cod	101	128	150	0.588	–	0.65
North-east Arctic Haddock	149	121	80	0.474	0.45	0.35
Haddock in the North Sea and Skagerrak	170	150	140	0.673	–	0.70
North-east Arctic Saithe	252	184	150	0.398	0.40	0.26
Saithe in the North Sea and Skagerrak	153	169	200	0.487	–	0.40
Greenland Halibut	37	–	65 ¹	0.358	–	–
Pelagic species						
Capelin (Barents Sea)	177	519	–	–	–	–
Norwegian Spring Spawning herring ²	11 144	10 736	5 000	0.110	–	0.15
North Sea herring ²	878	1 190	1 300	0.353	–	0.12/0.25
Mackerel	3 299	3 754	2 300	0.203	–	0.17
Horse mackerel						
Blue whiting ²	2 597	2 919	2 250	0.518	–	0.32
Sandeel	2 015	1 500	600	0.510	–	–
Norway Pout	329	168	150	0.264	–	–

1. MBAL.

2. ACFM assessment May 1999.

The table indicates that several ground fish stocks at the moment are either considered to be “outside safe biological limits (Bpa)” or to be “harvested outside safe biological limits (Fpa)” whereas the stock situation for important pelagic species is more positive.

Management of commercial fisheries

Most of the key fish stocks in Norwegian fisheries are shared with other countries. TACs and national quotas for such joint stocks are fixed in negotiations between the countries involved. Norway enters into annual bilateral quota agreements with Russia, the European Union, the Faeroe Islands, Greenland, Iceland and Poland. With the exception of the agreement with Poland, these agreements include exchange of quotas. Norway is also party to a trilateral agreement with Greenland and Iceland on the management of capelin in the Jan Mayen – Iceland – Greenland area, a trilateral agreement with the European Union and the Faeroe Islands on the management of North East Atlantic mackerel as well as a five-party agreement on Norwegian Spring Spawning herring. Norway also participates in regional management within the framework of the Northwest Atlantic Fisheries Commission (NAFO) and the North East Atlantic Fisheries Commission (NEAFC).

As of 15 May 1999 an agreement between Norway, Russia and Iceland was reached on the Icelandic fishery for cod in the Barents Sea (“Loop hole”). The bilateral protocol signed by Norway and Iceland on the same date regulates the exchange of quotas between Iceland and Norway. In accordance with the agreement, Iceland was granted 4 450 tonnes of cod in the Norwegian Economic zone north of N62°N, and Norway was granted a quota of 17 000 tonnes of capelin in Icelandic water in 1999. To manage the national fisheries, both output and input regulations as well as technical regulations are employed.

Output regulations

In the Norwegian fisheries several types of output regulations are employed. In most of the fisheries a TAC is set resulting in a national quota for the Norwegian fishing fleet. As a rule the national quota is divided between groups of vessels, *i.e.* group quotas. Vessel quotas in addition regulate the fisheries for the most important species, a fixed quota for each participating vessel, or maximum quotas

(a group quota divided in a manner that results in a certain competition between the vessels in the group). In addition to these measures, period quotas and trip quotas are used as output regulations in the shrimp fisheries in South Norwegian waters and days at sea are used as output controlling measures in the shrimp fisheries at the Flemish Cap.

TACs and national quotas in 1998 and 1999 for some of the most important species in Norwegian fisheries, (agreed upon by Norway and other parties, specified on economic zone/area and on agreement) are listed in Table 3 below.

The positive development in the capelin stock in the Barents Sea resulted in a limited fishery for this species in 1999.

The negative development for some of the most important ground fish stocks, *i.e.* cod and haddock north of 62°N, resulted in a reduced TAC and national quota of cod in 1998 compared to 1997. The TAC and national quota for this important stock were further reduced in 1999. The TAC and national quota for haddock were reduced in 1999.

There has been a considerable increase in the catches of blue whiting over the last years. A coastal state process has been initiated within the framework of NEAFC in order to bring about a regulation of this stock. A process accompanying the coastal state process has been initiated in the framework of NEAFC.

Table 3. TAC and national quotas in 1998 and 1999 for some of the important species in the Norwegian fisheries

Species	Area	Agreement between Norway and:	TAC	TAC	National quota	
			('000 tonnes)	('000 tonnes)	('000 tonnes)	('000 tonnes)
			1998	1999	1998	1999
Cod	North of 62°N	Russia	654 000	480 000	313 000 ²	236 500 ²
	North Sea	EU	140 000	132 400	14 110	11 770
	Skagerrak	EU	20 000	19 000	650	620
Haddock	North of 62°N	Russia	130 000	78 000	71 000 ³	46 000 ³
	North Sea	EU	115 000	88 500	23 050	14 120
	Skagerrak	EU	7 000	5 400	290	225
Saithe	North of 62°N		145 000	145 000	137 500	137 500
	North Sea and Skagerrak	EU	97 000	110 000	45 400	52 200
Herring	North of 62°N ¹	EU, Iceland, Faeroe Islands, Russia	1 300 000	1 300 000	741 000	741 000
	International waters					
	North Sea, West of 4°W	EU	254 000	265 000	71 910	74 800
	Skagerrak	Sweden, Denmark	80 000	80 000	10 670	10 670
Capelin	North of 62°N	Russia	–	80 000	–	48 000
	Iceland, Jan Mayen, Greenland	Iceland, Greenland	1 265 000	1 200 000	159 150	112 000
Mackerel	North Sea, Skagerrak	EU	62 455	62 455	52 180	52 180
	North of 62°N		111 350	111 350	104 980	104 980
Blue whiting	International waters, EU-zone and NEZ	NEAFC	650 000	650 000	–	250 000
Sprat	Skagerrak	Sweden, Denmark	40 000	50 000	3 000	3 750
Shrimp	Skagerrak	Sweden, Denmark	13 160	13 160	6 130	6 130
	Greenland	EU			2 500	2 500
	NAFO ⁴	NAFO			1 985 ⁴	1 985 ⁴

1. Norwegian spring spawning herring.

2. Norwegian coastal cod (40 000 tonnes) included.

3. Norwegian coastal haddock (5 000 tonnes) included.

4. "Days at Sea".

The national quota of minke whales was set to 671 and 753 animals in 1998 and 1999 respectively. The quotas for seals were set at 5 000 in the Barents Sea both for 1998 and 1999, and 13 100 and 14 350 in the areas around Jan Mayen. 34 vessels participated in the hunt for minke whales and two and three vessels participated in the hunt for seals in 1998 and 1999 respectively. All participating vessels were required to have inspectors on board to ensure that their hunting activities were performed in accordance with regulations.

Input regulations

Several administrative measures are applied to limit the fishing effort in the Norwegian fisheries. The main legislation for these measures are based on the following acts:

- Act of 5th December 1917 relating to Registering and Marking of fishing vessels.
- Act of 20th April 1951 relating to Fishing with Trawls.
- Act of 16th June 1972 relating to the Regulation of the Participation in Fisheries.
- Act of 3rd July 1983 relating to Salt-Water Fisheries.

The Act of 1951 and the Act of 1972 were the basic legal instruments for the arrangements of fishing licences as well as other types of effort regulation introduced to the fishing fleet. The Acts of 1917, 1951 and 1972 were replaced by the Act of 1999 on the Regulation of the Participation in Fisheries as of 1 January 2000. In the table below the number of vessels with licence and the type of licence for these vessels in 1998 and 1999 are listed.

Table 4. **Type of fishing licence, the number of licences and fishing vessels with licence in Norwegian fisheries: 1998 and 1999**

Type of licence	Number of licences	
	1998	1999
Purse seine	99	100
Blue whiting	46	46
Norwegian Spring spawning herring with trawl	80	81
Industrial trawl	110	107
Capelin trawl	141	151
Cod trawl	103	103
Saithe trawl	16	15
Shrimp trawl	112	105
Other licences	85	86
Total number of licences	792	794
Number of vessels	460	454

In the table above the number of licences and vessels in the licence register are shown. One particular vessel may hold several different types of licences and may not, in the course of one or two years, participate in all fisheries for which it is licenced. The table indicates that the number of licences as well as the number of vessels with more than one licence are increasing, while the number of vessels with licence has been slightly reduced.

In 1998 it was evident that it was necessary to regulate the number of trawlers in the fisheries for Norwegian spring spawning herring. New licences for trawlers with a minimum historic catch record in this fishery were introduced in 1998.

The fisheries authorities do also, in addition to the licensing system, regulate the fishing effort for other parts of the fleet.

In 1996 and 1997 an increasing number of vessels less than 28 metres and with fishing rights in the fisheries for cod north of 62°N were rebuilt to a size above 28 metres. Vessels originally above 28 metres

were also replaced by larger vessels or rebuilt. As a result, the total capacity of vessels above 28 metres fishing for groundfish species with conventional gears increased considerably in this period. To prevent an even further expansion of the capacity in this particular vessel group, a temporary moratorium on the building and rebuilding of vessels fishing for groundfish species with conventional gears to a vessel size 28 metres and above was introduced in March 1998. The moratorium was lifted in December 1998 and replaced by a new regulation that provided measures to prevent such a development, *i.e.* the total number of fishing vessels in this particular vessel group was fixed.

In 1998 the fisheries authorities decided to regulate the number of coastal vessels 11 metres and above fishing for shrimp in the North Sea and Skagerrak. The number of fishing vessels with vessel quotas in the seine fisheries for saithe north of N62°N was set in May 1999.

Technical regulations

Regulation of minimum fish size, minimum mesh size, gear restrictions in certain fisheries, by-catch rules, discard ban and real time closure and opening of fishing grounds with too high intermixture of undersized fish, are the most important instruments in use in the Norwegian fisheries to secure a sound management of marine resources.

In the shrimp trawl fisheries the use of sorting grids in the gears are mandatory.

Mandatory use of sorting grids in the cod trawl fisheries was introduced in 1999 for the trawl fisheries in the Norwegian economic zone between N62°N and N64°N. Experiments on the use of sorting grids in the trawl fisheries in the North Sea will be continued.

The authorities also regulate the use of seine in the fisheries for herring with seine to avoid accidental killing and dumping of fish.

A program to remove nets and other gears lost by the fishing fleet on the fishing grounds and thereby avoid "hidden" fishing activity has been in operation and will be continued.

Access

Consultations on bilateral fishing arrangements for 1998 and 1999 were held with Russia, the EU, the Faeroe Islands, Greenland and Poland. With the exception of the agreement with Poland, which entails unilateral quota allocation to Poland, these agreements shall fix a reasonable balance in reciprocal fishing patterns.

In Tables 5 and 6 below the quotas allocated to Norway in other country zones and quotas allocated to other countries in the Norwegian economic zone in 1998 and 1999 are presented. Exchanged quotas are included in the figures.

In addition to the exchange of quotas, the agreements between the countries involved also includes licensing arrangements for vessels fishing in other country's economic zones.

Management of recreational fisheries

The most important fish species for recreational fishing in fresh water are salmon, sea trout, sea char, brown trout, arctic char, whitefish, grayling, perch and pike.

The salmon fishery in the sea and freshwater fishery for all species including salmon, are regulated by the Act of May 1992, relating to salmonids and freshwater fish etc. The objective of the Act is to ensure that natural stocks of anadromous salmoids, fresh-water fish and their habitats, as well as other fresh-water organisms, are managed in such a way as to maintain natural diversity and productivity. Within this framework, the Act shall provide a basis for the improvement of stocks with a view to raising yields for the benefit of holders of fishing rights and sports fishermen. The Act states that management must be directed at the individual natural stock. A general principle for anadromous fish is that fishing is prohibited unless permission is given.

Table 5. Quotas allocated to Norway specified on different economic zones in 1998 and 1999

The Agreement (between)	The economic zone of/ Area	Total Norwegian quotas (all species, tonnes)	
		1998	1999
Norway and Russia	Russia	186 000	218 000
Norway and EU	EU North Sea	253 390	246 785
	EU West of 4°W	289 820	277 375
	Greenland, West coast.	2 000	1 915
	Greenland, East coast	19 850	13 730
Norway and the Faeroe Islands	Faeroe Islands	51 300	56 675
Norway and Greenland	Greenland, West coast	600	1 318
	Greenland, East coast	1 700	3 000
	Greenland	1 200	950
Norway and Iceland	Iceland	–	17 500 ³
Norway, Greenland and Iceland	Jan Mayen/Iceland/ Greenland	159 150 ¹	112 000 ²
Norway and EU (Sweden and Denmark)	Skagerrak/Kattegatt	21 240	21 760
NAFO	NAFO (3M)	185	–
NEAFC	Irminger Sea	7 100	7 100

1., 2. Quota for the period 1.07.97 – 30.04.98 and 15.07.98 – 30.4.99.
3. Of which 17 000 tonnes of capelin.

Table 6. Quotas allocated to other countries in the Norwegian economic zone in 1998 and 1999

Allocated to	Area	Total quotas (all species, tonnes)	
		1998	1999
Russia	North of 62°N	378 800	398 000
	Jan Mayen	11 750	11 750
EU	North of 62°N	49 900	40 900
	North Sea	518 235	512 025
	Jan Mayen	1 000	1 000
Faeroe Islands	North of 62°N	10 420	13 828
	North Sea	36 580	38 271
	Jan Mayen	1 000	1 000
Greenland	North of 62°N	4 690	3 630
	North Sea	750	1 000
Iceland	Jan Mayen, North of 62°N	202 000	206 450
EU (Sweden and Denmark)	Skagerrak/Kattegatt	165 320	165 000
Sweden	North Sea	4 775	4 655
Poland	North of 62°N	3 100	3 100
	North Sea	880	950
	Jan Mayen	5 000	5 000

Aboriginal fisheries

Norwegian fisheries authorities acknowledge an obligation to maintain a traditional Lap fishery, which is mainly carried out in the coastal area in the northern parts of Norway. The policy is to fulfil this obligation within the existing fisheries management system. When special measures are taken, the criteria for qualification therefore are geographical or connected to the common boat size among Lap fishermen, rather than an ethnic criterion. The Laps are represented in the Advisory Committee on Regulation, which gives advice on fisheries regulations to the Ministry of Fisheries.

Adjustments in the rules for the register of professional Fishermen have been made in order to make it easier for Laps with a traditional way of living and working, to be registered. This has been achieved by extending the limit for maximum income from other types of activities besides fishing in the actual geographical area. At the same time funds have been made available to secure the delivery of the catches in the Lap areas of northern Norway.

Monitoring and enforcement

In order to manage the different fisheries properly, an extensive system to control the fishing activity and the fishing fleet has been established. The control and enforcement system in Norway has three cornerstones: The Coast Guard, the Directorate of Fisheries and the Sales Organisations.

The most important sources of information, in order to control the fishing activity and check the reliability of catch reports, are logbooks and sales notes. All vessels with an overall length of 13 meters or longer are subject to the logbook provisions. The smaller vessels are obliged to fill out a simplified version of the logbook.

The logbooks are a primary source for the monitoring of a vessel's fishing activity checking facts such as live weight of catches by species and the exact position and fishing time of each fishing operation.

For the authorities, the sales note or sales contract between the fishermen and the buyers is the basis for keeping accounts of catches in relation to quotas. On the basis of the information from sales notes, the authorities are able to estimate when a quota is exhausted and stop the fishing activity accordingly.

Vessels from third countries are subjected to the same rules as Norwegian vessels when fishing in Norwegian waters, *inter alia*, with regard to rules for bycatch, discard, logbooks and use of technical devices such as sorting grids.

Foreign vessels fishing in the Norwegian economic zone and onboard-producing Norwegian vessels are obliged to send regular catch reports to the Directorate of Fisheries who is operating the Norwegian system for quota control. The vessels must send a message containing information of the catch onboard specified by species and what time the vessel has entered into the Norwegian economic zone (active code). In addition the vessels must send catch reports to the Directorate of Fisheries on a weekly basis. The vessels are also obliged to notify the authorities when they have completed their fishing activity and are about to leave the Norwegian economic zone (passive code).

The Norwegian fisheries authorities will establish seven check-points north of 62°N and three flexible checkpoint areas in the North Sea for the purpose of controlling foreign vessels in the Norwegian economic zone. Foreign vessels are obliged to notify the system for quota control in the Directorate of Fisheries no later than 24 hours before arriving at the checkpoint.

In order to improve the control of fisheries, Norway and the European Union have, as from 1 January 2000, established a satellite-based monitoring system, which applies to vessels operating in the waters of either party. Bilateral pilot projects on satellite tracking are being carried out in co-operation with Russia, the Faeroe Island and Iceland.

As from 1 January 2000, vessels operating in international waters in the NEAFC-area are subject to satellite tracking. A pilot project on satellite tracking was established in 1996 for the NAFO area. In 1998 it was decided that as from 1 January 2001, vessels operating in the NAFO area shall have satellite tracking equipment on board.

Aquaculture

Policy/Policy changes

The fish farming industry is of great importance to the Norwegian fisheries sector. Salmon is by far the most important species. Rainbow trout is the second most important species, while species like halibut, arctic char, cod and shellfish are beginning to make their way into the industry.

The industry is regulated by various laws and regulations of which the most important are:

- The Act of Farming of Fish, Shellfish etc.
- The Act on Protection against Pollution.
- The Act on Measures against Diseases.
- The Act of Harbours and Fairways etc.

All farming of fish and shellfish in Norway requires a licence from the authorities. For sea farming of salmon and trout there is also a system of limited entry. There has not been the issuance of new licences for salmon and trout nation-wide since the mid-eighties. The number and regional distribution of new licences are decided by the central fisheries authorities.

The emphasis on environmental and disease-controlling measures has resulted in a regulation of the operation and installation of aquaculture facilities. This regulation also restricts the use of antibiotics in fish farming and addresses the handling and disposal of dead fish. The licence holders are instructed to keep logbooks on the amount of fish in the cages, the number of dead fish and escaped fish and the amount of antibiotics and chemicals used in the production. In case of disease, the licence holder is obliged to keep records on the type of disease, the number of fish infected and the location the fish is kept in.

The veterinary service controls fish diseases, and any fish farmer using antibiotics is prohibited from selling fish until approval from the fisheries authorities has been given. The Norwegian Directorate of Fisheries operates laboratories along the coast to test fish quality and to measure the residues of antibiotics in fish. Introduction of effective vaccines in addition to improving operating routines has nearly eliminated the use of antibiotics in salmon farming. The average use of antibiotics was only 1.7 mg/kg fish produced in 1998 and 1.3 mg/kg fish produced in 1999. The consumption of antibiotics in 1999 was only 2% of what was used in 1990.

Feed quotas were introduced in 1996 in order to lessen production growth and prevent lasting imbalance on the EU-market for salmon, where Norwegian salmon has a market share of approximately 65%. Each licence holder is obliged to not exceed a maximum level of feed used in the production of salmon. In 1998 the feed quotas amounted to 650 tonnes for every fish farm sized 12 000 m³. This was an increase of 2.3% from 1997. In 1999 the feed quotas amounted to 680 tonnes, an increase of 4.6% from 1998. The feed quota regime has resulted in a steady production growth in 1998 and 1999 and consequently stable prices on the European market for salmon. The regime has been extended to cover 2000.

Production facilities, values and volumes

Most Norwegian sea-farms are open cage systems located along the coast. This kind of system has proven to be most cost-effective. Each licence normally covers two or three locations. The purpose of giving the licence holder more than one location is to reduce the risk of diseases and pollution. There are numerous suitable locations for aquaculture along the coast and do not represent any limitation for further growth in the aquaculture industry.

Table 7. **Types of licences granted, production and employment in the Norwegian aquaculture industry 1998 and 1999**

Type of licence	Number of licences		Production ⁴				Employment (persons)	
			Volume (tonnes/1000 pcs)		Value (NOK million)		1998	1999
	1998	1999	1998	1999 ³	1998	1999		
Sea-farm, salmon and trout	826	843	410 859	456 000	8 632		2 466	
Smolt, salmon and trout	313	315	117 880 ¹		946		1 024	
Marine fish	363	390	1 173		36		229	
Shellfish	299	558	267/686 ²		N/A		246	

1. 1 000 pieces of smolt.

2. 1 000 pieces (mainly scallop, oysters).

3. Prognoses.

4. Preliminary figures.

Licences for Sea-farm production of salmon and trout not utilised and withdrawn by the authorities in recent years, were reassigned to new licence holders in 1998 and 1999. Priority was given to licence holders that were in production in the northern part of Norway.

The number of licences for production of marine fish species and shellfish increased in this period. The activity in this part of the industry is however, as indicated in the table, at the moment quite modest.

The maximum production capacity of smolt units increased from 1 million smolt per year to 2.5 million smolt per year during 1999.

The production of salmon and trout increased by approximately 12% from 1998 to 1999. Preliminary figures indicate that the amount of salmon and trout exported to the EU, the main export market for Norway, increased by about 10% from 1998 to 1999. The export volume to other markets increased by more than 50%. Preliminary figures indicate a slight increase in the average price of export in 1999 compared to 1998.

The operating profit in the sea farming industry of salmon and trout was estimated at about NOK 1.3 billion in 1998, a sharp increase compared to the estimated total operating profit of NOK 650 million in 1997. The main reasons for this positive development were higher prices, increased production and stable production costs. It is expected that the profitability will be even higher in 1999.

Fisheries and the environment

National plans for how to deal with crises in the coastal zone were put into action in 1998. Their purpose is to organise work on environmental problems and to ease the co-operation between the institutions involved. The plan has been prepared to deal with crises like flourishing algae, invasions of marine mammals, oil pollution or accidents at sea.

The need to manage the coastal zone and to secure the areas used by the fishing fleet and aquaculture industry has high priority in Norway. The coastal zone is an area and focus for many different and potentially conflicting interests. The Norwegian government has issued a "white paper" on Conservation and use in the coastal zone that was agreed to by the Norwegian Parliament in June 2000. The "white paper" takes into account the aims of the Convention on Biodiversity stating the need of "conservation of biological diversity and sustainable use of its components". The challenges in the coastal zone are to ensure harvesting of resources and use of the coastal area for a multitude of activities as well as ensuring a healthy resource base for future generations. Each county and local municipality is urged to work out a coastal zone management plan if they regard it as necessary. The fisheries authorities participate in the planning process in each county and municipality.

The coral reefs in Norwegian waters have been known for several years. The reefs have been important fishing grounds for the fleet fishing with conventional gears like nets and line. The catches in these important areas have, however, reduced during the last years. Increased use of active gears like trawl in some of these areas has been regarded as one reason for this development.

The fisheries authorities regard the reefs to be important and as such need special protection.

A regulation on the protection of coral reefs was introduced in March 1999. In the regulation it is stated that the fishermen should take special attention when fishing nearby these areas. In the regulation it is also specified that it is not allowed to fish with active bottom gear in two specific coral reefs areas.

Government financial transfers

In the period covered by the review, there were small changes in the government financial transfers.

Income support schemes

The minimum wage scheme for fishermen experienced only minor changes in 1998 and 1999. This scheme is established to support fishermen when the income from the fishing activity is insufficient, due to reasons beyond the fishermen's influence, such as long periods of bad weather, extraordinary ice conditions, etc.

The amount needed for this scheme was reduced, following the trend from previous years. In 1997, NOK 19.6 million was paid out under this scheme, in 1998 the amount was NOK 14.1 million, while the 1999 figures were NOK 10.8 million.

Structural adjustment

To stimulate the renewal of the fishing fleet, a change was made in 1999. In order to improve the effect of the funds allocated, the previous division between support for decommissioning and the support for renewal were merged into one scheme.

Under this scheme, support could be allocated to:

- Fishermen who take their vessels permanently out of fishing activity.
- Fishermen who take their ships permanently out of fishing activity, but plan to transfer their licence or fishing rights to another vessel of a better quality and maintain the fishing activity.
- Fishermen who build new vessels or import second-hand vessels of high standards.

Sixty-eight million NOK were allocated to this scheme in 1999. The administration of this scheme was performed by the Norwegian Industrial and Regional Development Fund, who allocate funds to applicants, according to guidelines given by the Ministry of Fisheries.

Table 8. **General Services – the catching sector**

	1997
Ministry of fisheries	21 141 000
Membership in international organisations	3 464 000
Institute of marine research	95 437 000
Operations of research vessels	71 011 000
Directorate of fisheries	95 268 000
Coast Guard	407 571 000
Total	NOK 693 892 000

The costs of fisheries management as a percentage of catch value has declined considerably the later years, from 13% in 1990 to less than 8% in 1997. This development has continued further in the years after 1997.

Post harvesting policies and practices

Food safety and quality

The quality of fish and fishery products is of great importance to the fishing industry, and this area is given high priority. The Norwegian quality regulation relating to fish and fishery products was revised in 1996. Following the EEA-agreement and the subsequent obligation to comply with the EU-regulations regarding hygienic standards in the food processing industry, Norway has adopted both EU legislation on animal health issues and EU safety and quality legislation related to production of seafood. Since 1999 this also includes the adoption of the EU border control regime for fish and fishery products originating from countries outside the EEA area.

The Norwegian fish processing industry has implemented own-check systems based on the principles of HACCP as advised by Codex Alimentarius Commission. The own-check systems cover both food safety and quality aspects and are audited by the competent official authority. Commercial standards are, however, developed and supervised by the seafood industry.

The authorities and the related establishments have put a lot of resources to implement and revise this system to ensure the quality of products. Much emphasis has been put on obtaining bilateral agreements concerning sanitary and veterinary issues with the quality control authorities in countries representing important markets. Some of the reasons are that the demand for sanitary certificates for the export of fish and fish products to new markets, especially in Central and Eastern Europe, is increasing.

Information and labelling

With respect to labelling, Norway put focus in development of international quality standards and conformity assessment systems. It is important to ensure that technical regulations and standards, including packaging and labelling requirements, do not create unnecessary obstacles to international trade.

Processing and handling facilities

Fish landed in Norway must be approved by the fishermen's sales organisations. There are five organisations handling gadoids and one organisation handling pelagic fish. These organisations are situated along the entire coast.

By the amendment of the Act of 14 December 1951 on the marketing of raw fish, the right of the fishermen's sales organisations to approve first-hand buyers is annulled. This system of approval has been replaced by a system of registration of buyers. The new system and the regulations concerning registration as first-hand buyers entered into force 1 January 1998. First-hand buyers are to be registered by the Directorate of Fisheries.

According to the quality regulations the Director General of Fisheries approves establishments (plants and freezing, salting and filleting vessels) and gives them an official approval number. The Director General of Fisheries' List of Approved Establishments is regularly updated and sent to competent authorities in the markets.

Markets and trade

Promotional efforts

The Norwegian Seafood Export Council (NSEC) is responsible for generic marketing campaigns for fish and fishery products in Norway and abroad. The Council has, in co-operation with the Norwegian Trade Council, offices in France, Germany, Japan, USA, Spain, Brazil and China. The Council finances its activities by a levy on exports of fish and fish products.

In 1999 NSECs budget was NOK 390 million. The NSEC operates under the fish Export Act of 1990 and the Fish Export regulation of 1991. Additionally, due to the Salmon agreement between Norway and the EU signed in 1997, the NSEC operates under a provisional regulation relating to special conditions attached to the export of salmon products. The regulation which entered into force on 1 December 1998 contains both price and quantitative measures and provides for the collection of an additional export levy on Norwegian salmon. The additional export levy shall be used for the promotion and marketing of Norwegian Salmon in the Community, and for joint marketing campaigns to the mutual benefit of the industries in Norway, Scotland and Ireland.

As a result of this agreement between Norway and the EU, the funds for marketing of salmon has increased substantially, and the Norwegian Seafood Export Council has increased their marketing efforts correspondingly. Marketing campaigns are carried out in Japan, China, Southeast Asia and in European countries.

Volumes and values

Total exports of seafood from Norway increased from 1998 to 1999, and in 1999 the total export value reached NOK 29.8 billion, which is an increase of 6.7% compared to 1998. The growth in exports can mainly be explained by an increase in the exports of salmon. Especially the Japan and US markets have shown a stable increase in their imports of Norwegian fish products.

The last two years, as in previous years, the most important export market for Norwegian salmon was the European Union. However, the EU share of the total export volume from aquaculture is slightly decreasing. There have been some changes in the distribution of frozen salmon to Japan and China, two markets which have had an important increase of Norwegian fish products last year, and particularly of salmon and trout. The major exports market for trout is still Japan.

From 1998 to 1999, exports of fresh and chilled products increased from 26 to 28%, and frozen products increased from 17 to 20%. With respect to traditional products as klippfish and stockfish there has been a decrease in export values from 1998 to 1999. The share of catch used for the production of meal and oil also decreased in this period.

Trends in domestic consumption

The domestic market is seen as an important and profitable market for the fishing industry. For some time a survey on domestic consumption has been conducted in order to provide more reliable statistics. According to the latest statistics, Norwegians consume about 20 kg of fish and fishery products on average per year. During the last two years there has been a slight increase in the Norwegian consumption. It is the particular age groups of 60 and more which contribute to an increase in consumption of fish. Younger generations have a stable consumption of seafood.

Outlook

The traditional fishing industry

The outlook for the traditional fishing industry seems mixed, reflecting the fact that the stock situation for some of the most important species is considered to be satisfactory, while other stocks are in a more unfavourable situation. This latter applies to the cod and haddock stocks, which is especially important to some parts of coastal Norway. The situation for other important species in certain areas, *i.e.* in the North Sea, is still regarded as critical.

The main objective for the Norwegian Government fisheries policy is not only to maximise the profits through an economically efficient use of the resources, by seeking the highest possible return rate from the fisheries sector, but also to achieve a socio-economic optimisation with respect to the total gain for the coastal communities. The Norwegian fisheries sector plays an important role in the Norwegian government's overall policy to maintain the settlement structure in the coastal communities, and especially in the northern parts of Norway.

In the years to come the Norwegian fishing industry will be challenged in the field of emission of polluting gases in the air. This applies especially to the emission of nitrogen oxide where Norway has committed itself to a substantial reduction before the year 2010.

The market challenge

FAO asserts that the fish resources in a global perspective are very unlikely to increase in the future, and there is strong concern on how to assure the stocks in coming years. Combined with a general growth in the world economy, and hence an increased demand for fish products, an increasing demand for fish has to be met by increased production in aquaculture. The aquaculture products from Norway represent more than $\frac{1}{3}$ of the total export value from fisheries and aquaculture, and are expected to increase in the years ahead.

The globalisation in the commerce of fish and fish products means that the competition on the world market will be strong. Especially the filet industry in the north of Norway meets competition in the whitefish sector. Products of Hake and Pollock can be produced at lower prices in countries where labour is cheaper. Globalisation is a challenge to the industry sector, which has to improve the technology to become more efficient.

Product development is seen as a task for the industry in conquering both new and existing markets. In coming years it is desirable to develop new products of raw material, which at present is regarded as waste products.

A general feature for the fishery industry is an expansion towards new markets in the Pacific Rim. Non-traditional countries become more important, *i.e.* USA, Southeast Asia, Eastern Europe and Russia. Nevertheless, the EU-countries will continue to be the most important export market in the future.

In accordance with the EEA-agreement, Norway has obtained better market access for fishery products to the EU market. For some species the customs duties are abolished, while for other species the duties have been reduced by 70% from the 1st of January 1997. However, there will be no reduction in the customs duties for species like herring, mackerel, salmon and prawns.

The most important constrain for further growth in the aquaculture industry in Norway is market access and barriers to trade. As an example of this, the Norwegian aquaculture industry has gone through dumping cases in EU and USA. The need for recognised principles for free international trade in fish and aquaculture products are therefore conspicuous and necessary in order to meet the growing global demand for fish and shellfish.

Aquaculture

During the last 20-25 years, the aquaculture industry has proved to be an important export industry as well as an important industry in small coastal communities. Natural conditions make Norway very suitable for farming of fish and shellfish.

Norwegian fish farming is strictly controlled by a number of laws and regulations which restrict the freedom of action of the operators of the fish farm.

To make the industry able to reach its potential production capacity and competitive position, the authorities will continue to focus on the environment as well as disease controlling measures. To ensure that the industry does not affect the environment in an undesirable way and to control the fish diseases, focus will be put on the establishment and use of environmental parameters in the assignment of locations and the control of these parameters. It is also important to stimulate the industry to use the most profitable forms of production.

The costs involved in the production of salmon and rainbow trout have been reduced during recent years, and the profitability is fairly good. The productivity has increased considerably in the last few years. It is expected that the production costs will be further reduced in the future, due to a continuation of the integration process in the industry and increased efficiency in production methods.

Research, development and education are important to the improvement of the industry. In recent years, focus has been on environmental interactions, reduction of fish diseases and development of new species for farming. Marketing research on aquaculture species and food quality control will be increased in the years ahead.

Farming of marine species is developing, though a great effort still has to be put in to scientific and developing activities to establish a commercial industry.

Special topic: Fishing Capacity

Introduction

Multiple objectives are a common feature for the fishery policy of many nations. The objectives of the Norwegian fishery policy have been outlined in several white papers and are often formulated as follows:

“The fisheries policy chosen must aim for commercially viable development of the fisheries industry. Sustainable management of resources is absolutely essential if we are to achieve this. Through market orientation and increased added value, the industry must help create and sustain stable employment opportunities and settlement in coastal areas.”

In this document a description of the management of the fishing capacity will be given, *i.e.* input regulations and other regulatory measures introduced to control the fishing capacity and effort in important fisheries. The intention is to give a brief overview of how the fishing capacity has been managed in recent years, to give some information about the background for the measures introduced, and at the end to give some remarks about the management of fishing capacity in Norway at the moment.

Input regulations in Norway

The legal system

The following acts form the legal framework for how to control the ownership of the fishing vessels, the arrangement of fishing licences, the regulation of participation in the fisheries as well as other measures established for certain vessel groups to control the fishing capacity in the fisheries. The Act of 1999, which came into force the 1st January 2000, will replace the Acts of 1917 and 1951 when necessary regulations have been amended.

- Act of 5th December 1917 relating to Registering and Marking of fishing vessels.
- Act of 20th April 1951 relating to fishing with trawl.
- Act of 26th March 1999 relating to the regulation of the participation in fisheries.

Regulations of ownership in the Norwegian fishing fleet

The Act of 1999 requires that vessels used in commercial fisheries must be registered in the Register of Norwegian Fishing Vessels, and that certain requirements must be fulfilled. The buyer of the fishing vessel must be a Norwegian citizen or likewise, and as a main rule the buyer of the fishing vessel must be an active fisherman *i.e.* he must have been in commercial fisheries at least three of the last five years. There must also be an acceptable economic basis for operating the vessel.

The Norwegian licensing system

A person or a company may own a vessel with licence. A licence is required to operate large vessels in some of the most important fisheries, but a fishing licence is connected both to the owner and to the fishing vessel. If there is a change of ownership of a fishing vessel, or if the owner wants to buy a new vessel, an approval by the fisheries authorities is required in advance. The licensing system in force applies to certain species, fishing in certain areas, with certain fishing gears and fishing with vessels of a specific size. Within the fisheries where permits are required, it is prohibited to fish without a permit or licence.

The licences have been introduced to the fishing fleet to make the authorities able to control the overall fishing capacity in the ocean going part of the fleet. The regulations for each of the licences listed also set certain rules for the size of the fishing vessel as well as certain rules for how large a renewed or new vessel may be compared to the size of the original vessel.

The table shows that the types of licences have increased in the period, and that the number of vessels with licence has been reduced; *i.e.* there has been a concentration of licences on fewer vessels.

In general the licensing systems applies to the ocean going fishing fleet in Norway (vessels above 27.5 metres) except vessels 28 metres or above fishing with conventional gears. Annual permits, more or less like a licensing system, regulate this group of vessels.

A moratorium on the rebuilding and building of new vessels above 28 metres was introduced in 1998. The moratorium was replaced by a new regulation in 1999. At the same time the participatory requirements for these vessels were extended to include all fisheries/species.

Table 9. Number of licences by fisheries and years

Type of licence	1990	1992	1994	1996	1998
Purse seine	103	103	102	103	99
Blue whiting	49	49	47	44	46
Industrial trawl/North Sea trawl	221	167	151	116	116
Capelin trawl	155	56	160	138	141
Norwegian spring spawning herring with trawl	–	–	–	–	80
Limited North Sea trawl	–	41	42	36	38
Unlimited trawl/cod trawl	128	119	116	117	104
Shrimp trawl	147	130	116	106	110
Saithe trawl	–	–	–	14	16
Saithe seine	7	7	7	7	6
Danish seine	2	3	4	3	5
Argentines	36	27	34	29	25
Sprat	–	–	–	–	–
Other licences	–	179	2	3	4
Total number of licences	848	881	781	716	790
Number of vessels	547	565	501	463	459

A licence for the fishing fleet 28 metres and above (fishing for groundfish species like cod, haddock, ling, tusk etc. with conventional gears) will be established in the near future.

The regulation of the participation in the Norwegian fisheries by the coastal fleet

Whereas the licensing system described above primarily relates to the larger ocean-going part of the Norwegian fishing fleet (including vessels 28 metres and above, fishing with conventional gears), other input and effort regulating measures have been introduced in the coastal fleet. To regulate the fishing capacity, participatory requirements or annual permits have been introduced.

Pelagic fisheries

In the beginning of the 1980s the purse seine fleet with an overall length above 27.5 metres was strictly regulated by vessel and trip quotas. A decommissioning scheme was established for this group of vessels to adjust the fishing capacity. However, vessels just below the limits that require a licence increased the fishing capacity. As a result annual permits for the fishing fleet between 21.35 and 27.5 metres were introduced in 1983 in the fishing for mackerel. North Sea herring was included later on.

Annual permits were introduced for other parts of the coastal fleet fishing for mackerel in 1997. Only vessels 13 metres and above fulfilling certain participatory rules were allowed to participate in the fishery for mackerel.

In the herring fisheries requirements of a certain technical standard of the vessels have been applied. The authorities must approve the vessels in advance.

Groundfish fisheries

Input regulations were introduced in the groundfish fisheries for the fleet fishing with conventional gears for the first time in 1990. The first fishery where the number of vessels was regulated was the cod fishery north of 62°N. Whereas, for several years, the trawler fleet fishing for the same species in the same areas had been regulated by licences, group quotas and vessel quotas; the fleet fishing with

conventional gears was regulated solely by group and very large vessel quotas until 1989. The crisis in the cod fisheries north of 62°N in 1989 called for new measures to regulate the effort in this fishery. As from 1990 the participation in this fishery is regulated by a certain minimum historic catch.

In addition to regulating the participation in the cod fisheries through annual permits, similar measures have been introduced in the fisheries for species like Greenland halibut and lumpfish. As in other regulations the main criteria for participation is a certain minimum catch record and a certain size of the vessel.

Input regulations were introduced in the seine fisheries for saithe in May 1999.

Shrimp

Participation requirements were introduced for the coastal fleet in the shrimp fishery south of 62°N for the first time in 1998. The shrimp fisheries north of 62°N for coastal vessels less than 19.8 metres are not regulated. Vessels above this limit require a shrimp trawler licence.

As a rule of thumb the group quotas assigned to each group of vessels in a particular fishery is divided between the vessels fulfilling the participatory requirements according to a certain key. In most of the fisheries described the quota for each vessel is set according to the length of the vessel at a certain date. This "intersection date" has been introduced to reduce the possibility of getting a higher share of the quota by increasing the length of the vessel.

The participatory requirements are usually determined as a minimum historic catch record in most of the fisheries described. As a rule the vessel should have had a minimum catch for the last three years (*i.e.* a percentage of the assigned vessel quota). Vessels not fulfilling these activity requirements are excluded from the group.

Other capacity management measures

The increasing average age in the fishing fleet has been given attention for several years. To reduce the average age and to stimulate the building of new vessels, annual grants have been given. However, complementary measures have been taken to control the fishing capacity in certain important vessel groups. Investment limits were set each year in the period 1988-1998 for vessels above 34 metres with cod or industrial trawler licence and for the purse seine fleet (1990-1998 for the shrimp trawler fleet).

The import of older fishing vessels above 34 metres was, however, not regulated. This fact and the fact that the investment limits delayed the building of new fishing vessels and probably made the new vessels more expensive and counteracted a necessary renewal of the fleet led the authorities to abolish this regulation in 1998.

The situation at the moment is that decommissioning schemes are in force in certain parts of the coastal fleet, whereas a special regulation motivating the withdrawal of vessels is in force in some parts of the ocean-going fleet. The latter system is called "Unit quota system".

Unit quota systems

Initially, when a unit quota system was introduced, the number of vessel quotas was equal to the number of fishing vessels. The idea with the unit quota system is to make the members of a vessel group, where such a system has been applied, responsible of adjusting the fishing capacity to the available resources and thus secure higher profitability.

This is done by allowing the owner of two fishing vessels to transfer the quota of one vessel, after a certain deduction to the remaining vessels in the group, from one vessel to another. The owner of the vessel will then control more than one quota for a period (at the moment 13 years). The owner of the extra quota has the responsibility for the costs involved and to withdraw the vessel from the Norwegian fishing fleet.

A unit quota system was introduced in certain parts of the cod trawler fleet for the first time in 1984. The reason was the decline in the cod stock north of 62°N. A similar arrangement was introduced during the period 1990-1994, and reintroduced again in the period 1997-1998 for the cod trawler fleet as a whole.

A similar arrangement was introduced for some of the vessels with shrimp trawler licences (vessels with a permit to fish for shrimp in Greenland waters) in 1994 and for the purse seine fleet in 1996. Both arrangements came to an end in 1998.

As from 2000 a new unit quota system was introduced for the vessel groups described above. The Act of Saltwater fisheries, which forms the legal basis for the unit quota system, was revised in 1999. The revised Act gives the opportunity to establish such systems on a permanent basis as well as to introduce similar measures for other vessel groups.

As a result of the revised Act a unit quota system will be introduced to fishing vessels 28 metres and above fishing for groundfish species with conventional gears in 2000. In addition, grants will be given this year to secure that the unit quota system in this group will be effective. It is also the intention to establish such a system for vessels with saithe trawler licences in the near future.

To reduce the possibility for excess fishing capacity to be exported to other countries the unit quota system will be changed. Vessel owners that scrap their vessel will be rewarded by keeping the extra quota for a certain additional number of years compared to when the vessel is exported.

The fisheries authorities must approve, in advance, the export of Norwegian fishing vessels withdrawn from the Norwegian fishing fleet due to the unit quota system.

The unit quota system is regarded as a dynamic way of adjusting the capacity and to secure a reasonable renewal of the fleet in certain homogenous vessel groups. It is, however, regarded not to be suitable for vessel groups that are less homogenous.

To control the fishing capacity in the coastal fleet, in addition to the requirements of participatory rights or annual permits in certain important fisheries described above, the authorities regard decommissioning schemes to be most suitable for the time being. However, a process will be started to appraise whether a modified unit quota system might be suitable also for less homogenous coastal vessels groups in the future.

Decommissioning schemes

Decommissioning schemes have been applied for different vessel groups in the Norwegian fishing fleet in earlier years. Such schemes were applied for the cod trawler and purse seine fleet in the eighties and to the coastal fleet for several years. The coastal fleet scheme came to an end in 1993.

In the 1998 agreement between the National Fishermen Association and the Ministry of Fisheries, NOK 25 million were granted to reintroduce a decommissioning scheme for the coastal fleet. In 1999 and 2000 additional funds were allocated to this scheme.

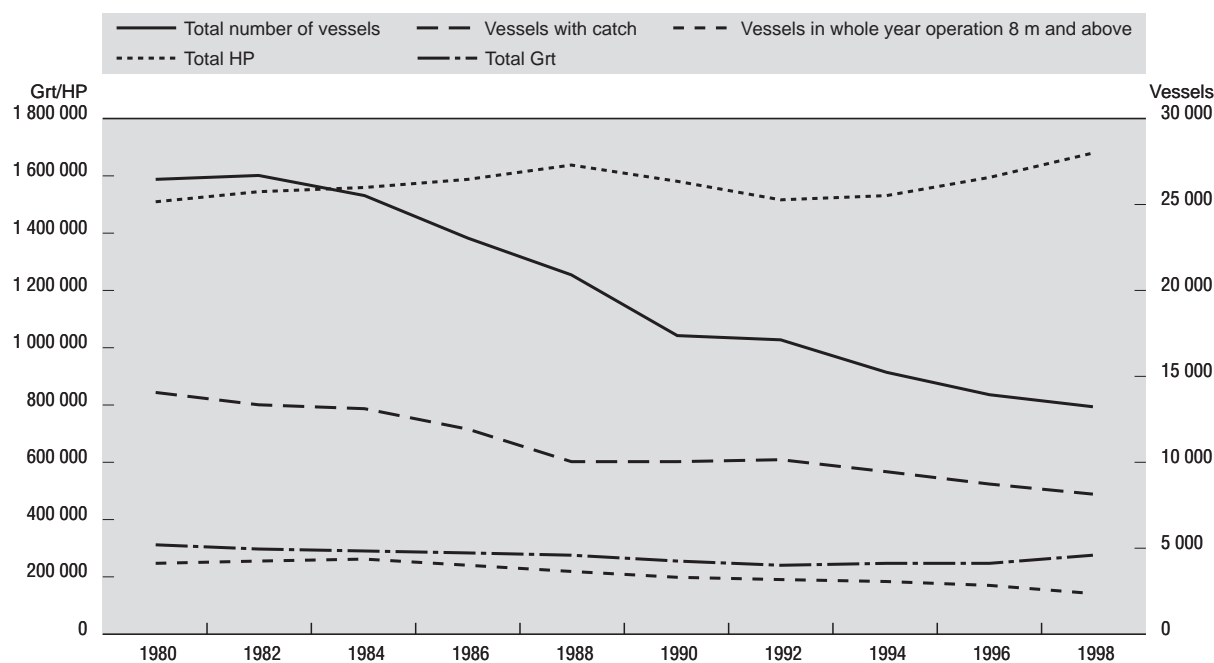
The decommissioning scheme applies for certain important vessel groups. Priority is given to vessel groups where participation requirements or annual permits have been introduced to secure a balance between the actual fishing capacity and available fishing opportunities for the remaining vessels in these groups.

Fishing capacity indicators

As a general rule the licensing system and other types of effort regulations have been applied in such a way that vessels most dependent on a fishery for a certain species in a certain area have been given the permit to participate whereas vessels less dependent are given the opportunity to participate in the fishery for a small share of the group quota. The number of vessels in the latter group is not regulated. The number of fisheries with free access has been substantially reduced in Norway, especially since 1990.

In this part of the document the effects of the input measures taken will be investigated. This will be done by analysing the development in physical indicators (number of vessels, tonnage, horsepower), profitability and the development in the average age in the fishing fleet.

Graph 1. The development in the total number of fishing vessels, total engine power (Horse Power) and total tonnage (estimated Gross Register Tonnage) (1947/Oslo Convention), 1980-1998



Physical indicators

One indicator describing the effects of the elaborated licensing system and other types of permits introduced to the fishing fleet, is the total number of fishing vessels. In the graph below the development in the number of fishing vessels registered in the Norwegian Fishing Vessel Register is presented along with the development in the total engine power and total tonnage of these vessels. In addition the development in the number of fishing vessels actually participating in commercial fisheries and the number of vessels 8 metres and above operating more than 30 weeks each year are presented.

The graph indicates, on the one hand, that the total number of fishing vessels has been substantially reduced in the period 1980 – 1998. The total engine power and total tonnage have, on the other hand, increased or been stable. This fact indicates that the capacity measures introduced have not affected the fishing capacity as expected.

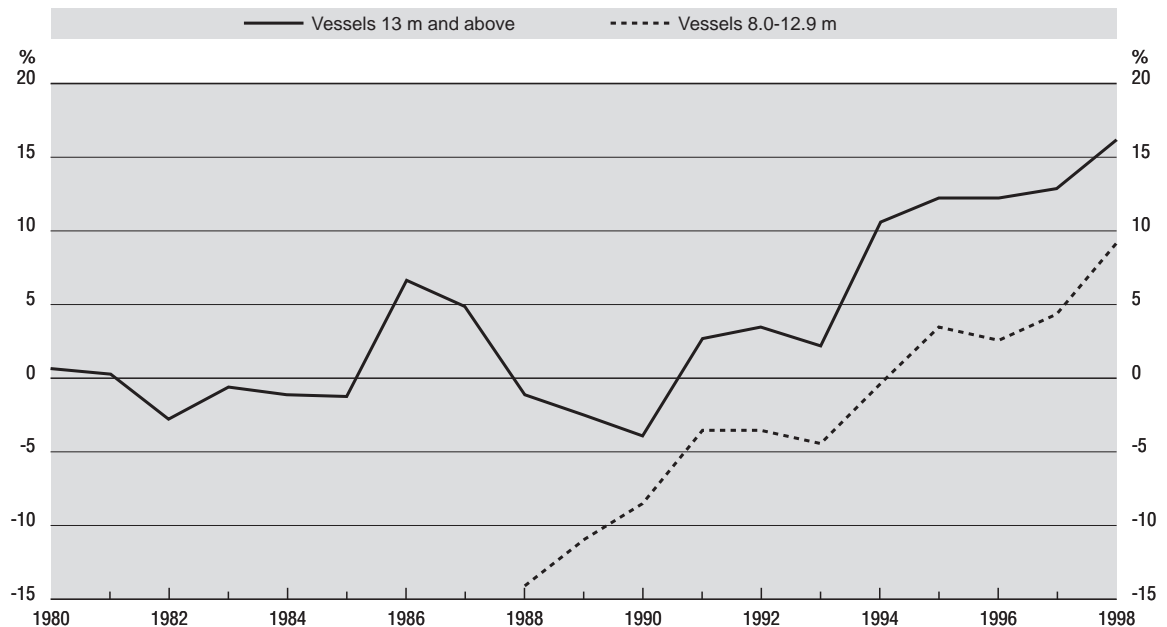
The number of vessels participating in fishing activity has however been substantially reduced in the period. In 1980 some 14 000 fishing vessels participated in the fisheries, while about 8 200 vessels participated in 1998 and 1999.

The annual survey of the activity in the fishing fleet, undertaken by the Directorate of Fisheries, indicates that the total number of fishing vessels 8 metres and above operating more than 30 weeks has been substantially reduced in this period. The total number was estimated at 4 200 and 3 400 in 1980 and 1990 respectively. In 1998 the total number was estimated at about 2 400 vessels. These 2 400 vessels represent about 90% of the total catch volume in the Norwegian fisheries, and about 85% of the total first-hand value, indicating that the measures taken have resulted in a concentration of fishing opportunities to a relatively small number of vessels.

Economic indicators

In the graph below the development in the estimated operating margin in the fishing fleet 8.0-12.9 metres and 13 metres and above operating on a whole-year basis is presented. The operating margin is defined as operating profit over total operating revenues (percentage).

Graph 2. **Estimated profit margin (%) for the whole year operating fishing fleet 8-12.9 metres and 13 metres and above 1980-1998 (1988-1998 for vessels 8-12.9)**



The graph shows that the fishing fleet did have severe profitability problems in the first part of the 1980s, followed by a few years with positive profit. Higher quotas and catches of cod north of 62°N mainly caused this positive development in 1985-1987. The crisis in this fishery is clearly illustrated by the sharp decline in the profit margin in 1988-1990. Since 1990 the profit has been positive in the fleet 13 metres and above, whereas the coastal fleet 8-12.9 metres had a positive operation margin in 1995. In the period 1994/1995-1998 the profit in the fishing fleet has been rather good, both in the pelagic sector and in the ground fish sector.

One reason for this positive profitability is a positive development in the catches of the most important species combined with higher prices. The fact that the number of vessels sharing the increased quotas has decreased may also be an explanation. It is however difficult to isolate the effects of the input regulations from the positive development in the resources.

The annual survey of the profitability in the fishing fleet, does also show that the average size of a fishing vessel operating on a whole-year basis has increased in the period investigated. The survey also indicates that the average number of days at sea for such vessels has not increased to the same extent as the quotas. This fact shows that it would be possible to catch the same amount of fish with a smaller number of boats. That is, the profitability could have been even higher with a fleet fully utilised.

The profitability will probably be slightly reduced in 1999. It is also expected that the profitability will be reduced in 2000 and in the medium terms because of the severe problems in the main groundfish stocks. This fact indicates that the input regulatory measures taken have to be prolonged and probably widened to secure a reasonable profit in the future.

The average age of vessels

The average age of the fishing fleet has increased for several years, even in the part of the fleet fishing on a whole-year basis. This fact also indicates that there still exists a problem as regards the balance between total fishing capacity and profitability with available resources.

The increasing age of the fishing fleet has been given priority for several years. High average age may result in a fishing fleet not fulfilling requirements when it comes to quality of fish landed, utilisation of by-catch and waste as well as recruitment of well educated crew. The fishing fleet will probably also be subject to new regulations when it comes to environmental questions in the future.

The challenge for the authorities is to secure that the replacement and renewal of the fleet is balanced, *i.e.* does not result in increased fishing capacity, which in turn may result in reduced profitability. The fisheries authorities have decided to concentrate the efforts to control or reduce the average age to the fleet most dependent on the fisheries, that is the 2 500 vessels operating more than 30 weeks.

Conclusions

The ocean-going part of the fleet will be given more freedom as regards the size of the vessel in the future. Detailed regulation of fishing capacity for each vessel by the authorities will come to an end. The ocean-going part of the fleet will also be given the responsibility to balance the overall fishing capacity to the available resources, and thereby to secure the necessary profitability to secure a reasonable renewal of the fleet in the future.

Concerning the coastal fleet, work will be started to evaluate whether a unit quota system could be introduced. For the time being a decommissioning scheme is regarded to be the most useful tool to reduce the fishing capacity to available resources.

Globally, regionally and also at a national level, the existing fishing capacity is far in excess of available resources. In order to have sustainable fish stocks in the future, this fishing capacity has to be regulated in numerous ways. Although fish stocks are managed in a sustainable way, it seems fair to say that a huge reduction in the fishing capacity is necessary before the fishery systems can be said to be sustainable. Norway is currently implementing various measures to reduce the excessive fishing capacity. Norway will report to the FAO on the progress of the preparation of the national plan by the end of 2000.

In Norway, the management of fishing capacity has focused on licences, rights of participation, decommissioning schemes and the system for withdrawing vessels and concentrating vessel quotas on the remaining vessels (unit quota system). There have been discussions during the 1990s of whether or not it would be wise to introduce Individual Transferable Vessel Quotas (ITQs), but this has not yet happened.

The Unit Quota System is anticipated to stimulate reduction in the fishing capacity, but it is also important to have a regulation of the fisheries where the fishermen are not tempted to make unsound investments.

TURKEY

Legal and institutional framework

The Ministry of Agriculture and Rural Affairs (MARA) is the main Government organisation responsible for fisheries (including aquaculture) administration, regulation, protection, promotion and technical assistance through four General Directorates. All activities in fisheries and aquaculture are based on the fisheries Law No: 1380, enacted in 1971. Based on this law, regulations and circulars are prepared to regulate fisheries. The Fisheries Law No. 1380 of 1971 was amended by law 3288 of 1986. According to Laws 1380 and 3288 and the Continental Waters Law No: 2674 of 1982, foreigners are not allowed to take part in commercial fishing activities. In accordance with the laws, every year, commercial fisheries and sport fishing circulars are published in the official Journal. In these circulars, species whose fishing are restricted, mesh sizes, protected areas, species size/gear restrictions, fishing methods, fishing seasons for species are specified.

The main duties of MARA are to:

- Perform and to assign the duties specified in the Laws No: 1380 and 3288.
- Determine and implement the major fisheries policies (including aquaculture).
- Assist the services such as the provision, supply and distribution of the fisheries (including aquaculture) credits and other inputs that fish farmers and fishermen use.
- Establish and operate quality control systems and organisations required to ensure and regulate that fish and other fishery products are captured, processed, stored, marketed and exploited in accordance with international quality standards.
- Establish and operate research activities on the improvements, controlling, production, processing units, agencies, laboratories and establishments, and to provide technical assistance to private sector organisations wishing to establish and operate such kind of institutions.
- Prepare and implement extension and training systems, programs and projects for farmers and fishermen.
- Collaborate with private agencies, universities, research institutions and international organisations to increase the productivity, conservation of natural stocks and to protect them from biotic and abiotic hazards.

In the field of Quality Control the Ministry works in 26 provinces with 128 inspectors while Central Competent Authority employs eight experts and about 255 staff, working on fisheries management at the Province Directorates, including five staff at the Central Competent Authority.

The fisheries laws give the major responsibility of fisheries to the MARA, and during the 1980s, significant effort was devoted to preparing laws and by laws which are related to the management of coastal and inland resources. A significant part of legislation prepared in this period deal with protection and conservation issues. These include laws on environmental protection, national parks and the protection of cultural and national wealth, which may limit some fisheries and aquaculture activities. As a result, a number of ministries and institutions established in the 1980s such as Ministry of Environment, Ministry of Forest, Under Secretariat of Maritime, etc. are involved in the decision making process regarding fisheries and aquaculture.

The State Planning Organisation prepare long-term development plans and annual programs conforming to the targets of the sector determined by the Government, co-ordinate activities of the ministries and public institutions concerning economic, social and cultural policies, ensure efficient implementation and advise the government regarding fishery policy issues.

Fisheries data are gathered and evaluated by the State Statistics Institute in collaboration with MARA. The institute collects data from all large-scale fishers, and sub-sampling for small-scale fishers. Under-secretariat of Foreign Trade of Prime Ministry, is the public organisation that regulates fish exports and imports. The Agricultural Bank of the Republic of Turkey and the Under-secretariat of the Treasury operate credit and incentive schemes to support the fisheries and aquaculture sectors. The Scientific and Technical Research Council role is to organise and support research activities. The Export Promotion Centre of Turkey, which is the only public organisation in this field, acts as an intermediary in establishing business contacts between foreign importers and Turkish exporters to develop and to promote Turkish fisheries exports.

Capture fisheries

Over the last decades, three main phases have been observed in the development of the fisheries sector. First, a rapid increase in catches between the mid 1970s to late 1980s, reaching 676 004 tonnes in 1988. Then, a sharp decline between 1988 to 1991 to 364 661 tonnes, followed by apparent recovery from 1992 onwards. Total fisheries production was 543 900 tonnes in 1998 (Table 1). In spite of this recovery, production is still well below the peak level seen in 1988. Marine fisheries, including shellfish, crustacean and molluscs (3% of total fish production), accounted for 80% of total catch, plays an important role, though inland fisheries and aquaculture each accounted for 10% in 1998. By 1998 the value total production was made up of 68.5% marine fisheries, 8% freshwater, 23.5% aquaculture.

Table 1. Fish production of Turkey, 1988-1998

	Catches		Aquaculture		Total
	Freshwater	Marine	Freshwater	Marine	
1988	48 500	623 404	3 965	135	676 004
1989	42 883	409 929	3 504	850	457 116
1990	37 315	342 017	4 237	1 545	385 114
1991	39 401	317 425	4 510	3 325	364 661
1992	40 370	304 766	6 522	2 688	354 346
1993	41 573	502 031	7 392	5 046	556 042
1994	42 838	542 268	7 265	8 733	601 104
1995	44 983	582 610	13 113	8 484	649 200
1996	42 202	474 243	17 960	15 241	549 646
1997	50 460	404 350	27 300	18 150	500 260
1998	54 500	432 700	33 290	23 410	543 900

Source: Fisheries Statistics, Prime Ministry, State Statistics Institute (S.S.I).

The main policy objectives are to improve fishing efficiency, to maintain and improve fish stocks and the living standards of the fishing community. To attain these targets the government uses the following means:

- Improvement of fishing techniques by providing current technology and credits to the fishers.
- Implementation of fishing regulation arrangements stated in the annual ministerial circulars for commercial and sport fishing. Control sections of the provincial directorates of MARA and Coast Guards are in charge of controlling fishing activities.
- Development of fisheries management system. The ministry plans a new administrative structure. Therefore a new law has been sent to Parliament for re-organising MARA, including establishment of a General Directorate for fisheries.

- In order to obtain an efficient control mechanism the Government wish to update the penalties laid down in the Fishery Law. To amend the law, a draft has been prepared and sent to the Parliament.
- Development of open sea fisheries to reduce fishing pressure on natural stocks.
- Research studies are continuing on the selective fishing gear which will help to avoid fishing of non-targeted species.
- Upgrading infrastructure. The Government has been constructing fishing ports and wholesales markets, and other needs of industry.

Marine fisheries

The principal marine fishing grounds are the Black Sea (anchovy, mullet, bonito, whiting, horse mackerel etc.), the Marmara Sea (anchovy, mullet, bonito, whiting, tuna, shrimp, etc.), the Aegean Sea (Sea bream, sea bass, octopus, squid, sardine, sword fish, bonito, tuna, shark) and the Mediterranean Sea (tuna, sardine, octopus, squid, calamar, shrimp etc).

Main production areas for bivalve and molluscs are in the west and middle Black Sea (for processed baby clams), the Dardanell strait (for live black mussel, bearded mussels, clams, oysters, cockle) and the Ayvalik region (for live black mussel, bearded mussels, clams, oysters, cockle). The marine capture fisheries have historically contributed over 90% of total catch however in the late 1980s this was reduced and in 1998 it accounted for 413 900 tonnes, representing 76.5% of total fish supplies. The dramatic fall in the marine fish catch after 1988 was most pronounced in the case of the small pelagic fish, especially anchovy from the Black Sea. Though the anchovy production was 310 298 tonnes in 1987, it dropped to 98 620 tonnes in 1989. These decreases have come about because of over fishing and water pollution.

Fishing fleet

There are four basic types of fishing in Turkey:

- Small scale, a typical two men operation, uses an 8 metre open boat with a 10-25 HP inboard diesel engine, by far the largest employer.
- Trawling.
- Purse seining.
- Beach seining.

The larger units may use 10-metre boats with three fishermen. Some are equipped with depth recorder/fish finders. Most fishers use basic gears, trammel nets and long lines. After 1980, some developments have been observed in the fishing fleets in terms of the capacities and engine powers, but still there are no fishing fleets in the open seas and oceans. However, this positive development has led to problems of over fishing. Therefore additional licensing of over 12 metres fishing boats was stopped in 1991 and, in 1997, all licensing was stopped for new fishing vessels. The registration of fishing vessels has been done in accordance with the FAO standards. A new record keeping system is under development in line with responsible fisheries. According to 1998 statistics, there were 17 475 fishing vessels (including inland fishing fleet, Tables 2 and 3).

Table 2. **The number of fishing vessels by length (metre)**

Length	< 12	12-15	15-20	20-25	25-30	30-40	40-50	> 50	Total
Number	15989	499	494	304	129	45	13	2	17 475

Table 3. **The number of fishing vessels by gross tonnage**

Gross ton	< 18	18-25	25-50	50-100	100-200	200-300	300-500	500-700	Total
Number	16 259	117	527	360	169	34	6	3	17 475

Fishing ports

Building of fishing ports and other facilities have been accelerated with the commencement of the planned economic program that covers a five-year period. A commission determines constructions of fishery ports and their locations. The commission consists of representatives from the State Planning Organisation, Ministry of Transport and Ministry of Agriculture and Rural Affairs. The Ministry of Transport undertakes the constructions. The number of fisheries ports is given in Table 4.

Table 4. The number of fishery ports in Turkey

Type of structure	Black Sea	Marmara Sea	Aegean Sea	Mediterranean Sea	Inland Water	Total
Fishing ports	58	43	45	17	2	165
Small fishing port	15	9	11	4	–	39
Shore facility	69	1	–	–	–	70
Total	142	53	56	21	2	

Source: Fisheries Statistics, Prime Ministry S.S.I.

Freshwater fisheries

The freshwater catch amounted to 54 500 tonnes in 1998, making up 10% of the total fish supply, compared with 40 280 tonnes and 7.6% in 1988, respectively. Though the contribution of fresh water catch to total fishery production is relatively small, its contribution to the rural areas in terms of fish supply and employment is significant.

The freshwater sources, in connection with irrigation and energy production purposes, are increasing steadily. The south-eastern region is an important area in this regard. It is envisaged that 22 dams and 19 hydroelectric power plants will be constructed on Tigris and Euphrates rivers within the framework of the special regional project called "South Eastern Anatolia Project". While fisheries production is only a small issue in the Project, the project will develop 220 000 ha of water with an estimated annual fish yield of 8-10 000 tonnes, a rise of some 15-20% in freshwater production. The dams in this area and other water sources create possibilities for many different fish species to be grown. Grey mullet, carp, pike, pike perch and crayfish are among the important freshwater species caught.

Aquaculture

Until recently, the aquaculture industry in Turkey was almost entirely confined to the production of rainbow trout in fresh water. Commercial-scale utilisation of the country's coastal waters for fish farming began only in the late 1980s, and has grown rapidly into an important activity. The sector is considered by industry and government to have potential for increasing both domestic fish supplies and exports earnings. In 1998, the production reached 56 700 tonnes – which was 4 100 tonnes in 1988 – corresponding to a more than 13-fold increase in the last decade (see Table 3).

Table 5. The number of fish farms licenced by MARA, production capacities and actual production by 1998

Species	No. of licenced farms	Licenced farms capacity (tonne/year)	Actual production (1998)
Trout	880	23 417	34 630
Salmon	1	50	40
Carp	66	9 794	950
Mussel	–	–	2 000
Turbot	–	–	0
Shrimp	2	320	270
Sea Bass and Bream	123	10 494	18 810
Total	1 072	44 075	56 700

Source: Ministry of Agriculture and Rural Affairs.

The number of farms by size in each sub-sector, their capacities and production figures (1998) are summarised in Table 5. The contribution of aquaculture production to total fish production has also increased steadily from 2% in 1992 to 10% in 1998. It appears that technical and market limitations have so far limited the utilisation of existing aquaculture capacity. Trout, sea bass and bream are the main species cultured and a small amount of carp and shrimp are also farmed.

As landing from capture fisheries is stagnating, to maintain a sustainable development, licensing, establishment and control of fish farms have been implemented by a ministerial decree. To maintain an environmentally sound development, an EIA (Environmental Impact Assessment) should be provided on individual sites where fish farmers applied for licences. To ensure the quality of products, the control system considers following:

- Water analyses.
- Residue analyses in accordance with National Residue Monitoring Program (96/23/EEC Directive).
- Disease and parasite control (91/67/EEC and 93/140/EEC).
- Control of transportation.
- Certificate of origin.
- Health certification.

Fish farms are subject to periodic general hygiene control. A company or farmers wishing to export fish and fishery products or to set up a processing plant must provide all requirements of directives 91/492/EEC and 91/493/EEC, fishery law and regulation to obtain an approval number.

To maintain more effective licensing and control mechanism, new aquaculture legislation (in line with a draft report prepared by international consultants) is under preparation.

Post harvesting policies and practices

The Quality Control System is based on the development of effective systems ensuring the safety of fishery products, including harmonisation with international regulations.

An EU inspection took place between 2-6 February 1998 within the framework of the directives 91/492/EEC and 91/493/EEC and the observed deficiencies were stated in the form of a report.

As a result of this report, by the Commission's Decision dated 24 June 1998 (98/407), the EU banned the importation of the fish products and bivalve and molluscs from Turkey. Later, as a result of studies carried out by MARA and the guarantees forwarded to the EU, the ban on fish products was lifted by the Commission's Decision dated 15 December 1998 (1999/2 EC), with the exception of the bivalve and molluscs.

MARA, as the competent authority, has immediately initiated studies following the inspection dated 2-6 February 1998 and prepared a plan regarding "Fishery Products Quality Control Action Plan" and put it into application.

Fishery Products Quality Control Action Plan

The Fishery Products Hygiene and Fish Diseases Control Section Directorate has been founded within the structure of the Ministry of Agriculture and Rural Affairs General Directorate of Protection and Control. The administrative structure of this centre has been strengthened by the appointment of veterinarians, engineers, etc.

The urgent action plan prepared by this unit has been discussed at meetings with the participation of the representatives of the private sector, the related directorates of the Ministry and the Laboratory Directorates. The deficiencies, inadequacies and problems have been discussed and corrective actions taken.

Regarding the application of the action plan, a series of meetings were again organised with the participation of private and public sector representatives and the "Fishery Products Quality Control

Application Guideline” was provided. These instructions include provisions for training activities for the purpose of rendering information.

The Provincial inspection structure has been reorganised. The inspectors were continuously trained especially on the subjects of plant inspections, control of production and harvesting areas, sample collection, analyses, evaluation of the results, documentation and preparation of health certificates. Besides, the HACCP training activities were included within these training programs. These training activities are still continuing.

Within the “Fishery Products Quality Control System”, all the inspections and documentation, monitoring programs and analyses for the bivalve and molluscs, fresh, chilled and processed fish and aquaculture products, to be initiated at the production phase and continued until the exportation phase, were clarified.

In parallel with the application of this system, the plants which had received approval until the year 1998 were subjected to extensive inspections and the approval of those lacking technical and hygiene conditions were cancelled. The granting of the new approval numbers, the number of which was reduced to 32 as of July 1998 as a result of these inspections, is being undertaken quite fastidiously. Currently, there exist a total of 63 approval numbers for fish product establishments including new constructions. Among these, the number of plants processing live bivalve and molluscs is five, while the number of those processing processed bivalve and molluscs is 13. One of the processing plants is a processing vessel.

The rules and principles regarding the inspection of the plants have been re-determined and the related inadequacies have been removed through the preparation of the “Inspection Guideline”, which has introduced a standardisation and a grading system for the inspections. This guideline will be changed soon in order to help solve new application problems.

Technical and hygienic conditions and especially the infrastructures of the plants have been improved recently, while the operations are upgraded to conform to the conditions anticipated in the related EU directives, through a professional business administration understanding. The plants are being regularly and frequently inspected by the Provincial inspectors and the deficiencies and disorganisation are reported. The plants are required to take necessary steps to remove these deficiencies and disorganisation within a specified period of time. The Central inspectors are frequently participating in the Provincial inspections.

Within the Ministry’s central unit, a special HACCP committee has been constituted for the purpose of inspecting the HACCP plans, investigating the applications on site and approving these plans.

The reference laboratories of MARA have been strengthened especially from the viewpoint of tools, equipment and instruments, with the supplementary budget provided by the Government and the HPLC, CS-MS instruments have been put into service.

The “Analyses Methods Manual for Fishery Products” aimed at laboratory personnel and regarding the analyses to be applied, their management, the evaluation of the analyses results and the preparation of the analyses result reports has been prepared, and practical training activities have been organised at the laboratories. For example, in February of 1999, a long-term training activity has been organised at Izmir Provincial Control Laboratory Directorate, with the participation of the related reference laboratory experts. Good laboratory practices have been put in operation with standardised sampling direction.

A “Samples Collection and Sending to Laboratories” direction has been put into application. Both involve the control of the production areas and the specimens to be collected at the production and exportation phase.

A “National Residue Monitoring Program” has been developed. This is applied at the aquaculture installations and the rules and principles regarding the application of this program are designated. In addition, special rules have been designed for the transport of products from the farms to the packaging plants.

The “Water Quality Control Notice”, which was in application in parallel with the directive numbered 80/778/EEC, regarding the quality of the water used at the fishery products’ plants, has been revised in accordance with the conditions recommended by the “EU Identification Mission” team.

The studies regarding the preparation of health certificates, which are prepared especially at the exportation phase, were organised and precautions taken regarding the correct application of the “Health Certificate Issuing Notice “, prepared for this purpose by the Ministry.

As for bivalves and molluscs the following special provisions have been taken.

The “Production Areas Control Plans”, which have been in application in the bivalve and molluscs production areas since the past years but which was discontinued from time to time, has been seriously taken up. The realisation of microbiological and toxicological analyses has been continued on the water and fishery product samples collected from production areas. Within the framework of this monitoring program, the water and fishery product samples collected from the stations have been subjected to analyses at 15-day periods at the related laboratories, and the open and closed production areas have been announced according to the results of these analyses.

Regarding the DSP, PSP and later ASP analyses, which bear significant importance within especially the toxicological analyses, experts working in Izmir and in Bursa, have been subjected to training in Spain with the support of the EU. Currently, these analyses are realised at these two laboratories. Another laboratory is planning to carry out these toxin analyses in Samsun for the Black Sea Region.

On the other hand, studies have been initiated as a result of the discussions carried out with the EU authorities in Brussels on 22 October 1998 (within the scope of the toxicological monitoring program) and upon the demand for phytoplankton designation. The monitoring program results evaluated by the central unit of MARA are being announced to the Provincial inspectors, export routes and the plant owners and the bivalve and molluscs obtained from the open areas are sent to the related places, following the preparation of the Documents of Origin.

The European Commission, in November 1999, lifted the export ban following an EU inspection visit to Turkey (19-23 July 1999).

To ensure the quality of fish and fishery products, in line with the EU regulations, some measures have been taken by the government in recent years, including:

- Establishing a new section called “Fishery Products Hygiene and Fish Disease’ Control Section.
- Guideline on Fishery Products Quality Control Application (in line with 91/492/EEC and 91/493/EEC Directives).
- Inspection Guideline (in line with 91/492/EEC and 91/493/EEC Directives).
- Notice for Samples Collection and Sending to Laboratories.
- Analyses Methods Manual for Fishery Products (AOAC Methods).
- Notice for National Residue Monitoring Program (in line with 96/23/EEC Directive).
- Notice for Health Certificate Issuing (in line with 93/185/EEC).
- Notice for Water Quality Control (in line with 80/778/EEC Directive).
- Notice for Disease and parasite control (in line with 91/67/EEC and 93/140/EEC).
- Notice for Production Areas Control Plans (in line with 79/923/EEC and 91/492/EEC Directives).
- Notice for Controls of technical and hygiene, record keeping and HACCP (in line with 94/356/EC Directive).
- Packing materials Codex (in line with 79/112/EEC).
- Notice for Fishery Products Transportation with vehicles.
- Notice for control of wholesale markets and sales points (under preparation).

Markets and trade

The per capita consumption of fishery products in Turkey is primarily dependent on the marine fisheries catch. From 5.4 kg in 1991, the lowest level, this reached a record high level in 1995, exceeding 9.5 kg for the first time but subsequently falling to 8.3 kg in 1998.

Compared with other countries in the Mediterranean and Black Sea regions, consumption of fish in Turkey is relatively low, comparable to north-west African (6.4 kg) and eastern European countries (6 kg). Consumption of fish products is also quite low compared to the world average of about 14 kg in 1997, and with consumption in the European Community at an average of 22 kg per annum, ranging from about 10 kg in Austria to 57 kg in Portugal.

In 1998, 28 205 tonnes of fish and fishery products (excluding live fish) were exported, worth USD 96 477 000 (Table 6). The major exports market were also the EU (especially Germany, Greece, UK, Italy, Spain and France), accounting for almost 85% of both quantity and value of exports. The others are to a lesser extent Japan and Hong Kong for mollusc and crustacean, Lebanon for sea bream, and EFTA countries. The importance of export of canned products has been increased in recent years, focusing on Germany, the UK and Belgium. In 1998, chilled fish export was valued at around USD 12 million, 12.5% of total exports, from USD 25 million in 1997. Among the exported fresh and chilled fish, sea bass and sea bream are the most important species.

Table 6. The exports of fishery products from Turkey, 1993-1998 (Q = tonnes, V = USD 000)

Product type	1993		1994		1995		1996		1997		1998	
	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000
Live fish												
(1000 individual)	112	379	46	185	66	106	12	101	40	224	9	63
Fresh-chilled	2 881	11 669	3 862	12 816	4 045	11 829	4 642	18 184	6 307	25 004	3 590	11 977
Frozen	791	2 329	1 256	3 226	1 185	2 800	684	1 976	1 115	2 667	766	2 117
Fileto	582	3 218	1 010	4 437	1 075	6 097	1 038	4 747	1 890	8 469	1 349	7 251
Salted-dried-smoked	119	3 128	179	4 437	154	775	251	1 753	291	1 831	182	950
Shellfish	798	4 129	1 106	5 932	620	3 745	812	6 122	1 558	7 733	1 299	4 260
Molluscs	8 435	18 356	7 179	21 465	6 920	23 985	5 349	22 313	7 210	22 280	4 329	13 264
Canned fish	4 042	1 180	6 910	20 287	9 874	31 828	12 889	39 490	14 187	45 642	13 436	42 746
Canned shellfish, bivalve and molluscs	2 243	9 980	1 892	8 646	1 833	9 804	2 424	12 972	3 233	14 151	3 254	13 848
Total		61 646		77 896		90 963		107 658		128 001		96 477

Source: Under secretariat of Foreign Trade of Prime Ministry.

As mentioned above, total export (excluding live fish) in 1998 was 28 205 tonnes, valued at USD 96 477 million compared with imports of 32 254 tonnes valued at USD 43 374 million. In terms of trade balance there was a surplus of USD 53 104 in 1998, compared with USD 75 607 in 1997. This reduction of 30% in the surplus was primarily attributed to the EU ban. This figure shows that the import ban, which was introduced by EU, caused great damage on Turkish fishing industry especially the aquaculture sector (sea bass and bream farmers).

Imports of fishery products have rapidly increased since 1991, when production from capture fisheries sharply declined. In 1998, total imports (excluding live fish) were 32 254 tonnes, worth USD 43 373 000 (Table 7). Frozen fish comprised over 86% of the total. Frozen tuna is an important source of raw material for the canning industry. The EU is the dominant source of fishery product supply to Turkey (especially Holland, the UK and Norway), and to a lesser extent Far East countries (Singapore and Thailand) and some African countries (Ghana, Cote d'Ivoire). Where fresh fish and frozen fish (mostly mackerel) is concerned, inputs from Norway are also important.

Table 7. The imports of fishery products into Turkey 1993-1998

Product type	1993		1994		1995		1996		1997		1998	
	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000	Tonnes	USD '000
Live fish												
(1000 individual)	3 191	686	3 712	818	3 067	692	65	494	89	647	69	450
Fresh-chilled	42	105	3	9	38	129	20	106	185	165	104	133
Frozen	31 228	19 020	24 120	21 172	28 191	28 776	26 945	27 898	36 191	44 038	27 607	33 857
Fileto	382	555	147	227	825	1 369	1 318	1 883	1 418	2 178	1 479	2 457
Salted-dried-smoked	141	502	53	157	462	921	353	792	673	1 407	721	1 234
Shellfish	53	241	6	43	136	1 021	110	449	100	362	90	301
Molluscs	1 728	2 095	1 366	2 327	986	2 142	899	1 898	1 259	2 040	1 398	2 127
Canned fish	40	248	68	246	234	587	224	639	1 259	562	508	1 527
Canned shellfish												
molluscs	33	95	270	903	280	1 155	276	1 054	274	995	347	1 287
Total		23 547		25 902		36 702		35 213		52 394		43 373

Source: Under secretariat of Foreign Trade of Prime Ministry.

Outlook

Fisheries and aquaculture provide a vital source of food, employment, recreation, trade and economic well being for people, both for present and future generations and should be conducted in a responsible manner. To ensure the effective conservation, management and development of fisheries and aquaculture resources, the government will take further actions and wishes to put some measures into practice in order to:

- Increase the total production.
- Establish a General Directorate for fisheries and aquaculture.
- Amend the Fisheries Law.
- Prepare a regulation for aquaculture.
- Improve the quality control systems from landing to consumer.
- Accredite Laboratories and calibrate both equipment, personnel and training programs.
- Provide sufficient equipment for inspectors for inspection and sampling.
- Set up remote control system for land based fishing control.
- Harmonise fishery Law and Regulation in accordance with relevant EU Directives.

UNITED STATES

Summary

The United States harvested a total of 4 352 million metric tons of fish, shellfish, and other aquatic products valued at USD 3 294 billion in 1998. In 1997, 4 635 million metric tons were harvested valued at USD 3 408 billion.

The estimated marine recreational finfish catch for 1998 was 312 million fish taken on an estimated 60.3 million fishing trips. The total estimated weight of the harvest (fish kept) was 88.3 thousand metric tons.

Various fishery management plans were revised to incorporate revisions in quotas, size limits, and gear restrictions.

Per capita consumption of fishery products increased slightly to 6.8 kg (14.9 pounds).

US edible fishery exports have declined steadily the past several years totalling USD 2 268 billion in 1998. This represents a 16% decrease from the 1997 amount of USD 2 713 billion and a significant drop by USD 1.2 billion (35%) from its peak in 1992.

Seafood imports totalled USD 8 173 billion in 1998 – a 5% increase from the 1997 amount of USD 7 754 billion.

Legal and institutional framework

The major legal authority for managing fish in the US Exclusive Economic Zone (EEZ) is the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which was extensively amended in October 1996 with the passage of the Sustainable Fisheries Act (SFA). The SFA includes numerous provisions that require science, management and conservation actions by the US Department of Commerce/National Oceanic and Atmospheric Administration/National Marine Fisheries Service (NOAA Fisheries), and includes changes and mandates regarding fisheries management that had to be implemented by required dates from December 1996 to October 1998. Some of the key provisions of the SFA are:

- Prevent overfishing and end overfishing of depressed stocks.
- Rebuild depleted stocks to levels consistent with MSY.
- Reduce bycatch and minimise mortality of unavoidable bycatch.
- Designate and conserve essential fish habitat.

In 1998 and 1999, there were relatively few significant changes in the above major enabling statutes, mainly focusing on the implementation of these changes and the completion and review of the large number of mandated reports on various issues. In addition, in late 1998, certain programs dealing with North Pacific groundfish, especially Alaska pollock, were implemented pursuant to the American Fisheries Act, which established procedures for and funded a major buyout of pollock harvesting capacity.

Accordingly, NOAA Fisheries continued to implement the SFA mandate to establish management plans that will end overfishing in ten years; reported on essential fish habitats in US fisheries; and completed several Congressionally mandated reports or reviewed the findings of other reports that were conducted by non-government panels or task forces. The MSFCMA may be reauthorized later

in 2000, four years after the last amendments, but it is still not clear how the US Congress will exercise this authority.

Fishing operations in Federally managed US fisheries are governed by Fishery Management Plans (FMPs) developed by the Regional Fishery Management Councils and approved by the Secretary of Commerce, and, as of 31 December 1999, there were 41 FMPs in effect and several more that were in various stages of development. Fisheries managed by FMPs account for more than three-quarters of total US fishery landings, with most of the remaining fisheries managed by the coastal States. Practically all or 96% by volume, of all US fishery harvests take place in State waters (generally 0 to 3 miles) or in the US EEZ (3 to 200 miles). Practically all Federally managed fisheries operate under TACs and various restrictions on access, and three fisheries (halibut and sable fish; ocean quahog and surf clam; and wreckfish) are managed with individual transferable quotas (ITQs).

Foreign investments in the US fish harvesting sector are regulated by flagging, ownership, and cabotage that were most recently amended in the American Fisheries Act of 1998. Essentially, fishing vessels that participate in the US fisheries must be documented under US Coast Guard regulations, built in the United States, and subject to a 75% US ownership requirement. Foreign ownership of quota shares in the three ITQ fisheries is prohibited under the FMPs. Foreign investments in other sectors, like processing, trading, marketing, and aquaculture, are not subject to analogous restrictions and therefore are essentially free.

Capture fisheries

Employment and the structure and performance of the fleet

Based on historical and fragmentary current data, it is estimated that there are 25 000 to 30 000 commercial fishing vessels (defined as vessels over 5 net tons) licenced to operate in the US EEZ, and that this number has probably not changed significantly in recent years. In addition, while the economic performance of the fleet varies substantially from fishery to fishery, overall performance in the last several years has been at a non-optimum level.

There is no current information on the number of fishermen employed in the various fisheries. However, employment in the processing and wholesale sectors indicate a yearly average of 83 thousand workers employed in 4 817 plants divided between processing (54 thousand workers; 1 297 plants) and wholesale (29 thousand workers; 3 520 plants).

Landings

Commercial landings (edible and industrial) by US fishermen at ports in the 50 states amounted to 4.1 million metric tons valued at USD 3.1 billion in 1998, a decrease of 294 thousand metric tons (down 7%) and USD 319 million (down 9%) compared with 1997. The volume of 1998 US landings decreased, especially in the Pacific waters affected by El Niño, for the following major species: cod, yellowfin flounder, herring, rockfish, squid and seaweed. The decrease value in 1998 was associated with decreased landings of several major species and lower prices for cod, herring, menhaden, pollock (walleye), tuna and some species of flounder. Finfish accounted for 86% of the total landings in quantity terms, but only 46% of the value. The 1998 exvessel price paid to fishermen was USD 0.34 compared to USD 0.35 in 1997.

Commercial landings by US fishermen at ports outside the 50 states or transferred onto foreign vessels (joint ventures) provided an additional 182 thousand MT valued at USD 165.9 million. This was a 6%, or 10 thousand MT increase in quantity, but a decrease of USD 19.6 million (23%) in value compared with 1997. Most of these landings consisted of halibut, sea herring, Atlantic mackerel, snapper and tuna landed in Canada, Puerto Rico, American Samoa and other foreign ports.

There were significant reductions in the 1998 landings of many Pacific coast fisheries that may be associated with El Niño. The 1997-1998 El Niño was the strongest on record and had spectacular impacts on weather, marine ecosystems and fisheries. El Niño, Spanish for little boy or Christ child, is

associated with the appearance of unusually warm eastern and central tropical Pacific Ocean waters. During an El Niño the western Pacific trade winds are weak and don't produce the upwelling of cool, nutrient rich waters in the eastern Pacific. This causes a rise in sea surface temperature, which reduces primary productivity, adversely affecting higher trophic levels of the food chain including commercial fisheries.

Status of fish stocks

The Sustainable Fisheries Act, which reauthorized the Magnuson-Stevens Act, requires the Secretary of Commerce to report to the US Congress annually on the status of fisheries within each of the Regional Management Council's geographical area of authority and identify those fisheries that are overfished or are approaching a condition of being overfished.

In accordance with the requirements of the SFA, the basis for the identification of overfished stocks is the current overfishing definition found in the FMPs. Prior to requirements under the new National Standard Guidelines, most existing overfishing definitions were based wholly or in part on either a fishing mortality rate or stock biomass, but not both. The new statutory definition requires that status determination criteria must specify both a maximum fishing mortality threshold or reasonable proxy, and a minimum stock size threshold, or reasonable proxy.

Thus, species must be assessed according to whether the fishing mortality threshold is being exceeded and whether the minimum stock size threshold is being met.

Based on the criteria specified in the MSFCMA, the most recent Report on the Status of Fisheries finds that 98 species are listed as "overfished," 127 species are listed as "not overfished," and 5 species are considered to be approaching an overfished condition; for 674 species, the status relative to overfishing is unknown. Whenever possible, species were assessed using existing overfishing definitions in FMPs or FMPs under development, the remainder were evaluated using the 1999 edition of the NOAA Fisheries publication, "*Our Living Oceans*".

Last year's report identified 90 species as overfished, 200 species as not overfished, and 10 species as approaching an overfished condition; for 544 species, the status relative to overfishing was unknown.

Based on the identifications made in the Congressional report, the Councils are now required to develop programs to end overfishing and rebuild overfished stocks, and to prevent overfishing from occurring for the stocks that are approaching an overfished condition. The rebuilding programs must be as short as possible, but not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise.

In the NOAA Fisheries publication, "*Our Living Oceans*," the terms "overfished" and "overfishing" are not used but a similar concept, "Long Term Potential Yield (LTPY)" is used which is analogous to MSY. In this publication, it is estimated that, of 203 "stock groups" under Federal management, 36% are considered below LTPY, 31% are near their potential yields, 11% are above, and 22% are unknown.

Resource management

NOAA Fisheries and the eight Regional Fishery Management Councils have implemented 41 formal fishery management plans (FMPs) to regulate fisheries within the 3 to 200-mile EEZ, and work with the coastal States to manage other fisheries in waters under State jurisdiction, usually from zero to three miles. In addition, NMFS manages one FMP fishery directly – the FMP for Atlantic Highly Migratory Species (tuna, swordfish, shark, billfish, *etc.*), a fishery conducted both within and outside the US EEZ.

Fisheries managed by FMPs account for an estimated 70% (by value) of all US commercial fisheries. The largest single US fishery by a wide margin that is not managed by an FMP is the coastal fishery for Atlantic menhaden, which in 1998 accounted for 773 690 metric tons valued at USD 103.8 million, or almost 19% by volume and a little more than 3% value of the respective totals.

During the period under review, there were no fundamental and major changes in management instruments, and NOAA Fisheries and the Regional Fishery Management Councils concentrated on implementing the 1996 Sustainable Fisheries Act amendments to the MSFCMA. Within this management framework, fisheries regulations generally became stricter, as the United States focused increasingly on dealing with overfishing and poor stock health. Hence, the number of FMPs increased from 32 in 1990 to 41 in 1999, and, within these FMPs, there was a progressive evolution away from reliance on quotas and gear restrictions, and toward other measures to control effort and restrict entry. As a result, by the late 1990s, various limited access measures had been introduced in the large majority of federally managed fisheries. These limited access measures range from:

- Control date (date after which licences are not issued).
- licence or vessel moratorium.
- licence or vessel limitation.
- ITQ.

Commercial fisheries

Management instruments

The United States employs a wide range of management instruments, including TACs, gear and vessel restrictions, seasonal and area closures, restrictions on size/weight, and individual fishery quotas in three fisheries (halibut/sablefish; wreckfish; and surf clam/ocean quahog). Mainly in response to the MSFCMA's mandate to end overfishing within 10 years, the United States will no doubt modify the use of these management instruments in the years to come.

Access

There were no significant changes in fishery access arrangements in 1997, including foreign access to US fish resources and US access to fisheries outside the US EEZ. A handful of Governing International Fisheries Agreement was in force, but there were no directed foreign fishing allocations in the US EEZ. Foreign joint venture operations in US waters (in which US-flag vessels harvest fish and sell their catch "over-the-side" to a foreign-flag vessel) have also been phased down, but 15 000 metric tons of Atlantic mackerel and 40 000 metric tons of Atlantic herring were still made available for such joint ventures in 1998.

US access to foreign fisheries is essentially limited to the tuna purse seine fisheries in the central and western Pacific Ocean. These access arrangements are managed under the provisions of the South Pacific Tuna Treaty, which was last renegotiated in 1992. Under the terms of this agreement, US-flag tuna vessels have access to fisheries in the waters of the 16 Pacific island nations that make up the Forum Fisheries Agency (FFA), and the US tuna industry pays USD 4 million in annual access fees. Although the numbers fluctuate from season to season, approximately 35 to 40 US-flag tuna purse seine vessels have operated in these Pacific fisheries in the period under review.

Recreational fisheries

Recreational fishing in the US EEZ is defined by the Sustainable Fisheries Act of 1996 as "fishing for sport or pleasure". Additionally, "charter fishing" is defined as "a vessel carrying a passenger for hire who is engaged in recreational fishing." Federal regulations do not provide for the sale of recreational caught fish. However, each state sets regulations for its waters and, in some cases, state regulations allow for the sale or barter of recreational caught fish.

With the exception of highly migratory species, recreational fishing regulations in the United States are, in most cases, set by each state. For species under Federal regulation, it is normal procedure for state and Federal governments to come to a common decision regarding appropriate regulations. There is no Federal saltwater sport-fishing licence in the United States. However, several states require a

licence. Daily recreational catch limits vary by state and generally by species. Catch limits vary from zero (depleted species) to unlimited amounts. Size limits are imposed for certain species. Gear restrictions vary but usually involve the collection of baitfish and generally apply only to nets.

In 1998, over 7.5 million people made 60 million marine recreational fishing trips to the Atlantic, Gulf, and Pacific coasts. The estimated marine recreational finfish catch was 312 million fish. Over 55% of the number caught were released alive. The estimated total weight of the harvest (fish kept) was 88.5 thousand metric tonnes.

The Atlantic and Gulf coasts accounted for 77% of the participants, 88% of the fishing trips, and 91% of the marine recreational finfish catch. Most (56%) of the catch came from inland waters, 34% from state territorial seas, and 10% from the EEZ. The distribution is different for the Atlantic and Gulf coasts versus the Pacific coast. On the Atlantic and Gulf, the majority of the trips were from inland waters, while on the Pacific coast more trips were from the state territorial seas.

Aboriginal fisheries

The Western Alaska Community Development Quota (CDQ) Program provides a unique harvesting privilege to 57 rural communities on the Bering Sea coast of Alaska. The total population of these communities is about 21 000 persons of which about 77% are Alaska natives. Although the program is not designed specifically for the indigenous people of western Alaska, they stand to benefit from CDQ economic activity as well as the non-native people who reside in the specified communities.

The CDQ Program allocates 7.5% of the groundfish, prohibited species (bycatch in the groundfish fisheries), crab, and halibut quotas to eligible western Alaska communities. The objective of the CDQ Program is to provide the means for starting or supporting commercial seafood activities in western Alaska that will result in ongoing, regionally based commercial seafood or related businesses. The CDQ communities may harvest their allocations directly, as is frequently done in the halibut fishery, or they may contract with vessels and processors to catch and process CDQ in exchange for direct royalty payments and employment opportunities for community residents. The estimated ex-vessel value of CDQ harvests is about USD 50 million per year.

The operations and effectiveness of these CDQ programs were formally assessed in a Congressionally mandated report, *The Community Development Quota Program in Alaska*, prepared by the National Research Council in 1999. Essentially, this report concluded that the CDQ program has by and large made significant progress in meeting its principal goals, especially promoting economic and social benefits for residents of these communities, although some problems of governance and communication among the communities were also reported.

Monitoring and enforcement

The NOAA Fisheries Office for Law Enforcement is the primary investigative arm of the Federal government regarding the enforcement of Federal fisheries laws and regulations. The office utilises a four tiered approach to the conservation and protection of living marine resources.

1) Investigation and patrol

The NOAA Fisheries Office for Law Enforcement investigates and prosecutes both criminal and civil violations. The office has increased its emphasis and the focus of resources on the detection and prosecution of the most egregious violators. On-going investigative work has revealed the existence of complex and deeply integrated illegal fishing operations, which have a significant impact on fisheries stocks. Successful prosecution and elimination of such activities serve to protect existing stocks and enhance future commercial opportunities. In addition to investigative work, agents and uniformed enforcement officers provide a balanced approach to policing by spending significant time conducting patrols and inspections. These functions primarily involve the monitoring of dockside operations and some near shore activities and are intended to detect and deter potential violations.

2) Community oriented policing and problem solving

Current enforcement strategies also involve significant efforts to gain compliance with laws and regulations through use of Community Oriented Policing and Problem Solving (COPPS). The promotion of voluntary compliance through outreach, public awareness, and education involves community interaction. The COPPS program was adopted as a proactive means to further involve others in the challenges of conservation law enforcement. COPPS is designed to involve communities and other persons who may be considered stakeholders by encouraging them to focus on results. The foundation of COPPS rests on education and understanding through teamwork and partnerships. It employs voluntary, rather than punitive measures to encourage and increase overall compliance in the regulated community.

3) Use of technology to enhance investigations and compliance

The exponential growth of technology in recent years has provided a number of potential solutions for use in the management of fisheries and persons involved in fishing. The intent is to develop national fisheries enforcement operations using advanced technologies such as satellite based Vessel Monitoring Systems (VMS). VMS provides satellite-based tracking of, and communications with, fishing vessels. This is a powerful new tool with potential benefits ranging from control and monitoring to cost savings for fisheries enforcers, managers, and fleet owners. The United States currently monitors the operations of driftnet vessels and numerous US-flag vessels in several fisheries. The United States is also engaged in global efforts to apply VMS to various international arenas. Current operational systems include the successful Hawaiian pelagic long-line project, which involves over 120 longline vessels operating from Hawaii and the New England Scallop Project which includes VMS tracking of approximately 270 scallop fishing vessels in New England. The NOAA Fisheries National VMS project is nearing completion and will soon incorporate the existing Hawaiian long-line and New England Scallop systems in addition to the Atlantic Highly Migratory Species Fishery and the Alaska Atka Mackerel Fishery. There are a number of additional fisheries under consideration as well. VMS is just one example of useful technology. A number of other endeavours, including remote radar applications, are also being explored.

4) Development and fostering of partnerships

NOAA Fisheries currently has co-operative agreements in place with nearly 25 US States and Territories. In addition to these partners, NOAA Fisheries holds agreements or works closely with a number of other Federal agencies, tribes and other organisations.

Multilateral agreements and arrangements

During the 1998-1999, the United States engaged in a number of global, regional, and bilateral negotiations and began to implement several agreements and other less formal arrangements, all of which are intended to promote US international fisheries policies. The examples given below selectively review these negotiations and agreements, highlighting the most important international developments:

Negotiations

- Strongly supported agreement in the World Trade Organisation on fish subsidies and tariffs.
- Participated in several sessions of the Multilateral High-Level Conferences to establish a regional organisation to manage the fisheries for highly migratory species in the central and western Pacific.
- Joined a group of coastal African States (South Africa, Namibia, and Angola) and several distant-water-fishing nations in negotiations to establish a new regional organisation to manage the Southeast Atlantic fisheries.

- Supported and prepared for the United Nation's Food and Agriculture Organisation (FAO) sponsored consultations on reducing illegal, unregulated and unreported operations in international fisheries.

Implementation of agreements and other arrangements

- Concluded an agreement with Canada on joint management of and reciprocal access to Pacific salmon fisheries.
- Joined a recently renegotiated organisation for managing tuna and controlling dolphin mortality in the Eastern Tropical Pacific.
- Strongly supported the technical and policy-level consultations of 1998 and 1999 that led to the approval by FAO of the three international plans of action on 1) mitigating seabird mortality in longline fisheries; 2) the management of shark and shark-like species; and 3) the management of fishing capacity, and began domestic and international efforts to implement these International Plan of Actions domestically and to encourage and help other FAO Members do the same.

Aquaculture

Policy changes

During the period under review, the Administration took a number of steps to promote environmentally and economically sound aquaculture. US demand for fisheries products continues to outpace domestic production leading to large increases in the US annual seafood trade deficit, and domestic aquaculture production is recognised as having significant potential to offset part of this deficit. As a consequence, in June 1998, the National Aquaculture Development Act of 1980 was amended and reauthorized by the Congress; the National Aquaculture Development Plan was revised by the Joint Subcommittee on Aquaculture and continues to be updated as the Strategic Plan for Federal Actions; the National Oceans Conference held in May 1998 by the Administration, declared the importance of marine aquaculture and allocated three years of new funding to address the research, technology and environmental concerns of aquaculture in marine environments; and the US Department of Commerce drafted legislation in 1999 that would provide long-term lease sites for aquaculture facilities in the US EEZ that would fill a gap in Federal authorities. The draft legislation, however, was not introduced to Congress during the review period.

Table 1. **Estimated US aquaculture production**

	1992-1997	
	Metric tonnes (thousand)	Value (thousand USD)
1992	314	724
1993	308	783
1994	302	751
1995	313	815
1996	315	886
1997	348	934

Fisheries and the environment

In terms of fisheries and the environment, the US implements the National Environmental Policy Act (NEPA) for all fishery management actions that may have a significant impact on the quality of the human environment (physical, biological, socio-economic). For every major federal action, an environmental assessment (EA), environmental impact statement (EIS) or categorical exclusion (CE) is completed in accordance with NEPA regulations. Environmental impacts generally associated with fishery management actions include effects resulting from 1) harvest of fish and invertebrate stocks which may result in changes in food availability to predators and scavengers, changes in population

structure of target fish and invertebrate stocks, and changes in the marine ecosystem community structure; 2) changes in the physical and biological structure of the marine environment as a result of fishing practices, *e.g.* effects of gear use and fish processing discards; and 3) entanglement/entrapment of non-target organisms in active or inactive fishing gear. To the extent practicable, the appropriate NEPA review (EA, EIS, and CE) is integrated with fishery management documents developed under the MSFCMA. Opportunity for public review and comment prior to final action is afforded through both the NEPA and MSFCMA processes.

For the period under review, the United States undertook a number of domestic and international initiatives relating to the “fisheries and the environment” theme. The following selectively reports on a few highlights.

External environmental threats to aquatic ecosystems

- The United States continues to support a wide variety of means of conserving and protecting endangered and threatened salmon runs in the Pacific Northwest, and has committed increased public resources to that end.
- The United States funded a number of “disaster relief” measures under Section 312a) of the MSFCMA, most of which provided Federal assistance to fishing communities in response to a natural disaster, such as a hurricane.

Adverse impacts of capture fisheries and Aquaculture on non-targeted species and the environment

- Under the 1996 Sustainable Fisheries Act amendments to the MSFCMA, NOAA Fisheries was required to conduct research on incidental harvests taken in the shrimp trawl fisheries in the Gulf of Mexico and the South Atlantic, and to establish a program to reduce those incidental harvests.
- In developing a policy to promote the domestic marine aquaculture industry, the Administration has consistently sought through a variety of means to achieve that goal on an environmentally sound basis.
- NOAA Fisheries has placed added emphasis on the need for a broader approach to fisheries management that takes into account the impacts of directed fishing operations on fish habitats and the surrounding ecosystems. The 1996 Sustainable Fisheries Act amendments to the MSFCMA mandated that NOAA Fisheries identify and describe essential fish habitats in all Federally managed fisheries.

Government financial transfers

The following table shows the US Government financial transfers to marine fisheries 1997-1999.

Social assistance

The United States does not have a fisheries sector social assistance program *per se* – a transfer of Government funds directly to fishermen “to ensure some minimum level of welfare.” However, in various ways, the United States is increasingly addressing impacts on fishing communities.

One example is the establishment, under the 1996 amendments to the MSFCMA, of a new National Standard #8, which states that “conservation and management measures shall ... take into account the importance of fishery resources to fishing communities in order to A) provide for the sustained participation of such communities, and B) to the extent practicable, minimise adverse economic impacts on such communities.” Under this standard, NMFS has had to define and describe “fishing communities” and conduct social impact analyses for all Federally managed fisheries.

One other means whereby the United States may be said to be moving cautiously toward a social assistance policy in fisheries is disaster relief. Under Section 312a) of the 1996 amendments to the MSFCMA, the Secretary of Commerce may, in order to assist a fishing community that is adversely affected by a commercial fishery failure, provide Government-funded relief to, *inter alia*, “... assist a fishing community affected by such a failure”. The federal share of such relief shall not exceed 75% of the total cost.

Table 2. US government financial transfers marine fisheries (1997-1999)

	1997	1998	1999
	Million USD		
Revenue Enhancing Transfers			
(from consumers): Market Price Support			
Transfer effects of US tariffs on fishery imports ¹	36.4	37.8	42.8
Total Market Price Support	36.4	37.8	42.8
Revenue Enhancing Transfers			
Revenue Enhancing Transfers			
(from Government budgets): Direct Payments			
<i>USDA Market Promotion Program</i>			
Alaska Seafood Marketing Institute	3.0	2.7	2.5
American Catfish Association	0.3	0.3	0.1
American Seafood Institute	0.6	0.4	0.4
<i>USDA Surplus Commodity Removal</i> ²	8.5	17.2	15.7
<i>Fisheries Disaster Relief</i>			
Flooding; red tide; buyouts,	19.8		
Bristol Bay salmon		17.0	
Alaska salmon			50.0
New England multispecies ground fish			7.9
American Fisheries Act ³			20.0
Total Direct Payment			
Revenue Enhancing Transfers	32.2	37.6	104.5
Cost Reducing Transfers			
Treasury/IRS Fuel Excise Tax Exemption ⁴	150.0	150.0	150.0
NMFS Fisheries Development Program	17.3	11.3	10.6
NMFS Fisheries Finance Program ⁵	1.7	1.7	1.7
NMFS Capital Construction Fund			
(tax deferral program) ⁶	2.5	2.5	2.5
NMFS Fishermen's Contingency Fund	1.0	0.9	0.9
Fishing Vessel Gear Damage Program	0.2	–	–
Total Cost Reducing Transfers	171.5	166.4	165.7
Total Revenue Enhancing and Cost Reducing Transfers	240.0	241.8	313.0
General Services Transfers			
Information Collection and Analysis	165.8	177.5	188.8
Resources Information	116.2	125.5	133.8
Fishery Industry Information	24.6	27.1	30.1
Information Analysis and Dissemination	24.9	24.9	24.9
Acquisition of Data	26.8	25.1	25.1
Conservation and Management	103.8	120.9	140.5
State and Industry Assistance ⁷	9.7	11.5	12.5
Sea Grant College Program ⁸	3.0	3.0	3.0
Saltonstall-Kennedy Development Grants ⁹	0.4	3.4	3.0
Dept. of Transportation/ Coast Guard Fisheries Law Enforcement ¹⁰	431.0	457.2	425.1
Fisheries Infrastructure ¹¹	NA	NA	NA
Expenditures of State Fisheries Agencies ¹²	NA	NA	NA
Total General Services Transfers	740.4	798.5	798.0

Table 2. US government financial transfers marine fisheries (1997-1999) (cont.)

	1997	1998	1999
	Million USD		
Total Transfers	980.5	1,040.3	1,103.0
Total Ex-Vessel Fisheries Revenues	3 447.6	3 128.5	NA
Transfers/Total Revenues (% age)	28.4%	33.2%	NA
Revenue Enhancing and Cost Reducing Transfers/ Total Revenues (%)	6.9%	7.7%	NA
General Services Transfers/Total Revenues (%)	21.5%	25.5%	NA

1. These figures represent total US tariff revenues for imports of edible fish and shellfish products. Since most fishery imports are duty-free, the lion's share of these amounts is accounted for by imports of a handful of processed products such as canned tuna, sardines and oysters, smoked salmon, and frozen crabmeat. Hence, only a small group of processors derive most of the benefits of these transfers. More fundamentally, the reported amounts do not capture the entire transfer because they exclude the dead-weight loss to society caused by the increase in prices for domestically produced and imported fish. Measuring this dead-weight loss requires assessing supply and demand elasticities of fish products subject to tariffs. Thus, an accurate and comprehensive estimate of these transfers from consumers to producers would give higher amounts than the figures given here.
2. During the three year period under review, this program was used to purchase processed (canned, nuggets, and pouched) salmon and canned tuna products.
3. This transfer was used primarily to assist in the funding of a buyback of Alaska groundfish (pollock) vessels.
4. Treasury/Internal Revenue Service does not monitor levels of uncollected fuel excise taxes, and this rough estimate was developed by NOAA Fisheries.
5. The figures given for this program represent the costs to government of operating the program, and do not capture the full value of the transfer. The FFP program provides direct loans to industry for various purposes (some repair and maintenance of fishing vessels; aquaculture; buybacks; and purchase of IFO shares in the halibut and sablefish fisheries), and the transfer is the reduced costs of retiring the loans. Calculating these reduced costs requires a careful examination of FFP and commercial interest rates and repayment schedules.
6. The figures given for the CCF tax deferral program represent an estimate of the economic impact on industry of deferring these taxes. Annual deferred taxes have averaged USD 25 to USD 30 million in recent years, but these taxes are for the most part recaptured at a later date through lower depreciation allowances. The effective annual transfer to industry in the form of lower taxes has been calculated at about USD 2-USD 2.5 million.
7. This budget line provides funds for various grants to coastal States.
8. The entire Sea Grant program has been funded at between USD 53.4 and 55.6 million in the three years under review, and the transfer amount given in this table represents a rough estimate of that share of the Sea Grant program that supports fisheries programs, as opposed to other NOAA programs (oceans, weather, etc.).
9. The entire S-K grants program is listed under "general services" because practically all of these grants are awarded to support basic scientific and management missions, but it may be noted that a small share of these grants fund projects that assist the fishing industry and could therefore be placed under the "cost reducing" category of transfers.
10. The US Coast Guard is responsible for at-sea enforcement of fisheries regulations, while NOAA Fisheries deals primarily with the investigation and prosecution of criminal and civil violations. US Coast Guard fisheries law enforcement has domestic and foreign components, with the bulk of spending allocated to domestic enforcement. In FY 1999, for example, domestic activities were budgeted at USD 377.5 million and foreign at USD 47.6 million. Coast Guard fisheries law enforcement accounted for between 12 to 14% of their entire operational budget in the three-year period under review.
11. Fisheries infrastructure, including the construction, maintenance and modernisation of fishing ports and landings facilities, is funded by many Federal and local agencies, such as the Army Corps of Engineers and various Port Authority and other local public works agencies. These transfers to fisheries infrastructure were not calculated and are therefore not included in this submission.
12. About 20 of the 50 US States have coasts of meaningful length, and perhaps a dozen or so have reasonably large agencies responsible for marine and inland fisheries, with marine responsibilities usually extending to three miles. States with fairly large fisheries agencies include: Maine, Massachusetts, New York, New Jersey, Virginia, Florida, Texas, California, Oregon, Washington, Alaska, and Hawaii. These agencies generally deal with both freshwater and marine fisheries, and are funded from both State and Federal sources. It is assumed that the large bulk of their programs fall in the "general services" category of transfers. No estimate of these State transfers was made.

Structural adjustment

The United States does not have a statutory structural adjustment program per se, but has implemented specific programs that address some of the same objectives as structural adjustment (reduction of fishing capacity). One such program is Government-funded buybacks of fishing licences and vessels. Another is Section 312(b) of the 1996 Sustainable Fisheries Act amendments to the MSFCMA, the "Fishing Capacity Reduction Program," which seeks the "maximum sustained reduction in fishing capacity at the least cost and in a minimum period of time", and will be funded from multiple sources, including fees paid by industry.

Buybacks funded entirely from Government sources have been implemented for many years on a case-by-case basis, and usually with special appropriations. Capacity reduction plans under Section 312(b) may be implemented in the future when the recently completed framework regulations are approved. However, one such capacity reduction plan – for Alaska pollock – was enacted directly in late 1998 through the American Fisheries Act.

Markets and trade

Markets

Per capita consumption of fishery products increased in 1998 to 6.7 kg (14.9 pounds), reversing a two-year decline. Although consumption increased slightly in 1998, total consumption remains about 90% of the record high of 16.2 pounds (7.4 kg) reached in 1987. Most of the seafood consumed in the United States is in fresh and frozen forms, followed by canned products consisting mostly of tuna.

Fresh and frozen finfish accounted for 5.8 pounds (2.6 kg), slightly down from 6.1 pounds in 1997, while fresh and frozen shellfish consumption was 4.4 pounds (1.7 kg) per capita, up from 3.8 pounds in 1997. The fresh and frozen finfish includes approximately 1.0 pound of farm raised catfish. Consumption of canned fishery products was 4.4 pounds (2 kg) per capita in 1998, the same as 1997. Cured fish accounted for 0.3 pounds per capita, the same as in previous years. Imports of edible seafood made up 63% of the consumption.

Table 3. **Per capita consumption**
Pounds, edible meat

	Fresh and Frozen	Fillets and Steaks	Shrimp	Canned	Cured	Total
1987	10.7	3.6	2.4	5.2	0.3	16.2
1988	10.0	3.2	2.4	4.9	0.3	15.2
1989	10.2	3.1	2.3	5.1	0.3	15.6
1990	9.6	3.1	2.2	5.1	0.3	15.0
1991	9.7	3.0	2.4	4.9	0.3	14.9
1992	9.9	2.9	2.5	4.6	0.3	14.8
1993	10.2	2.9	2.5	4.5	0.3	15.0
1994	10.4	3.1	2.6	4.5	0.3	15.2
1995	10.0	2.9	2.5	4.7	0.3	15.0
1996	10.0	3.0	2.5	4.5	0.3	14.8
1997	9.9	3.0	2.7	4.4	0.3	14.6
1998	10.2	3.2	2.8	4.4	0.3	14.9

Trade

Imports

US imports of edible fishery products in 1998 were valued at a record USD 8.2 billion, USD 418.9 million more than in 1997. Edible imports consisted mostly of fresh and frozen products valued at USD 7.4 billion, canned products (USD 587.6 million), cured products (USD 140.6 million), and caviar and roe products (USD 33.2 million).

The value of shrimp imported in 1998 amounted to USD 3.1 billion and accounted for about 38% of the value of total edible imports. The other major import items were fresh and frozen tuna, canned tuna, fresh and frozen fillets and steaks, and regular and minced fish blocks.

Exports

US exports of edible fishery products totalled USD 2.3 billion in 1998, a decrease of USD 445 million compared to 1997. Fresh and frozen items were valued at USD 1.8 billion, principally consisting of salmon (USD 307.5 million), surimi (USD 331 million), and lobsters (USD 255.1 million). Exports of canned products amounted to USD 211.2 million consisting mostly of salmon. Exports of cured products were valued at USD 23.2 million while caviar and roe exports amounted to USD 258 million.

Concerning multilateral negotiations/discussions on market liberalisation, the United States will continue to seek early passage of the Accelerated Tariff Liberalisation (ATL) initiative. The fisheries sector (one of eight sectors in the ATL package) still has very high tariffs in many countries with peaks

between 20% and 50%; a few countries have tariffs as high as 100%. The initiative, which was sent to the WTO from the Asia-Pacific Economic co-operation (APEC) forum in November 1998, seeks to eliminate all fisheries tariffs by the end of 2005.

The United States will also continue to support and contribute to initiatives on trade liberalisation sponsored by the Fisheries Working Group of APEC, including a study on the extent and WTO consistency of fishery sector subsidies in the APEC region.

Outlook

The United States will continue to implement changes and mandates regarding fisheries management required under the MSFCMA. NOAA fisheries will focus on reducing overfishing and overcapitalisation of the US fishery resources by improving stock assessment and prediction, improving essential fisheries habitat, and reducing fishing pressure, including downsizing of fishing fleets.

The following are some key activities for 2000-2001.

- Improve and expand stock assessment and prediction through increased stock surveys, fisheries oceanographic projects, and a West Coast Observers program.
- Continue to implement the Sustainable Fisheries Act, refine essential fish habitat designations in the fishery management plans, and to reduce fishing impacts on essential fish habitat.
- Implementation of a national fishing vessel registration and fisheries information system, quality standards for regional programs, and integrate the results into a unified system. This system will also fill critical gaps through initiation of new data collection programs that will subsequently reduce the risk and uncertainty of living marine resource policy decisions.
- Implement priority recommendations of the Task Force on coral reefs by identifying, developing, monitoring and enforcing no-take fishery reserves in US waters. This program will provide the management tools for NOAA Fisheries and the Regional Fishery Management Councils to effectively utilise "no-take" fishery reserves as a fishery management tool. It will provide baseline assessments and long-term monitoring of both coral reef fishes and the associated ecosystem in identified coral reef "no-take" zones; and provide enforcement support for such zones.
- Continue to attain economic sustainability in fishing communities by establishing a Fisheries Assistance Fund as a contingent emergency appropriation to provide flexible, uniform, and timely assistance through buybacks to address disasters, overfishing, or overcapitalisation. Collect fisheries statistics and perform economic and social analyses required by the new Standard 8 of the Sustainable Fisheries Act. The importance of such economic data has increased in recent years as additional management measures have been implemented to end overfishing and rebuild stocks.
- Promote public and private sector aquaculture, which includes funding for research and an extension program to develop environmentally sound marine aquaculture.

Special topic: Fishing Capacity

Summary

The United States was an active participant in the FAO-sponsored consultations leading to approval in 1999 of an International Plan of Action on the Management of Fishing Capacity (IPOA/capacity), and has established and begun to implement a domestic capacity management program. Essentially, the United States has thus far devoted considerable resources to studying and assessing the problem and has a long-term goal, but has yet to develop a detailed plan that maps out all the steps and specifies the means for reaching that goal. In recent years, the United States has also implemented capacity reduction measures in selected fisheries in response to specific appropriations and directives from Congress, for the most part in the form of fishing vessel and permit buyouts. Domestically, the United States has a capacity management strategic planning goal with an FY 2005

target and small but increasing targets for prior years, and, internationally, all FAO members, including the United States, accepted in 1999 a non-binding commitment under the FAO IPOA/capacity to develop “preliminary assessments of national fishing capacity” by the end of 2000, the identification of national fisheries and fleets requiring urgent measures” by the end of 2001, and “national plans for the management of fishing capacity” by the end of 2002.

Overall, the United States has made considerable efforts in both the domestic and international spheres to understand/assess and deal with overcapacity in the fisheries sector and has established internal processes and long-term strategic plans to manage this problem, but is just beginning to develop a detailed and substantive national plan. Therefore, this section of the US Review of Fisheries is a preliminary progress report that deals mainly with initial steps and procedures and not with the substance of a national capacity management plan. Within that framework, this report will focus on the following:

- The completion of a Congressionally mandated report – the Federal Investment Study – that investigated the contributions of subsidies and other Government programs to capacity and capitalisation in the US fisheries sector.
- The creation of a NOAA/NMFS task force that developed technical and economic definitions and measures of capacity.
- The planned preparation of two reports in 2000 that give qualitative and quantitative assessments of capacity levels in Federally managed fisheries.
- A brief review of capacity reduction measures applied in specific fisheries and a discussion of the various capacity management means currently and prospectively available.
- The establishment of a formal strategic planning goal to eliminate overcapitalisation (and overcapacity) in 20% of domestic fisheries by 2005.

Studies and assessments

Federal investment study

This study was mandated by the 1996 amendments (known as the Sustainable Fisheries Act) to the MSFCMA, which directed the establishment of a task force of interested parties to examine “the role of the Federal Government in subsidising the expansion and contraction of fishing capacity ... and otherwise influencing the aggregate capital investments in fisheries.” The task force, which consisted entirely of non-government experts, met seven times in many parts of the country and completed its report in the summer of 1999. The Federal Investment Study is the only formal study of the government’s role in the emergence of the overcapacity problem, and its report addressed the issue as comprehensively as possible, examining the policies of many different government agencies over the roughly two decades since extended jurisdiction was introduced in 1977.

The Federal Investment Study reached mixed conclusions, stating that some government subsidies and programs appear to have contributed to the excessive expansion of capacity in some fisheries during some periods, while many other government programs either made no such significant contribution or lack of data prevented the task force from drawing any conclusion. In addition, the task force concluded that certain government subsidies and other programs contributed to an erosion of the resource or of fish habitats with the result that overcapacity effectively ensued. The study also made a number of specific recommendations on modifying the NOAA/NMFS fisheries loan and tax deferral programs, since those two programs have traditionally been the most obvious objects of public scrutiny.

The Federal Investment Study was generally well received when it was released in mid-1999, and, whatever its limitations, the study did make an important basic point: governments that want to manage capacity in their fisheries in a sustainable and rational way must encourage the appropriate economic incentives.

NOAA fisheries task force on capacity

In 1998, NOAA Fisheries created an internal task force to examine definitions and technical measures of fishing capacity, and to report on their findings to the NOAA Fisheries Science Board. The task force, consisting mainly of agency economists, met several times in 1998 and 1999, completed its draft report in June 1999, and finalised the report at the end of 1999. The economists also gave presentations based on the work of this task force at international meetings, including an FAO-sponsored technical consultation on the capacity that was held in Mexico City in November 1999. Both the NOAA Fisheries Science Board and the FAO technical consultation responded positively to the definitions and measures developed by the technical experts. This indicates that the work has domestic and international support.

Drawing on work that NOAA Fisheries experts had done for the FAO-sponsored initiative on the management of fishing capacity, the task force developed the following major recommendations:

- The most appropriate definition of capacity in fisheries should be output-based, that is, defined in terms of volumes and values of catches, rather than in terms of inputs (vessels, gear, fuel, crew, etc.)
- Various measures of capacity have practical and analytical advantages, depending on the available data, with the “easiest” and least data hungry being 1) the “peak to peak” method, and the more complex and data-reliant being 2) the data envelopment analysis and 3) stochastic production frontier metrics.
- Economic definitions and measures, which take into account some economic benchmark like cost minimisation, are ideally preferable to technical definitions and measures, which simply examine capacity in terms of quantities of outputs.

Reports on capacity in US domestic fisheries

After the NOAA Fisheries Science Board accepted the findings of the internal task force, the agency decided to apply these measures to domestic Federally managed fisheries in 2000. This assessment of domestic capacity will be accomplished in two stages:

- First, NOAA Fisheries will prepare a “qualitative” report on capacity, based largely on existing technical literature and on materials already developed by the eight Regional Fishery Management Councils (essentially, the SAFE reports).
- Second, NOAA Fisheries will conduct more technical and detailed “quantitative” analyses of capacity in domestic fisheries, using the metrics developed by the task force, primarily utilising the peak-to-peak and data envelopment analysis approaches.

The first, qualitative report should be completed in April/May 2000, and the second, quantitative report in around September 2000. After these two reports are completed, NOAA Fisheries will issue a formal, publicly available report that assesses capacity levels in domestic fisheries as a special volume in the *Our Living Oceans-Economics* series in early 2001.

These reports will give the agency and the interested public a fairly complete, up-to-date and scientific picture of the overcapacity problem in US fisheries on a fishery-by-fishery basis. With this information, it is expected that NMFS and the US Government can more intelligently develop and implement remedial and preventive measures.

Capacity management in us domestic fisheries

The United States has implemented capacity reduction programs in various domestic fisheries, but, as noted previously, has not yet developed a formal national capacity management plan. In addition, regulatory arrangements are in place that supports better management, or control, of capacity. Finally, the United States actively supports the fisheries sector initiative on subsidies in the World Trade Organisation's (WTO) next multilateral trade round, one of the benefits of which will be to mitigate their effort and capacity-enhancing effects.

In recent years, the US Congress and the Administration have begun to reform some of these domestic programs. Currently, the United States has five broad means for addressing the management of capacity in Federally managed fisheries: 1) limited entry; 2) government-funded buyouts; 3) industry-funded buyouts; 4) rights-based management arrangements, including individual and community quotas; and 5) reform of domestic capacity-enhancing subsidies.

Limited entry

Various forms and degrees of limited entry are currently in place in virtually all Federally managed fisheries, with the single major exception of the Gulf of Mexico shrimp trawl fishery. These management arrangements include a wide range of measures, ranging from “control dates”, a relatively mild form of limited access, to licence limits, and licence and vessel moratoria. Limited access does not effectively manage capacity, but is generally considered a necessary first step. Essentially, under limited entry, fishery managers can control the number of participants and, with licence limitations and licence and vessel moratoria, they can prevent new entrants. Therefore, limited entry may be a first step in a graduated process in which managers apply progressively stricter controls on participation.

Government-funded buyouts

The first is government-funded buyouts of fishing vessels and permits, which measures have been supported by Congress for about two decades. Government-funded buyouts of vessels and/or permits have been implemented in the following fisheries: North Pacific groundfish; Pacific Northwest salmon, New England groundfish and scallop; and Gulf of Mexico shrimp. During the last half dozen years, various amounts have been provided as emergency appropriations to NOAA, the Economic Development Administration and the Small Business Administration (Department of Commerce) and the Department of Agriculture to fund vessel and permit buyouts.

Industry-funded buyouts

The second broad authority for reducing capacity is Section 312 (*b* through *e*), “Fishing Capacity Reduction Program”, of the Magnuson-Stevens Act, which provides for a program that is in part funded by some combination of public resources and industry fees. Under Section 312*b*), capacity reduction may be funded by any combination of: 1) Saltonstall-Kennedy Act resources (derived ultimately from tariff revenues collected on imports of fish and aquatic products); 2) Congressional appropriations; 3) industry fees; and 4) funds from “State or other public sources or private or non-profit organisations.” Industry fee systems will be developed and approved through as referendum by the appropriate Regional Fishery Management Councils and will not exceed 5% of the ex-vessel value of all fish harvested from the fishery for which the capacity reduction program is established.

NOAA Fisheries has developed a final rule for implementing Section 312*b*) industry-funded capacity reduction plans, and awaits formal approval. Thus far (as of April 2000), no Section 312*b*) capacity reduction plans have gone through the full Magnuson-Act process. However, Congress did “directly” enact one such industry-funded capacity reduction plan for the Alaska groundfish fleet in late 1998 with the passage of the American Fisheries Act.

Rights-based management

Two forms of rights-based management exist in US fisheries, individual fishery quotas (IFQs) and community development quotas (CDQs), both of which were implemented at various times in the last decade. IFQ fisheries include: 1) mid-Atlantic ocean quahogs and surf clams; 2) south-east Atlantic wreckfish; 3) north Pacific halibut and sablefish; and 4) Atlantic purse seine tuna. CDQs have been implemented in a number of western Alaskan native small-scale fisheries.

The 1996 Sustainable Fisheries Act amendments to the Magnuson-Stevens Act mandated 1) a four-year, *i.e.* until October 2000, moratorium on the development of new IFQs and 2) two National Academy of Sciences reports on IFQs and CDQs. These reports were completed in 1998, and they concluded, *inter alia*,

that both the IFQs and CDQs had generally positive effects on overcapacity in those fisheries. The future availability of IFQs as one means, among others, of addressing overcapacity in US domestic fisheries depends on whether the Congress extends the moratorium or allows it to lapse in October 2000.

Reform of subsidies

Even before the start of the proposed new WTO trade round, the United States has begun to re-examine and selectively modify some of its domestic economic assistance programs, in part to mitigate their negative effects on levels of capacity in US fisheries. As noted above, the Congressionally mandated Federal Investment Study addressed this issue and produced interested and well-received recommendations. Changes in domestic economic assistance programs were made at different times for different programs some as early as more than a decade ago. As examples of these reforms, the United States has reduced or eliminated the capacity-enhancing effects of domestic fisheries sector subsidies, as follows:

- Direct grants for commercially applied research, such as new product development, (*e.g.* Saltonstall-Kennedy and Sea Grant) have been cut back.
- Congressional appropriations that support NOAA Fisheries trade promotion and domestic market activities have been sharply reduced.
- The Federal fisheries loan guarantee program that funded vessel construction, modernisation, and repair (Fisheries Obligation Guarantee) was terminated in 1996, and replaced by a direct loan program that emphasises lending for other purposes (*e.g.* capacity reduction, aquaculture and other shoreside purposes, and purchase of IFQ shares by small-boat fishermen).
- Congressional appropriations for vessel and permit buybacks have been increased sharply.

Long-term planning

Overcapacity in US fisheries: A strategic planning goal

While defining and studying the overcapacity problem, NOAA has decided to establish a longer term planning objective. Toward that end, a strategic objective that explicitly addresses the overcapacity problem was incorporated among NOAA's planning performance measures in 1998. These strategic planning goals are regularly updated to accompany the Administration's budget requests, and the information provided here is drawn from NOAA's budget request for FY 2001.

Under NOAA Fisheries' strategic plans, three themes apply to the fisheries sector: 1) build sustainable fisheries, 2) recover protected species, and 3) sustain healthy coasts. It is estimated that approximately three-quarters of NOAA's appropriations related to fisheries programs fall under the first, build sustainable fisheries (BSF) planning element.

Under BSF, there are three broad objectives: 1) eliminate and prevent overfishing and overcapitalisation, 2) attain economic sustainability in fishing communities, and 3) develop environmentally and economically sound marine aquaculture. The first objective has three performance measures, of which one is:

- "By 2005, 20% fewer overcapitalised fisheries"

The proposed timetable for reaching this goal is as follows:

1999	2000	2001	2002	2003	2004	2005
0%	1%	3%	5%	10%	15%	20%

Two points about this performance measure are important. First, it should be noted that, for purposes of this exercise, the term “overcapitalised fisheries” is used in a broad sense, referring to fisheries in which there is “overcapacity” according to the technical and economic definitions developed in 1999 by the NOAA Fisheries internal task force and not simply to fisheries in which there is excessive capital investments. Second, the term “fisheries” may apply either to single or multiple stocks as managed under Fishery Management Plans (FMPs), and not necessarily to individual stocks and/or species. Currently (April 2000), there are 41 FMPs in place for Federally managed fisheries in the United States. Therefore, this performance measure effectively will require the elimination of overcapacity in about eight FMPs by 2005.

While the above performance measure applies directly and explicitly to capacity management, other measures have capacity-related implications. At least two other BSF performance measures whose achievement will almost certainly have implications for the management of fishing capacity are:

- “By 2005, 25% (86 of 279) fewer overfished fisheries”, and
- “By 2005, 20% of communities impacted by limited/closed fisheries are economically improved”.

Therefore, the US national capacity management plan, when finalised, must meet fairly ambitious overcapacity (and overfishing) reduction targets, and, at the same time, avoid excessively negative impacts on fishing communities.

SPECIAL STUDY: RUSSIAN FEDERATION

Introduction

Fish has been one of the major food products since ancient times, as well as a source of cheap protein and raw material for various food and non-food stuffs (feeds and technical products). Russia remains among the leading fishing nations following the disintegration of the USSR, ranking seventh in terms of catch of fish and sea products including aquaculture.

The total catch of fish and non-fish species by enterprises and organisations of the fishing industry was 4.5 million tonnes in 1998, and 4.2 million tonnes in 1999. The average per capita consumption of the fish products in the country was 10 kg in 1998, and about 10 kg in 1999. The share of fish products in the domestic diet of people remains to be significant (about 10%).

Despite some revival in production in the past three years, enterprises and organisations of the fishing industry are still in the state of crisis. The state of the industry was analysed comprehensively to reveal the critical state of major factors that underly it. In our view, these are:

- Thinning out of fisheries in economic zones of foreign states and on the high seas globally, and nearly complete redeployment of fishing fleet to the EEZ of Russia. As a result catches of fish and other aquatic living resources have fallen.
- Economic dislocation within the industry, reduction of fleet, its changed mode of operation, and the taxation policy of the state.
- Given a drastic cutdown in support from the federal government, the industry in a large measure has become self-supporting. This resulted in entailed higher prices for fishery goods, and made it impossible to fully market those products because of the low purchasing capacity of the population in the domestic market. Similarly, harvesting enterprises are less interested in supplying processors, and domestic marketing of their product. Respective fish processing capacities of the Russian on-shore plants are being engaged by no more than 25%.

Nevertheless, in spite of the unpredictable processes of the formation of free markets, production in Russian fisheries has retained its important position within the national industrial complex. The fishing industry is considered to be one of the main sources of food supply for the population of the country.

Legal and institutional framework

General principles of management

There is a three-level system of government administration for the fishing industry in the Russian Federation (RF). First, the appropriate functions of the Federal government are performed by the State Committee for Fisheries of RF. Second, the executive authorities of entities of the Federation, cities and regions are involved. Third, the respective management bodies of enterprises and organisations of the sector have a role. This system of administration of the fishing industry is based on, and operates in accordance with, the Constitution of the Russian Federation, Presidential decrees, resolutions of the government of the Russian Federation, and other rules and legal documents.

Table 1. Development of the fishing industry of Russia in 1998-1999

Indicators	Unit	1998	1999 (tentative data)
Total catch	"000 tonnes	4 517	4 232
Fishery food product			
including canned fish (total)	"000 tonnes	3 014	2 783
Canned products	"000 tonnes	114	121
Non-food fishery products	"000 tonnes	247.7	263
of which fish meal	"000 tonnes	169.9	150
Export of fishery goods	"000 tonnes	938	947
Imports of fishery goods	"000 tonnes	538	600
Total employees	Thousand	398	373
Average per capita consumption of fishery products	Kg	10	10

The rules and legal acts regarding the study, conservation, reproduction, utilisation and protection of aquatic living resources currently in force, correspond to the provisions of the constitution of the Russian Federation, general principles and rules of international law.

The principal legal documents making up the juridical basis for marine fisheries of the Russian Federation can be listed as follows:

- UN Convention on the Law of the Sea of 10 December 1982 (ratified pursuant to Federal Law of 26 February 1997, Number 30).
- Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of the Straddling Fish Stocks and Highly Migratory Fish Stocks (ratified pursuant to Federal Law of April 26 1997, Number 69).
- Federal Law "On wild animal world" of 24 April 1995, Number 52.
- Federal Law "On internal sea waters, territorial sea and adjacent zone of the Russian Federation" of 31 July 1998, Number 155.
- Federal Law "On the exclusive economic zone of the Russian Federation" of 17 December 1998, Number 191.
- Federal Law "On continental shelf of the Russian Federation" of 30 November 1995, Number 187.
- Federal Law on "Merchant marine navigation of the Russian Federation" of 30 April 1999, Number 81.
- Federal Law "On specially authorised state for protection, control and regulation of utilisation of species of the animal world and their habitat" of 19 January 1998, Number 67.
- Resolution of the government of the Russian Federation of 30 December 1998, Number 1594 "On specially authorised state authorities of RF for the protection of habitat".

As for departmental legislation, there are two primary documents. First, is the order for "Clearance and enforcement of fishing vessels, products of sea fisheries and other goods transferred through the state border of the Russian Federation by these vessels" developed by the State Customs Committee, the State Committee for Fisheries and other ministries and agencies concerned. The second document is the "Provisions for interaction and co-ordination of operations between the bodies and troops of the Federal Border Guard Service and the Fishery Conservation and Enforcement Department of the State Committee for Fisheries in the protection of aquatic living resources". This document was enacted by the order 9/7 of the two above organisations on 12 January 1999.

The State Committee for Fisheries has developed and discussed with the ministries and agencies a procedure for declaration of sea fishery products supplied beyond the customs territory of Russia in foreign trade operations. The State Committee for Fisheries is also taking other measures to raise the level of manufacturing and sound management of enterprises in the industry, and to improve the governance of the national fishing industry.

The concerns of entities of the RF relating to policy building in management and utilisation of aquatic living resources are being taken care of. These concerns are co-ordinated by the regional (territorial) fishery councils and local scientific and operational boards established on the initiative of the fishing industry.

Regional fishery councils are operative bodies that administer fisheries in Russia. The councils are made up of representatives from regional executive offices and territorial fishery enforcement services. The major functions of the regional fishery councils are:

- Reception of applications for quotas and development of proposals for their allocation.
- Analysis of quota use performance, and preparation of proposals for their reallocation.
- Setting up venues for longer-term development of regional fishery complexes.

Along with the regional fishery councils, each fishery basin (region) establishes its own scientific and operational board whose permanent members are representatives of the executive authorities of the local entities. These boards create proposals for optimum utilisation and enhancement of living resources in the respective fishery basin and allocate catch quotas.

The system of distribution and TAC allocation is being revised to raise the effectiveness of the use of aquatic resources and to improve conservation. This revision is being done with the objectives of increasing production, increasing fish supply to the domestic market and securing contributions to budgets of all levels.

Capture fisheries

Status of stocks

The entire average annual total allowable catch of fish and non-fish species (TAC) from Russia's economic zone is estimated by scientists and experts to have the potential to exceed 5.5 to 6 million tonnes over the long term.

Alaska pollock will continue to dominate (up to 45%). Its abundance is low in some fishing areas (Primorie – Maritime Provinces, South Kurils), or is rather high and is withstanding great fishing pressure (Sea of Okhotsk). Low abundance of Alaska pollock is expected in the Western Bering Sea in view of the forthcoming relatively cold period in the North Pacific.

Cod stocks in the Barents Sea are marked by a decline in fish stock recruitment due to high fishing mortality. This may lead to a reduction of the size of the stocks. However, considering the eight to ten year cyclic patterns, the emergence of one or two-year classes of cod exceeding the average annual level might be expected in 2010-2020.

The main objectives in the development of the fishery resources for the industry are as follows:

- Reorientation of high seas fisheries toward the exclusive economic zone of the Russian Federation (over 70% of total catch).
- Retention of economic ties with coastal states to secure catches in foreign EEZs amounting to 850 000 tonnes a year.
- Involvement of high seas areas globally (catches of 300 000 tonnes a year).
- Increase sea and freshwater fishing, commercial fish culture in inland waters, and the development of mariculture.

Fisheries

About 20% of the catch comes from the northern fishing area, the major species being cod, haddock, herring and, in certain periods of time, capelin.

It is mostly fish (predominantly sea fish) that Russia is harvesting (97%). Fisheries hinge on four groups of mass species: cod, herring, salmon and horse mackerels. The largest part of catch is made up of gadoids (chiefly, pollock and cod). Catches of herrings have gone up during the last decade.

Non-fish species constitute a relatively small share of the catch. The main species can be classified under crustaceans, molluscs or algae. The catch of squid has risen from 52 000 tonnes in 1998 to 56 000 tonnes in 1999.

The importance of individual fishing areas in the overall catch varies. In the Pacific only the Northwest is fished. In the Atlantic, the role of the Northeast has gone up (7 000 tonnes in 1998 to 9 000 tonnes in 1999), though catches in the Northwest, central east and Southeast areas, conventionally important for Russia, have declined dramatically. Fisheries in the South and Indian oceans have virtually stopped. These changes have to do with the rise in fuel costs and an ageing fleet (which makes long distance fishing more difficult).

The estimated value of the Russian catch of all fish species (fish, invertebrates, algae and mammals) in 1998 was USD 4.4 billion.

Structurally, the catches taken by Russia in its fishing zone could be subdivided into the following categories of stocks:

- Sea fish stocks whose fisheries under the present conditions are profitable, and which have been subjected to the most intensive exploitation during the past eight years (both licenced and illegal). These include sturgeons, Atlantic salmon, chum, sockeye, and flounders of higher value, crabs, shrimps, and scallops. Catches of these species in 1998 amounted to 148 500 tonnes, or 3.3% of the total catch. The value of catches of the above species was USD 620 million. Sea fisheries on the level of self-repayment, or below it, are those for navaga (*eleginus*), redfish, rockfishes, atka mackerel, some flounders, cod, haddock, squid, saury, pink salmon and algae. The catch of the above species was 715 900 tonnes in 1998, or 15.8% of the total catch. The total value of the formally recorded catch of these species in 1998 was USD 1.2 billion.
- Sea fish stocks such as herring, anchovy, Baltic herring, inshore herrings and sprat, molluscs and Alaska pollock made up 54.9% of the total catch. The total value of their catch was USD 1.2 billion.

The value of freshwater fish is estimated to be USD 100 million.

One-sided orientation of fishing towards large and valuable fish (sturgeons, salmon, and whitefishes) tended to lead to overfishing.

Less than 1 million tonnes have been taken in recent years from zones of foreign states. A large number of lower value species are caught in these zones: horse mackerels, anchovy, blue whiting, sardine, mackerel, cod, herring, haddock and squid.

The post-crisis state of 1998 and the notable rise in the strength of the US dollar facilitated an increase in profitability of production (since the fishing industry is export-oriented). However, the volume of production has had a negative impact on the financial results of operations of enterprises in the sector. A random sample from a group of enterprises made by the State Committee for Statistics by 1 January 2000 indicated that, out of 306 fishery enterprises, 150 (49.0%) had their revenues of RUR 2 109.4 million, while 156 (51.0%) had lost RUR 1 646 million. On the whole, the ventures sampled received revenues of RUR 464 million. Compared to the corresponding date of 1999, the enterprises sampled had losses reaching RUR 2496 million.

Management of commercial fisheries

Under the new economic conditions, most of the enterprises have been transferred from the state to other forms of ownership. In its practice of administration, the State Committee for Fisheries proceeds from some radically new provisions.

Fish stocks, especially those in the EEZ, are federal property. They are managed by the Committee, based on Constitution, with compulsory participation of entities of Federation, and always with due regard to the interests of small national communities, especially those of the aboriginal people of the Far North and Far East.

Fishing and taking of sea products by Russia in its own EEZ and beyond it is exercised on scientific basis, pursuant to national and international rules of law. Despite considerable difficulties that the

fishing industry is now passing through, scientific research potential has been retained, as has a rather efficient system of enforcement. All fishing is based on scientific recommendations and ensuing TACs that are allocated among Russian ship owners and foreign participants in the fishery. In 1999 over 70 fishing stocks were managed by quotas. This should lead to establishment of scientifically based catch limits and the use of stocks and continued sustainable fisheries. However, setting up of quotas as such is not a “cure-all”, since some stocks are being depleted in a number of areas.

There has been an increase in unlimited fishing of stocks that occur both on the high seas and in areas under national jurisdiction. As a rule, this entails not only ecological but also serious social and economic consequences for coastal community who traditionally depend on fishing to live.

This situation is observed for a number of high seas areas, particularly those that are enclaves fully surrounded by areas under national jurisdiction of one state. In this regard, Russia observes a moratorium on fishing in the central Sea of Okhotsk. The small “donut hole” of the Bering Sea, constituting only 8% of the total area, is located in the centre of the sea and surrounded by the 200 mile zones of Russia and USA. The “donut hole” used to be fished intensively by Japan, Korea, Poland and China for straddling stocks of pollock inhabiting mostly the zones of Russia and USA. The Convention for the Conservation and Management of Pollock Resources in the Central Bering Sea, signed in June 1994, means that stocks of pollock in that area should be maintained at sustainable levels.

There is unregulated fishery for cod conducted by vessels and several countries often under flag of convenience in a small high seas portion of the Central Barents surrounded by zones of Russia and Norway. Similar situations emerge in other parts of the ocean as well. In order to make fisheries in the area more orderly, an intergovernmental agreement between Russia, Norway and Iceland was concluded in 1999. The agreement provided for the cessation of uncontrolled fishing for cod by Iceland.

While resolving extremely complicated problems of economic and social life, Russia attaches no less importance to the introduction of a precautionary approach, as described in Sections 6 and 7 of the Code of Conduct for Responsible Fisheries. This principle follows from the evolution of mechanisms of fishery management in the oceans, improvement of regulatory techniques, further development of scientific potential, and development of new technical aids.

No doubt, there are many problems that Russian fisheries are having with regard to protection of resources and fishery management: for example; illegal fishing, infringement of fishing regulations, illegal handling of raw fish and fishery products, and several other violations of domestic legislation. This results mainly from the drawbacks of the transitional period, economic crisis in the national economy in general and specifically in the fisheries sector, as well as social tension in some areas where fishing is important.

Aboriginal fishing

Numerous small nations inhabit the coastal territory along the shores of the Arctic and Pacific Oceans in Russia. To a great extent their subsistence depends on harvesting sea products (fish, mammals, crustaceans, etc.).

This circumstance is duly accounted for by Russia's government. The government grants conventional special rights to the local population of these areas for taking sea products. This is done by way of allocating special quotas that are not part of the regular regional quotas. Hence, the aboriginal people of Kamchatka and Chukchi Peninsula (Chukchi, Evens, Koryaks and other peoples) use their small boats for small – scale fishing for salmon – or they do it from shore. The same is true of the population inhabiting the Arctic Ocean coastal areas. They harvest salmon and whitefishes (coregonus).

A special feature of the aboriginal fisheries is the harvesting of marine mammals (ringed seal, bearded seal and harbour seal). Walrus hunting is permitted only to the local people of Chukotka (2 000 animals annually). There is also small scale hunting of pinnipeds in the Sea of Okhotsk, and some sealing on the Caspian Sea and on the lake of Baikal. The Russian legislation specifies that the product of that hunting can only be used exclusively for local consumption.

Monitoring and enforcement

The fishery enforcement service is Russia's specially authorised state administration for the protection and enhancement of fish stocks and the control over fishing regulations. It is a part of the State Committee for Fisheries of the RF. Up to the middle of 1998 this service enforced fishing regulations, as well as protecting aquatic living resources in inland waters, on the continental shelf, in the EEZ, in regulatory areas of international fishing conventions and agreements, and on the high seas.

The need to improve the system of conservation and optimum utilisation of the natural resources in the territorial sea, EEZ and continental shelf of Russia, and to establish a dependable mechanism for their protection from depredation led to the Presidential decree (Number 950 of 29 August 1997) "On measures to ensure protection of marine living resources and state control in this field". To implement this decree, the government issued Resolution Number 9, dated 26 January 1998, which placed the protection of living marine resources in the hands of the Federal Border Guard Service of Russia. These acts delegated the following areas of control to that service:

- Enforcement of laws in the field of protection of aquatic living resources.
- Surveillance of compliance with the terms of permits (licences) to capture aquatic living resources, and of other documents, authorising users of those resources.
- Implementation of international treaties concerning the protection of aquatic living resources.

At present, the network of government bodies for fishery enforcement within the State Committee for Fisheries includes 27 basin (territorial) offices, a central department for fishery expert analysis and development of rules to protect, enhance and introduce fishery resources, a central fish reproduction laboratory, and central production ichthyological service. Territorial offices comprise 456 republican, local, regional, operative and sub-regional inspection services.

Enforcement of fishery laws in inland waters is conducted in conjunction with police forces, which belong to the executive administration (federal, republican or regional). Over 160 000 infractions of fishing regulations are reported annually on Russia's inland water bodies.

The government sets annual TACs (total allowable catch) for aquatic living resources for the sea and inland waters. Areas approved by the State Committee for Fisheries then use those TACs to allocate catch quotas. Based on the quotas approved, permits are issued to enterprises of various forms of ownership for fishing stipulating the species, volumes of catch, areas and time of fishing. Permits are issued to each vessel individually, and for each on-shore fishing gear, (provided the enterprise has a licence).

Applications are actioned by the enforcement services by issuing a fishing ticket for each vessel identifying and specific composition of the catch permitted. The enforcement service establishes limitations on the number of licences, transferral of quotas, fishing effort, fishing gears, and areas.

Multilateral agreements and arrangements

Foreign fishing in Russia's zone, and operations of Russian ships in zones of foreign states, are performed within the framework of 57 intergovernmental agreements and conventions with Norway, Japan, China, North Korea, USA, Ukraine, Latvia, Sweden, Estonia and other countries.

Fishing permits are issued to natural and legal persons for each vessel by the State Committee for Fisheries, pursuant to intergovernmental and other agreements on fisheries.

Each year the government establishes the volume of resources permitted to be harvested by foreign boats, and the method of distribution of funds obtained from them.

In order to make monitoring and control over fisheries effective, an information and computer network for the fishing industry was established on the basis of eight regional specialised centres of data collection and processing. This includes the sectoral system of monitoring of operations of fishing vessels in the Far East, which began in 1999. A similar system has been in operation successfully in the Northern Basin for nearly two years. The system is designed to ensure effective control over fishing

operations of the Russian and foreign fleet in the EEZ and on the continental shelf, and to reliably block ways of illegal export of fishery products.

The system of surveillance and monitoring employs communication and weather satellites of "Agros", "Ocean", and "Meteor" type, which make it possible to monitor weather conditions, and other activity.

The areas under surveillance on the Pacific, Barents Sea, Baltic Sea and Black Sea, make up a total of 6.3 million km². Aquatic living resources are protected by patrol vessels, boats moving in the same direction, border guard ships, chartered civil aircraft, and planes. Observers/inspectors from the enforcement service board and inspect foreign vessels. Similar measures are taken in respect of national fishing vessels.

The State Committee for Fisheries of the RF has offices of representatives in 10 countries. The RF has concluded intergovernmental agreements for co-operation in the field of fisheries with 46 states, which maintain national interests by securing fishing opportunities beyond the Russian EEZ. Russia is a member of 11 international fisheries organisations.

The arrangement made with FAO regarding the development of a joint programme of co-operation is of special importance to Russia. The sub-programme "Utilisation of the Living Resources of the World Ocean" is integral to the federal target programme "World Ocean". Developed in 1997, it stipulates the need for a comprehensive interdepartmental and international approach to the study of information on the oceans.

The strategy of Russia in international fisheries, and other organisations within bilateral multilateral co-operation, envisages broad integration with other states concerned in the development of the oceans, while protecting the interests of national fisheries.

The present is full of serious challenges in view of the continuing resource and law crises caused by unrealised expectations that international co-operation among the nations interested in management and sustainable use of marine living resources, primarily fish, would be improved through application of the provisions of the 1982 UN Convention on the Law of the Sea. No less impact came from the disintegration of the East European socialist bloc and the Soviet Union whose share of the world catch used to be about 30%.

A commitment to overcome these difficulties and give a new impetus to co-operation of states in optimum utilisation of fish resources has been observed in recent years. This commitment has led countries to develop and accept the Rio Declaration and Agenda XXI, the Code of Conduct for Responsible Fisheries, the UN Agreement on Implementation of UNCLOS provisions relating to Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, the FAO Compliance Agreement, the Kyoto Declaration and the Plan of Action for the Sustainable Contribution of Fisheries to Food Security, the Rome Consensus regarding World Fisheries and a number of other documents.

Russia has taken an active part in the development of the above documents, and has ratified the UN Convention on the Law of the Sea (1982) and the UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks.

Aquaculture and mariculture

Aquaculture in ponds provides some 85% of all the fish cultured in Russia. In the late 1980s the annual production of fish in ponds reached 260 000 tonnes. At present, however, only 40 000 tonnes is produced.

Industrial aquaculture uses water from the cooling systems of industrial facilities. There are 119 industrial fish farms in Russia now: their total water area exceeds 300 000 km². The output in 1998-1999 was over 20 000 tonnes. One of the most significant advantages of industrial aquaculture is the ability to accelerate the metabolism in fish by temperature variations. However, the disadvantage is that industrial aquaculture is a rather expensive venture requiring considerable funding. Most of the industry fish farms secure repayment of expenditures by operating on high value species such as sturgeon.

Mariculture is the breeding and rearing of water organisms in the inshore zone at sea. Of 17.4 million tonnes of fish and molluscs produced annually by mariculture facilities all over the world, the Russian share is only 0.05%.

In addition to commercial breeding and rearing of fish, Russia traditionally attaches great importance to the enhancement of various species of fish, especially those endangered (*e.g.* sturgeon). All over Russia there are facilities for fish stock enhancement which either belong to the state co-operative organisation Rosrybkhoz (50 enterprises) or to the Head Fishery Enforcement Service (63 enterprises). They are farms or rather hatcheries where eggs are hatched while newly born fish are reared up to the stocking size. All these hatcheries are non-commercial enterprises; they are budget-subsidised or funded from taxes paid by industrial and agricultural enterprises as compensation for the use of natural resources. One example to show is the volume of operations from hatcheries: 8 389 million larvae, fingerlings, young, and smolts were raised and released to sea in 1998, of which 104.7 million were sturgeon, and 674.2 million were salmon. This effort meant that 50% of the stocks of sturgeon in the Caspian Sea, and 90% of those species in the Sea of Azov, are now being supported by the fish generated by hatcheries.

Despite their huge potential, aqua and mariculture sectors are insufficiently developed in Russia. The level of production in aquaculture went down noticeably in recent years, due to the extended economic crisis in the country in general, and specifically in the fishing industry.

The plan is to redesign and technically re-equip the 35 hatcheries and rearing facilities. The measures envisaged will make it possible to produce an additional four billion individuals of valuable fish species.

Government financial transfers

A chronic shortage in turnover capital, the growing problem of mutual payments, the drastic reduction of government support, nearly total lack of investments in the fishery regions, and production declines have placed the enterprises and organisations of all forms of ownership in a grave economic situation.

The development of the fishing industry is slowed down considerably by the excessive tax pressure and by various tariffs. The problem of promoting investments is most acute as well. Most enterprises are virtually devoid of investment income. Amortisation funds are being used for wrong purposes and foreign investors are cautious in view of lack of certain guarantees and imperfect legislation.

In 1998 financing from the federal budget was ten times less than in 1991, whereas private investments are just beginning to appear and their volume is quite insignificant. One consequence is that the extent of the depreciation of production in the industry in 1998 exceeded 50%. In 1999 it was proposed that RUR 5 430 million be allocated from the target budget fund for the management, study, conservation and reproduction of aquatic living resources, and from non-budget sources, for the development of fisheries complex (RUR 3 437 million from the fund; RUR 1 817 million from non-budget sources including money of companies; RUR 177 million from the federal budget).

The actual result for 1999 was that RUR 4 661.9 million, or 85.8% of that planned, was for the development of the fisheries complex. This included RUR 2 693.2 million from the fund, RUR 1 792.2 million from non-budget sources and RUR 176.5 million from the federal budget.

In 1999 it was planned to allocate from the federal budget RUR 165 million for the support of higher and secondary educational establishments and RUR 11 million for personnel of the central office of the State Committee for Fisheries. Those amounts were fully used. In the same year it was planned to allocate RUR 2 324 million from all sources to finance the investment programme for the fishing industry. The investments actually used amounted to RUR 2 109 million, or 91% of planned expenditure. Out of the total volume of investments, RUR 398 million came from the fund and were actually used; 79% of the planned amount (RUR 507.4 million).

As a positive result, within the industry we can mention the transfer of taxes to the budget. In 1999 they amounted to RUR 3 121 million including RUR 1 062 million to the federal budget; 3.2 and five times greater than in 1998, respectively.

No great impetus can be given to the fishing industry of Russia without radically resolving the problem of investments. That is why Russia is changing to a new investment policy based mostly on domestic private investments and, in part, on state funding. Russia also plans to tackle this problem to a certain extent by inviting foreign funds.

It is expected that the federal budget will finance fish stock enhancement and their protection, training institutions, and protection of habitat.

Post-harvest policies and practices

Food safety

Under the present conditions the production of better quality fishery products is of particular strategic importance for Russia, since a good share of catches of fish and other animals is exported. Quality is maintained and improved by the existing system of sectoral standards, authorised testing centres which can control safety and quality of fish products on a modern level, and by the established system of certification.

The system of quality control of fishery products, which was changed radically in recent years, envisages the inspection of raw material and pre-cooked products at individual stages of production. Hazard analysis of critical control points (HACCP) is one of such systems applied to the production process.

The extent to which national standards agree with international standards is important for the competitiveness of Russian fishery products. This characteristic is important for exports to the EC, where exporters are placed in one of three categories. Russia is in "group one" since the national standards for fishery products, and the level of production, are recognised as equivalent to those existing in EU member states.

However, there has been a trend in recent years among importing nations to make quality requirements more stringent. Compliance with the national standard by numerous enterprises and organisations manufacturing fishery products remains to be a serious problem. Standards of Codex Alimentarius Commission (FAO-WTO) continued to be implemented in 1998 and 1999.

Information and handling

Questions of labelling have proceeded successfully though, as a rule, labels contain minimum information. Since this problem is currently being discussed in international fora (primarily FAO and WTO), eco-labelling is now being promoted. This is a complicated problem and Russia is only starting this process, as most other fishing nations are.

Processing and handling

Evaluation of the engineering and technological status of fish processing facilities in Russia should take into account trends in the scientific and technical progress and market demand (including possibilities of export).

Fishery goods of high quality can only be manufactured from the best raw material. Since over 90% of the fish are taken from the oceans, the fresh fish caught should be preserved at the fishing area, or directly on the catching vessels. Introduction of modern processing techniques, especially on board fishing vessels, factory ships, fish receiving and transport fleet is common.

The likely types of food fish products should meet market demand. The bulk of production will be made up of "table" fish, including live, chilled, frozen cut, filleted, minced, pre-cooked and slightly salted fish. Manufacturing "ready for use" products is important in Russia.

The variety of fish cooking forms has fallen in recent years. However, further reduction of pre-cooked fish dishes can be averted in the very near future. In view of the potential resource of small-sized raw fish available, the problem of their wider utilisation becomes increasingly important. The same is true of

species like mussels, algae, and squid. Increasing the production of “ready for use” foods and various dishes is realistic provided some technical, organisational and social measures are taken.

In the future, one way to use raw material will be to increase the production of food mince and other products rich in protein, for processing into final product. Further increases in production of frozen mince on board ships will make it possible to manufacture fishery products of high quality, including baby food, and to save raw material to make feed, medicines and preparations.

In view of the great shortage of feed in the local market, new technology and new generation equipment for making high quality feeds out of under-utilised fish species and waste from processing factories will be developed. Since fisheries harvest greater volumes of small-sized fish, some comprehensive waste-free technologies and facilities are planned to maximise the use of this raw material for food purposes (*e.g.* mince of special conditions, shaped mince products, and other products).

Markets and trade

Domestic consumption

The Russian domestic fish market is over supplied. A wide variety of Russian and imported products are freely sold, even though Russia’s catches have nearly halved since 1990 and it has a positive balance of foreign trade in fishery products. The main reason for the oversupply situation is the significant drop in the level of consumption due to declining purchasing capacity.

The economic crisis of 17 August 1998 had its serious impact on the fish market. Imports of fishery goods fell dramatically. They started to be replaced more steadily by nationally produced goods. Prices doubled or became three times higher throughout the entire variety of goods. Besides, VAT benefits for several food stuffs were cancelled on 1 July 1999, and sales taxes were introduced which brought about further rise in wholesale and retail prices for fishery products. This entailed a reduction in wholesale and retail sales. In 1999, the purchasing capacity of people dropped by 22% whereas retail sales decreased by 11%.

The production of marketable food products tended to decline, mostly in salted fish, salted or smoked fish pack products, frozen filleted fish, and roe product forms. In 1999 the production of frozen cut and gutted fish went down by 9% from 1998 levels. In the same period the production of seafood products increased by 20%, food mince by 40% and the volume of canned and preserved fish by 6%.

In 1998 prices for fishery goods did not increase significantly. But there was an abrupt rise in prices virtually for the whole range of products in August-September. Frozen fish went up quite notably (doubled on the average), including headed Alaska pollock (up 128%) and whole mackerel (up 160%). Prices for salted and smoked fish rose 1.5 times on the average and canned fish went up by 75%.

The economic crisis made fish catching organisations increase their supply to foreign markets. The Russian export of fishery goods in 1999 was 936 000 tonnes, worth USD 1 214.7 million, exceeding the 1998 figure by 8 000 tonnes (USD 92.7 million).

The downward trend in food fish production is associated with a decline in per capita consumption of fishery products – from 15.8 kg in 1991 to 10.0 kg in 1999. In terms of protein content, fishery products made up 20% in the total intake of animal proteins (including meat, milk, eggs, etc.) by the population.

The level of consumption of fish varies among regions depending on supplies and traditions of communities. In such maritime territories as Kaliningrad, Murmansk, Far East, it is close to the level recorded in Norway and Portugal (14-15 kg per capita). In areas where meat is the major product, the level of fish consumption of 7 kg per person is much below the average level in the country. This is true of Kalmyk Republic, Caucasus, Volga territories. The current per capita consumption of fishery products in Russia is 2.6 times less than the value of 23.7 kg recommended by the Russian Nutrition Research Institute, and above the food safety level.

Table 2. **Volume of fish food production: 1998-99**
000 tonnes

Product	1998	1999
Food fish products including canned fish (total)	3 014	2 783
Food products (total) including:	2 900	2 662
Live and chilled	837	639
Frozen (total) including:	1 709	1 675
Cut and gutted	902	823
Filled, and special cut	154	146
Salted and spiced	16	11
Smoked; fish back salted or smoked	9	3
Dried	7	3
Cooked	5	5
Sea products	76	91
Others	3	5
Food mince	47	51
Roe	37	33
Canned fish	114	121
Non-food products (total) including:	247	263
Fish meal	163	150
Oil	1	2
Fish/mince for feed	83	111

Table 3. **Per capita consumption of fisheries products**
Kilograms

	1991	1996	1997	1998	1999 (tentative)
Average per capita consumption of fishery products	15.8	9.0	10.3	10	10

Trade

Foreign trade in the fishing industry of Russia is important since its turnover of goods is about the same as that in the domestic market. The average annual turnover in exports and imports of fishery products for the last five years has been 1.8 million tonnes, worth about USD 2 billion.

Export fees of 5% for chilled and frozen fish, and 10% for crustaceans were introduced in Russia in March 1999. These fees worsen the economic conditions of fish harvesting organisations.

A general overview of foreign trade in fishery goods indicates that it is rather stable, with an upward trend both in exports and imports. Foreign trade developed following economic liberalisation with appearance in the world market of fishery product manufacturers, and their dealers, and establishment of new intermediary trade companies.

Conclusions

The main strategic objectives for the long-term development of the fisheries in Russia are the following:

- Ability to function effectively during the process of formation of the free market economy and transition of the country to sustainable development.
- Profound qualitative transformation in the fish-catching and processing sector based on modern technologies and advanced development so that demand from the domestic markets can be met.
- Capacity to meet domestic demand for food products, in particular for raw material and pre-cooked products.

The achievement of the above objectives involves meeting the following goals:

- Reforming the system of administration of the fishing industry, including the improvement of free market institution, establishment of financial institutions and an increased share of modern production structures – primarily in small and medium businesses.
- Modernisation of the existing fleet, and construction of new and highly effective fishing boats.
- Redesigning and improving the existing land facilities and the construction of new ones.
- Development of export potential.
- Creation of new socially significant and economically efficient jobs to avert unemployment and, hence, decrease social tension in the industry.
- Protection and enhancement of aquatic living resources.
- Development of commercial mariculture.
- Development of fisheries science and the strengthening of its potential.
- Introduction of modern schemes to attract national and foreign private capital for the development of fishery industry.

Development of the fishing industry implies greater government influence on the economic processes in the industry, broader demand for fishery products and more active innovation and investment processes. As it will be based on restructuring the production potential and replacement in the fleet, this restructuring will primarily be at the expense of medium and small vessels for in-shore areas and large ships for the high seas and foreign economic zones.

These changes will allow an increase in catches by nearly 20% between 1998 and 2010. In 2010 catches should therefore reach 5 to 6 million tonnes. Consequently, the per capita consumption of fishery products in 2010 will be 17 kgs, 1.7 times higher than in 1998.

Special chapter: Fishing Capacities

One unique feature of the fishing industry is that the fleet constitutes 75% of the main means of production in the sector. The fleet is old: 24% of the vessels are over 20 years old. The total number of boats and their capacity is falling, as is the number of big freezing trawlers and factory ships.

Following the privatisation drive, only 4.7% of the fish catching fleet remains in federal hands – 56.7% became property of limited companies; 23.7% was taken over by fishing collective farms; 12.5% are now owned by private ventures and co-operatives; 2.4% belong to joint ventures. During the last two years (1998-1999) the number of harvesting, processing and receiving/transporting vessels fell by 10% and full-time fishermen on ships fell by 7%. The number of processing, transporting, support and special purpose boats, as well as ships for long-term exploration, is decreasing rapidly.

In 1998-1999 about 350 vessels were written off including 273 harvesting, 21 processing, 34 transporting and refrigerating, and 22 support boats.

In 1999 the fleet consisted of 2 502 harvesting, 88 processing, 383 receiving and transporting and 95 support vessels. Of special concern is the age of the fleet; 31% of very large and large vessels are being used in excess of the standard service time. Smaller and very small boats are even more physically worn out (their service time has been exceeded by 44%); 69% of the processing vessels, and 35% of the receiving and transporting vessels are over 20 year old.

The main task to be accomplished in the very near future is to develop national fisheries, supply enough fish products to the country and provide ship builders with orders. This is a priority for the state in the use of natural water living resources and it can be achieved provided the concerns of the Russian fishing ship owners are complied with.

To meet these objectives with due regard to the projected fishery resources, Russia needs to design and construct 845 catching vessels of various types by 2010, and 1 094 vessels by 2015 (including

about 624 small-sized vessels and small boats). Investments for fishing fleet construction up to the year 2015 are likely to be close to RUR 263 billion. Investment will be funded by:

- Federal support (budget, investment loans, fund of financial support) – 10%.
- Enterprises' own money (wear-out allocations, accumulation fund investments) – 45%.

The State Committee for Fisheries is taking steps to adjust fishing capacity to the living resources available. This involves the use of a system of permissions to acquire, charter, and re-equip vessels, provided each fishing vessel is allocated a quota for harvesting a certain species. Purchase or lease of ships of some types (*e.g.* long-liners or crab-taking boats, or of ships adjusted to operate in certain regions, for instance, in the Barents Sea), are only allowed as replacement of decommissioned fishing capacity.

The reduction in supply of ships from national manufacturers induces ship-owners to charter foreign ships, and to deliver fish abroad as compensation for charter. Consequently, foreign capacity in shipbuilding, and machine and equipment building are stimulated economically by Russian fishermen. Vessel construction needs to be re-oriented radically towards rehabilitation of national shipbuilding. This is a complex task involving changes in a series of laws concerning tax, price and economic terms of delivery of vessels from the Russian docks, national machine and equipment construction potential (for on-board equipment).

The State Committee is currently conducting this work with a number of Federal executive authorities. The establishment of a mechanism of federal loans to fishing companies, which invest in national shipbuilding, is being considered. Support of this kind may be in a number of forms, including postponement of tax payments.

The State Committee is also considering encouraging enterprises that invest in renovation of fleet at national docks, and allocating the necessary amounts of living resources for the entire project repayment period. At present a flexible resource allocation scheme is being developed to match shipbuilding, called a "quota-warranty". Pursuant to the government decisions, national ship-building and ship repairs will probably be motivated by partial customs import fee exemptions for fishing vessels, processing equipment, devices for ship building and repairs at national docks, gantries and spare parts.

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