



# Review of Fisheries in OECD Countries

**POLICIES AND SUMMARY STATISTICS**





# **Review of Fisheries in OECD Countries**

POLICIES AND SUMMARY STATISTICS 2008



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## Foreword

**T**his edition of the Review of Fisheries in OECD Countries: Policies and Summary Statistics was approved for public release by the Committee for Fisheries in September 2008.

The Review consists of three parts. Part I contains the “General Survey of Policy Developments in OECD Countries” which provides an overview of the key trends and policy developments in the OECD fisheries sector in recent years. It is based on material submitted by OECD member countries, as well as other sources of information within and outside the Organisation. The General Survey was written by Anthony Cox, Carl-Christian Schmidt, Ingrid Kelling, and Doan Jeong of the Fisheries Policies Division.

Part II contains a special chapter prepared for the Review on foreign direct investment in the OECD fisheries sector, focusing on the type and potential effects of restrictions on foreign direct investment in the sector. The chapter was written by Anthony Cox of the Fisheries Policies Division.

Part III consists of Country Notes which review the fisheries and aquaculture sectors in OECD member countries, highlighting recent policy developments.

The Review was edited by Emily Andrews-Chouicha of the Fisheries Policies Division.



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## List of Acronyms

<b>CCAMLR</b>	Commission for the Conservation of Antarctic Living Resources
<b>CCSBT</b>	Commission for the Conservation of Southern Bluefin Tuna
<b>CDS</b>	Catch Documentation Scheme
<b>COLTO</b>	Coalition of Legal Toothfish Operators
<b>EEZs</b>	Economic Exclusive Zones
<b>FDI</b>	Foreign Direct Investment
<b>FFA</b>	South Pacific Forum Fisheries Agency
<b>FIFG</b>	Financial Instrument for Fisheries Guidance
<b>FMR</b>	Fisheries Management Renewal (Canada)
<b>FTA</b>	Free Trade Agreement
<b>GFCM</b>	General Fisheries Council for the Mediterranean
<b>GFT</b>	Government Financial Transfer
<b>GRT</b>	Gross Registered Tonnage
<b>GT</b>	Gross Tonnage
<b>IATTC</b>	Inter-American Tropical Tuna Commission
<b>IBSFC</b>	International Baltic Sea Fishery Commission
<b>ICCAT</b>	International Commission for the Conservation of Atlantic Tunas
<b>ICES</b>	International Council for the Exploration of the Sea
<b>IFQ</b>	Individual Fishing Quota
<b>ILO</b>	International Labor Organization of the United Nations
<b>IMO</b>	International Maritime Organization of the United Nations
<b>IOTC</b>	Indian Ocean Tuna Commission
<b>IPOA</b>	International Plan Of Action (FAO)
<b>ITF</b>	International Transport Workers' Federation
<b>IUU</b>	Illegal, Unreported and Unregulated (fishing)
<b>MAC</b>	Marine Aquarium Council
<b>MCS</b>	Monitoring Control and Surveillance
<b>MSC</b>	Marine Stewardship Council
<b>NAFO</b>	Northwest Atlantic Fisheries Organization
<b>NASCO</b>	North Atlantic Salmon Conservation Organization
<b>NBF</b>	National Board of Fisheries (Sweden)
<b>NEAFC</b>	North-East Atlantic Fisheries Commission
<b>NGO</b>	Non Governmental Organization
<b>NMFS</b>	National Marine Fisheries Service (United States)
<b>RFMOs</b>	Regional Fisheries Management Organizations
<b>SEAFO</b>	Southeast Atlantic Fisheries Organization
<b>SSC</b>	Sturgeon Stewardship Council
<b>TAC</b>	Total Allowable Catches

<b>TDS</b>	Trade Documentation Scheme
<b>UNGED</b>	United Nations Conference on Environment and Development
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>VMS</b>	Vessel Monitoring System
<b>WCPFC</b>	Western Central Pacific Fisheries Commission
<b>WSSD</b>	World Summit on Sustainable Development
<b>WTO</b>	World Trade Organization

PART I

# General Survey 2007

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## Recent trends in the OECD fisheries and aquaculture sector

### *Marine capture fisheries*

OECD countries reached 22.8 million tonnes in 2005, accounting for around 23% of total world marine capture fisheries production (Figure I.1). However, OECD production continued its long term downward trend which has seen production decline by an average 3% a year from a decade ago. In 2005, the value of OECD marine capture production totalled USD 31 billion. Declines in production have mostly occurred in a number of EU countries, Japan and the United States (Figure I.2). Denmark, Greece and Japan suffered the largest decreases in marine capture production while Canada, Australia and New Zealand all raised their tonnages by an average of 1% or more per year between 1995 and 2005. Japan, the United States, Norway and Korea are the largest marine fisheries producers amongst OECD countries, accounting for 59% of total OECD production (Figure I.3).

Although there are differences across OECD countries, the negative trend in fish production indicates that the resource base remains under pressure in many OECD countries. Recent data from the FAO indicates that, worldwide, 25% of fish stocks are overexploited or depleted, while 52% of stocks are fully exploited (FAO 2007). To some extent, the declining production in many OECD countries also demonstrates that OECD governments are taking steps to bring production in line with resource availability. This is being achieved through a mixture of resource recovery plans, vessel decommissioning programmes to reduce fishing capacity, improved management measures, and the strengthening of fisheries monitoring and surveillance activities. The push to meet the goal established in the 2002 World Summit on Sustainable Development to restore depleted fish stocks to maximum sustainable yield levels by 2015 has also been a factor in determining country approaches to managing marine capture fisheries.

Figure I.1. **World and OECD marine capture fisheries production**

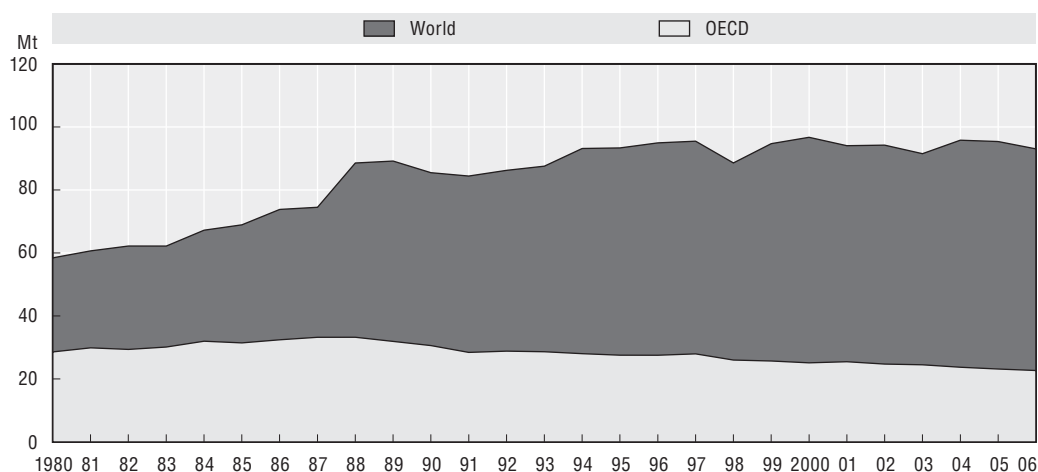


Figure I.2. **Average annual change in OECD marine capture fisheries production (1995-2005)**

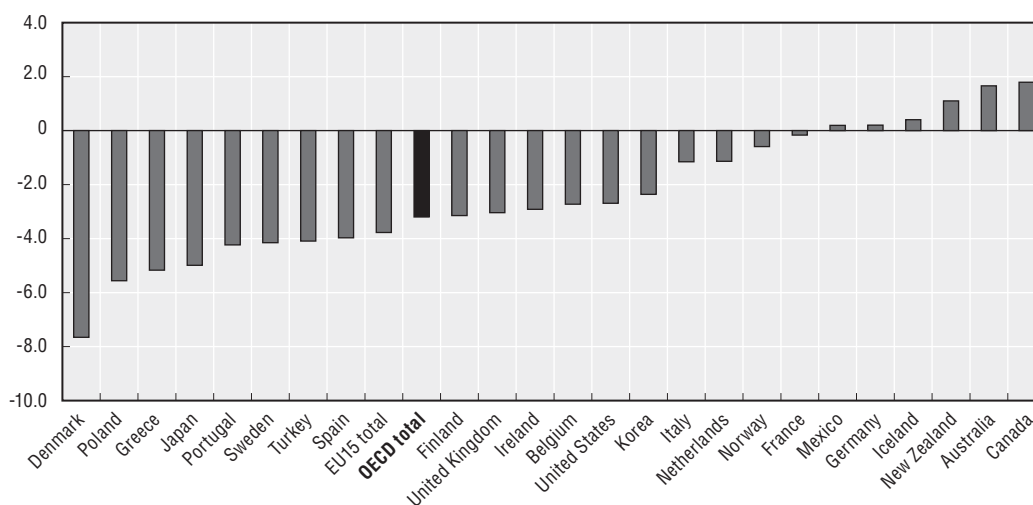
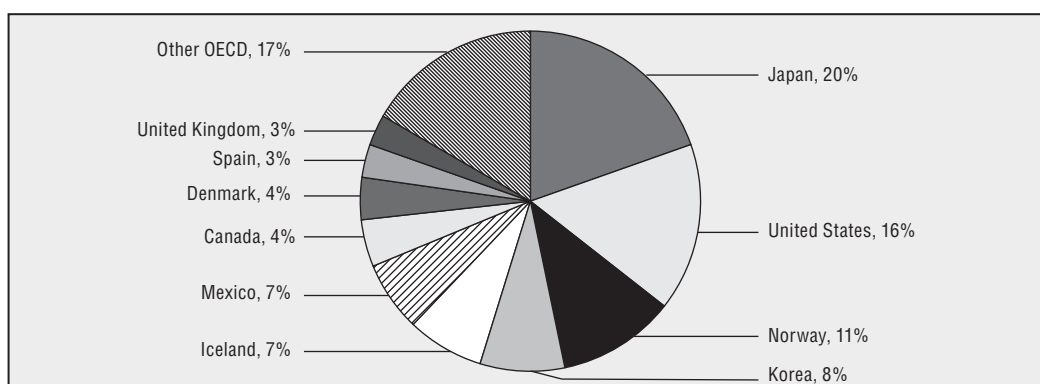


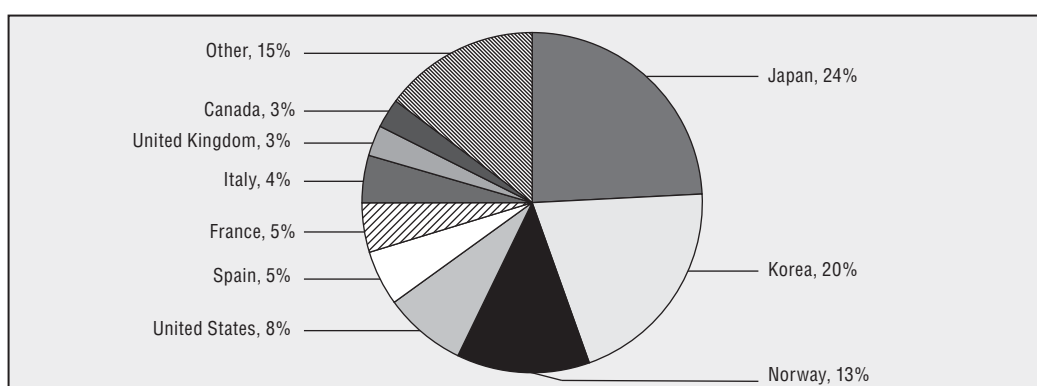
Figure I.3. **Fish landings in domestic and foreign ports as a percentage of OECD total, 2005**



### Aquaculture production

Worldwide, the aquaculture sector has grown by an average of 8.8% a year since 1970 while OECD aquaculture production has grown by a slower rate, averaging 1.3% per year between 1995 and 2005. OECD countries accounted for 11% of total world aquaculture production in 2005. Aquaculture contributed 20% to total OECD fisheries production in 2005 compared to 43% globally. The main growth areas have been in the EU, where aquaculture production increased by almost 2% a year between 1995 and 2005. High rates of growth continued in Iceland, Canada, Ireland and Norway while the United States and Japan registered a slight decrease. Just six countries – Japan, Korea, Norway, the United States, Spain and France – account for 75% of total aquaculture production in OECD countries (Figure I.4).

The relatively slower rate of OECD aquaculture production reflects a number of factors. Lower production costs in non-OECD countries and increasing competition for coastal ocean space have combined to make the OECD relatively less attractive for investment in aquaculture operations. Aggressive expansion of aquaculture production in a number of non-OECD countries, especially China, has been assisted by the offer of attractive terms and

Figure I.4. **Share of aquaculture production in OECD countries, 2005**

conditions for establishing aquaculture facilities (such as concessional financing and tax holidays) as well as less stringent application of environmental regulations in some cases.

Nevertheless, production of salmon in OECD countries reached an all time record in 2005 with 877 436 tons being harvested, a doubling of 1995 production. By far the biggest player, Norway's production reached 66% of total salmon production, some 582 403 tons with a value of USD 1.8 billion. Technological progress is advancing rapidly. For example, the full life cycle of the bluefin tuna can now be replicated in controlled aquaculture conditions, opening the way for high value farmed tuna production in the near future. Cod production from aquaculture passed 8 000 tons in 2005, doubling production from 2004, again underlining the fact that high value species are rapidly finding their way into aquaculture production systems.

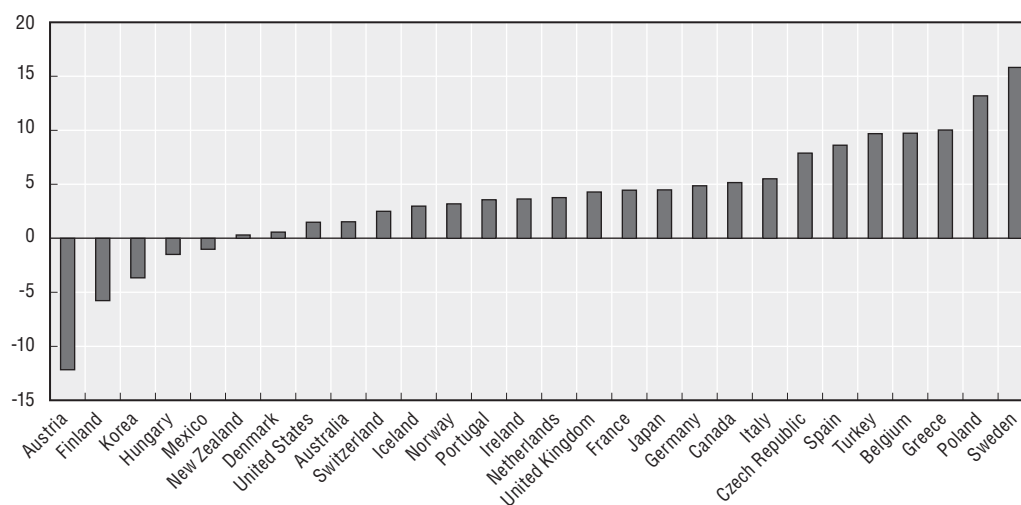
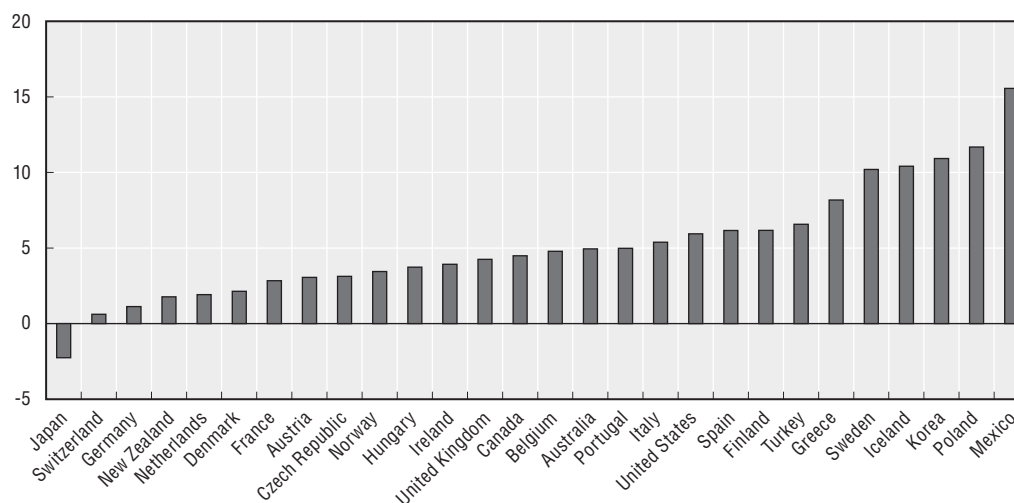
### Trade

Trade in fish and fish products has increased sharply over recent years; while OECD countries' import bill amounted to USD 59.8 billion in 2004, this had increased to USD 67.5 billion two years later. There was no notable change in the origins of these imports; non-OECD countries accounted for almost 60% of OECD imports. Corresponding export figures for the OECD are USD 33.8 billion and USD 40.2 billion. Most OECD countries have increased the value of both their fisheries exports and imports over the past decade (Figures I.5 and I.6). By contrast, OECD exports increased mostly to non-OECD countries; in fact exports to outside the area increased by 40% over the 2002-06 period.

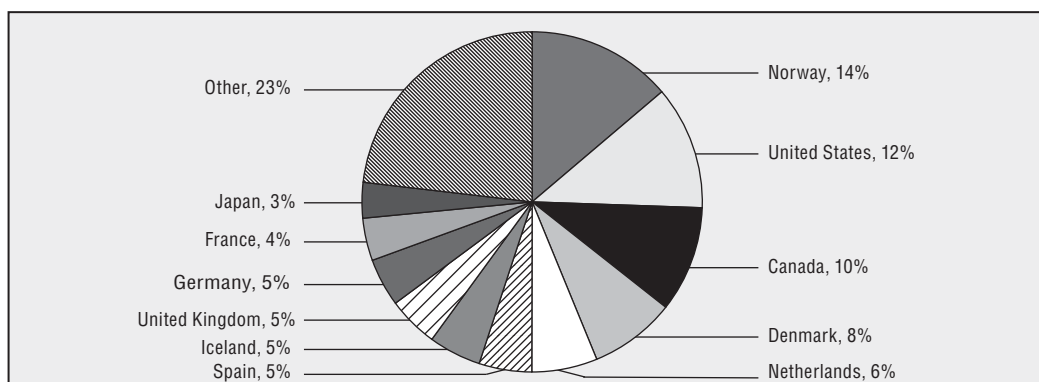
The United States, Norway, Canada, Denmark, the Netherlands and Spain are the major exporters from OECD countries, accounting for 50% of total OECD exports in 2006 (Figure I.7). The major importers in 2006 were Japan, the United States, Spain, France, Italy and the United Kingdom, accounting for 70% of total imports to the OECD (Figure I.8).

### Fishing fleets

Many OECD countries have been actively reducing the size their fleets through decommissioning programmes in order to better match fleet capacity with available resources. Within the European Union, strict capacity management has been established since the new Common Fisheries Policy came into force in 2002, resulting in a 10% decrease in the number of vessels and 7% decrease in total GRT up to 2005. Such measures are implemented through two key requirements: any entry of capacity has to be compensated by the exit of at least an equivalent capacity, measured both in terms of tonnage and power; and capacity withdrawn (or scrapped) with public aid cannot be replaced.

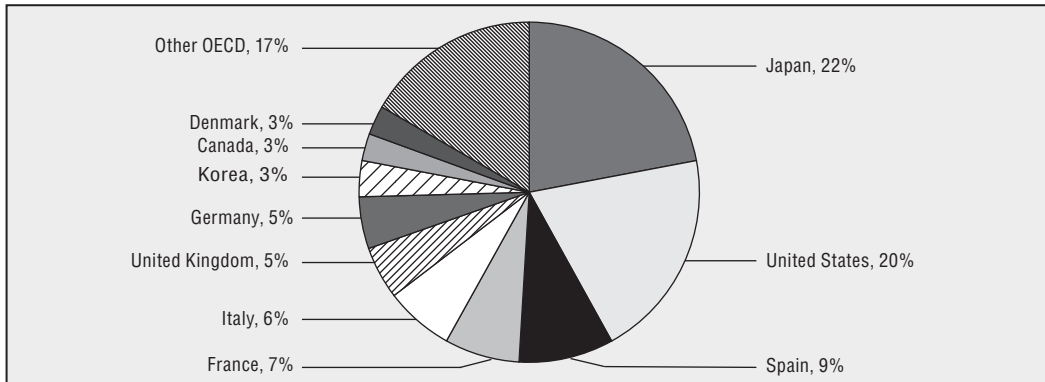
Figure I.5. **Average annual growth in exports from OECD countries, 1995-2005**Figure I.6. **Average annual growth in imports to OECD countries, 1995-2005**Figure I.7. **Major OECD exporters, 2006**

Country shares of total OECD exports



**Figure I.8. Major OECD importers, 2006**

Country shares of total OECD imports

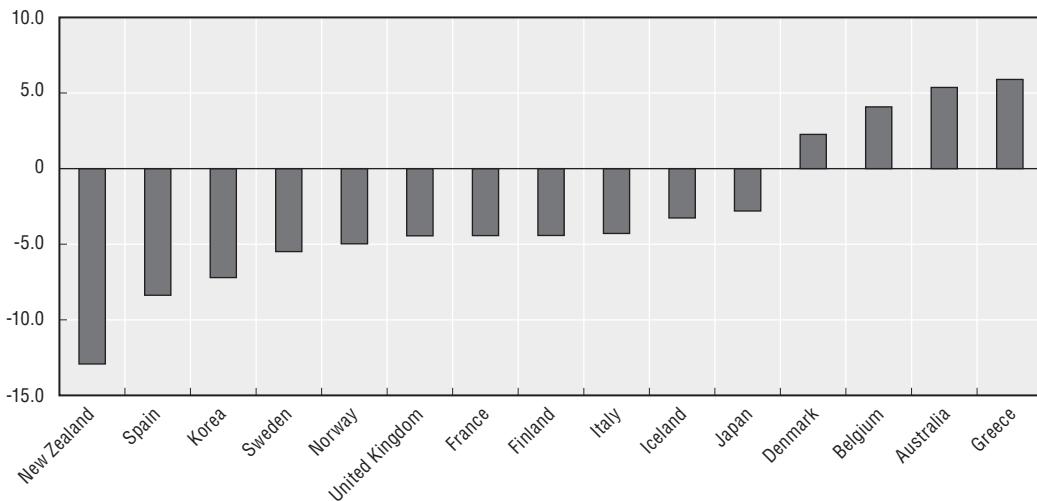


In Norway, new capacity management measures were introduced in 2004 (a Structural Quota System and a Quota Exchange System) together with an industry-funded decommissioning scheme, to meet the challenge of overcapacity. The Norwegian schemes have been actively used by the industry and the result has been an overall reduction in the number of vessels from 8 187 in 2004 to 7 721 in 2005, a decrease of almost 6%.

**Employment**

According to the available data, the number of workers in the harvesting industry in the OECD has been steadily falling over the past decade (Figure I.9).<sup>1</sup> In contrast, the number of employees in the processing sector has been increasing in a number of OECD countries, even that for the OECD as a whole, workers in the harvesting industry still outnumber those in the processing and aquaculture industries combined by a ratio of two to one. For example, Denmark now employs twice as many people in processing as harvesting. Processors constituted 16% of EU workers in the fishing industry in 2005 but 75% in New Zealand and 60% in Iceland.

**Figure I.9. Annual rate of change in employment (in percentage) in the harvesting sector 1995-2005**





## Government financial transfers

Government financial transfers (GFTs) to the fishing industry in the OECD have been fluctuating at around USD 6 billion over the last decade. This represents around 18% of the value of the total catch from capture fisheries. The majority of GFTs are for fisheries management, research and enforcement (38% of total GFTs in OECD countries) and infrastructure expenditure (39%). The remaining transfers consist of vessel decommissioning schemes (7%), income support (5%), access agreements (3%), vessel construction and modernisation (3%) and other cost reducing transfers and direct payments and general services (5%).

GFTs for individual countries have fluctuated considerably over the past 10 years (Figure I.10). Japan, the United States, the European Union, Korea and Canada remain the largest providers of GFTs to the sector. The greatest rates of decline in GFTs are most evident in Japan and a number of EU countries (Figure I.11). The major development over the past few years has been the negotiations in the WTO on developing a set of rules for disciplining fisheries subsidies (this issue is discussed further below).

## Development assistance

While OECD countries remain the largest outlet for fish and fish products, non-OECD developing countries are playing an increasing role as suppliers. This has come about as a result of the over-fishing of key OECD stocks, the growing popularity of fish and increasing disposable incomes. The relative importance of developing countries is likely to further increase in the future. It is therefore important that developed countries take an active interest in building fisheries management capacity in developing countries based on sustainable and responsible fisheries and aquaculture systems. This is reflected in development assistance to developing country fisheries sectors, which amounted to some USD 400-450 million last year. However, more effort is needed to ensure both resource and industry sustainability through sustained interaction between the fisheries and development policy communities (OECD 2006).

Figure I.10. **GFT for selected countries**

Thousand US dollars

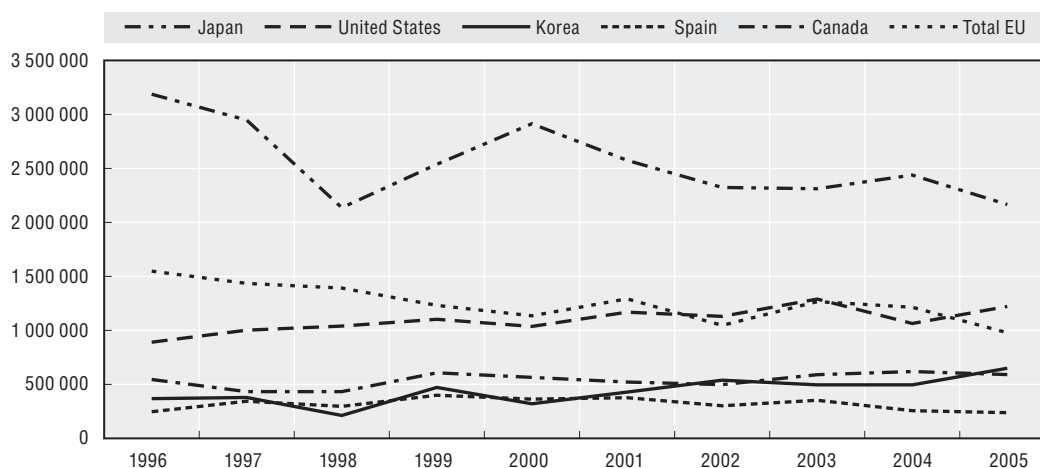
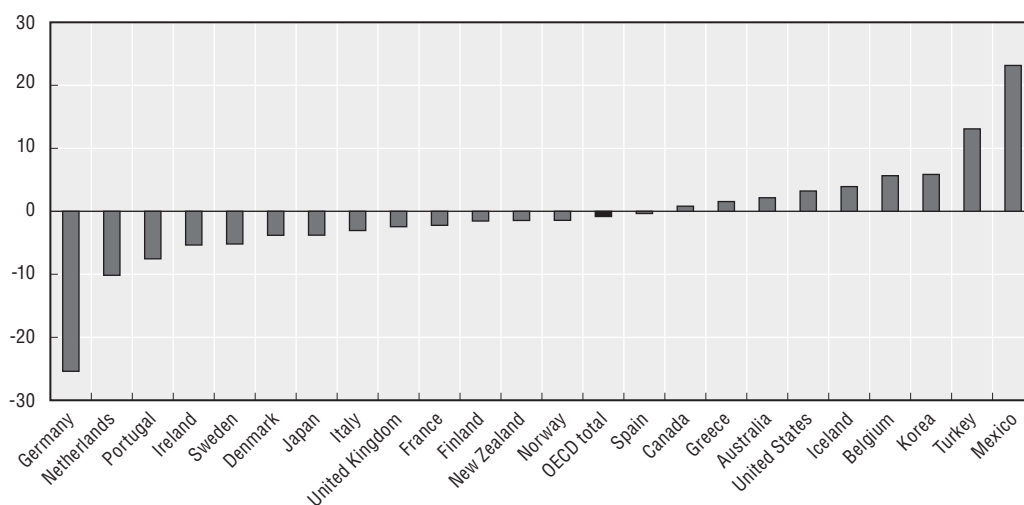


Figure I.11. **Average annual growth of GFTs, 1996-2005**

## Recent developments in OECD fisheries policies

### *Addressing IUU Fishing*

Illegal, unregulated and unreported (IUU) fishing activity is a serious global problem that depletes fish stocks and undermines efforts to ensure renewable stocks for the future. As well as undermining the sustainability of stocks, fishing illegally creates an unfair economic advantage for fish pirates who distort markets with illegal products and reduce incentives for legal fishers to adhere to the rules. IUU fishing is the result of economic factors such as growing demand, coupled with overcapacity and weak governance. Economic principles can be a key to making the practice less attractive: by making it more costly to mount and conduct IUU operations or by reducing the revenue from fish piracy. Increasing the expected costs of IUU fishing can be achieved by making illegal fishing riskier by increasing the likelihood of getting caught. If penalties are sufficiently high and uniform in scope and applicability they could act as an important deterrent to illegal operators.

In recent years, fish piracy has moved to the forefront of the international fisheries policy agenda, and governments around the world have stepped up efforts to combat it. Alongside the role of the OECD's Committee for Fisheries that developed an analytical framework for addressing IUU fishing (OECD 2005), the final report from the High Seas Task Force (HSTF) was released in 2006.<sup>2</sup> The report contained a number of recommendations that were considered both practical and politically feasible (Box I.1).

Progress has been made towards implementing a number of these recommendations, primarily as a result of the efforts of individual countries "championing" particular measures. Three areas are of particular significance. First, the United States, with the assistance of Australia, Canada, New Zealand and the UK, have taken a lead on implementing practices to strengthen the Monitoring Control and Surveillance Network (Recommendation 1). The aim of this strategy is to strengthen the flow of information and intelligence regarding high seas fishing. The project enhances the existing network function with dedicated resources, analytical capacity and the ability to provide MCS training and technical assistance to fisheries enforcement officers, particularly in developing countries. The enhanced capacity of the network will allow the MCS Network secretariat to analyse and report on profiles for vessels and organisations and offending

### Box I.1. Recommendations from the High Seas Task Force

1. Strengthen the International Monitoring, Control and Surveillance (MCS) Network.
2. Establish a global information system on high seas fishing vessels.
3. Promote broader participation in the United Nations Fish Stocks Agreement (UNFSA) and the Food and Agriculture Organization of the United Nations (FAO) Compliance Agreement.
4. Promote better high seas governance by:
  - developing a model for improved governance by RFMOs;
  - encouraging an independent review of RFMO performance;
  - encouraging RFMOs to work more effectively through better co-ordination; and
  - supporting initiatives to bring all unregulated high seas fisheries under effective governance.
5. Adopt and promote guidelines on flag state performance.
6. Support greater use of port and trade measures by:
  - promoting the concept of responsible port states; promoting the FAO Model Port State Scheme as the international minimum standard for regional port state controls and supporting FAO's proposal to develop an electronic database of port state measures;
  - reviewing domestic port state measures to ensure they meet international minimum standards; and
  - strengthening domestic legislation controlling imports of IUU product.
7. Fill critical gaps in scientific knowledge and assessment.
8. Address the needs of developing countries.
9. Promote better use of technological solutions.

Source: High Seas Task Force (2006).

history reports; select species/region specific risk assessments including predictive assessments; assign penalty schedules; produce estimates of illegal take from specific fisheries; provide market and economic incentive analyses and change of flag analyses; and analysis on Ports of Convenience.

Second, work is underway to address a lack of access to transparent and authoritative information about ownership and control of fishing vessels (Recommendation 2). The establishment of a global information system for high seas fishing vessels (FishVIS) is intended to address the gap in information available to detect, deter and eliminate IUU fishing. The system was proposed to provide greater transparency in the nature and operation of illegal fishing activities. Ministers from New Zealand and Australia agreed to take this proposal forward by leading and funding a feasibility study on the technical and beneficial aspects of the system. The final recommendation of the New Zealand-Australia scoping study was to work with the FAO, which also undertook a study to determine the feasibility and viability of developing a comprehensive record of fishing vessels within FAO, including refrigerated transport vessels and supply vessels, which incorporates available information on beneficial ownership, subject to confidentiality requirements in accordance with national law. The FAO study was considered at the 27th Session of the FAO Committee on Fisheries, held March 2007, and members supported convening an Expert Consultation to further develop the concept.

Finally, the third recommendation has been addressed through the development of a model for improved governance by RFMOs, reviewing of RFMO performance, encouraging RFMOs to work more effectively together through better co-ordination and use of port and trade-related measures and supporting initiatives to bring all unregulated high seas fisheries under effective governance. An independent, high-level panel was commissioned to develop a model for improved governance by RFMOs. The work of the panel was hosted by the Royal Institute of International Affairs (Chatham House) in London and the report was published in 2007. There has also been a move by a number of RFMOs to undertake reviews of their performance, with NEAFC being the first to undergo an independent review in 2007. The development of a binding legal instrument on minimum standards for port state controls is also underway in the FAO.

### ***Fisheries management policy developments***

The last few years have seen a heightened interest in expanding the range of management instruments employed in OECD countries. Several member countries are contemplating, or are already in the process of, modernising their fisheries management approaches and systems. This is good news for fish stocks and for the future profitability of fisheries in many areas. For example, both Canada and Denmark have recently adjusted their fisheries management approaches. In Canada, Fisheries Management Renewal (FMR) is a package of programs and policy renewal activities that are based on the principles of stability, transparency and predictability. The four objectives of FMR are: strong conservation outcomes, shared stewardship, stable access and allocation, and a modernized compliance regime. In Denmark, a new system of quota allocations was introduced where vessels, as from 2007, will be given a fixed annual quantity of fish to catch. This should terminate tendencies to create Olympic fisheries and overcapitalisation that has characterised Danish fisheries for decades.

Other countries (for example, Sweden) have launched national debates on how to tackle continued over-fishing. In Spain a white paper identifying and diagnosing failures and problems in the fisheries sector was published with a view to providing guidelines and directions for Spain's future policy on fisheries; it fuelled a debate between central government, the Autonomous Communities and fisheries stakeholder. At a broader level, the European Commission launched a consultation in 2007 on the use of rights based management systems in the Common Fisheries Policy.

These policy developments indicate increasing acceptance of and willingness to implement market-based fisheries management instruments in many OECD countries. The work of the Committee for Fisheries demonstrated that market based mechanisms can help to improve the efficiency of resource use and better align the incentive structure of fishers with those of the border community. OECD Ministers have repeatedly called for more use of market-like instruments in economic policies. Compared to regulatory management instruments, market based instruments encourage operators in the fishery to be an integral part of the solution to overfishing, improve the incentives for complying with fisheries rules, and generally result in more profitable, resilient and sustainable fisheries.

Much of the resistance towards the introduction of market-based instruments has emanated from the perception that individual transferable quotas are the preferred goal of fisheries management. However, the OECD work highlighted the fact that market-like instruments are based on defining access rights to fisheries resources and include administrative regulations that influence fishers' incentives to fish, as well as a wide range

of economic instruments based on market interplay. The report demonstrated that there is a wide variety in the design and implementation of market mechanisms both across and within OECD countries.

Three key implications for policy makers emerge from the work. Fisheries managers have a greater array of market-like instruments at their disposal than might be appreciated. The experience of OECD countries points to the need to maintain a flexible approach to the design and implementation of market-like instruments to take into account social and biological conditions in particular fisheries, as well as the institutional constraints (both domestic and international) that may constrain the extent to which countries can take up market-like instruments. As there is no single approach to the use of market-like instruments, there is greater scope for the use of the range of market-like instruments in achieving improved management outcomes.

Several attributes of market-like instruments seem to be particularly important in improving the robustness of fisheries management, the regulatory environment for fishers and the efficiency of resource use. The duration of the right and ability to transfer some or all of these rights to others in the sector are particular important features in this respect and strengthening these characteristics will help improve the adaptability and resilience of the sector in both the short and long term, and to internalise the process of adjusting to changing external conditions.

Finally, the extent of stakeholder involvement in decision making processes will heavily influence the prospects for a successful outcome when using market-like instruments. Furthermore, the demonstration effect will be augmented and the comfort level that participants in the sector are likely to have with market-like instruments will in general improve.

### **WTO negotiations on fisheries subsidies**

A major effort has been underway since 2001 to develop fisheries subsidies disciplines in the WTO. As part of the Doha Round, WTO Ministers mandated negotiations to “clarify and improve WTO disciplines on fisheries subsidies, taking into account the importance of the sector to developing countries”. This mandate was reinforced at the December 2005 WTO Ministerial in Hong Kong where it was agreed that there should be strengthened “disciplines on subsidies in the fisheries sector, including through the prohibition of certain forms of fisheries subsidies that contribute to overcapacity and over-fishing”.

The fisheries subsidies negotiations have made considerable progress and a wide range of countries have participated actively in the negotiations. The key debate has been over the form that the disciplines should take. Some countries have argued for a broad prohibition on all fisheries subsidies, with only justified exceptions (the top-down approach). Other countries argue that all subsidies should be permitted, but with specific subsidies prohibited (the bottom-up approach). There is, however, general agreement that subsidies that lead to overcapacity and overfishing as well as IUU fishing should be prohibited. The issue of special and differential treatment for developing countries has also been strongly debated in the negotiations. In November 2007, a draft text bringing together the various elements of the negotiations was proposed by the Chair of the WTO Negotiating Group on Rules.

Disciplining fisheries subsidies is a relatively new area for the WTO. The focus of the negotiations is on the effect of subsidies on resources and sustainability as well as their trade distorting effects. From that perspective, successful completion of the fisheries subsidies

negotiations will be a major landmark for fisheries policy in general. However, while there has been progress in the negotiations, much remains to be done. Moreover, the fate of the fisheries subsidies negotiations will be determined by overall progress with the Doha Round negotiations, in particular negotiations over agriculture and non-agriculture market access.

### **Progress towards the WSSD goals**

As an integral part of the 2002 World Summit on Sustainable Development (WSSD), governments negotiated and agreed on an action plan for oceans, coasts, and Small Island Developing States. The key goals and timetables for fisheries were to:

- urgently develop and implement national and, where appropriate, regional plans of action, to put into effect the FAO International Plans of Actions (IPO), in particular the IPO to prevent, deter and eliminate illegal, unreported, and unregulated (IUU) fishing by 2004 and the IPO for the management of fishing capacity by 2005;
- encourage the application of the ecosystem approach by 2010 for the sustainable development of the oceans, particularly in the management of fisheries and the conservation of biodiversity;
- maintain or restore depleted fish stocks to levels that can produce their maximum sustainable yield on an urgent basis and, where possible, no later than 2015;
- ratify or accede to and effectively implement the relevant United Nations and, where appropriate, associated regional fisheries agreements or arrangements; and
- eliminate subsidies that contribute to IUU fishing and over-capacity, while completing the efforts undertaken at the WTO to clarify and improve its disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries.

These targets and timetables represented an important advance for fisheries policy in terms of the commitments made by the world's political leaders. Progress towards achievement of these goals has been steadily made against some of the goals. As outlined earlier in this survey, there has been considerable work done on improving policies to address IUU fishing at the national and international levels. A number of new, promising and revisited fisheries management approaches that aid the reduction of over-capacity have emerged in recent years. Work on developing rules for disciplining fisheries subsidies has been underway for some years at the WTO and the final outcome is largely dependent on progress being made in other areas of the overall negotiations (particularly with respect to agriculture and non-agricultural market access). There has also been a groundswell of support for the introduction of ecosystem approaches to fisheries management, although there remains considerable uncertainty about how such an approach can be operationalised in an effective and cost-efficient manner. Ongoing discussion at national levels and in the FAO is helping to clarify the strengths and limitations of ecosystem approaches to fisheries management.

Progress on other goals from the WSSD has not been so promising. In particular, the objective of restoring depleted fish stocks to levels that can produce their maximum sustainable yield by 2015 requires greater policy attention as there has only been a marginal decline in the number of depleted stocks in recent years (according to FAO data). A focus on developing effective and efficient stock rebuilding programs is required to provide governments with the necessary toolkit to undertake needed reforms. The main reasons for slow reform include reluctance of governments to make unpopular decisions, a scarcity of the human, institutional and financial resources required to devise and

implement management programmes, a lack of understanding of the potential benefits by both governments and fishers, and the difficulty in finding alternative employment in communities and regions with a high dependency on fishing activity. Achieving sustainable and resilient fisheries management reform generally requires continuous effort and adjustments over an extended period of time.

### ***The ageing fisher workforce in OECD countries***

Many OECD member countries are or will experience a general “ageing” of their populations. At a macroeconomic level, this raises issues of the effects on pension systems, health care and various activities including travel, hobby activities, etc. The fisheries sector in a number of OECD countries also faces an aging of the fisheries workforce (see Box I.2). This may have implications for government policy on fisheries adjustment, worker training and retraining, and labour market policies. For example, governments may need to consider expanding the use of foreign workers in the fisheries sector as domestic availability of labour declines. There may also be concerns over the fate of fisheries dependent communities in a period of declining labour force, necessitating some decisions about adjustment to changing market and social realities.

A number of countries have announced measures to address the issue of an aging fisher workforce. Denmark has announced a number of specific measures to entice younger recruits, including (wage) subsidies for taking on board apprentices, the building of new fisheries education facilities and, once the new fisheries management system with transferable vessels quotas are in place from January 2007, the “Fish Fund”, which may be used to give new entrants access to quotas.

The Fisheries Agency of Japan implemented a program covering 2004 to 2005 to promote seasonal internship for prospective fisher workers. In 2006, the program was strengthened to include seminar meetings aiming at recruiting people and creating a website for vacancy announcements for local fisheries associations and fishery workers.

Since 1981, Korea has implemented a program to bring in new fishers to the sector. The main elements of the Korean policy are to entice fishers into the harvesting sector through technical and management education and low-rate loans for fishing facilities and business start-ups. If people wish to be designated as a “fisher successor”, they must apply for this status with a business plan. If the person subsequently is designated as a “fisher successor” through a government evaluation, the government will extend the aforementioned services. Being a “fisher successor” does not automatically imply access rights. From 1981 to 2003, 15 510 people were designated.

While obviously the seriousness of the problem differs across the countries surveyed, all countries surveyed, with the notable exceptions of New Zealand, Iceland and France, face a recruitment challenge if they wish to, under present conditions, continue to fish with domestic fishers. At the domestic level, ways to address the problem of ageing in the harvesting sector include more promotional campaigns to attract fresh recruits, the introduction of an active labour market policy (which has an important link to the fisheries management system), an increased retirement age and in general, ensuring that the sector is profitable enough compared with alternative job opportunities. At the international level, policies that may also be helpful to address the ageing harvesting workforce include measures that attract foreign participation – either immigration or through investment, and more generally, attracting foreign fishing fleets to undertake harvesting as a service.

### Box I.2. Age profiles of fishers in selected OECD countries

Current age structures and difficulties in recruitment in the fishing sectors of member countries is a consequence of a number of issues and factors that define whether individuals are attracted to the sector and when they decide to exit. For entry, this includes the wage systems (partly a function of the management framework), difficulties in obtaining capital to set up a fish harvesting operation; requirements for entering the sector and under which conditions, education systems, and perceptions about the fisheries sector (*e.g.* hard work, length of time at sea, risks in the activity). For exit, the key factor is the prevailing pension systems (general or sector specific) that define when fishers decide to leave the activity. Factors that affect both entry and exit decisions include alternative job possibilities, pay rates in other sectors, and the existence of subsidies.

Data on the age profile of the fisheries workforce are available for Denmark, Norway, Sweden, France, Korea, Germany, New Zealand, Japan, Iceland, Spain, Finland, the United Kingdom and Chinese Taipei (Figure I.12). Although the data definitions (definition of fishers) and the age groups that are used may differ across countries, the following provides an overview of the current situation.

With the exception of France, Iceland and New Zealand, the countries for which data are available have an age structure characterised by a relatively high percentage of aged fishers and relatively few young recruits. In contrast, France has a very high percentage of younger age groups, while in the retirement age group (55+), the number of fishers rapidly decreases. The French situation is likely to be influenced by the retirement system which, generally, provides the option for early retirement from the age of 50 (with penalties).

While New Zealand fishers also seem to have largely retired by the age of 60, a very high percentage of fishers are in the younger age group. This suggests that in New Zealand, fishing is an attractive occupation and with few, if any, entry barriers. To obtain entry to the harvesting sector, a commercial fisher is required to obtain a fishing permit that is not transferable. Iceland also employs very few fishers over the age of 60 and, as with New Zealand, there is no problem with recruiting young people; almost 25% of the fisher population is under the age of 30.

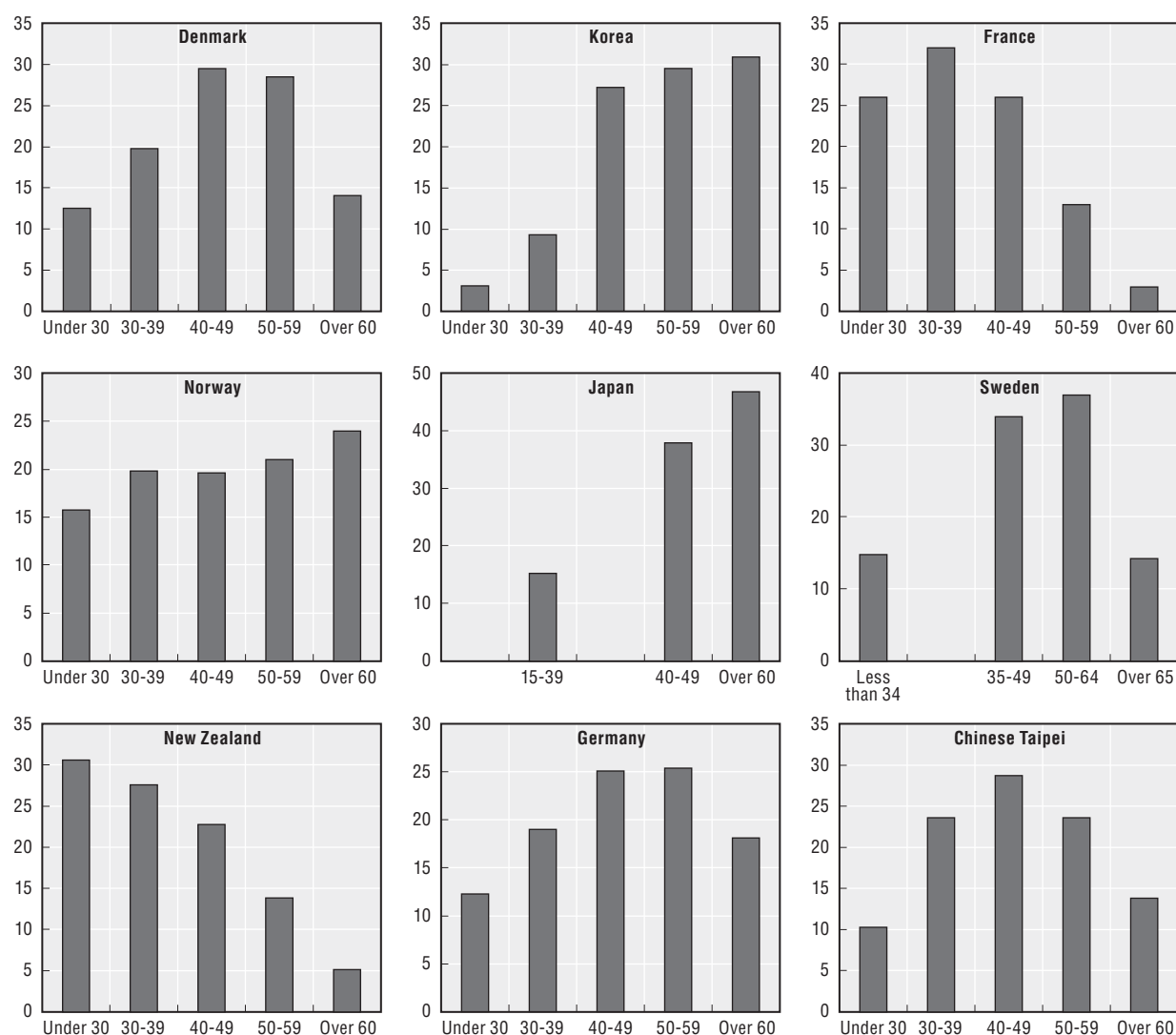
Sweden, Germany, Spain, and Denmark are in a rather similar situation with relatively few fishers in the young and old age groups (10-15% in both groups) and the rest equally distributed over the 35-59 age group. These countries seem, however, to have a recruitment problem and a relatively high average age. Despite less of a recruitment problem, the United Kingdom has a fairly similar distribution of fishers.

The Korean, Japanese and Finnish situations are quite similar and present the most immediate problem for a fast ageing fisher population with few recruits. The 60+ age group represents 46.8% of fishers in Japan and 30.9% in Korea, while 15-39 year olds only make up 15.3% in Japan and 12.4% in Korea. In Korea, where statistics for those less than 30 years of age are collected, this group only constitutes 3.1% of the total. In Japan, the situation has aggravated sharply over the past decade as the proportion of fishers in the 65+ age group has doubled. In Finland, more than 60% of fishers are above the age of 50 with around 30% above the age 60. Also, Finland has a major problem with recruitment.

The case of Norway is somewhat different from the three other groups of countries in that there is a relatively equal distribution of fishers over the various age groups with a tendency towards an increase in the average age.



Figure I.12. Age profiles for fishers in selected OECD countries



## Future policy issues for the OECD fisheries sector

While a great deal of progress has been made in a number of policy areas in the OECD fisheries sector, a number of challenges remain. In addition, a number of issues are on the policy horizon and are likely to require a policy response by OECD governments in the medium term.

First, it is clear that continued efforts are required to further combat IUU fishing. Much has been accomplished in recent years, but efforts currently underway on the development of additional policy tools will help to more effectively address IUU fishing. In particular, work on port state controls and flag state controls will be essential to close existing policy gaps.

Second, the task of rebuilding depleted fish stocks to meet the 2015 WSSD target poses a significant challenge for OECD (and non-OECD) countries. Progress to date on rebuilding stocks has been patchy and a more concerted effort is necessary to help governments develop and implement stock rebuilding programs. In particular, work is required to ensure that one-off rebuilding programs are integrated with ongoing management arrangements for the fisheries in question.

A third issue that is rapidly moving to centre stage relates to the role of ecolabeling and certification in the fisheries sector. The growing number of private and public standards and schemes for sustainability runs the risk of presenting a confused picture to consumers, producers and governments alike. The key challenge for OECD governments is to determine the most appropriate role for regulatory policy and identify the most effective policy tools to meet policy objectives.

Finally, a longer term issue is that of climate change and the fisheries and aquaculture sector. Fisheries ecosystems and fishing-based livelihoods are subject to a range of climate-related environmental variability, ranging from extreme weather events, floods and draughts, to changes in aquatic ecosystem structure and productivity, and changing patterns in, and abundance of, fish stocks. In order for policy makers to ensure sustainable resource management in the future, policies and practices will need to be adjusted to take account of changes to productivity or distribution of fisheries resources as a result of climate-related environmental variability. While climate variability is only one of the many threats to sustainable fisheries in the future, it has until recently received less attention in international policy debates. Increasingly, fisheries policy makers are becoming more aware of the need to anticipate and incorporate climate-related changes into local, national and international coping responses.

## Notes

1. Note that reliable employment data is only available for a small number of OECD countries.
2. The HSTF was a group of fisheries ministers from Australia, Canada, Chile, Namibia, New Zealand, United Kingdom (Chair) and international NGOs (Earth Institute, IUCN-World Conservation Union, WWF International) whose aim was to reduce the level of illegal, unregulated and unreported fishing on the high seas through the formulation and eventual implementation of recommendations to combat some of the issues outlined above. Over two years, expert panels identified the legal, economic, scientific and enforcement factors that permitted IUU activity to thrive.

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## ANNEX I.A1

*Statistical Summary Tables to the General Survey, 2007*Table I.A1.1. **National unit per US dollar (USD)**

	Monetary unit	2003	2004	2005
Argentina	Argentine peso	2.90	2.92	2.90
Australia	Australian dollar	1.54	1.36	1.31
Belgium	Euro	0.89	0.80	0.80
Canada	Canadian dollar	1.40	1.30	1.21
Chinese Taipei	Taiwanese dollar	34.58	34.42	31.71
Czech Republic	Czech koruny	28.13	31.91	29.79
Denmark	Danish krone	6.58	5.99	6.00
Finland	Euro	0.89	0.80	0.80
France	Euro	0.89	0.80	0.80
Germany	Euro	0.89	0.80	0.80
Greece	Euro	0.89	0.80	0.80
Iceland	Icelandic krona	76.69	70.19	62.88
Ireland	Euro	0.89	0.80	0.80
Italy	Euro	0.89	0.80	0.80
Japan	Yen	115.94	108.15	110.10
Korea	Won	1 197.80	1 043.80	1 013.00
Mexico	Peso	10.79	11.28	10.89
Netherlands	Euro	0.89	0.80	0.80
New Zealand	New Zealand dollar	1.72	1.51	1.42
Norway	Norwegian krone	7.08	6.74	6.44
Poland	Zloty	3.89	3.65	3.23
Portugal	Euro	0.89	0.80	0.80
Russian Federation	Ruble	30.69	28.81	28.28
Slovak Republic	Slovak koruny	36.76	32.23	31.02
Spain	Euro	0.89	0.80	0.80
Sweden	Swedish krona	8.08	7.35	7.47
Thailand	Baht	41.49	40.22	40.22
Turkey	Lira	1.50	1.43	1.37
United Kingdom	Pound	0.61	0.55	0.55
United States	US dollar	1.00	1.00	1.00

Source: OECD Economic Outlook No. 78.

Table I.A1.2. OECD fishing fleet, 2004 and 2005

	Total vessels				Vessels without engines				Vessels with engines			
	2004		2005		2004		2005		2004		2005	
	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT
Australia	..	..	..	..	..	..	..	..	..	..	..	..
Canada	22 966.00	..	..	..	..	..	..	..	..	..	..	..
European Union	86 652.00	1 927 743.00	83 702.00	1 862 654.00	6 766.00	5 173.00	6 208.00	4 750.00	79 886.00	1 922 570.00	77 494.00	1 857 904.00
Belgium	123.00	23 289.00	121.00	22 686.00	0.00	0.00	0.00	0.00	123.00	23 289.00	121.00	22 686.00
Czech Republic	..	..	1 449.00	174 080.00	..	..	..	..	..	..	..	..
Denmark	3 407.00	96 070.00	3 425.00	96 523.00	49.00	43.00	81.00	71.00	3 358.00	96 027.00	3 187.00	91 397.00
Finland	3 393.00	18 052.04	3 268.00	91 468.00	0.00	0.00	0.00	0.00	3 393.00	18 052.04	3 265.00	16 947.68
France	7 715.00	214 562.00	7 858.00	214 374.00	0.00	0.00	0.00	0.00	..	..	..	..
Germany	2 163.00	66 307.00	2 057.00	18 863.00	..	..	..	..	..	..	..	..
Greece	18 910.00	95 643.00	18 628.00	93 099.00	365.00	207.00	353.00	182.00	18 545.00	95 436.00	18 275.00	92 917.00
Ireland	..	..	..	..	..	..	..	..	..	..	..	..
Italy	14 873.00	200 561.41	14 304.00	198 996.71	1 834.00	1 687.00	1 713.00	1 735.00	13 039.00	198 874.41	12 591.00	197 261.71
Netherlands	927.00	196 702.00	894.00	172 195.00	0.00	0.00	0.00	0.00	927.00	196 702.00	894.00	172 195.00
Poland	1 379.00	45 660.69	975.00	30 252.00	114.00	33.71	36.00	33.65	1 265.00	45 626.98	939.00	30 219.00
Portugal	10 089.00	112 977.00	..	..	..	..	..	..	..	..	..	..
Spain	14 041.00	489 746.00	13 695.00	487 140.13	1 869.00	1 161.00	1 820.00	1 136.00	12 172.00	488 585.00	11 875.00	486 003.83
Sweden	1 597.00	44 447.00	1 589.00	44 105.00	0.00	0.00	0.00	0.00	1 597.00	44 447.00	1 589.00	44 105.00
United Kingdom	7 030.00	222 941.16	6 722.00	218 134.00	13.00	13.24	16.00	32.00	7 017.00	222 927.92	6 706.00	218 102.00
Iceland	1 570.00	169 874.00	1 449.00	174 080.38	0.00	0.00	0.00	0.00	1 570.00	169 874.00	1 449.00	174 080.38
Japan	..	..	..	..	..	..	..	..	..	..	..	..
Korea	91 608.00	724 980.00	90 735.00	700 810.00	4 405.00	3 582.00	3 181.00	2 854.00	87 203.00	721 398.00	87 554.00	697 956.00
Mexico	106 487.00	240 856.00	106 487.00	240 856.00	102 807.00	..	..	..	..	..	..	..
New Zealand	1 757.00	174 529.56	1 654.00	172 644.00	16.00	6.85	21.00	11.00	1 741.00	174 522.71	1 633.00	172 633.00
Norway	8 187.00	392 090.00	7 721.00	370 651.00	0.00	0.00	0.00	0.00	8 187.00	392 090.00	7 721.00	370 651.00
Turkey	18 999.00	195 587.00	18 836.00	195 165.00	109.00	208.00	103.00	199.00	18 890.00	195 379.00	18 733.00	194 966.00
United States	..	..	..	..	..	..	..	..	..	..	..	..
<b>OECD total</b>	<b>338 226.00</b>	<b>3 825 659.56</b>	<b>310 584.00</b>	<b>3 716 860.38</b>	<b>114 103.00</b>	<b>8 969.85</b>	<b>9 513.00</b>	<b>7 814.00</b>	<b>197 477.00</b>	<b>3 575 833.71</b>	<b>194 584.00</b>	<b>3 468 190.38</b>
Argentina	608.00	193 747.00	657.00	188 729.00	..	..	..	..	..	..	..	..
Chinese Taipei	..	..	13 569.00	766 384.83	..	..	253.00	171.57	..	..	13 316.00	766 213.26
Russian Federation	..	..	..	..	..	..	..	..	..	..	..	..
Thailand	16 432.00	487 716.53	13 627.00	441 171.00	..	..	..	..	16 432.00	487 717.00	13 627.00	441 171.00

..: Not available.

Source: OECD (2007a).

Table I.A1.3. **OECD total employment in fisheries, 2005**

	Harvest sector	Aquaculture	Processing	Total
Australia	14 729.00	3 533.00	4 666.00	22 928.00
Canada	..	..	..	0.00
European Union	178 180.00	38 858.00	42 435.00	259 473.00
Belgium	860.00	143.00	780.00	1 783.00
Czech Republic	..	1 679.00	140.00	1 819.00
Denmark	3 241.00	571.00	5 209.00	9 021.00
Finland	2 755.00	428.00	865.00	4 048.00
France	25 459.00	14 386.00	..	39 845.00
Germany	2 184.00	..	8 539.00	10 723.00
Greece	30 502.00	5 860.00	2 800.00	39 162.00
Ireland	5 037.00	1 936.00	3 507.00	10 480.00
Italy	32 174.00	..	..	32 174.00
Netherlands	..	85.00	6 495.00	6 580.00
Poland	4 940.00	5 000.00	14 100.00	24 040.00
Portugal	19 770.00	..	..	19 770.00
Slovak Republic	..	382.00	..	382.00
Spain	36 709.00	8 388.00	..	45 097.00
Sweden	1 902.00	..	..	1 902.00
United Kingdom	12 647.00	..	..	12 647.00
Iceland	4 450.00	156.00	6 400.00	11 006.00
Japan	222 510.00	..	..	222 510.00
Korea	97 584.00	41 631.00	..	139 215.00
Mexico	..	..	..	0.00
New Zealand	1 416.00	648.00	6 653.00	8 717.00
Norway	14 785.00	4 146.00	..	18 931.00
Turkey	98 787.00	5 914.00	4 990.00	109 691.00
United States	..	..	..	0.00
<b>OECD total</b>	<b>632 441.00</b>	<b>133 744.00</b>	<b>107 579.00</b>	<b>1 051 944.00</b>
Argentina	15 549.00	..	..	15 549.00
Chinese Taipei	246 380.00	105 123.00	..	351 503.00
Russian Federation	..	..	..	..
Thailand	..	..	..	0.00
<b>Total</b>	<b>894 370.00</b>	<b>238 867.00</b>	<b>107 579.00</b>	<b>1 418 996.00</b>

Note: Data are estimations.

..: Not available.

Source: OECD (2007a).

Table I.A1.4. **Government financial transfers to marine capture fisheries sector in OECD member countries, 2003**

	Direct payments (A)	Cost reducing transfers (B)	General services (C)	Total transfers (D)	Total landed value (TL)	(A + B)/TL	(A + B + C)/TL
	USD million					%	
Australia	..	64	32	96	1 073	6	9
Canada	258	34	266	558	1 857	16	30
European Union	458	350	459	1 267	8 370	10	15
Belgium	2	..	..	2	102	2	2
Czech Republic	..	..	..	..	..	..	..
Denmark	29	0	9	38	422	7	9
Finland	2	4	14	20	20	29	101
France	26	12	142	180	1 285	3	14
Germany	2	5	0	7	191	4	4
Greece	54	21	44	119	301	25	39
Ireland	6	..	59	65	224	3	29
Italy	127	0	22	149	1 657	8	9
Netherlands	4	0	2	7	654	1	1
Portugal	1	..	26	27	328	0	8
Spain	201	108	45	353	2 228	14	16
Sweden	3	2	25	31	108	5	28
United Kingdom	0	11	72	83	851	1	10
Iceland	0	16	32	48	895	2	5
Japan	18	26	2 267	2 311	9 428	0	25
Korea	18	60	417	495	4 017	2	12
Mexico	2	151	24	177	929	16	19
New Zealand <sup>2</sup>	0	0	38	38	152	0	25
Norway	4	13	123	139	1 256	1	11
Poland	..	..	..	..	57	0	0
Turkey	..	..	16	16	529	0	3
United States <sup>1</sup>	105	4	1 119	1 227	3 418	3	36
<b>OECD total</b>	<b>863</b>	<b>717</b>	<b>4 794</b>	<b>6 373</b>	<b>31 982</b>	<b>5</b>	<b>20</b>
Argentina	..	..	..	..	..	..	..
Chinese Taipei	19	3	14	36	1 941	1	2
Russian Federation	..	..	..	0	..	..	..
Thailand	..	..	..	..	957	..	..
<b>Total</b>	<b>882</b>	<b>719</b>	<b>4 808</b>	<b>6 409</b>	<b>34 880</b>	<b>..</b>	<b>..</b>

Note: 0 refers to data between 0 and 0.5.

..: Not available.

1. Includes an estimate of market price support (that is, transfers from consumers to producers).

2. Value of exports is used in place of value of landings.

Source: OECD (2007a).

Table I.A1.5. **Government financial transfers to marine capture fisheries sector in OECD member countries, 2004**

	Direct payments (A)	Cost reducing transfers (B)	General services (C)	Total transfers (D)	Total landed value (TL)	(A + B)/TL	(A + B + C)/TL
	USD million					%	
Australia	..	64	32	96	1 122	6	9
Canada	256	46	285	586	1 528	20	38
European Union	289	361	565	1 215	9 107	7	13
Belgium	6	..	..	6	102	6	6
Czech Republic	..	..	..	0	..	..	..
Denmark	11	0	17	29	450	3	6
Finland	..	4	15	19	18	23	105
France	62	10	165	237	1 306	6	18
Germany	2	4	0	6	206	3	3
Greece	30	24	41	95	363	15	26
Ireland	6	..	59	65	224	3	29
Italy	105	0	65	170	1 714	6	10
Netherlands	1	0	5	5	654	0	1
Portugal	1	..	26	27	328	0	8
Spain	63	131	62	257	2 692	7	10
Sweden	..	3	31	34	110	3	31
United Kingdom	0	8	80	87	940	1	9
Iceland	0	18	38	56	994	2	6
Japan	18	13	2 407	2 438	10 332	0	24
Korea	18	60	417	495	3 591	2	14
Mexico <sup>2</sup>	2	80	32	114	875	9	13
New Zealand <sup>3</sup>	0	0	50	50	191	0	26
Norway	4	13	125	142	1 545	1	9
Poland	..	..	..	0	57	0	0
Turkey	..	..	60	60	682	0	9
United States <sup>1</sup>	41	3	1 021	1 064	3 418	1	31
<b>OECD total</b>	<b>628</b>	<b>658</b>	<b>5 031</b>	<b>6 316</b>	<b>33 641</b>	<b>4</b>	<b>19</b>
Argentina	..	..	..	..	..	..	..
Chinese Taipei	8	3	13	24	1 985	1	1
Russian Federation	..	..	..	..	..	..	..
Thailand	..	..	..	..	..	..	..
<b>Total</b>	<b>636</b>	<b>660</b>	<b>5 044</b>	<b>6 340</b>	<b>35 626</b>	<b>..</b>	<b>..</b>

Note: 0 refers to data between 0 and 0.5.

..: Not available.

1. Includes an estimate of market price support (that is, transfers from consumers to producers).

2. OECD estimate.

3. Value of exports is used in place of value of landings.

Source: OECD (2007a).

Table I.A1.6. **Government financial transfers to marine capture fisheries sector in OECD member countries, 2005**

	Direct payments (A)	Cost reducing transfers (B)	General services (C)	Total transfers (D)	Total landed value (TL)	(A + B)/TL	(A + B + C)/TL
	USD million					%	
Australia	..	..	46	46	1 150	0	4
Canada	236	34	321	591	1 568	17	38
European Union	203	335	441	979	7 744	7	13
Belgium	1	0	0	1	107	1	1
Czech Republic	..	..	..	0	..	..	..
Denmark	3	0	55	58	485	1	12
Finland	2	5	18	25	17	41	146
France	21	5	100	126	1 279	2	10
Germany	3	1	0	4	253	2	2
Greece	19	28	14	61	391	12	16
Ireland	..	..	..	0	207	..	..
Italy	65	0	54	119	1 726	4	7
Netherlands	9	0	5	14	..	..	..
Portugal	1	0	32	33	233	1	14
Spain	77	106	56	238	1 914	10	12
Sweden	3	5	28	37	117	7	31
United Kingdom	0	10	80	90	1 015	1	9
Iceland	0	20	44	64	1 080	2	6
Japan	15	11	2 140	2 165	9 623	0	23
Korea	43	57	549	649	3 770	3	17
Mexico <sup>2</sup>	2	80	32	114	562	15	20
New Zealand <sup>3</sup>	0	0	37	37	144	0	26
Norway	4	6	139	150	1 814	1	8
Poland	..	..	..	..	61	0	0
Turkey	..	..	98	98	1 091	0	9
United States <sup>1</sup>	93	3	1 127	1 223	3 530	3	35
<b>OECD total</b>	<b>596</b>	<b>545</b>	<b>4 975</b>	<b>6 116</b>	<b>32 138</b>	<b>4</b>	<b>19</b>
Argentina	..	..	..	0	..	..	..
Chinese Taipei	10 969	2 783	31 806	45 558	1 970	698	2 313
Russian Federation	..	..	..	0	..	..	..
Thailand	..	..	..	0	..	..	..
<b>Total</b>	<b>11 565</b>	<b>3 328</b>	<b>36 781</b>	<b>51 675</b>	<b>34 108</b>	<b>44</b>	<b>152</b>

Note: 0 refers to data between 0 and 0.5.

..: Not available.

1. Includes an estimate of market price support (that is, transfers from consumers to producers).

2. OECD estimate.

3. Value of exports is used in place of value of landings.

Source: OECD (2007a).



Table I.A1.7. **Captured fish production in OECD countries, 2003-05**

	2003			2004			2005		
	Total <sup>1</sup>	Total value	Unit value	Total <sup>1</sup>	Total value	Unit value	Total <sup>1</sup>	Total value	Unit value
	000 tonnes	USD million	USD/kg	000 tonnes	USD million	USD/kg	000 tonnes	USD million	USD/kg
Australia	215	1 095	5.10	231	1 117	4.85	237	1 150	4.86
Canada	1 088	1 588	1.46	1 452	1 673	1.15	1 020	1 568	1.54
European Union	4 845	7 954	1.64	4 918	7 795	1.58	4 710	7 744	1.64
Belgium	24	102	4.30	24	107	4.52	22	107	4.98
Czech Republic	..	..	..	..	..	..	..	..	..
Denmark	1 028	418	0.41	1 090	450	0.41	913	485	0.53
Finland	76	19	0.25	89	18	0.21	77	17	0.22
France	695	1 282	1.85	663	1 307	1.97	606	1 279	2.11
Germany	222	190	0.86	223	206	0.92	246	253	1.03
Greece	90	309	3.45	91	363	3.98	90	391	4.32
Ireland	195	200	1.03	306	178	0.58	282	207	0.73
Italy	312	1 647	5.28	288	1 714	5.95	268	1 726	6.43
Netherlands	391	525	1.34	379	..	..	413	..	..
Portugal	182	326	1.79	163	259	1.59	157	233	1.49
Spain	774	1 962	2.53	687	2 143	3.12	717	1 914	2.67
Sweden	281	108	0.38	262	110	0.42	248	117	0.47
United Kingdom	575	866	1.51	654	940	1.44	670	1 015	1.51
Iceland	1 981	899	0.45	1 730	994	0.57	1 669	1 080	0.65
Japan	4 743	9 432	1.99	4 515	10 332	2.29	4 466	9 623	2.15
Korea	1 831	4 015	2.19	1 752	3 272	1.87	1 829	3 770	2.06
Mexico	1 303	929	0.71	2 417	885	0.37	1 520	562	0.37
New Zealand <sup>2</sup>	576	702	1.22	521	843	1.62	485	888	1.83
Norway	2 702	1 259	0.47	2 671	1 545	0.58	2 546	1 814	0.71
Poland	160	57	0.36	174	64	0.37	136	61	0.45
Turkey	463	530	1.14	505	717	1.42	380	1 091	2.87
United States	4 402	4 388	1.00	4 492	3 786	0.84	3 641	3 530	0.97
<b>OECD total</b>	<b>24 307</b>	<b>32 847</b>	<b>1.35</b>	<b>25 378</b>	<b>33 025</b>	<b>1.30</b>	<b>22 639</b>	<b>32 880</b>	<b>1.45</b>
Argentina	839	..	..	873	..	..	862	..	..
Chinese Taipei	1 141	1 942	1.70	938	1 985	2.12	1 011	1 970	1.95
Russian Federation	3 235	..	..	2 963	..	..	..	..	..
Thailand	1 952	957	0.49	1 844	1 023	0.55	1 809	1 000	..
<b>Total</b>	<b>31 474</b>	<b>35 747</b>	<b>1.14</b>	<b>31 996</b>	<b>36 033</b>	<b>1.13</b>	<b>26 320</b>	<b>35 851</b>	<b>1.36</b>

.. : Not available.

1. Total national landings, including fish, crustaceans, molluscs and algae.

2. Total export value as data on value of production are not collected.

Source: OECD (2007a).

Table I.A1.8. **OECD aquaculture production, 2003-05**

	Total aquaculture (volume '000 tonnes)			Total aquaculture (value USD million)			Total aquaculture (value USD/kg)		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
Australia	44	51	48	458	525	470	10.32	10.31	9.83
Canada	157	145	155	448	398	591	2.85	2.74	3.81
European Union	1 271	1 396	1 277	2 448	2 949	2 291	1.93	2.11	1.79
Belgium-Luxemburg	..	..	..	..	..	..	..	..	..
Czech Republic	20	19	20	39	34	38	1.96	1.73	1.87
Denmark	38	43	39	103	132	128	2.73	3.07	3.27
Finland	13	13	14	40	47	55	3.21	3.64	3.82
France	240	244	244	580	660	..	2.42	2.71	..
Germany	64	57	46	192	216	217	2.98	3.81	4.73
Greece	102	98	110	359	391	454	3.52	3.99	4.14
Ireland	63	59	63	112	121	135	1.79	2.06	2.14
Italy	192	233	234	515	689	698	2.69	2.96	2.98
Netherlands	..	52	68	..	..	..	..	..	..
Portugal	8	7	7	50	47	43	6.28	7.01	6.07
Slovak Republic	1	1	1	..	..	..	..	..	..
Spain	313	362	273	440	593	502	1.40	1.64	1.84
Sweden	7	7	7	19	20	21	2.61	2.89	3.11
United Kingdom	212	202	152	..	..	..	..	..	..
Iceland	6	8	8	..	..	..	..	..	..
Japan	1 306	1 261	1 257	3 901	4 146	4 102	2.99	3.29	3.26
Korea	844	938	1 057	1 072	1 191	1 437	1.27	1.27	1.36
Mexico	70	80	80	274	271	..	3.93	3.38	..
New Zealand	87	94	105	152	191	176	1.76	2.03	1.67
Norway	584	637	657	1 358	1 680	2 072	2.32	2.64	3.16
Poland	32	35	36	70	79	85	2.18	2.25	2.34
Turkey	79	94	118	277	0	511	3.50	0.00	4.33
United States	420	408	358	961	1 065	1 092	2.29	2.61	3.05
<b>OECD total</b>	<b>4 901</b>	<b>5 147</b>	<b>5 157</b>	<b>11 420</b>	<b>12 496</b>	<b>12 827</b>	<b>2.33</b>	<b>2.43</b>	<b>2.49</b>
Argentina	2	2	2	..	..	..	..	..	..
Chinese Taipei	359	322	303	1 102	1 184	0	3.07	3.68	0.00
Russian Federation	267	278	..	..	..	..	..	..	..
Thailand	1 064	1 260	1 304	1 463	1 705	1 740	1.37	1.35	1.33
<b>Total</b>	<b>6 592</b>	<b>7 008</b>	<b>6 766</b>	<b>13 986</b>	<b>15 385</b>	<b>14 567</b>	<b>2.12</b>	<b>2.20</b>	<b>2.15</b>

.. : Not available.

Source: OECD (2007a).

Table I.A1.9. **OECD imports of food fish by major product groups and major world regions, 2004**  
Tonnes

	All fish	%	Fish, fresh, frozen, incl. fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Importers</b>										
EU	4 477 895 430	67	2 839 169 393	65	231 826 500	85	741 550 060	67	665 349 477	76
Japan	888 270 906	13	759 068 639	17	11 986 924	4	85 477 048	8	31 738 295	4
United States	529 005 810	8	266 293 676	6	16 574 196	6	168 507 110	15	77 630 828	9
<b>OECD total</b>	<b>6 643 271 254</b>	<b>100</b>	<b>4 377 424 673</b>	<b>100</b>	<b>274 121 137</b>	<b>100</b>	<b>1 110 781 961</b>	<b>100</b>	<b>880 943 483</b>	<b>100</b>
<b>Origins</b>										
OECD	6 643 271 254	46	53 735 490	50	16 589 754	40	68 432 353	62	9 075 730	71
Non-OECD <sup>1</sup>	7 821 845 241	54	52 814 577	50	24 471 293	60	42 795 417	38	3 717 101	29
Africa	912 165 740	12	187 304 289	355	39 401 037	161	164 964 645	385	31 586 074	850
America	1 654 267 578	21	22 446 210	43	124 252	1	10 854 822	25	438 521	12
Asia	4 259 333 361	54	70 350 945	133	34 160 123	140	20 273 024	47	16 674 985	449
Europe	860 398 652	11	9 208 011	17	325 318	1	9 887 846	23	2 485 334	67
Oceania	91 843 413	1	272 844 061	517	10 943 021	45	98 907 601	231	14 405 880	388

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.

1. 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.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.10. **OECD exports of food fish by major product groups and major world regions, 2004**  
Tonnes

	All fish	%	Fish, fresh, frozen, incl. fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Exporters</b>										
EU	3 414 242 167	49	1 959 650 647	44	132 053 859	42	675 495 173	57	647 042 488	69
Japan	138 345 553	2	110 306 191	2	335 899	0	20 269 071	2	7 434 392	1
United States	1 010 570 592	15	817 544 520	18	24 851 053	8	74 806 363	6	93 368 656	10
<b>OECD total</b>	<b>6 923 686 600</b>	<b>100</b>	<b>4 499 695 241</b>	<b>100</b>	<b>311 924 646</b>	<b>100</b>	<b>1 177 596 784</b>	<b>100</b>	<b>934 469 928</b>	<b>100</b>
<b>Destinations</b>										
OECD	6 923 686 600	69	4 499 695 241	63	311 924 646	75	1 177 596 784	80	934 469 928	91
Non-OECD <sup>1</sup>	3 105 819 582	31	2 618 425 088	37	102 812 716	25	289 208 653	20	95 373 125	9
Africa	769 942 821	25	690 768 116	26	27 847 318	27	31 139 603	11	20 187 784	21
America	137 493 831	4	60 912 259	2	55 809 463	54	10 128 537	4	10 643 571	11
Asia	1 095 776 076	35	861 730 231	33	13 814 179	13	190 810 912	66	29 420 754	31
Europe	1 018 247 062	33	935 995 097	36	2 455 186	2	54 058 197	19	25 738 582	27
Oceania	38 294 327	1	33 415 923	1	101 136	0	1 786 432	1	2 990 836	3

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.

1. 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 origins.

Source: OECD, *International Trade Statistics Directorate*, 2006.

Table I.A1.11. **Imports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2004**  
Importing country (USD million)

	Australia	Canada	Czech Republic	Hungary	Iceland	Japan	Korea	Mexico	New Zealand	Norway	Poland	Slovak Republic	Switzerland	Turkey	United States	Total EU
<b>Origin</b>																
Australia	2	3	0	0	0	343	0	0	9	0	0	0	1	0	96	<b>44</b>
Canada	15	14	1	0	12	500	46	12	6	29	2	0	10	0	2 148	<b>443</b>
Czech Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>3</b>
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>6</b>
Iceland	1	14	0	0	0	114	5	1	0	65	39	0	5	1	181	<b>1 126</b>
Japan	12	13	0	0	0	0	154	2	3	1	0	0	1	0	165	<b>21</b>
Korea	7	7	0	0	0	733	0	3	2	1	0	0	0	0	78	<b>93</b>
Mexico	0	4	0	0	0	87	10	0	0	0	0	0	0	0	459	<b>35</b>
New Zealand	117	10	1	0	0	107	11	0	1	1	2	0	5	0	154	<b>168</b>
Norway	9	23	6	1	33	513	35	8	0	0	146	0	30	25	133	<b>2 263</b>
Poland	1	1	15	9	1	3	0	0	0	2	0	0	6	0	19	<b>235</b>
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Switzerland	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	<b>3</b>
Turkey	0	1	1	0	0	62	8	0	0	0	1	0	2	0	6	<b>148</b>
United States	21	637	3	0	1	1 348	131	69	3	64	18	0	10	1	0	<b>724</b>
European Union	32	29	37	37	10	359	71	10	1	245	141	0	255	16	213	<b>11 404</b>
Austria	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	<b>15</b>
Belgium	0	0	1	0	0	0	0	0	0	0	0	0	5	0	2	<b>466</b>
Denmark	14	1	10	5	6	72	5	0	0	112	33	0	54	0	13	<b>1 977</b>
Finland	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	<b>6</b>
France	0	2	2	4	2	23	6	1	0	7	3	0	51	1	17	<b>1 201</b>
Germany	2	1	8	16	1	7	1	0	0	7	21	0	37	1	5	<b>1 050</b>
Greece	1	1	0	0	0	2	0	0	0	0	0	0	2	0	8	<b>348</b>
Ireland	1	1	4	0	0	19	14	0	0	20	18	0	5	0	6	<b>403</b>
Italy	5	3	4	3	0	17	4	0	0	1	1	0	26	0	8	<b>402</b>
Luxemburg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>15</b>
Netherlands	2	3	4	2	0	37	8	0	0	6	27	0	26	4	26	<b>1 684</b>
Portugal	1	5	0	0	0	1	1	0	0	1	0	0	5	0	9	<b>368</b>
Spain	1	3	4	4	1	160	7	8	0	1	13	0	17	8	42	<b>1 692</b>
Sweden	1	1	0	0	0	0	0	0	0	29	11	0	4	0	2	<b>489</b>
United Kingdom	5	9	0	0	1	19	26	0	0	59	13	0	21	1	75	<b>1 288</b>
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Non-OECD America	35	148	11	7	9	1 368	89	96	5	68	37	0	9	33	2 536	<b>3 056</b>
Non-OECD Asia	402	575	25	4	2	6 993	1 168	89	39	26	72	0	78	2	5 264	<b>2 677</b>
Non-OECD Oceania	10	4	0	0	0	137	1	4	3	0	0	0	0	0	101	<b>56</b>
World	707	1 528	110	63	98	14 259	2 047	304	72	666	499	0	437	90	11 948	<b>26 966</b>

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.11. Imports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2004 (cont.)

Importing country (USD million)

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom	Total OECD
<b>Origin</b>																
Australia	0	1	0	0	12	1	6	0	2	0	0	0	18	0	4	499
Canada	1	35	100	3	64	35	3	2	20	0	7	2	36	24	113	3 240
Czech Republic	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	4
Hungary	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	6
Iceland	0	69	80	10	122	85	8	3	0	0	18	48	186	13	483	1 550
Japan	0	1	0	0	5	4	0	0	1	0	3	0	5	0	3	373
Korea	0	4	0	0	3	5	3	0	18	0	0	1	54	1	3	924
Mexico	0	0	0	0	1	0	0	0	21	0	0	0	13	0	0	596
New Zealand	1	6	8	0	23	16	8	1	12	0	2	2	75	4	12	576
Norway	5	1	309	83	330	284	1	0	3	0	26	56	71	913	182	3 225
Poland	0	7	25	0	22	157	0	0	1	0	6	0	1	6	9	291
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5
Turkey	0	4	0	0	20	5	25	0	55	0	14	0	18	4	1	229
United States	0	20	28	0	166	155	3	2	56	0	38	42	85	10	120	3 033
European Union	196	830	358	72	1 750	942	246	114	2 374	75	777	858	1 860	255	698	12 859
Austria	0	0	0	0	1	1	0	0	11	0	0	0	0	0	0	16
Belgium	2	0	11	0	108	42	7	1	29	28	165	7	49	2	14	474
Denmark	26	93	0	23	226	367	49	5	376	2	117	79	178	165	271	2 303
Finland	1	0	1	0	0	0	0	0	0	0	0	0	0	4	0	9
France	7	148	17	3	7	78	10	1	311	23	43	55	421	14	63	1 318
Germany	116	78	83	8	130	0	29	5	123	5	280	18	43	27	105	1 158
Greece	2	2	0	0	46	11	0	0	167	0	4	9	87	0	19	363
Ireland	1	5	9	1	124	23	1	5	29	0	15	1	102	4	81	491
Italy	12	15	10	0	57	38	39	0	0	1	13	6	201	0	10	473
Luxemburg	0	6	1	0	4	1	0	0	0	0	2	0	0	0	0	15
Netherlands	19	369	49	2	247	239	49	2	319	10	0	72	208	29	70	1 829
Portugal	5	4	6	0	48	2	1	0	60	3	3	0	222	1	15	392
Spain	2	17	14	3	281	57	38	0	723	1	12	500	0	4	40	1 961
Sweden	1	25	115	30	38	17	12	1	102	0	15	90	34	0	8	539
United Kingdom	2	67	40	1	433	66	9	93	125	2	110	21	315	4	1	1 517
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-OECD America	2	75	352	1	472	276	17	2	414	1	43	26	1 228	4	142	7 506
Non-OECD Asia	18	307	63	19	313	423	47	5	326	2	172	30	376	49	527	17 418
Non-OECD Oceania	0	1	0	0	15	28	0	0	5	0	0	0	0	0	5	315
World	238	1 495	1 584	198	4 166	2 709	469	130	3 871	79	1 277	1 253	5 367	1 297	2 834	59 795

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.12. **Exports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2004**

Exporting country (USD million)

	Australia	Canada	Czech Republic	Hungary	Iceland	Japan	Korea	Mexico	New Zealand	Norway	Poland	Slovak Republic	Switzerland	Turkey	United States	Total EU
<b>Destination</b>																
Australia	0	9	0	0	1	8	6	0	129	5	2	0	0	0	26	<b>37</b>
Canada	2	0	0	0	13	11	5	1	9	24	1	0	0	1	768	<b>27</b>
Czech Republic	0	0	0	0	0	0	0	0	0	4	17	2	0	1	0	<b>40</b>
Hungary	0	0	0	0	0	0	0	0	0	1	8	2	0	0	0	<b>28</b>
Iceland	0	20	0	0	0	0	0	0	0	14	0	0	0	0	1	<b>10</b>
Japan	296	383	0	0	75	0	734	56	111	388	13	0	0	49	1 093	<b>380</b>
Korea	0	36	0	0	4	159	0	7	25	29	0	0	0	5	346	<b>55</b>
Mexico	0	0	0	0	0	0	1	0	0	7	0	0	0	0	94	<b>9</b>
New Zealand	15	5	0	0	0	26	44	0	0	0	0	0	0	0	3	<b>1</b>
Norway	0	19	0	0	63	1	1	0	1	0	2	0	0	0	36	<b>199</b>
Poland	0	1	0	0	32	0	0	0	1	141	0	0	0	0	5	<b>182</b>
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Switzerland	1	7	0	0	4	1	0	0	2	28	5	0	0	1	8	<b>227</b>
Turkey	0	0	0	0	1	0	0	0	0	22	0	0	0	0	1	<b>16</b>
United States	99	2 204	0	0	177	150	69	487	137	129	19	0	0	4	0	<b>176</b>
European Union	49	370	4	5	1 221	14	61	36	159	2 256	363	1	4	138	785	<b>12 223</b>
Austria	0	0	1	0	0	0	0	0	0	3	0	0	0	1	0	<b>218</b>
Belgium	0	27	0	0	49	0	0	0	7	0	7	0	0	4	21	<b>774</b>
Denmark	1	83	0	0	90	0	0	0	1	419	23	0	0	0	12	<b>279</b>
Finland	0	2	0	0	9	0	0	0	0	84	0	0	0	0	0	<b>92</b>
France	11	49	2	3	103	3	2	2	17	372	26	0	1	17	126	<b>2 290</b>
Germany	2	35	1	1	90	2	2	0	25	213	244	1	2	3	189	<b>1 450</b>
Greece	9	3	0	0	32	0	2	0	9	29	0	0	0	23	3	<b>225</b>
Ireland	0	2	0	0	1	0	0	0	1	1	0	0	0	0	1	<b>165</b>
Italy	1	13	0	0	27	0	14	19	11	179	1	0	0	49	57	<b>2 324</b>
Luxemburg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>73</b>
Netherlands	0	13	0	0	79	5	1	1	6	118	15	0	0	13	126	<b>808</b>
Portugal	0	3	0	0	93	0	1	0	2	251	0	0	0	0	37	<b>831</b>
Spain	20	26	0	0	175	3	36	14	66	139	1	0	0	23	99	<b>1 665</b>
Sweden	0	20	0	0	12	0	1	0	4	217	8	0	0	4	5	<b>266</b>
United Kingdom	3	93	0	0	460	1	2	0	11	233	38	0	1	1	108	<b>763</b>
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Non-OECD America	0	30	0	0	1	8	5	2	0	146	0	0	0	5	64	<b>84</b>
Non-OECD Asia	421	370	0	0	33	560	198	42	223	228	1	0	2	1	498	<b>428</b>
Non-OECD Oceania	3	0	0	0	0	65	1	0	11	0	0	0	0	0	2	<b>5</b>
World	889	3 489	16	7	1 743	1 045	1 143	632	835	4 138	463	5	8	214	3 840	<b>15 308</b>

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.12. Exports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2004 (cont.)

Exporting country (USD million)

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom	Total OECD
<b>Destination</b>																
Australia	0	0	15	0	0	3	1	1	4	0	3	1	2	1	7	224
Canada	0	0	1	0	1	0	1	0	3	0	4	5	3	1	9	862
Czech Republic	0	1	10	0	2	14	0	3	4	0	2	0	3	1	0	65
Hungary	0	0	5	0	3	12	0	0	2	0	0	0	3	0	0	40
Iceland	0	0	4	0	1	0	0	0	0	0	1	0	1	0	2	46
Japan	0	0	75	2	22	4	2	19	13	0	36	2	189	0	16	3 580
Korea	0	0	7	0	2	1	0	7	0	0	13	0	2	0	22	667
Mexico	0	0	0	0	1	0	0	0	0	0	0	0	8	0	0	113
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94
Norway	0	1	133	0	5	17	0	0	0	0	8	1	0	19	15	321
Poland	0	1	39	0	3	36	0	13	0	0	16	0	6	57	11	363
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	3	55	0	35	38	2	2	23	0	49	4	11	3	2	286
Turkey	0	0	1	0	2	2	3	0	0	0	3	0	5	0	0	41
United States	0	2	12	0	16	5	6	5	6	0	18	8	36	2	61	3 653
European Union	3	842	2 070	3	1 151	1 060	376	364	387	19	1 601	368	1 877	814	1 290	17 688
Austria	0	3	34	0	8	127	2	0	15	0	17	5	2	4	2	224
Belgium	0	0	67	0	141	79	2	4	13	5	351	4	18	30	60	889
Denmark	0	14	0	0	17	49	0	7	1	0	29	3	13	116	29	909
Finland	0	1	26	0	3	7	0	1	0	0	4	0	3	48	0	189
France	0	293	262	0	0	243	40	107	52	7	275	57	323	178	453	3 024
Germany	3	91	568	0	123	0	15	36	58	2	300	4	73	80	98	2 258
Greece	0	3	54	0	10	25	0	1	40	0	13	2	52	15	10	335
Ireland	0	0	4	0	3	7	1	0	0	0	4	0	1	1	143	171
Italy	0	40	338	0	316	118	176	26	0	1	280	52	739	109	129	2 694
Luxemburg	0	32	2	0	22	3	0	0	1	0	7	3	0	1	1	73
Netherlands	0	252	166	0	27	201	14	15	8	2	0	4	15	36	68	1 185
Portugal	0	7	9	0	50	27	13	2	3	0	32	0	587	77	24	1 218
Spain	0	76	139	0	335	59	80	73	189	0	176	206	0	69	263	2 270
Sweden	0	4	173	3	15	21	0	4	0	0	29	1	7	0	9	537
United Kingdom	0	26	227	0	81	94	34	86	7	2	84	27	46	50	0	1 713
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-OECD America	0	0	5	0	10	2	0	1	4	0	4	14	42	0	3	347
Non-OECD Asia	0	1	126	0	32	12	1	8	3	0	74	4	113	1	54	3 006
Non-OECD Oceania	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	88
World	5	866	2 702	13	1 420	1 280	412	468	513	19	2 106	421	2 544	913	1 626	33 775

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.13. **OECD imports of food fish by major product groups and major world regions, 2005**  
Tonnes

	All fish	%	Fish, fresh, frozen, incl. fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Importers</b>										
EU	4 412 804 944	68	2 802 419 036	59	230 624 544	84	687 593 506	67	692 167 858	75
Japan	1 409 300 795	22	1 247 915 690	26	15 910 706	6	102 325 093	10	43 149 306	5
United States	513 434 824	8	302 969 633	6	11 275 664	4	123 103 208	12	76 086 319	8
<b>OECD total</b>	<b>6 490 953 562</b>	<b>100</b>	<b>4 750 389 599</b>	<b>100</b>	<b>275 975 552</b>	<b>100</b>	<b>1 020 066 724</b>	<b>100</b>	<b>919 139 065</b>	<b>100</b>
<b>Origins</b>										
OECD	147 833 327	54	53 735 490	50	16 589 754	40	68 432 353	62	9 075 730	71
Non-OECD <sup>1</sup>	123 798 388	46	52 814 577	50	24 471 293	60	42 795 417	38	3 717 101	29
Africa	423 256 045	342	187 304 289	355	39 401 037	161	164 964 645	385	31 586 074	850
America	33 863 804	27	22 446 210	43	124 252	1	10 854 822	25	438 521	12
Asia	141 459 077	114	70 350 945	133	34 160 123	140	20 273 024	47	16 674 985	449
Europe	21 906 509	18	9 208 011	17	325 318	1	9 887 846	23	2 485 334	67
Oceania	397 100 562	321	272 844 061	517	10 943 021	45	98 907 601	231	14 405 880	388

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.

1. 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 I.A1.14. **OECD exports of food fish by major product groups and major world regions, 2005**

	All fish	%	Fish, fresh, frozen, incl. fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Exporters</b>										
EU	3 389 950 252	51	245 970 483	6	8 816 946	3	98 366 355	9	22 587 616	2
Japan	100 291 348	1	64 627 330	1	834 448	0	14 824 312	1	20 005 257	2
United States	867 311 258	13	720 124 131	16	6 205 911	2	67 622 076	6	73 359 140	8
<b>OECD total</b>	<b>6 700 078 028</b>	<b>100</b>	<b>4 421 657 414</b>	<b>100</b>	<b>296 424 585</b>	<b>100</b>	<b>1 072 180 255</b>	<b>100</b>	<b>909 815 773</b>	<b>100</b>
<b>Destinations</b>										
OECD	6 700 078 028	68	4 421 657 414	63	296 424 585	74	1 072 180 255	77	909 815 773	86
Non-OECD <sup>1</sup>	3 163 136 885	32	2 595 121 254	37	101 850 351	26	314 715 898	23	151 449 382	14
Africa	653 691 443	21	592 483 162	23	30 803 534	30	17 393 703	6	13 011 044	9
America	150 791 216	5	76 692 538	3	58 518 254	57	7 858 459	2	7 721 964	5
Asia	1 180 854 636	37	854 094 424	33	8 621 707	8	223 225 885	71	94 912 620	63
Europe	1 135 766 515	36	1 040 942 367	40	2 617 102	3	63 986 733	20	28 220 312	19
Oceania	20 055 916	1	16 114 994	1	126 158	0	1 545 468	0	2 269 296	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.

1. 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 origins.



Table I.A1.15. **Imports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2005**  
Importing country (USD million)

	Australia	Canada	Czech Republic	Hungary	Iceland	Japan	Korea	Mexico	New Zealand	Norway	Poland	Slovak Republic	Switzerland	Turkey	United States	Total EU
<b>Origin</b>																
Australia	5	2	0	0	0	327	1	0	8	0	0	0	2	0	108	<b>54</b>
Canada	20	10	1	0	11	494	41	11	7	12	1	0	9	0	2 180	<b>487</b>
Czech Republic	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	<b>4</b>
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>7</b>
Iceland	1	13	0	0	0	123	7	1	0	57	29	0	5	2	161	<b>1 169</b>
Japan	9	15	0	0	0	0	146	2	2	1	0	0	4	0	205	<b>29</b>
Korea	5	5	0	0	1	627	0	6	2	3	0	0	0	0	81	<b>82</b>
Mexico	0	4	0	0	0	84	7	0	0	0	0	0	0	0	471	<b>46</b>
New Zealand	124	11	0	0	0	103	17	1	1	1	1	0	5	1	154	<b>176</b>
Norway	11	27	6	0	25	497	29	10	0	0	221	0	36	27	130	<b>2 789</b>
Poland	3	2	19	7	0	3	0	0	0	3	0	0	7	0	17	<b>336</b>
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Switzerland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>4</b>
Turkey	0	3	1	1	0	65	10	0	0	0	3	0	1	0	6	<b>170</b>
United States	21	670	5	0	1	1 408	147	66	3	42	16	0	13	1	0	<b>813</b>
European Union	34	39	49	29	8	407	79	13	1	404	185	0	264	10	220	<b>11 789</b>
Austria	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	<b>4</b>
Belgium	0	0	1	0	0	0	0	0	0	34	1	0	5	0	1	<b>456</b>
Denmark	14	5	12	5	5	72	7	0	0	158	55	0	58	1	16	<b>2 072</b>
Finland	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	<b>5</b>
France	0	2	4	5	1	38	6	2	0	7	5	0	50	1	23	<b>1 203</b>
Germany	2	2	12	12	1	18	0	0	0	73	34	0	40	0	5	<b>1 183</b>
Greece	1	2	0	0	0	10	0	0	0	0	0	0	2	0	8	<b>359</b>
Ireland	1	1	4	0	0	14	13	0	0	24	10	0	4	0	7	<b>394</b>
Italy	5	5	5	0	0	31	5	0	0	1	0	0	27	0	8	<b>220</b>
Luxemburg	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	<b>15</b>
Netherlands	2	3	5	2	0	27	5	0	0	29	35	0	29	1	32	<b>1 790</b>
Portugal	2	6	0	0	0	3	2	0	0	1	0	0	5	0	9	<b>388</b>
Spain	1	5	5	3	1	167	10	10	0	0	12	0	18	5	46	<b>1 807</b>
Sweden	1	1	1	1	0	0	0	0	0	31	18	0	3	0	2	<b>476</b>
United Kingdom	5	8	1	0	0	26	30	0	0	47	16	0	22	1	61	<b>1 418</b>
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Non-OECD America	37	146	12	6	7	1 300	110	109	5	34	52	0	7	23	2 666	<b>3 550</b>
Non-OECD Asia	459	663	26	3	1	6 822	1 269	129	51	23	109	0	87	6	5 761	<b>3 417</b>
Non-OECD Oceania	9	4	0	0	0	112	1	0	2	0	0	0	0	0	101	<b>78</b>
World	789	1 650	134	71	87	14 083	2 192	359	86	700	685	0	466	85	12 750	<b>29 822</b>

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.15. **Imports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2005 (cont.)**  
 Importing country (USD million)

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom	Total OECD
<b>Origin</b>																
Australia	0	0	0	0	18	1	4	0	6	0	0	0	18	0	4	<b>508</b>
Canada	1	46	103	3	77	32	3	2	23	0	14	9	37	14	120	<b>3 284</b>
Czech Republic	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	<b>6</b>
Hungary	0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	<b>7</b>
Iceland	1	87	76	10	118	87	12	6	0	0	29	37	193	14	499	<b>1 569</b>
Japan	0	0	0	0	10	4	0	0	1	0	6	0	5	0	3	<b>415</b>
Korea	0	3	0	0	3	2	0	0	19	0	1	1	48	1	3	<b>814</b>
Mexico	0	1	0	0	2	0	1	0	18	0	4	0	21	0	0	<b>611</b>
New Zealand	1	6	11	0	22	16	16	1	12	0	2	3	68	3	14	<b>595</b>
Norway	8	0	331	81	432	347	19	0	1	0	25	53	94	1 179	217	<b>3 808</b>
Poland	1	7	33	0	27	245	0	0	5	0	5	0	1	4	9	<b>399</b>
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Switzerland	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	<b>6</b>
Turkey	1	3	1	0	22	7	25	0	62	0	18	1	26	4	1	<b>261</b>
United States	1	29	30	0	192	174	4	2	61	0	45	52	80	10	134	<b>3 207</b>
European Union	218	889	403	83	1 810	988	236	137	2 473	76	819	895	1 683	274	806	<b>13 532</b>
Austria	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	<b>6</b>
Belgium	1	0	12	0	114	38	7	1	36	29	125	6	66	3	17	<b>498</b>
Denmark	27	99	0	29	237	352	43	5	402	2	137	79	198	181	279	<b>2 480</b>
Finland	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	<b>8</b>
France	8	157	25	3	15	89	11	2	308	22	49	52	377	12	72	<b>1 347</b>
Germany	130	88	96	8	132	0	29	8	131	5	326	16	38	28	149	<b>1 383</b>
Greece	2	2	0	0	54	15	0	0	168	0	3	11	82	0	21	<b>382</b>
Ireland	1	5	9	0	122	21	2	7	30	0	15	1	106	5	71	<b>473</b>
Italy	15	15	12	0	65	42	39	0	0	1	13	7	0	0	12	<b>306</b>
Luxemburg	0	3	2	0	3	1	0	0	0	0	5	0	0	0	1	<b>16</b>
Netherlands	22	408	42	2	231	275	42	2	344	10	0	69	217	29	97	<b>1 959</b>
Portugal	4	4	4	0	45	2	1	1	58	4	1	0	239	1	23	<b>416</b>
Spain	2	18	12	4	298	54	38	0	767	0	12	549	0	4	47	<b>2 090</b>
Sweden	3	24	124	34	34	18	15	0	88	0	12	81	30	0	12	<b>534</b>
United Kingdom	2	66	64	1	456	81	9	110	142	2	120	24	329	6	6	<b>1 636</b>
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Non-OECD America	5	86	446	1	566	362	19	3	453	0	42	34	1 381	6	145	<b>8 063</b>
Non-OECD Asia	20	346	114	19	428	572	53	7	402	1	212	51	495	67	631	<b>18 828</b>
Non-OECD Oceania	0	1	2	0	14	27	0	0	11	0	3	0	1	6	13	<b>308</b>
World	267	1 641	1 776	209	4 556	3 155	523	163	4 178	78	1 389	1 325	5 760	1 589	3 212	<b>63 960</b>

Note: Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.16. **Exports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2005**

Exporting country (USD million)

	Australia	Canada	Czech Republic	Hungary	Iceland	Japan	Korea	Mexico	New Zealand	Norway	Poland	Slovak Republic	Switzerland	Turkey	United States	Total EU
<b>Destination</b>																
Australia	0	12	0	0	1	7	4	0	132	9	3	0	1	0	34	<b>36</b>
Canada	2	0	0	0	7	12	7	2	9	15	1	0	0	2	812	<b>25</b>
Czech Republic	0	1	0	0	0	0	0	0	0	3	19	2	0	1	0	<b>54</b>
Hungary	0	0	2	0	0	0	0	0	0	1	10	2	0	1	0	<b>31</b>
Iceland	0	8	0	0	0	0	0	0	0	23	0	0	0	0	2	<b>7</b>
Japan	291	390	0	0	85	0	622	44	96	408	5	0	0	58	1 136	<b>313</b>
Korea	1	28	0	0	5	145	0	4	29	24	0	0	0	6	400	<b>43</b>
Mexico	0	1	0	0	0	0	2	0	0	10	0	0	0	0	96	<b>13</b>
New Zealand	14	4	0	0	0	20	60	0	0	0	0	0	0	0	4	<b>1</b>
Norway	0	13	0	0	55	1	1	0	1	0	2	0	0	0	37	<b>243</b>
Poland	0	1	1	0	57	0	0	0	1	226	0	0	0	0	7	<b>358</b>
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Switzerland	0	6	0	0	6	3	0	0	2	0	6	0	0	0	9	<b>145</b>
Turkey	0	0	0	0	2	0	0	0	2	23	0	0	0	0	0	<b>17</b>
United States	86	2 220	0	0	161	198	72	498	139	119	16	0	0	4	0	<b>181</b>
European Union	49	383	5	8	1 231	19	54	19	177	2 434	506	1	4	97	880	<b>11 810</b>
Austria	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	<b>226</b>
Belgium	0	34	0	0	60	0	2	0	7	42	10	0	0	4	26	<b>804</b>
Denmark	0	85	0	0	80	0	0	0	2	459	65	0	0	3	17	<b>320</b>
Finland	0	3	0	0	7	0	0	0	0	83	1	0	0	0	1	<b>105</b>
France	17	52	3	5	94	8	2	2	16	477	28	0	0	19	136	<b>2 399</b>
Germany	1	30	2	0	94	0	1	0	30	205	317	1	2	5	211	<b>1 512</b>
Greece	7	4	0	0	21	0	1	0	16	34	0	0	0	23	5	<b>215</b>
Ireland	0	2	0	0	3	0	0	0	0	1	0	0	0	0	1	<b>236</b>
Italy	0	16	0	0	25	1	11	0	12	0	6	0	0	0	61	<b>1 339</b>
Luxemburg	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	<b>76</b>
Netherlands	1	21	1	1	96	6	1	1	5	140	17	0	0	17	159	<b>914</b>
Portugal	4	11	0	0	77	0	1	0	3	259	0	0	0	0	42	<b>870</b>
Spain	14	23	0	2	202	2	31	16	68	169	1	0	0	24	97	<b>1 687</b>
Sweden	0	12	0	0	11	0	1	0	3	243	14	0	0	2	8	<b>279</b>
United Kingdom	4	90	0	0	460	1	2	0	13	318	45	0	2	1	119	<b>827</b>
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Non-OECD America	0	43	0	0	2	16	3	5	0	173	1	0	0	5	62	<b>99</b>
Non-OECD Asia	453	414	0	0	38	723	198	52	244	273	3	0	3	2	586	<b>455</b>
Non-OECD Oceania	2	1	0	0	0	42	3	0	10	0	0	0	0	0	3	<b>6</b>
World	913	3 602	24	20	1 787	1 231	1 042	633	883	4 930	604	5	10	242	4 214	<b>16 307</b>

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

Table I.A1.16. Exports of fish, crustaceans, molluscs and products thereof by OECD countries according to origin,<sup>1</sup> 2005 (cont.)

Exporting country (USD million)

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	United Kingdom	Total OECD
<b>Destination</b>																
Australia	0	0	15	0	0	3	1	1	5	0	3	2	1	1	5	238
Canada	0	0	1	0	1	1	1	0	4	0	2	5	3	1	6	896
Czech Republic	1	1	12	0	3	16	0	3	4	0	6	0	4	3	1	80
Hungary	1	0	5	0	5	11	0	0	3	0	1	0	4	1	0	47
Iceland	0	0	3	0	1	1	0	0	0	0	1	0	0	0	1	41
Japan	0	0	66	2	23	5	9	18	24	0	30	1	121	0	13	3 449
Korea	0	0	8	0	3	0	0	2	1	0	6	1	2	0	20	684
Mexico	0	0	0	0	2	0	0	0	0	0	1	0	10	0	0	122
New Zealand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104
Norway	0	1	148	0	11	49	0	0	0	0	5	0	0	19	9	354
Poland	0	2	80	0	4	57	0	11	1	0	23	0	9	156	16	651
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	2	57	0	32	42	2	0	0	0	0	5	0	3	1	177
Turkey	0	0	2	0	3	1	4	0	0	0	2	0	5	0	0	45
United States	0	1	16	0	21	6	6	3	7	0	27	9	34	2	49	3 697
European Union	5	937	2 154	4	1 194	1 089	398	327	420	15	1 345	381	1 166	954	1 420	17 677
Austria	0	3	36	0	9	130	2	0	17	0	17	4	2	4	2	232
Belgium	0	0	71	0	159	77	3	4	11	4	365	4	15	25	66	991
Denmark	0	14	0	0	31	69	0	11	2	0	16	2	11	124	40	1 031
Finland	0	0	31	0	3	7	0	0	0	0	3	0	3	56	1	199
France	0	325	282	0	0	241	52	101	55	6	274	54	325	224	460	3 259
Germany	4	94	580	0	130	0	19	31	61	2	312	4	76	85	114	2 412
Greece	0	6	47	0	9	27	0	1	38	0	13	2	48	17	8	324
Ireland	0	1	5	0	8	10	1	0	0	0	4	1	1	1	205	244
Italy	1	31	350	0	347	121	195	0	0	0	0	51	0	95	149	1 471
Luxemburg	0	33	2	0	22	5	0	0	1	0	6	3	1	1	1	79
Netherlands	0	295	192	0	40	207	14	13	8	2	0	4	17	37	84	1 379
Portugal	0	9	7	0	44	17	15	2	2	0	35	0	613	108	20	1 267
Spain	0	89	148	0	295	42	72	81	216	0	175	227	0	74	266	2 336
Sweden	0	5	191	3	12	22	0	4	0	0	33	0	4	0	4	572
United Kingdom	0	33	213	0	86	114	25	79	8	1	92	25	48	103	0	1 881
Non-OECD Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-OECD America	0	1	6	0	21	1	0	1	1	0	5	21	40	0	4	409
Non-OECD Asia	0	0	160	0	18	10	0	7	5	0	67	5	106	1	75	3 442
Non-OECD Oceania	0	0	0	0	5	0	0	0	0	0	0	0	1	0	0	67
World	8	961	2 921	16	1 454	1 368	448	431	568	16	2 234	446	2 535	1 173	1 728	36 448

Note: 0 value less than 0.5 of unit of measure.

1. Comprises codes SH 0302-0307, 121220, 1504, 1604 1605 and 230120.

Source: OECD, *International Trade Statistics Database*, 2006.

## PART II

# Special Chapter on Foreign Investment Issues in the OECD Fisheries Sector

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## Executive Summary

This chapter examines the potential benefits from liberalising foreign direct investment in the fisheries sectors of OECD countries. Foreign direct investment (FDI) is defined as an activity in which an investor resident in one country obtains a lasting interest in, and an influence on the operation of, an entity in another country. The analysis reveals that there are significant restrictions on inward FDI to the fish harvesting sectors of most OECD countries. This stands in stark contrast to most other economic sectors in OECD countries where barriers to FDI have fallen significantly over the past few decades and where FDI restrictions are now generally low. In the meantime, restrictions on FDI to the fish processing sector are very low. The paper presents a cross-country comparison of FDI restrictiveness in the sector using an index of restrictiveness based on the type and degree of restrictions in place in each country.

FDI is an important driver of economic growth as the internationalisation of production helps to better exploit the advantages of enterprises and country resource endowments, increase competitive pressures in domestic markets, and stimulate technology transfer and innovative activity. Similar benefits can be expected in the OECD fisheries sector if the restrictions on inward FDI are relaxed. Unfortunately, there is limited empirical evidence on both the scope and impacts of FDI in the OECD fishing sector and so it is difficult to draw definitive empirical conclusions about the potential net benefits from investment liberalisation.

In general, however, FDI is as good or as bad as the domestic policy framework governing the sector to which the investments are directed: the extent to which the potential benefits from FDI liberalisation would be realised depends critically on the management regime in place in the host country. Under effective management regimes with well-defined and enforced access rights, the relaxation of foreign investment rules will lead to improvements in economic efficiency and overall income growth and, depending on the relative profitability between foreign and domestic harvesting, some replacement of domestic fleet may occur. However, open access regimes will result in an inflow of capital to the country, some crowding out of domestic investment and adverse impacts on resource stocks (although the decline in resource sustainability would have occurred without the foreign capital). Under regulated open access regimes, inward FDI could have adverse effects on the profitability of the domestic industry, but no effects on the resource stock.

Three major obstacles to liberalisation of FDI rules are identified in the paper. First is a concern over sovereignty, in particular with respect to national pride, economic wealth and national security. The fish harvesting sector retains particular resonance in the cultural identities of many OECD countries and there is a reluctance to open the sector to the foreign-owned vessels and companies who may compete with the domestic industry for catches. The second obstacle, related to the sovereignty issue, is a desire to protect the

domestic harvesting industry. Calls for domestic industry protection are often bolstered by industry and coastal communities voicing underlying concerns that foreign entry into the sector will potentially alter the pattern of income distribution. Third, concerns over potential difficulties in monitoring and enforcing domestic regulations on foreign companies operating in a country's EEZ have also been an obstacle to liberalisation, particularly if it is believed that such companies may use complex corporate structures to avoid compliance costs. The use of mechanisms such as environmental auditing and performance bonds may help ease such concerns.

The impacts of FDI on the fisheries sectors of developing countries is probably of more immediate policy concern as most flows of FDI are from OECD to non-OECD countries. There is a risk that, in the quest for international investment to assist in increasing economic growth and alleviating poverty, developing countries could engage in regulatory competition. This could potentially induce a "race to the bottom" or "regulatory chill" with respect to environmental regulatory standards for their fisheries sectors. Just as with OECD countries, the ability of developing countries to maximise the benefits of FDI while minimising the adverse effects depends on the regulatory regime in place and the effectiveness with which it is enforced. The key concern for developing countries is therefore adequacy of their domestic institutional frameworks in ensuring sustainable fisheries management while pursuing a range of development objectives, and this is a policy imperative that goes beyond the issue of FDI.



## Introduction

Foreign direct investment (FDI) is defined as an activity in which an investor resident in one country obtains a lasting interest in, and an influence on the management of, an entity in another country (OECD 2003b, p. 157). Such investment is considered to be an important driver of economic growth both in OECD and non-OECD countries as the internationalisation of production helps to better exploit the advantages of enterprises and countries, increase competitive pressures in domestic markets, and stimulate technology transfer and innovative activity (OECD 2003b). As a result, there has been a tendency towards reducing or eliminating hindrances to FDI, as long as this does not conflict with other legitimate policy objectives.

Barriers to FDI have, in fact, fallen significantly in virtually all OECD countries over the past few decades. Overall, FDI restrictions are now generally low in OECD countries. There are almost no restrictions on FDI inflows into manufacturing, aside from economy-wide restrictions such as notification or screening requirements. The bulk of the remaining restrictions are concentrated in the service sector, with electricity, transport and telecommunications being the most constrained, followed by finance. While these sectors have opened up somewhat in recent years, restrictions remain relatively high. For example, FDI barriers have declined in the telecommunications and air transport industries, which were almost entirely closed in the early 1980s, but remain significantly higher than in other service sectors (OECD 2003b, p. 172).

The decline in FDI barriers has been coupled with a significant increase in the flows of FDI within the OECD area in the last half of the 1990s, with most of the activity consisting of mergers and acquisitions (including privatisation deals) of existing businesses. A significant share of FDI in the OECD area takes place between countries bound by regional trade agreements and among geographically close countries. For example, most European countries tend to host relatively more FDI originating from EU countries than from elsewhere. This pattern has become more accentuated over time with greater integration of the EU countries through the single market programme and economic and monetary union.

To a large extent, however, the fisheries sector has not been part of this trend. There remain significant restrictions on FDI in the fisheries harvesting sector in many OECD countries. OECD countries clearly place considerable policy importance on constraining the possibilities for inward FDI in this part of their domestic fisheries sectors; the degree of restrictiveness matches that observed in other sectors that are often seen as “critical” to countries’ sovereignty and economic security. Reasons underlying the reluctance of countries to liberalise FDI restrictions in the fisheries sector include sovereignty issues, the need to maintain surveillance and enforcement control over the fishing fleets operating in their EEZs, and protection for the domestic fishing industry and food security.

In contrast, there are fewer restrictions on inward FDI in the processing sector. In general, this sector is similar to other manufacturing sectors in that FDI inflows are primarily subject to economy-wide restrictions such as notification or screening

requirements. The degree of FDI restrictions depends to some extent on the degree of vertical integration between harvesting and processing in the host country by the company undertaking the investment.

The purpose of this paper is to examine the potential benefits of liberalising FDI restrictions in the OECD fisheries sector, the obstacles to such liberalisation, and potential measures for addressing the obstacles. The paper builds on work undertaken in the Committee for Fisheries' previous work on fisheries market liberalisation (OECD, 2003a). The section on FDI in the fisheries sector reviews the motives for seeking to undertake foreign investment and the empirical evidence (or lack thereof) of FDI flows in the sector. The following section discusses different types of barriers to FDI that are in place, while the next section introduces an index of FDI restrictiveness that provides an indicator for cross-country comparison. The potential benefits of liberalising FDI in the sector are addressed in the following section with the main conclusion that the extent to which potential benefits will be realised will depend on the effectiveness of the fisheries management regime in place. The next section reviews the obstacles to liberalisation of FDI flows in the harvesting sector and suggests how some of these obstacles might be approached. The last two sections are: The flow of FDI from OECD to non-OECD countries for fisheries investment raising a number of issues for both sets of countries and the last section with some concluding remarks.

## FDI in the fisheries sector

Foreign direct investment in the harvesting sector primarily takes two forms: investment in vessels or the purchase of quota.<sup>1</sup> These two forms of investment are often interlinked as, in some countries, quota is attached to a vessel and is transferred with the vessel (for example, in some fisheries in Norway and Denmark), in which case, the value of the quota is capitalised in the value of the vessel. The main motive for undertaking FDI is to gain access to fisheries resources in the host country. This is fairly obvious in the case of investment in quota and in vessels that have quota attached. Such access will often help in obtaining raw material for processing plants owned by the investing company, or assist in utilising idle vessel capacity. The purchase of vessels without quota is primarily a means of expanding or diversifying the operations of a fishing company. Intangible assets specific to the company (such as technologies, managerial skills, etc.) help to explain such investments, in addition to the company's expectation of obtaining a higher rate of return on the investment than in available alternatives.

The processing sector is closer in nature to industries in the manufacturing sector. Multinational companies undertake international investments in order to ensure their investment portfolio works to maximise the net wealth of the company. The decision to undertake FDI in a particular country's processing sector revolves around a multinational company's desire to locate production closer to raw material inputs, reduce transport costs to final markets, or exploit cost advantages (such as labour costs). They may also be seeking to internalise the benefits from technology that may have been developed by the company, and from vertical integration (Blonigen, 2005; Krugman and Obstfeld, 1994).

Data on FDI flows in the fisheries sector are difficult, if not impossible, to obtain. Such data are masked in official collections of statistics as FDI flows in the fisheries sector are aggregated with FDI flows in the agricultural sector. There are *ad hoc* estimates of FDI flows in particular countries, but these are rare and not useful for comparative purposes. For

example, Ito and Fukao (2005) estimate that the cumulative value of Japanese FDI outflows for the fishery sector between 1950 and 2001 was JPY 257 billion. The authors estimate that there were no FDI inflows to the Japanese fishing sector over the period.

There are some data on the presence of foreign-owned vessels operating in selected OECD countries. In 2004, for example, there were 86 UK registered foreign-owned vessels over 10 metres in overall length and landing at least 2 tonnes of quota stocks fishing against UK quota in 2004 (Table II.1). Of these vessels, 55% were Anglo-Spanish and 37% were Anglo-Dutch. It is worth noting that there has been a 40% decline in the number of foreign-owned vessels in the UK fleet since 1998. There has also been a recent buyout of some very large distant water fishing vessels, with associated quota, by an Icelandic company. Data on the ownership of the UK registered fleet for July 2005 indicate that the foreign ownership of vessels in England and Wales is heavily skewed towards the larger vessels (greater than 30 m in length) (DEFRA personal communication, August 2006). While this information doesn't detail the amounts of FDI that took place in the UK over the period, it does provide an indication that foreign companies place a value on access to the resources of other countries.<sup>2</sup>

Table II.1. **Foreign ownership of vessels in the UK, 1998 to 2003**<sup>1</sup>

Ownership	Number of vessels							
	1998	1999	2000	2001	2002	2003	2004	2005
Anglo-Dutch	36	34	34	39	38	41	32	32
Anglo-Spanish	97	82	84	77	77	81	47	46
Other <sup>2</sup>	7	6	6	5	6	9	7	9
<b>Total foreign owned</b>	<b>140</b>	<b>122</b>	<b>124</b>	<b>121</b>	<b>121</b>	<b>131</b>	<b>86</b>	<b>87</b>
<b>Total British owned</b>	<b>n.a.</b>	<b>1 623</b>	<b>1 506</b>	<b>1 338</b>	<b>1 279</b>	<b>1 108</b>	<b>995</b>	<b>973</b>

n.a.: Not available.

1. Covers British registered fishing vessels over 10 metres in overall length and landing 2 tonnes or more of quota stocks in a year.

2. Includes Anglo-Belgian, Anglo-Icelandic and Anglo-Irish vessels.

Source: DEFRA (2001, 2002, 2005, 2007), Scottish Executive (2006).

Hatcher *et al.* (2002) note that there is also significant Spanish ownership of the French fishing fleet and, to a lesser extent, of the Irish fleet. They also note a Dutch presence in both the Belgian and German fleets. To a large extent, these ownership patterns reflect historical fishing activities and were in place before the advent of the tighter FDI ownership rules in France and Belgium, in particular.

Limited data of inward FDI to the fisheries sector are also available for selected non-OECD countries and are reported in the investment climate reports prepared by the US State Department (US State Department, 2005a, b, c). In 2003, for example, Vietnam had a total of 105 foreign-financed projects in the fisheries and aquaculture sector with a project FDI inflow of USD 290 million (of which USD 150 million has been implemented). FDI inflows to the Moroccan fisheries sector totalled USD 15.4 million in 2003, while Chile's fisheries and aquaculture sector received a total of USD 107 million in inward FDI over the period 1999-2004.

Much of the FDI flows to these countries originate from OECD countries. For example, OECD countries were the source for over 90% of the total FDI inflows to Chile and Morocco for the period 1974-2004 and in 2003, respectively. Such data, while admittedly partial,

indicate that foreign investment flows are a feature of the international fisheries sector, at least with respect to developing countries. The key issues that arise as result of these investment flows to developing countries are discussed later in this document.

## Different types of FDI barriers

A range of barriers to inward FDI in the fisheries sector are in place in OECD countries. The results of a survey of FDI restrictions for the fishing and processing sectors in OECD countries are presented in Annex II.A1. A summary of the information from the survey is presented in Table II.2. This is an update of the survey presented in the OECD report on *Liberalising Fisheries Markets* (OECD, 2003a) and is supplemented by information from the OECD Code of Liberalisation of Capital Movements (see Box II.1). Essentially, the results have not changed markedly between the surveys.

The types of restrictions that are applied to the fisheries sector can be grouped into:

- foreign equity restrictions;
- screening and approval procedures; and
- constraints on genuine link, principal office and crew.

### Foreign equity restrictions

Restrictions on foreign ownership are the most obvious barrier to inward FDI. They typically take the form of limiting the share of companies' equity capital that non-residents are allowed to hold in a vessel or company in the fish harvesting sector or a company in the processing sector. In those countries where individual transferable quota (ITQ) systems are in place, there may be restrictions on the foreign ownership of quota and the amount of quota that can be held by a given foreign investor.

### Harvesting sector

Looking first at equity restrictions in vessels and harvesting companies, it can be seen from Table II.2 that a number of countries allow foreign investment up to a legislated maximum share in the equity of a given company. This limit varies significantly between countries:

- Australia, Canada, Greece and Mexico (< 50% foreign equity is allowed, for non-EU nationals in the case of Greece);
- Norway (< 40%);
- Denmark (< 33% for non-EU nationals); and
- New Zealand and the United States (< 25%).

Korea, Japan and Turkey have no restrictions on inward FDI to the sector. However, as will be discussed below, other restrictions on ownership of vessels in these countries have the effect of presenting significant barriers to FDI inflows. Iceland allows no inward FDI in its harvesting sector.

The situation with respect to the EU countries is more complex. Within the EU, there is an internal market characterised by the abolition between member State of obstacles to the free movement of goods, persons, services and capital. There are also no restrictions on the freedom of establishment of nationals of a member State in the territory of another member State (although some member States have put restrictions on the establishment of nationals from countries that recently acceded to the EU). The decision as to whether EU

Table II.2. **Summary of FDI restrictions in the OECD fish harvesting sector**

	Foreign equity restrictions	Screening and approval	Other restrictions
Australia	< 50%	Notification required if < AUD 50 million National interest test if > AUD 50 million	Owner of vessel must be Australian citizen or company registered in Australia.
Belgium	Restricted to EU nationals	Notification required	Principal office must be in Belgium. Genuine economic link required which can be demonstrated through 50% of the crew being recruited from persons living in the Belgian coast area and actually reside there, or more than 50% of the annual catch is landed in Belgian ports and a substantial part of the catch is offered for sale at local auctions.
Canada	< 50%	Notification required	Must hold Canadian fishing license.
Denmark	< 33% for non-EU nationals	Notification required	Must demonstrate genuine economic link. Ownership limited to registered commercial fishers (largely restricted to Danish nationals).
Finland	Restricted to EU nationals	Notification required	FDI may be allowed through an enterprise incorporated in Finland
France	Restricted to EU nationals	Notification required	Genuine economic link required for quota ownership Vessel must be managed by business operating on French territory Captain and First Officer must be French nationals.
Germany	No restrictions	Notification required	Acquisition to take place through company incorporated in Germany registration in German flag register limited to German nationals or companies incorporated in Germany.
Greece	< 49%	Notification required	
Iceland	No FDI allowed	Notification required	
Ireland	Restricted to EU nationals	Notification required	Registration of vessel requires ownership by citizens of EU and a license to fish in Irish waters.
Italy	Restricted to EU nationals	Notification required	Fishing in territorial waters reserved to Italian nationals.
Japan	No restrictions	Approval and screening from government	Ownership restricted to Japanese individuals, companies where the representatives and ? of directors are Japanese, and companies with head offices in Japan and where all representatives have Japanese nationality.
Korea	No restrictions	Screening and approval from central and provincial governments	Permit or license required.
Mexico	< 49%	Must show economic benefits	Vessels must be registered in Mexico.
Netherlands	Restricted to EU nationals		Ownership restricted to Dutch nationals, companies registered under Dutch law, established in the Kingdom, and having their actual place of business in the Netherlands.
New Zealand	< 25%	Approval from Ministry of Fisheries and Treasury requiring...	
Norway	< 40%	Approval from government	Ownership must be by Norwegian citizen or Norwegian company Ownership reserved for professional fishers.
Poland	No restrictions	Notification required	Quota holding restricted to Polish nationals only Crew must hold Polish certificate of competency
Portugal	Restricted to EU nationals	Notification required	Genuine economic link required
Spain	No restrictions	Notification required	
Sweden	Restricted to EU nationals	Notification required	Half the owners must be Swedish citizens or Swedish juridical persons Genuine link required.
Turkey	No restrictions	Notification required	License restricted to Turkish nationals.
United Kingdom	Restricted to EU nationals	Notification required	Genuine economic link required Must be controlled and directed from within the UK 75% of crew must be EU nationals.
United States	< 25%	Approval required	Company must be incorporated in the US.

countries allow inward FDI from non-EU countries is left to individual countries and this varies significantly between EU countries. A group of EU countries – Belgium, France, Ireland, Italy, Portugal and Sweden – do not allow inward FDI from non-EU countries. Six other EU countries – Denmark, Germany, Greece, Poland, Spain and the United Kingdom – allow FDI from non-EU countries, although Greece and Denmark have restrictions on the amount of non-EU equity. A common restriction on inward FDI in EU countries (even that coming from other EU countries) is that a genuine economic link with the host country must be demonstrated. This is discussed further below.

### Box II.1. OECD Code of Liberalisation of Capital Movements

The objective of the Code of Liberalisation of Capital Movements, adopted in 1961, is to provide a basis for the progressive non-discriminatory liberalisation of capital movements including the right of establishment in a foreign country for business purposes (OECD 2004). The Code is the only multilateral legally binding instrument that seeks to further liberalise capital movements. Under the Code, OECD member countries undertake to:

- notify the Organisation of any existing measures affecting capital movements;
- apply any measures without discrimination among OECD members;
- liberalise all the operations specified in the Code, except with respect to items against which a reservation has been lodged; and
- not to introduce any new restrictions which would not be covered by reservations (the “standstill” principle).

Implementation of the Code, in particular by removal of restrictions on cross-border capital flows and the lifting of country reservations against the Code, involves “peer pressure” exercised through policy reviews and country examinations to encourage unilateral rather than negotiated liberalisation. Reservations to the Code generally cover investments in the areas of real estate, broadcasting, air transport and fisheries (most notably the harvesting sector).

Source: OECD (2004).

Data are not widely available on the ownership patterns of the EU fishing fleet in response to the restrictions imposed by EU countries. Some data on the ownership structure of the UK fleet was presented in the previous section.

Restrictions on the ownership of quota by foreign interests are also widespread in OECD countries. These restrictions can either be implicit or explicit. Few OECD countries with tradable quota systems allow quota to be bought by foreigners, and even then, there are tight restrictions on the conditions under which the investment is allowed. In Australia, foreigners are allowed to buy quota (subject to the limits in Table II.2), but fishing is only allowed to be undertaken with an Australian registered vessel, or a vessel deemed to be an “Australian boat” which is owned by an Australian company. In New Zealand, foreign ownership of quota is permitted subject to certain national interest criteria being met, such as creation of jobs, development of new export markets, increased market competition, etc. In addition, no overseas person is allowed to have the right to exercise or to control the exercise of more than 40% of voting power. In some other countries, such as Denmark and Norway, the quota is often tied to a vessel and so the same restrictions that are in place for FDI in vessel ownership implicitly apply to quota ownership.

### *Processing sector*

In contrast to the harvesting sector, there are no restrictions on investment in the processing sector in the OECD area in terms of the amount of foreign equity allowed. In countries where forward integration between harvesting and processing occur, there are usually limits on foreign holdings of fishing quota. In Canada, for example, fish processing companies which have more than 49% foreign ownership are not permitted to hold Canadian commercial fishing licences.

### **Screening and approval procedures**

All OECD countries require some form of notification and approval procedures for FDI in both the harvesting and processing sectors. Depending on their implementation, obligatory screening and approval procedures can limit FDI through their constraining effects depending on the implementation of such practices. Prior approval of FDI, such as mandated for several OECD countries, could limit foreign capital if it is taken as a sign of an ambivalent attitude towards FDI, even though it may not be vigorously enforced. Simple pre- or post-notification is unlikely to have much impact on capital flows.

In the fisheries sector, approval procedures range from simple notification of the investment, either pre or post the investment taking place, to the requirement that the investor be able to demonstrate that the investment will result in economic benefits to the host country (for example, in Mexico). A number of countries require a middle course of action where approval is granted unless the investment is contrary to the national interest. In Australia, notification only is required for investments up to AUD 10 million, approval (normally without examination) for investments up to AUD 50 million, and for investments above AUD 50 million, approval is granted unless judged by the government to be contrary to the national interest. As noted in the previous section, New Zealand allows foreign ownership of quota provided it is in the national interest.

### **Constraints on genuine economic link, principal office and crew**

Barriers to FDI also arise through a number of national regulations that impose further restrictions and requirements beyond limits on foreign equity holdings. These can have particularly restrictive effects on investment flows and can significantly increase the transactions costs of FDI. They may limit the freedom with which FDI can be undertaken in a country even if the “headline” restrictions in terms of foreign equity allowed are not, in themselves, very restrictive. Indeed, in some cases, such additional restrictions can be so tight and difficult for foreigners to meet, that FDI cannot be effectively undertaken. This represents a “Catch-22” situation where, for example, foreign investment is technically open, but there are nationality restrictions on who can own a license or quota in order to invest, without which it is not possible to be the foreign owner of a fishing vessel.

Such constraints are evident in a number of countries. In Japan, for example, while there are no restrictions on the amount of equity that a foreign holding may invest in the fishing sector, ownership of vessels is restricted to Japanese individuals, companies where the representatives and two-thirds of the directors are Japanese, and companies with head offices in Japan and where all the representatives have Japanese nationality. Such requirements create barriers and increase costs just as effectively as explicitly limiting the amount of foreign equity. Poland, Denmark and Turkey have similar sets of Catch-22 type restrictions.

As discussed above, a number of countries require potential investors to demonstrate a genuine economic link with the host country before inward FDI proposals can be approved. This reflects a concern by many countries that the exploitation of their fish resources by foreign companies should provide some economic return to the host country. In the absence of fisheries management arrangements that facilitate such trade (such as the use of internationally tradable quota systems or resource rent taxes), countries attempt to ensure an economic return by requiring that foreign investors develop economic links with the host country.

This is particularly the case in the EU many countries require such a link to be demonstrated, even by other EU countries. This requirement arose as a result of the long-running argument within the EU about whether one member State had the right to restrict access to their fisheries from other member States and concerns over “quota-hopping” (EU 1996; Churchill 1990; Morin 2000). It marked a compromise between the need to allow for the free internal movement of capital, the right for each member State to benefit from the fisheries resources in their EEZs and the need to provide some protection for the livelihoods of coastal communities (Lequesne 2004, p. 98). This is because, while the rights to fish in EU waters, to gain access to quota, and to hold a fishing licence are regulated by each member State individually, such regulations must be consistent with overall EU regulations regarding freedom of movement of capital, and maintain the “relative stability” of the distribution of fishing rights within the community. The economic link was a means of balancing the conflicting policy priorities and directions within the EU.

What constitutes a genuine economic link is not generally defined in the legislation of countries, but is often elaborated through the court system (Lequesne, 2004). For example, under legislation in the United Kingdom, fishing vessels are required to demonstrate a real economic link with the UK through one of the following four options:

- a) landing at least 50% by weight of the vessel’s catch of quota stocks into the UK; or
- b) employing a crew of whom at least 50% are normally resident in a UK coastal area; or
- c) incurring a given level of operating expenditure in the UK for goods and services provided in UK coastal areas; or
- d) demonstrating an economic link by other means (including combinations of the above) providing sufficient benefit to populations dependent on fisheries and related industries.

In the case of Belgium, a real economic link must be demonstrated between the fishing activities of the vessel and the populations dependent on fisheries and related activities (Belgian Sea Fishing Service n.a.). This can be done by ensuring that, during the preceding calendar year, 50% of the crew of a vessel were recruited from among persons who live in the Belgian coast area and actually reside there, or where 50% of the annual catch was landed in ports along the Belgian coast and a substantial part of the catch was offered for sale at local auctions.

Other formal restrictions that can discourage FDI inflows include constraints on the ability of foreign nationals to manage or to work in affiliates of foreign companies and other operational controls on the business. Stipulations that nationals or residents must form a majority of the board of directors or vessel ownership, as is the case in Japan, New Zealand, Norway and Sweden, may undermine foreign owner’s control over their holdings and, hence, may make them more hesitant to invest under such circumstances. The requirement that the principal office of the host company be located in the host country is also a common restriction and serves to raise the raising transaction costs of FDI.

With respect to restrictions on the crew of the vessel, France requires that the captain and first officer must be French nationals, and that the other crewmembers be nationals of an EU country. Some countries also require that crew obtain certificates of competency from their national authorities which can restrict hiring practices. For example, Poland requires members of crew to hold a certificate of competency issued and endorsed by the Polish Maritime Administration.



In addition to the formal barriers discussed above, FDI flows can be restricted by opaque informal public or private measures. While there is no systematic evidence of such barriers (due to their very nature), the Catch-22 type restrictions discussed above are representative of the types of labyrinthine processes that investors are required to undergo to meet approval standards in some countries.

## **An index of FDI restrictiveness**

Using the results of the survey of FDI restrictions in the OECD member countries, an indicator of FDI restrictiveness can be developed in order to compare the degree of restrictiveness across countries and, potentially, over time. The concept is based on an aggregate indicator of FDI restrictiveness developed by the Productivity Commission in Australia (Hardin and Holmes, 1997) and further refined by the OECD (Golub, 2003). The indicator aims to systematically capture the main statutory barriers to FDI by weighting the key barriers according to their relative importance and then summing them so that they fall between 0 and 1 (with 1 being the most restrictive and 0 the least restrictive) (see Box II.2). The scores are presented in Table II.3.

### **Box II.2. Indicators of FDI restrictions**

Indicators of FDI restrictions have been used as a means of standardising the extent of FDI barriers across countries in a number of studies. These have ranged from a simple count of the number of restrictions to the more complex index developed in the OECD. Following Holmes and Hardin (1997) and Golub (2003), an indicator of FDI restrictions in the fishing sector has been developed which provides a means of systematically pooling information on the various types of barriers to form an aggregate indicator. This can then be used to facilitate cross-country comparisons and, if there are changes in the fisheries FDI regime over time, reductions or increases in FDI restrictions in the future.

The scoring system is based on regulations in each country in three areas: the amount of foreign equity allowed; screening and approval processes; and other restrictions relating to flagging requirements, personnel and licensing. The scores are presented in Table II.3. The highest weights are given to foreign equity limits as foreign ownership is a necessary and essential condition for FDI. A non-linearity is built in to reflect the fact that a total ban on foreign ownership is significantly more restrictive than allowing a small foreign equity stake. Screening and limitations on management are generally less important, although this may mask the restrictiveness of “Catch-22” restrictions that may exist in some countries. The scores are added together to obtain an overall indicator of FDI restrictiveness. It is possible that the various scores sum to slightly more than 1 when foreign equity is not totally banned; in such cases the index is rounded down to 1.

Golub (2003) notes a number of limitations of the measures that need to be borne in mind when interpreting the results. The indicators cover statutory barriers and abstract from the more indirect obstacles affecting FDI, such as those related to corporate governance mechanisms or hidden institutional or behavioural obstacles that discriminate against foreign firms. Such non-statutory barriers, even if known, are very difficult to ascertain and quantify. It is also possible that some countries are more forthcoming than others in self-reporting their restrictions. This could result in more transparent countries receiving higher scores, not because they are more restrictive, but because they are more complete in their reporting. Finally, there is an element of judgment involved both in the scores allocated to various restrictions (which restrictions should carry greater weights?) and in standardising and putting into context idiosyncratic restrictions in individual countries.

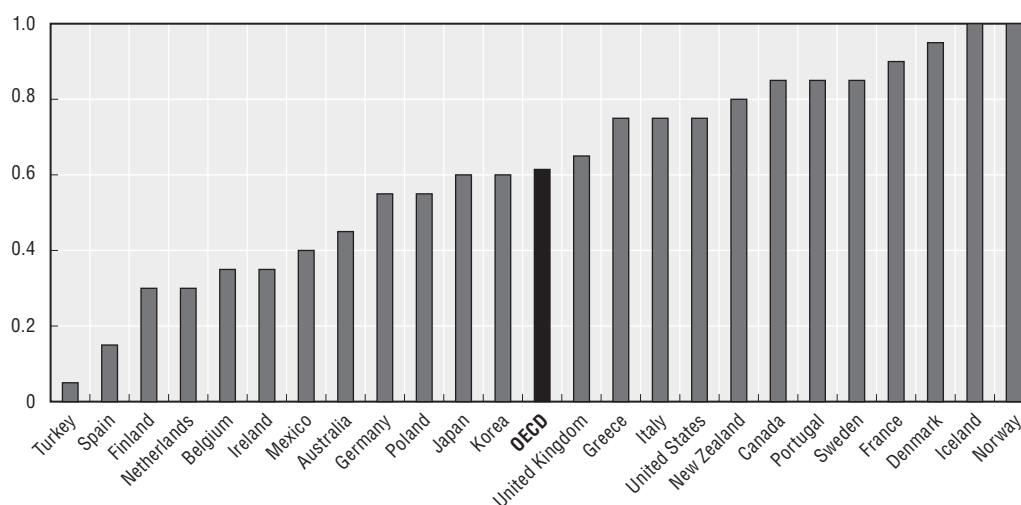
Table II.3. **Weighting coefficients on FDI restrictiveness in the fisheries sector**

Type of restriction	Criterion	Weight
<i>Foreign equity limits</i>	No foreign equity allowed	1
	1-19% allowed	0.6
	20-34% allowed	0.4
	35-49% allowed	0.3
	50-74% allowed	0.2
	75-99% allowed	0.1
	no restriction	0
	Restricted to EU nationals	0.3
<i>Screening and approval</i>	Must show economic benefits	0.2
	Approval unless contrary to national interest	0.1
	Notification (pre or post)	0.05
<i>Other restrictions</i>	Genuine or economic link	0.4
	Restrictions on licenses and quota	0.2
	Principal office in the host country	0.1
	Crew restrictions	0.1
<i>Processing restrictions</i>	Conditions on cross-ownership of licences	0.2

The resulting indexes of FDI restrictiveness for the harvesting and processing sectors in OECD countries are depicted in Figures II.1 and II.2. The data are arranged in ascending order of restrictiveness in the harvesting sector. The indexes confirm that FDI in the harvesting sector is significantly more restricted than in the processing sector. Across the OECD, average score in the harvesting sector is around 0.6, while it is 0.1 in the processing sector. By way of comparison, the average score for the OECD across all sectors in 1998 was around 0.18, with the telecommunications sector around 0.34, banking 0.17, air transport 0.39 and manufacturing 0.09. While caution must be exercised in making such comparisons as the indexes differ to some extent in their construction and weighting systems, the comparison reveals the relatively high degree of FDI restrictions in the harvesting sector.

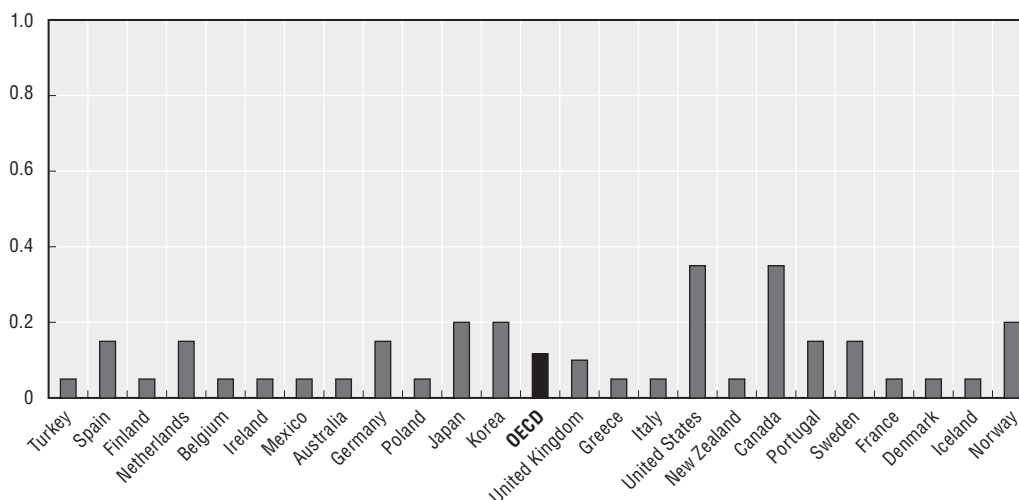
Figure II.1. **Restrictions on FDI in harvesting sector in the OECD**

0 equals least restrictive; 1 equals most restrictive



**Figure II.2. Restrictions on FDI in the processing sector in the OECD**

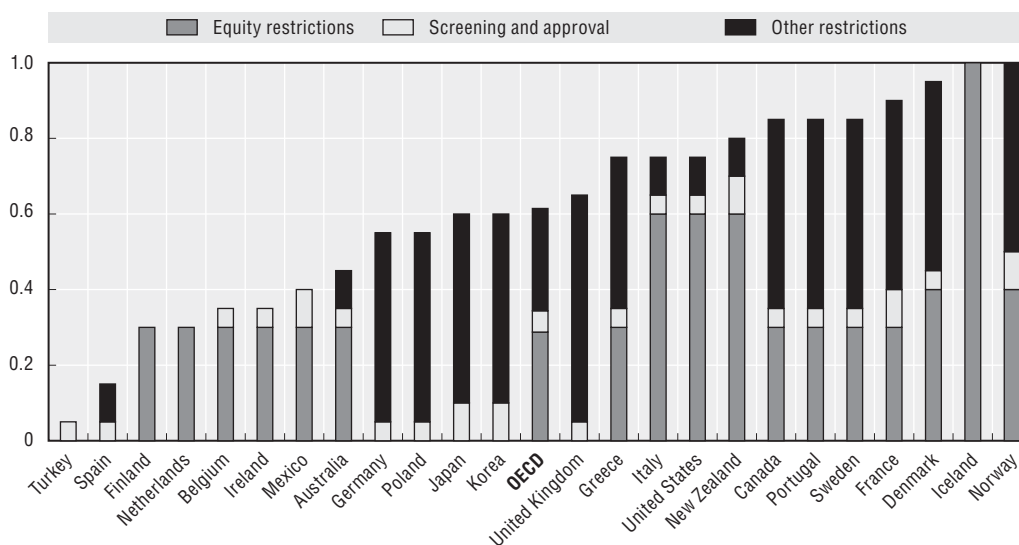
0 equals least restrictive; 1 equals most restrictive



The second main point worth noting is that two countries have scores of 1 in the index for the harvesting sector, yet only Iceland actually prohibits inwards FDI. This underscores the fact that, in some countries, a combination of FDI barriers can work to increase the effective restrictions on FDI to a degree approximating a ban on FDI. This is illustrated more clearly in Figure II.3 which shows the harvesting sector index broken down by the type of restriction.

**Figure II.3. FDI restrictions on the OECD harvesting sector, by type of restriction**

0 equals least restrictive; 1 equals most restrictive



Is there any pattern to the results from the index of FDI restrictiveness in the OECD harvesting and processing sectors? It can be argued that those countries that are relatively more “open” to inward FDI may also be those countries who are more dependent on fisheries exports for their economic performance. Figures II.4 and II.5 map the FDI restrictiveness indexes for the harvesting and processing sectors against the fish export intensity of

Figure II.4. Fish export intensity and FDI index for harvesting sector

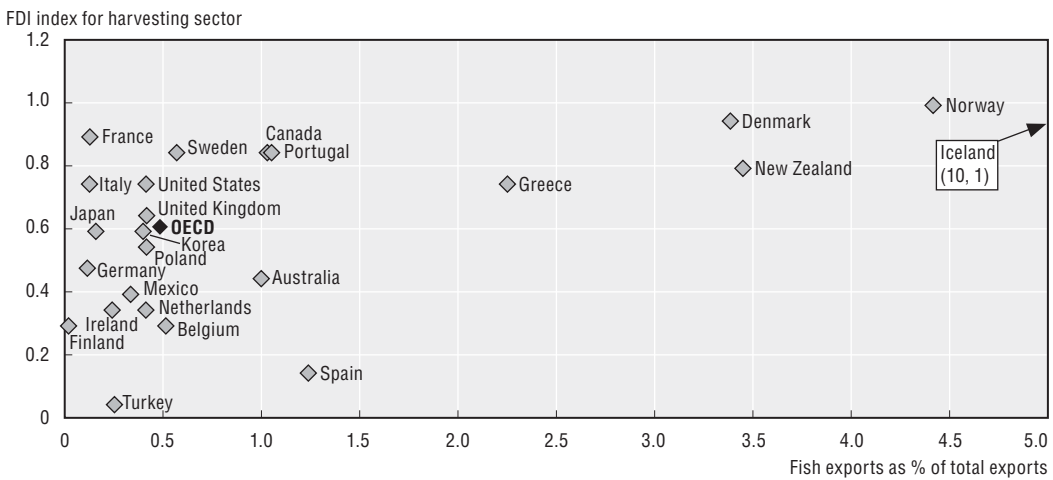
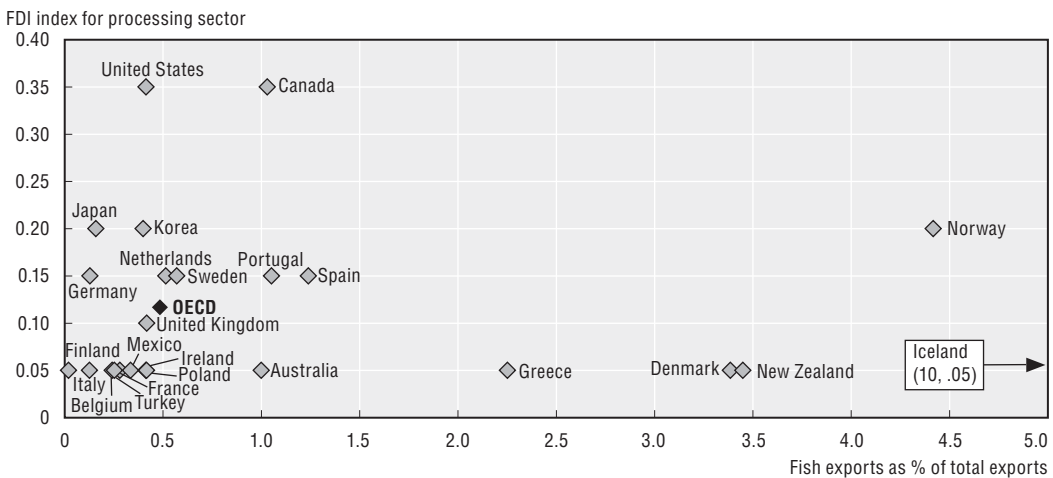


Figure II.5. Fish export intensity and FDI index for the processing sector



individual OECD countries, where fish export intensity is defined as the percentage of fish exports in total exports for each country. In terms of the harvesting sector, there is a positive relationship between the importance of fish exports in total exports and the degree of FDI restrictiveness. The opposite holds when considering the processing sector.

**A reality check**

The survey and the index discussed above portray a harvesting sector with significant restrictions on FDI. But how binding are the constraints in reality? Can foreign investors find their way around the restrictions to undertake investments through more creative arrangements? The empirical evidence for this occurring in the fisheries sector is sparse, but the lessons from other areas of international capital flows suggest that the growing sophistication of the international financial landscape has expanded the scope for individuals and companies to undertake cross-border capital flows (OECD 2002b). Rapid technological change and a widening of products and services have allowed countries to reach a level of economic and institutional development where they can fully integrate into highly developed international financial markets.

There are two main possible paths for avoiding FDI restrictions. First, the use of elaborate and complex corporate structures stretching across many countries and jurisdictions may conceal the true ownership of corporations which purchase controlling interests in vessels or harvesting companies. Such innovative corporate strategies can be used as a means to try and circumvent government restrictions on investment, ownership and so on. The extent to which this is an issue for particular countries will depend on the strength of their corporate and institutional governance, although lifting the “veil of corporate secrecy” in the sector can be difficult. While this goes to the heart of a broader set of issues relating to corporate governance, international company and tax law, recent work on the economic issues of IUU fishing has also highlighted the role of corporate veils in circumventing national restrictions (OECD 2005).

Second, vertical integration may be a means by which effective control can be gained over vessels or companies in the harvesting sector. Inward investment may take place in those upstream areas (processing, wholesale or retail) where FDI restrictions are minimal, and linkages then established down the value chain to the harvesting sector. This may entail the construction of complex corporate structures to blur the line of ownership and control in various functional areas of the company. As noted above, some countries such as Canada expressly prohibit foreign controlled fish processing companies from holding commercial fishing licences.

### **Potential benefits from liberalising FDI in the fisheries sector**

There is broad agreement in the general literature on liberalising FDI that open capital markets can promote more efficient and productive use of resources, realise economies of scale, and improve structural efficiencies (OECD, 2002a; Goldin and Reinert, 2005). FDI contributes to both factor productivity and income growth in host countries, beyond what domestic investment normally would trigger. It is more difficult, however, to assess the magnitude of this “additional” growth impact. The main policy challenge in both OECD and non-OECD countries is to ensure that the host country has a transparent, broad and effective enabling policy and governance environment in which the benefits from FDI can be maximised while ensuring that the potential costs are minimised.

In addition to economic growth, it is recognised that inward FDI can facilitate technology transfer and diffusion in the host country, a fact which may be of particular relevance for developing countries. The spillover effects can reach into the local economy and FDI can provide countries with technology that may not be locally available. There is also evidence that increased competition associated with the entry of foreign firms can upgrade the efficiency and product quality in national firms. By giving firms access to foreign sources of savings, the internationalisation of capital markets can ease financial constraints that may prevent firms from investing in potentially more efficient (and perhaps environmentally preferable) technologies.

It is also recognised that, in the absence of proper governance, liberalising FDI rules may result in adverse impacts on the host country. Such concerns centre on the potential for FDI to crowd out domestic investment, increase environmental degradation, and exploit low-paid workers (Zarsky 2005, pp. 2-3). Some of these concerns have become crystallised in the vocal opposition by some groups to globalisation and the process of increasing international economic integration (*The Economist*, 2005). Furthermore, many of the concerns have been raised in the context of flows of foreign investment into developing countries. The

remainder of this section discusses the potential benefits from the liberalisation of FDI in the fisheries sector, while the following sections addresses the issues in removing obstacles to such liberalisation and some of the developing country dimensions.

### **The harvesting sector**

In the case of the harvesting sector, the realisation of such potential gains from FDI depends critically on the effectiveness of the management regime in place in the host country (OECD 2003a, pp. 178-9). The relaxation of FDI restrictions will bring out any distortions or weaknesses of the existing policy framework and can result in adverse impacts on the sustainability of the resource and on the domestic industry. It is useful to consider three situations: where management is effectively enforced in the host country (that is, the country receiving the FDI); where there is open access in the host country; and where there is regulated open access (between the two extremes).<sup>3</sup>

Under effective management regimes, the relaxation of foreign investment rules will lead to economic efficiency improvements and income growth. If foreign investment in the host country is more profitable than investment alternatives in the home country (for example, through the more efficient use of capital stock or through access to resources), the foreign investor will buy their way into the domestic fishery through the purchase of access rights (catch quotas, effort quotas, vessel quotas, etc).<sup>4</sup> This will occur if the foreign investor believes that they can operate more profitably and pay a higher price for quota than domestic operators. This may result in some of the owners of domestic quotas being replaced by foreigners. As a result, the inward FDI may crowd out some domestic investment, which would then be directed to the next most profitable investment opportunity. Hence, relaxation of FDI restrictions is likely to improve overall resource use efficiency, and income growth, in the host economy.

Under open access regimes, relaxation of FDI restrictions will result in an increase in the capital flowing into the harvesting sector if, the foreign investors have a higher expected rate of return on their investment than the domestic investment.<sup>5</sup> This will initially come as an addition to the domestic investment and may, over time, replace some or all of the domestic investment. As there are no effective controls on effort or catches, this will lead to a further depletion of fish stocks. Depending on whether the fishery is initially underfished or overfished, catches will increase (underfished) or decrease (overfished) in the short term, but will decline in the long run as the stock becomes overexploited. The profitability of the domestic industry will decline, but the host country will gain from moving capital out of fishing and into other uses. However, this efficiency gain needs to be balanced against the negative effects on the resource stock that will result from the combination of increasing capital entering the fishery and an open access management regime.

Under regulated open access regimes where catches are effectively controlled under a total allowable catch (TAC) but where there are few (if any) restrictions on the effort used to take the TAC, there will be no effect on stocks. Some of the domestic fleet may be bought by foreign owners as foreign capital moves into the industry. As is the case under open access, this will reduce the profitability of the domestic fishing fleet but the country overall will gain from moving capital out of the fishing sector.

Empirical evidence on the impacts of FDI on the profitability of domestic fishing operations in OECD countries is very limited. A study by Hatcher *et al.* (2002) based on the data from foreign owned vessels in the UK industry (discussed above) concluded that

“while from the perspective of some UK fishing communities, the notional socio-economic impact of foreign ownership may seem significant, at the national level the impacts arguably are not great” (Hatcher *et al.* 2002). They also noted that the landing of fish into ports of countries other than the host country is often cited as a concern of domestic fishing communities. However, the desire to land products close to final markets or processing facilities is a pattern of trading that is widespread throughout the industry and is not confined to foreign-owned vessels. Many British-owned vessels land their catches abroad in order to take advantage of better market conditions and to improve profitability.

### **The processing sector**

The effects of liberalising restrictions on investment in the fish processing sector would not be much different from the effects of FDI liberalisation in other manufacturing industries. Unless the industry is vertically integrated, such investment would not have any direct effect on the catches of fish. There could, however, be indirect effects. Foreign investment either through ownership and control or through joint ventures, indicates that the investors expect to be able to increase the profitability of processing operations. This could occur through increased market access opportunities, better technology or better management and operating procedures. If the higher profitability of fish processing flows through to higher fish prices, then this could affect the total catches of fish, depending on what kind of management regime is in place. The extent of such price transmissions up and down the value chain depends on how the raw fish market operates. If there is a competitive market at the point of first sale (for example, through the use of auction houses), then the price transmission is likely to be quite low. On the other hand, if there is vertical integration between harvesting and processing, the extent of price transmission is much less transparent.

The issue of market structure will also influence the extent to which the host country will benefit from the positive externalities (spillovers) that are often associated with technological transfer and diffusion that may result from inward FDI.<sup>6</sup> In general, the evidence of positive spillovers is strongest and most consistent in the case of vertical linkages with suppliers or purchasers in the host country. To some extent, fishing technologies can be bought off the shelf. But there is no doubt that experience in the development, use and diffusion of new technologies can be more easily facilitated within a vertically integrated company. Economies of scale and the internationalisation of research and development can also push the pace of technological change. In the fishing sector, this can also be observed in the increasing demand for quality and traceability right through to the consumer. There is sufficient anecdotal evidence to support the view that vertical linkages in the supply chain tend to push for technological improvements and innovations to meet these market challenges. For example, the increased activity of major processors in ensuring secure supplies of raw material and particular quality standards has helped to force the pace of change in the harvesting sector.

Similarly, this can lead to increased environmental standards and have a positive spillover to domestic industry. Such a “race to the top” has been observed in other resource sectors (such as the mining sector). There is little evidence in the fishing sector of the “regulatory chill” that is sometimes observed in other areas where countries do not seek to increase environmental standards for fear of deterring foreign investment.<sup>7</sup> Indeed, the FDI restrictions in place for the OECD harvesting sector indicate that such policy-based competition for FDI is not an issue. It is an open question, however, if relaxing FDI

restrictions throughout the OECD area would lead to such regulatory chill; unsurprisingly, in the case of the harvesting sector, this will depend on the effectiveness of the management regime in place.

## Addressing obstacles to reducing barriers to foreign investment

Given the potential benefits of reducing FDI restrictions in the fisheries sector, why have OECD countries maintained relatively high barriers, particularly in the harvesting sector? Obstacles to FDI liberalisation appear to centre on four interrelated issues: sovereignty; protection of domestic industry; and concerns over monitoring, control and surveillance;. The rest of this section discusses these obstacles and identifies a number of issues that policy makers may wish to consider in the context of possible relaxation of FDI restrictions in the sector.

### Sovereignty concerns

Countries attach considerable importance to sovereignty over their ocean areas. This is due to a combination of factors including national consciousness, security and national economic wealth and is reflected in the legislation, policy objectives or political statements of the countries. For example, in a recent speech on his country's High North Policy, Norway's Foreign Minister emphasised the need "to safeguard Norway's interests and security... to promote economic growth, employment, living standards and settlement" (*Siku News*, 2006).

The sovereign right for countries to exploit the fisheries resources that lie within their EEZs is fundamental to national (and international) fisheries management policies. Indeed, such sovereignty underpins many of the mechanisms in the United Nations Convention on the Law of the Sea in determining the rights and obligations of coastal states. This is reflected in the national laws of most OECD countries. In Japan, for example, the Law Concerning the Exercise of Sovereign Rights Concerning Fisheries in Exclusive Economic Zones outlines the limited conditions under which foreigners may engage in fishing activities in the Japanese waters. Canada has a long-standing policy, which dates from the 1970s, which is intended to prevent foreign companies from gaining access to Canada's fisheries resources through the acquisition of Canadian companies having substantial license holdings. The policy does permit minority ownership of Canadian fish harvesting companies by foreign investors.

The strongly held view that a country's fisheries resources are essentially to be reserved for the country's fishers represents a relatively major political obstacle to moves to further liberalise FDI movements in the sector. Reducing the obstacle involves a trade off between the potential for improvements in economic efficiency and potential effects on security and national pride. This calculus is complex and involves a high degree of political judgement as the two sides of the analysis are not necessarily denoted in the same metric.

It is interesting to contrast this emphasis on sovereignty in the fisheries sector with the experience in other resource sectors. In the mining and oil sectors, for example, both large and small multinational enterprises operate across international borders and there are significant capital flows in and out of countries as mineral and oil resources are developed. In general, the ownership of the resources rests with the State, but access for exploitation is provided to companies, often in exchange for royalty payments, or in the case of some energy developments, resource rent taxes. The well-developed property



rights regimes set up for mineral and oil development enable the functional separation of ownership and exploitation and pave the way for FDI to help improve the efficiency of resource use and exploitation (Warhurst and Bridge, 1997).

Of course, there are some fundamental differences in the capital requirements of the mining and fishing sectors. The mining sector is highly capital-intensive and very few countries have the financial or technical resources to undertake major mining projects without the use of foreign capital and expertise. The fishing industry, in contrast, tends not to involve such major investments and expertise in fishing is more widespread amongst fishing nations.

However, the more relevant parallel lies in the way in which access rights are specified in the different sectors and the potential scope for the increased use of stronger access rights regimes to address the separation of the ownership and exploitation functions in the fisheries sector. In OECD countries, the ownership of fisheries resources rests with the State and the rights of exploitation are provided for access to fish rather than over the resource itself. However, there are considerable differences between OECD countries as to how well those access rights are specified with only a portion of OECD fisheries having well-specified, enforceable rights-based regimes which facilitate the efficient use of fisheries resources (OECD 2006). In cases where there are strong access rights, relaxing the restrictions on inward FDI to the fisheries sector will improve the economic efficiency of resource use, without compromising the sovereignty of the state over the resources themselves.

### **Protection of domestic industry**

Closely related to concerns over sovereignty, is a desire by many countries to ensure that the domestic industry is able to exclusively exploit the countries' EEZs. Fears of foreign control of a nation's fisheries resources are generally closely allied to domestic industry protection, often reinforced by the strong political voice of the fishing industry and coastal communities in many countries. This is reflected in the FDI conditions in many countries, including the need for foreign investors to demonstrate a genuine economic link in the host country, requirements for FDI to be undertaken through subsidiaries operated and controlled by host country nationals, and nationality requirements for board members to be primarily of host country nationality.

In the past, the FDI restrictions has been at least partly the result of an infant industry argument mounted by the domestic industry and governments as countries sought to build up their domestic fishing fleets. This was particularly evident in the years following the extension of the EEZ to 200 nautical miles when coastal states suddenly had control over significantly larger resource stocks than prior to the extension. Significant support was provided to domestic fisheries to build up capacity and domestic production. However, it is unlikely that the infant industry argument can be invoked in many OECD countries today. Indeed, the majority of OECD countries have undergone significant fleet reduction and industry rationalisation programmes in the last decade, indicating the industry has proceeded well beyond the infant stage. Even in the case of newly discovered (and hence under-exploited) fish stocks, the infant industry argument is weak; potential market failure resulting from a lack of information on resource availability, or a lack of capital in the domestic industry, can be addressed through appropriate specification of management measures to strengthen access rights and address issues of risk (see, for example, Gooday *et al.* 1999; Cox and Kemp, 1999).

As with the sovereignty argument, concerns over domestic industry protection revolve around the distributional impacts of changing foreign investment policy for the sector. Allowing a less restrictive investment regime in the harvesting sector may result in some changes in income distribution, depending on the management regime in place. Under a system of transferable quotas (either output or effort based), an individual or company that voluntarily sells their quota or vessel is, after having done so, no worse off than before the transaction took place, so the policy concerns over the distributional impacts are significantly reduced. However, under regulated open access or open access management regimes, the resulting shifts in distribution may be a cause for concern, particularly if the affected region(s) or communities have a strong political voice. This, for example, may be significant in some coastal regions. So, in general, liberalising the investment regime may result in an overall improvement in the wealth of the economy, provided that there is appropriate and well-enforced management.

### **Monitoring, control and surveillance concerns**

A third interrelated point focuses on enforcement concerns. It may be harder to control foreign-owned vessels and to enforce sanctions if the owner is not in the country. Such challenges are most evident in the case of prosecutions for IUU fishing where the offending vessel may be captured, but there is little prospect of being able to prosecute the actual owner of the vessel as they are usually located overseas. Similar concerns may be a factor in the reluctance of OECD countries to relax restrictions on investment in the harvesting industry.

Improved domestic fisheries management, with stronger access rights regimes which can be used to both control catches and effort and enlarge financing possibilities, may help address such concerns. Both domestic and foreign fishers are likely to have a greater incentive to abide by the rules imposed by domestic regulators if they have well-defined and enforceable access rights to the fisheries. Both groups of fishers have an incentive to maximise profits, but both have a stake in the longer term health of the fishery.

It is difficult to argue that the actual monitoring of foreign-owned vessels within a country's EEZ is any more difficult than monitoring the compliance of domestic vessels. The surveillance that is undertaken by fisheries authorities both at sea and in ports is equally likely to detect violations in domestic and foreign-owned vessels. The main problem occurs in the enforcement of infringements. One possible solution to this is the use of performance bonds as a surety against non-compliance with management regulations. Such financial guarantees are widely used in other resource sectors, most notably the mining sector (Costanza and Perrings 1990). In the mining sector, performance bonds are used to provide a form of insurance for the government in case a mining company goes bankrupt before a mine site is properly rehabilitated (Allen, Maurer and Fainstein, 2001). The guarantee also provides the company with an incentive to ensure that it undertakes appropriate environmental management in the extraction and post-extraction phases of the mine's life.

More attention could also be paid to requiring a higher level of authentication of the bona fides of the investing company prior to granting approval for investment to take place. Many companies now place significant effort into improving and demonstrating their environmental credentials. The use of environmental auditing processes for companies has become a regular feature of the corporate reporting architecture, along with due diligence

and social responsibility requirements. The extension of such corporate oversight and reporting tools to the fisheries sector has not been widely adopted as yet and there is scope for increasing their use to improve the effectiveness of fisheries enforcement.

## Issues for developing countries

Foreign investment has been one of the factors underlying the expansion of the fisheries sectors in many non-OECD countries over the past two decades. While OECD production from harvest fisheries has been stagnant in recent years, production from non-OECD countries has expanded significantly, particularly from China. Similarly, growth in aquaculture production in non-OECD countries has outstripped growth rates in OECD countries. The expansion in the non-OECD fisheries sector reflects a desire by those countries to exploit the comparative advantages offered by their endowments of fisheries resources, the availability of suitable aquaculture sites, and relatively low operating costs. These countries also seek to obtain the benefits from increased economic growth, expansion of the economic base and the transfer of technology and expertise that often accompanies FDI. Multinational seafood enterprises, many of which are based in OECD countries, are naturally attracted to these countries as they seek to maintain and expand their investment and operational portfolio in an increasingly challenging global operating environment. Foreign investment by these companies is part of their corporate strategy to gain access to resources, extend markets, improve efficiencies and, in some cases, acquire strategic assets.

The attractiveness of non-OECD countries as a destination for FDI is often enhanced by host country policies which subsidise inward direct investment. Such subsidies are relatively open and widespread amongst non-OECD countries. In the case of Russia, for example, the government was offering a package of incentives in late 2005 to persuade foreign fishing companies to invest in the country's fishing industry (*Worldfish Report*, 19 October 2005, p. FS/6). These incentives include soft loans and subsidised interest rates and are directed towards the purchase of new fishing vessels, modernising existing vessels, improve processing facilities, and increasing the capacity of hatcheries and fish farms. Similar incentive policies, together with assistance to infrastructure construction, labour training and tax holidays, can also be found in the fisheries sector development policies of many other non-OECD countries.

Empirical research shows that, in general, international investment incentives play only a limited role in determining the international pattern of FDI (Blomstrom *et al.*, 2000). Factors such as market characteristics, relative production costs and resource availability explain most of the variations in cross-country variations in FDI flows. However, it is clear that investment incentives might play a role for multinational company decisions at the margin where incentives can tilt the investment decision towards a particular country. This is particularly the case for financial incentives like grants, soft loans and similar subsidies which lower the initial costs of investment and reduce the risk of the FDI project. The question is whether the host country's costs for providing the incentives are justified; that is, are the investment incentives likely to yield benefits that are at least as large as the costs?

Foreign investment in the fisheries sectors of non-OECD countries raises a particular issue regarding the impacts of FDI on the health of the marine ecosystem and state of the fish stocks. Where the fisheries management regimes and associated environmental regulations are well-designed and enforced, the direct environmental impact of FDI in the

sector will generally be either benign or positive. However, marine ecosystems are a renewable, often fragile, resource, and sustainable management of the sector requires sound scientific basis for setting management policies and effective enforcement of regulations. To reap the full environmental benefits from FDI, adequate local capacities are needed. The technologies and expertise that are transferred to developing countries in connection to FDI tend to be more modern and environmentally “cleaner” than what is locally available. Moreover, positive externalities have been observed where local imitation, employment turnover and supply-chain requirements led to more general improvements in environmental practices in the host country.

A related concern is that the efforts of policy makers’ in developing countries to attract FDI may lead to “pollution havens” or a “race to the bottom”. While there is some anecdotal evidence of multinational enterprises relocating activities for environmental reasons, empirical studies have found little evidence such practices are widespread (OECD, 2002a). In general, the use of environmentally inferior technologies or practices will not usually be in the better interests of a multinational company and, for companies based in OECD countries, the environmental compliance costs in developing countries are usually minimal from the company’s viewpoint (Araya 2005; Zarsky 2005).<sup>8</sup>

A more pressing concern may be the risk of a “regulatory chill” in developing countries. If a fear of discouraging FDI is a factor in the decisions of host country authorities, it could dissuade policy makers from attempting to upgrade and tighten environmental or regulatory standards. Furthermore, regulatory chill may be a factor in those sectors where the costs of complying with more stringent environmental regulations might be greater than average, such as chemicals, steel or mining (Chudnovsky and Lopez 2002). Compliance costs might therefore play a more significant role in the decision making process of companies in such sectors and, hence, induce a greater degree of regulatory competition amongst developing countries. As a publicly owned and regulated renewable resource, the fisheries sector is one of those sectors where the fisheries management and environmental framework can have a significant influence on the profitability of companies’ operations. No work has been done as yet on the relative impact of environmental regulations on the costs of fishing operations in developed and developing countries, primarily due to the lack of a counterfactual against which to assess the effects of regulations. The extent of regulatory competition that occurs for international investment in the fisheries, either explicitly or implicitly, could be the subject of further research.

However, the developing country issues go beyond immediate concerns about the risks and benefits FDI. They encompass the broader question of the role of the fisheries sector in the development strategies of developing countries and the tradeoffs that governments are willing to make to achieve goals such as increased economic growth and poverty alleviation. One of the overarching concerns of development agencies, such as the FAO, UNEP and UNCTAD, and international banks, such as the World Bank and the Asian Development Bank, is that the sustainability of fisheries in developing countries is not sacrificed in the pursuit of these other development objectives, but are mutually supportive. The programs of these international agencies place considerable emphasis on the development of technical and institutional capacity in fisheries management in developing countries. The aid agencies of individual countries, such as the UK Department for International Development and Danish Agency for Development Assistance, also seek to enhance the management capacity of developing countries through their aid programmes.

Empirical evidence on the success of these efforts is, unfortunately, lacking at this stage although the efforts to improve governance regimes in developing countries are encouraging. Hersoug *et al.* (2004) observe that institution building has been the main slogan in bilateral development assistance to the fisheries sector for the last fifteen years. There are examples of successful fisheries management in developing countries (see, for example, Cunningham and Bostock, 2005), although the evidence is largely anecdotal and somewhat patchy. The risk that the rapid expansion of production in non-OECD fisheries and aquaculture production has been obtained at some cost to environmental standards remains tangible. The extent to which this is linked to foreign investment undertaken by companies based in OECD countries is open to conjecture and would require further analysis.

In summary, while the economic benefits of FDI to developing countries are real, there is general agreement that they do not accrue automatically (OECD 2002a). To reap the maximum benefits from foreign corporate presence, it is essential that the host country has a healthy enabling environment for business as well as an adequate regulatory framework. In cases where the domestic legal, competition and regulatory frameworks are weak or weakly enforced, then the presence of foreign companies in the sector may not lead to net benefits accruing to the domestic economy. While this requirement clearly also applies to OECD countries, it may present greater challenges for developing countries as they may not have sufficiently strong legal and judicial institutions and traditions to ensure sound regulatory practice.

## Conclusion

In a recent book on globalisation, the economist Jagdish Bhagwati observed that foreign direct investment is as good or as bad as the domestic policies governing the sector to which the investments are directed (Bhagwati 2004, p. 178). This observation is even more acute in the case of the fisheries sector. As a common property resource, government policy plays a major role in determining access to fisheries resources and the distribution of those rights. As a result, the impacts of FDI on the sustainability of fish stocks are nested within the effectiveness of the domestic management regime. The oft-quoted concerns about the general impacts of FDI on the environment will largely disappear if effective and enforced management regimes are in place in the host country. Other concerns over the ability to enforce regulations on foreign-owned companies will largely also apply to domestically controlled companies, and may be addressed through the innovative use of reporting and enforcement mechanisms.

Despite the potential benefits from increased efficiency and reduced transactions costs that are likely to flow from liberalising investment in the fishing sector, very few OECD countries have taken this path for their harvesting sectors. One of the major obstacles to liberalisation is a concern that such a policy shift will adversely affect the sovereignty of the host country over its marine areas. A mixture of national pride and national security seem to be at play here, through a perceived loss of control over who exploits the resources and how. Domestic industry protection also appears to be a major obstacle to liberalisation, bolstered by domestic industry and coastal communities voicing concerns over the entry of foreign vessels and companies and the resulting the potential for changes in the pattern of income distribution.

Unfortunately, there is limited empirical evidence on both the scope and impacts of FDI in the OECD fishing sector and so it is difficult to draw definitive empirical conclusions about the potential net benefits from investment liberalisation. In principle, however, it is clear that

effective domestic fisheries management will play a crucial role in determining impacts. Stronger access rights regimes and the use of innovative mechanisms (such as performance bonds), coupled with effective enforcement will increase the likelihood that investment liberalisation will result in an overall increase in the net economic wealth of the host country and in the country of origin of the investment. Nevertheless, the political dimension remains a key factor in addressing the tradeoffs that may be involved in such a process.

The impacts of FDI on the fisheries sectors of developing countries is probably of more immediate policy concern as most flows of FDI seem to be from OECD to non-OECD countries. Even in this case, however, the fundamental message of the work on FDI remains the same: the ability of countries to maximise the benefits of FDI while minimising the adverse effects depends on the regulatory regime in place and the effectiveness with which it is enforced. The key concern for developing countries is therefore adequacy of their domestic institutional frameworks in ensuring sustainable fisheries management while pursuing a range of development objectives. If these are sufficiently well-developed, then inwards FDI to the fishing sector will generally provide net benefits to their economies and support overall development goals.

## Notes

1. The leasing of quota is considered as a trade in a service and is not considered further in this chapter.
2. It is also worth noting that the UK situation is at least partly a result of historical fishing activity. A number of the Anglo-Spanish vessels were on the UK register prior to the introduction of restrictive licensing and so did not need to purchase any capacity or quota entitlements (these entitlements were given out free of charge when they were introduced).
3. Regulated open access is defined as management consisting of catch or effort controls, but with no clearly specified, transferable access rights. In the case of catch controls, there would be no explicit limit on effort, while, in the case of effort controls, there would be no explicit catch limits. Hence, this represents a stylised middle ground on the spectrum of management instruments.
4. As was evident from the survey, it is not sufficient for a foreign investor to purchase a controlling interest in a vessel or fishing country. Most countries require the vessel or company to hold access rights to the fishery and that they be licensed to hold such rights.
5. It is questionable whether foreign investors would even be willing to invest in an open access fishery given the lack of effective access rights and the poor long-term prospects for resource sustainability and economic profitability under open access management regimes. Strategic reasons for such behaviour may include a desire to establish a catch history in a country with the possibility of formal access rights being introduced in the future, a high discount rate being held by the company (which would encourage more rapid exploitation of a resource than is socially optimal), or the purchase of a vessel with the intention of shifting operations when the resource availability declined to unprofitable levels.
6. There are, of course, a variety of ways for technology to be introduced into a country's fisheries sector, including through the purchase of off-the-shelf technologies (such as processing lines, filleting machines).
7. This is a more passive version of competition on environmental standards leading to a "race to the bottom".
8. Chudnovsky and Lopez (2002) note that, as environmental costs represent less than 2% of the GDP in industrialised countries, it is difficult to imagine that they have any significant weight in location decisions.

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## ANNEX II.A1

## *Inventory of FDI Restrictions in the Fishing and Processing Sectors in OECD Countries*

### **Australia**

In the fishing and resource sectors, proposals for the establishment of new businesses involving a total investment of AUD 10 million or more, and proposals for the acquisition of existing businesses with total assets valued at more than AUD 5 million (more than AUD 3 million if greater than half the assets of the businesses are attributable to rural land) are notifiable. Proposals where the target assets or the planned investment outlays are valued above these thresholds (but below AUD 50 million) will normally be approved without examination. Proposals where the valuation is AUD 50 million or more will be approved – unless judged by the government to be contrary to the national interest.

A reservation has been lodged by Australia on ownership of Australian flag vessels, except if these are owned by an enterprise incorporated in Australia. In order to be registered as an Australian flag vessel, a ship needs to be majority-owned by an Australian national (i.e. an Australian citizen, a corporate body established by or under a law of the Commonwealth or of a State Territory).

### **Belgium**

Belgium does not allow acquisition of Belgian flag vessels by shipping companies not having their principal office in Belgium. The right to fly the national flag by vessels and the conditions of ship registration are determined by law.

### **Canada**

#### ***Investments in the fishing fleet***

The main constraint is the policy that fishing enterprises having a foreign ownership level of more than 49% are prohibited from holding Canadian commercial fishing licenses. This long-standing policy, which dates from the 1970s, is intended to prevent foreign companies from gaining access to Canada's fisheries resources through the acquisition of Canadian companies having substantial license holdings. The policy does permit minority ownership of Canadian fish harvesting companies by foreign investors. However, majority ownership would require the forfeiture of any existing licenses held by that company.

### **Investments in processing industry**

There is no limit on foreign ownership of fish processing companies that do not hold a fishing licence. Canadian fish processing companies which have more than 49% foreign ownership are not permitted to hold Canadian commercial fishing licences.

### **Other**

Foreign flag vessels may be authorised (licensed) to fish in Canadian fisheries waters in accordance with bilateral or multilateral fisheries agreements (*e.g.* the International Convention on Future Multilateral Co-operation in the Northwest Atlantic Fisheries, commonly referred to as the NAFO Convention). In addition, foreign vessels may be permitted to fish in Canadian waters under charter arrangements with Canadian companies. However, it is not a common practice to assign Canadian fishing quotas to foreign-owned or foreign-registered vessels.

In addition, Canada has lodged a reservation to current invisible operations in respect of port regulations and pilot charges for expenditures relating to fishing vessels.

## **Denmark**

According to the basic law “The Fisheries Act” (No. 281 of 12 May 1999), ownership of two-thirds of a fishing vessel is limited to those registered as commercial fishermen so as to ensure that only professional fishermen can influence fishing activities. Registration as a commercial fisherman is only possible when the following conditions are met:

- Danish citizenship or a permanent address in Denmark for a continuous period of at least two years.
- Employment onboard a fishing vessel for the previous 12 months.
- 60% of income during these 12 months must derive from commercial fishing.

To comply with the basic principle of non-discrimination in Community law, other EU and EEA citizens can register as commercial fishermen, although they do not meet the requirements of citizenship or permanent address in Denmark. EU and EEA citizens can register if they can prove a genuine link to Danish commercial fishing.

The genuine link to Danish commercial fishing is documented, for example, when a person has a permanent place of business in Denmark or if a minimum of 50% of all his landings are made in Danish harbours. This list is not exhaustive and other kinds of links can be taken into consideration.

To continue to be registered all the above requirements must be met continuously. This applies to any person who becomes registered, regardless of nationality.

There are no restrictions on the last third of the capital. Danes as well as foreigners, commercial fishermen as well as non-commercial fishermen have free access to ownership.

In Denmark there are no requirements concerning the nationality of the crew. Only the owners are subject to restrictions.

The use of Danish fishing rights is linked to the vessel. Fishing vessels engaged in commercial fishing must be registered in Denmark.

As long as the registration as a commercial fisherman is maintained, Denmark does not distinguish on the basis of nationality. There are equal opportunities for all commercial fishermen to own a fishing vessel and to exercise fishing rights.

There are no specific rules that apply to the processing industry.

## Finland

Finland reserves the ownership of Finnish flag vessels to Finnish nationals, including fishing vessels, except through an enterprise incorporated in Finland.

## France

*Quota allocation for French vessels:* Catch quotas allocated to France within the framework of the European Community regulations on conservation and management of fishery resources are reserved to vessels flying the French flag and meeting the following conditions:

- It must have a real economic link with the territory of the French Republic.
- It must be managed and directed from a stable body with a place of business on the French territory.

*Fishing operations and use of marine resources:* Fishing operations and the use of marine resources in French territorial waters or in the EEZ's of the French Overseas Territories, the French Southern Territories and the French Territories in Antarctica are reserved to the vessels flying the flag of France. Prior administrative authorisation, delivered by the French administration is needed. Derogation to this rule is possible under certain conditions.

*Ownership of vessels:* The ownership of a vessel flying the flag of France is subject to the following conditions:

- The vessel must be owned by a national of a member State of the Community.
- The vessel must comply with the French safety requirements laid down in Law No. 83-581 of 7 July 1983.
- Crew: the captain and the first officer must be a French national. The other crewmembers must be nationals of a country of the European Union.

## Germany

There are no restrictions on foreign direct investment in fishing except that the acquisition of a German flag vessel has to take place through an enterprise incorporated in Germany. Registration in the German fishing fleet register is reserved to ships owned by German nationals or companies incorporated in Germany.

## Greece

Foreigners are allowed to hold a maximum of 49% of the capital of a Greek flag vessel for maritime transport or fishing purposes. Non-EU ownership of Greek flag vessels, including fishing vessels, is limited to 49%.

## Iceland

### **Investments in fishing fleets**

Iceland has lodged reservations on foreign investments in fishing and primary fish processing (i.e. excluding retail packaging and later stages of preparation of fish products for distribution and consumption). Foreign investment in companies engaged in fishing and in companies applying for a licence to carry out whaling within the Icelandic territorial waters is restricted as well as foreign investment in primary fish processing (i.e. excluding retail packaging and later stages of preparation of fish products for distribution and consumption).

### **Investments in the processing industry**

No foreign ownership limitations apply to fish processing beyond the stage of primary processing.

### **Ireland**

Ireland has reservation on the acquisition of Irish-registered shipping vessels except through an enterprise incorporated in Ireland. The non-EC nationals' acquisition of sea fishing vessels registered in Ireland may be restricted. The registration of fishing vessels requires ownership by citizens or companies from an EC member State and a license to fish within Irish fishing limits.

### **Italy**

Non-EU ownership of Italian flag vessels, including fishing vessels, is limited to 49%. Companies that seek to invest in Italian vessels need prior authorisation by competent national authorities.

Fishing activity in Italian territorial waters is possible only for vessels holding the Italian flag, owned by Italian or EU subjects and provided with a fishing licence by the relevant Italian authorities.

According to the Italian national legislation, fishing by third countries' nationals is possible only in a framework of reciprocity.

### **Japan**

Japan maintains restrictions on inward foreign direct investments in the fishing industry. Foreign investors wishing to invest in fisheries in Japan are obliged to apply<sup>1</sup> for a permit from the Ministers of Finance and of Agriculture, Forestry and Fisheries, based on the Foreign Exchange and Foreign Trade Law. The Ministers examine the application and can order the change or suspension of the investment if necessary.<sup>2</sup>

Foreigners fishing activities are covered by Article 3 of the Law Regulating Fishing Operations by Foreigners. Except for minor catch activity (*e.g.* jigging by ships of less than three tons) fishing by foreigners in territorial waters of Japan is prohibited. Similarly, fishing by foreigners in the Japanese EEZ, except for minor catching (*e.g.* jigging by ships of less than three tons) are subject to prior permission from the Minister of Agriculture, Forestry and Fisheries according to Article 5 of the Law Concerning the Exercise of Sovereign Rights Concerning Fisheries in Exclusive Economic Zones.

Based on Article 2 of the Fishing Boats Law, the possession of fishing boats is limited to:

- Japanese individuals.
- Companies where the representatives and two-thirds of the directors are Japanese.
- Companies with head offices in Japan and where all representatives have Japanese nationality.

Lending Japanese fishing vessels to foreigners is regarded as exportation. Therefore, prior approval is required from the Minister of International Trade and Industry according to the Export Trade Control Order.

## Korea

### ***Investments in aquaculture and capture fisheries***

All capture fisheries and mariculture of fish, shellfish and seaweed in Korea require a permit or a license from the Central government (Ministry of Maritime Affairs and Fisheries: MOMAF) or the provincial governments. Foreigners wishing to carry out fishing operation in the EEZ need a fishing permit issued by the MOMAF. For sea farming and marine capture fisheries, the law of fisheries allows foreigners to invest in both fisheries. However, foreigners' investments are conditional, on and subject to, obligatory consultation of the provincial governments with the Ministry of Maritime Affairs and Fisheries.

### ***Investments in processing and exports***

There are no special restrictions regarding foreign establishment or investment in processing plants. General rules, mainly regulated by the Ministry of Commerce and Industry, are equally applied to Korean citizens and foreign investors. Imports and exports are regulated through the external trade act. No restrictions are employed as long as exporters are registered with the tariff administration.

## Mexico

In Mexico, the Foreign Investment Law determines and defines the rules for foreign investment and the areas of economic activity in which foreign involvement is considered beneficial and necessary. The Foreign Investment Law, supplemented with the provisions of the 1992 Fisheries Law and the Navigation Law of 1994, determines the operation and specific terms of foreign capital participation in fisheries activities.

Accordingly, fishing foreign investors are allowed to participate by establishing joint ventures or mixed-capital companies with a maximum foreign holding of 49% of the capital. The vessels used for this activity must be registered in Mexican and fly the Mexican flag.

Individuals, or legally incorporated Mexican companies, including companies with foreign capital, are allowed to register vessels on their own behalf or deploy them through contracts as Mexican – registered craft. Operators must request and obtain the corresponding Fishing Permits from the National Commission for Aquaculture and Fisheries.

In activities such as storage, distribution and for processing and marketing of fisheries products foreign investors are allowed to participate with up to 100%, i.e. unlimited.

In aquaculture activities, foreign capital participation can also account up to 100% if it is allocated in areas or waters within Federal jurisdiction and subject to having an authorisation from the National Commission for Foreign Investment.

## Netherlands

Foreign investment in vessels or companies operating in the Netherlands harvesting sector is permitted when two-thirds or more of the investment is provided by a member State of the European Union. There must also be a (sub) office located in the Netherlands. The vessel must be registered in the vessel registry of the Netherlands and must be mostly operated from the Netherlands and mostly harboured in the Netherlands.

## New Zealand

An overseas person wishing to own fishing quotas in New Zealand must obtain permission from the Ministry of Fisheries and the Treasurer. An overseas person is:

- a person who is not a New Zealand citizen and who is not ordinarily resident in New Zealand; or
- a company or corporate body that is incorporated outside New Zealand, or any company that is a subsidiary of a company or corporate body incorporated outside New Zealand; or
- a company in which:
  - ❖ 25% or more of any class of shares is held by any overseas person(s); or
  - ❖ the right to exercise or control the exercise of 25% or more of the voting power at any meeting of the company is held by any overseas person(s); or
- any nominee of an overseas person.

More detailed information is available at [www.oic.govt.nz/invest/fishquota.htm](http://www.oic.govt.nz/invest/fishquota.htm).

## Norway

### **Investments in processing and exports**

There are no special restrictions regarding foreign establishment or investment in processing plants. General rules, mainly regulated by the Ministry of Trade and Industry, are valid. Exports are regulated through the Fish Export Act of 1990. No restrictions are employed as long as the exporter is registered with the Norwegian Seafood Export Council, and a yearly fee of NOK 15 000 is paid to the Council. However, as a general rule, processing, packing or re-loading fish, crustaceans and molluscs or parts and products of these, is not allowed on a foreign-controlled vessel inside the fishing limits or the Norwegian Exclusive Economic Zone.

### **Investments in aquaculture**

All farming of fish and shellfish in Norway requires a special permit from the authorities. For sea farming of salmon and trout there is also a system of limited entry. No new licences for salmon and trout were issued between the mid-eighties and 2002. In 2002 and 2003 however 30 and 50 new licences were issued. As of 2004 the total number of licences for aquaculture production of salmon and trout were 913. The central fisheries authorities decide the number and regional distribution of new licences.

### **Investments in the fishing fleet**

#### *Foreign direct ownership*

According to 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 members, including the Chair of the Board, are Norwegian citizens and have resided 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 cast at least 60% of the votes. There are no restrictions on crew nationality.

### *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 company owning a boat has to be owned by persons who qualify for owning a fishing vessel.

## **Poland**

There are no restrictions to the foreign direct investments in the fisheries sector. However, all catch quotas are reserved for sea fishery vessels of Polish nationality only. Catch quotas may be exchanged within the framework of the IBSFC or under bilateral arrangements. There are no restrictions concerning crew nationality. However, members of crew must hold the certificate of competition issued in accordance with STCW 95 Convention (STCW 95, annex to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers of 7 July 1978, as amended in 1995) and which is issued or endorsed by the Polish Maritime Administration.

## **Portugal**

*Ownership of fishing vessels:* Decree (Decreto Lei) 525/99 of 10 December 1999 requires that the owners of vessels that have a catch quota entitlement, provide evidence, on an annual basis, of the existence of an economic link with Portugal.

### **Restrictions on services**

*Chartering of fishing vessels:* Article 9 of Decree (Decreto Lei) No. 278/87 of 7 July 1987 (as modified by Decreto Lei 383/98 of 27 November 1998) lays down the conditions under which fishing vessels from a third country can be chartered. Chartering is subject to previous authorisation of the member of the Portuguese government in charge of fisheries. Authorisation can be granted if the chartering of a foreign vessel is intended to:

- Temporarily replace a vessel whose construction or modification has been authorised, provided has identical fishing characteristics.
- Test new types of vessels, new fishing gear and fishing techniques or explore new fishing areas.

Furthermore:

- The species caught and the “on board” processing by the chartered vessels result in the products as being of Portuguese origin.
- The chartered vessels are subject to the same legal provisions as the ones applicable to Portuguese fishing vessels.

Regulatory Decree (Decreto Reglamentar) 7/2000 of 30 May 2001 in its Article 72 lays down the conditions to grant authorisation for the chartering of vessels. The authorisation to charter foreign vessels is granted for a maximum period of two years. Nevertheless, the authorisation expires when the condition for granting it (Article 9 of Decreto Lei 278/87) ceases to exist.

The chartering of Portuguese fishing vessels is also subject to previous authorisation from the member of the Portuguese government in charge of fisheries. The authorisation is valid for one year and renewable for the same period.

## Spain

Spain does not have any restrictions on foreign direct investments in the fishing industry.

## Sweden

*Ownership of vessels:* As a general rule a ship is to be considered Swedish and has the right to have Swedish flag if more than half of the owners are Swedish citizens or Swedish juridical persons. For more detailed information see the Law of the Sea (1994:1009).

*Fishing operations and fish quotas:* In order to perform a professional fishery the fisher needs fishing vessel permission (fishing license). If you have such a license you are allowed to fish on the Swedish quotas. Licenses are granted according to the stock situation. The fisher must also have a connection to the Swedish fishing industry. This connection can be demonstrated by:

- Landings in Sweden.
- The start of the fishing trip is a Swedish port.
- The fisher lives in Sweden.

For more detailed information see the Ordinance of the National Board (1995:23).

## Turkey

Turkey does not have restrictions on foreign investments in aquaculture and fish processing establishments. All fish farms require a license from the Ministry of Agriculture and Rural Affairs. However, according to Fisheries Law No. 1380, Article 21 it is prohibited for non-Turkish citizens to enter the fishing areas and inland waters mentioned in Article 8 of the Territorial Waters Law No. 476, and to practise fishing activities in these areas.<sup>3</sup>

## United Kingdom

Under the “Merchant Shipping (Registration of Ships) Regulations 1993” on fishing vessel ownership, for a vessel to be registered in the UK, it must meet the following requirements:

- Legal and beneficial title to the vessel must be vested in one of the following:
  - ❖ a British Citizen;
  - ❖ a national of a member State established in the UK;
  - ❖ a body incorporated in a member State established in the UK;
  - ❖ a body incorporated in a member State with a place of business in the UK;
  - ❖ European Economic Interest Groupings registered in the UK;
  - ❖ a UK local authority.
- It must be managed and its operations controlled and directed from within the UK.
- If legal title to the vessel is vested wholly in someone who is not resident in the UK, a representative must be appointed who is either an individual UK resident or a body incorporated in a member State with a place of business in the UK.



- It is a condition of a vessel's fishing licence that at least 75% of the crew on board the vessel at any time shall be nationals of member States of the European Community or the European Economic Area, or a combination of both.

As from 1 January 1999 fishing vessels will be required to ensure a real economic link with the UK by one of the following four options:

- landing at least 50 % by weight of the vessel's catch of quota stocks into the UK; or
- employing a crew of whom at least 50 % are normally resident in a UK coastal area; or
- incurring a given level of operating expenditure in the UK for goods and services provided in UK coastal areas; or
- demonstrating an economic link by other means (including combinations of the above) providing sufficient benefit to populations dependent on fisheries and related industries.

## United States

The United States has no restrictions on investments in shore-side operations such as processing plants. The US does maintain laws that prohibit the transportation of merchandise between points in the US except on US built vessels documented under US law and owned by citizens of the US. These laws are collectively known as the Jones Act.

The American Fisheries Act has had a significant impact on foreign direct ownership/shareholding restrictions. The American Fisheries Act of 1998 made the following changes:

- US ownership requirement has been increased from 51% to 75%.
- Vessels longer than 165 feet, more than 750 GRT, or with engines that generate over 3 000 hp became ineligible for licenses to operate in US Federally managed fisheries, except under certain precisely defined exceptions.
- Responsibility within the US government for administering these requirements in respect of vessels over 100 feet long was given to the Department of Transportation, Maritime Administration.

However, foreign-flag vessels may not fish or process fish in the 200 nautical miles US exclusive economic zone except under the terms of a Governing International Fisheries Agreement (GIFA), or other agreement consistent with US law. Foreign-controlled enterprises may not engage in certain fishing operations involving coastwise trade. In addition, foreigners may not hold more than a minority of shares comprising ownership in companies owning vessels that operate in US fisheries. Also, corporate organisation requirements pertain to the registration of flag vessels for fishing in the US exclusive economic zone.

## Notes

1. There has been yet no application for foreign direct investments to fisheries in Japan.
2. These include share acquisition of non-listed companies in stock exchanges, one-tenth or more of acquisition of the total shares of listed companies in stock exchanges, and the establishment of a branch office.
3. In the 7th Paragraph of Article 3, Turkish citizens and foreigners who catch fish for non-commercial or sportive purposes with small scale gears in the areas where fishing is not prohibited are not obliged to get a fishing licence. The matters concerning the methods and principles of this type of fishing are arranged by a regulation.



## PART III

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PART III  
*Chapter 1*

## **Australia**

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## Main characteristics of the Australian fishing sector

Australia's exclusive economic zone (EEZ) is the third-largest in the world. It covers approximately 10.3 million square kilometres; one-and-a-third times the area of Australia's land mass. Australia's commercial catch ranks approximately 60th in the world, representing 0.2% of world tonnage – although it is 2% by value. The volume and value of production in Australian fisheries have been affected recently by unfavourable movements in a number of important variables (including rising fuel prices and the appreciation of the Australian dollar).

In 2004-05, Australia's total exports of fisheries products were valued at AUD 1.54 billion with Japan and Hong Kong the main export markets for Australian edible fisheries exports. Australia imported AUD 1.17 billion of fisheries products in 2004-05; 82% (AUD 959 million) of the gross value of imports were edible fisheries products consisting of finfish, crustaceans and molluscs and in particular prawns, frozen finfish fillets and canned fish.

Various management measures are in place to manage fish stocks including input controls (*e.g.* limited entry, cod end mesh size restrictions, limited entry, geographic zones, trigger catch levels and TACs as well as output controls (*e.g.* ITQs) in the Southern Bluefin Tuna fisheries. Compliance is achieved through a combination of measures, including continued education and stakeholder participation in the development of management rules, effective law enforcement deterrents involving targeted operations and inspections, intelligence gathering, risk assessments and mitigation measures. In response to increasing numbers of IUU fishing incursions in Australia's northern EEZ, the Australian government has continued to commit increased resources to combat IUU fishing.

The management and regulation of aquaculture is still primarily a state responsibility as no aquaculture activities are currently carried out in Commonwealth waters. However, the Australian government does play a role in aquaculture development, especially in the co-ordination of government policy over national issues such as quarantine, disease outbreak controls, product quality, labelling, trade and taxation. The Australian government also continues to contribute to funding for education and research.

Australia's *Securing our Fishing Future* package, released in 2005, was designed to create a sustainable and profitable operating environment in Commonwealth-managed fisheries. The package includes a AUD 220 million structural adjustment package, a range of new fisheries management measures in Commonwealth fisheries and the declaration of Marine Protected Areas (MPAs) in the South-east Marine Region. The financial package included a AUD 150 million one-off, voluntary tender process to allow individual fishing businesses to rationalise or exit the industry, AUD 20 million for community assistance, AUD 30 million for onshore and related business assistance and AUD 21 million for a levy subsidy.

## Australia – Summary statistics

Figure III.1.1. **Harvesting and aquaculture production**

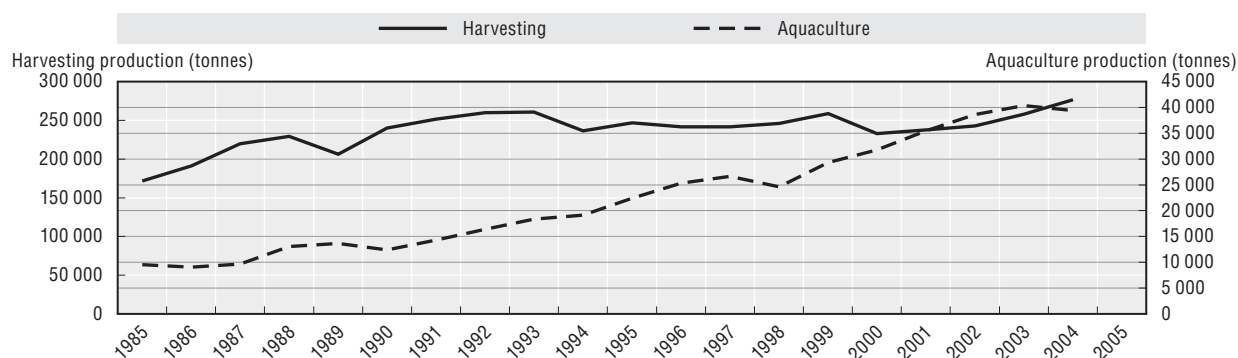


Figure III.1.2. **Key species of fisheries production by value in 2004/05**

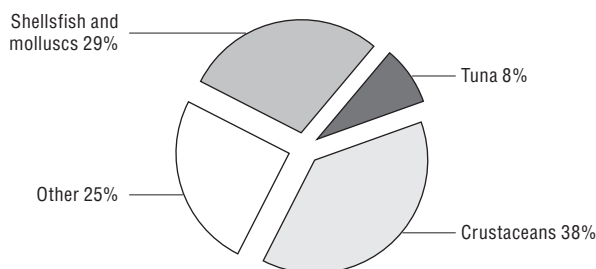


Figure III.1.3. **Trade evolution**

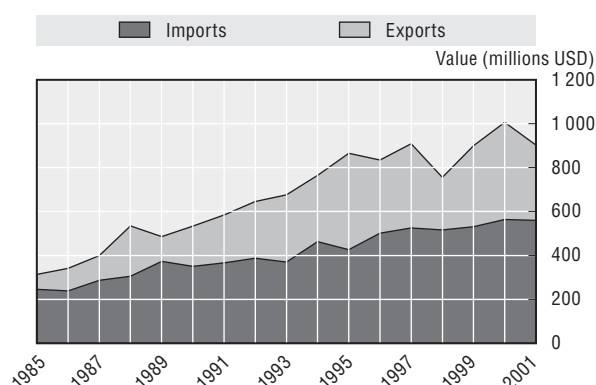


Figure III.1.4. **Evolution of government financial transfers**

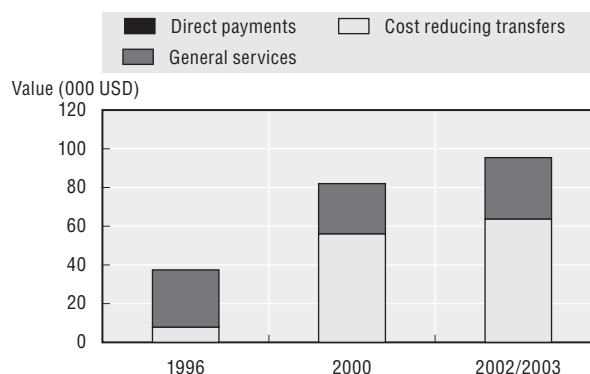


Figure III.1.5. **Production profile**

	1996	2005
Number of fishers	9 200	14 729
Number of fish farmers	3 900	3 533
Total number of vessels	1 179	n.a.
Total tonnage of the fleet	60 732	n.a.

n.a.: Not available.

Source: Figures III.1.1 and III.1.3: FAO; Figures III.1.2, III.1.4 and III.1.5: OECD.

## ADDITIONAL DETAILS<sup>1</sup>

### Legal and institutional framework

The Australian Fisheries Management Authority (AFMA) manages fisheries under Commonwealth jurisdiction in accordance with the provisions of the *Fisheries Management Act 1991* (FMA). Principal management instruments include input controls such as limited entry, seasonal and area closures, number of fishing vessels, gear and mesh size restrictions, and output controls, such as Individual Transferable Quotas (ITQs) as part of a Total Allowable Catch (TAC). Input controls have been used commonly but output controls are now being increasingly used.

AFMA places emphasis on a partnership approach between fisheries managers, industry, scientists, fishing operators, environmentalists/conservationists, recreational interests, other stakeholders and the general public. Implementation of the partnership model is facilitated by Management Advisory Committees (MACs) or Consultative Committees (CCs). AFMA is also responsible for enforcing the provisions of the FMA through the detection and investigation of illegal activities by both domestic and foreign fishing boats in the Australian Fishing Zone (AFZ) and Commonwealth managed fisheries.

Federal,<sup>2</sup> state and territory governments are responsible for managing fisheries and aquaculture within their jurisdictions. The *Offshore Constitutional Settlement 1983* (OCS) is the jurisdictional arrangement between the Commonwealth and states/NT that sets out responsibilities for offshore fisheries, mining, shipping and navigation and crimes at sea. It provides for state/NT laws to apply inside three nautical miles and for Commonwealth laws to apply from three to 200 nautical miles. However, Commonwealth and state/NT fisheries legislation allows alternative arrangements to be made for a fishery that override the existing jurisdictional lines set out by the OCS. Such arrangements, known as OCS fisheries arrangements, are intended to provide a more efficient and cost-effective management structure of Australian fisheries, as fish stocks do not necessarily align with legal boundaries.

There are five types of OCS fisheries arrangements that allow for single or co-management of fisheries:

- **Status Quo Management:** Where no agreement under the OCS has been reached between the Australian government and the relevant state. The state controls fishing in waters within 3 nautical miles and the Australian government has responsibility for fisheries from 3 nautical miles out to 200 nautical miles.
- **State Management:** Where an arrangement under the OCS provides for the relevant state to manage a fishery located in the waters of only one state. Here management occurs under state law.
- **Commonwealth Management:** Where an arrangement under the OCS provides for the Australian government to manage a fishery located off one state. Here management occurs under Commonwealth law.
- **Joint Authority Management:** Where an arrangement under the OCS provides for the Australian government and one or more states to form a single legal entity, which manages a fishery under a single law, either Commonwealth or state.
- **Regional Management:** Where an arrangement under the OCS provides for the Australian government and two or more states to manage a fishery under a Joint Authority under one or more laws. Management can occur under Commonwealth or state laws and the Commonwealth can take a stewardship or active management role.



In December 2005, the then Australian government Minister for Fisheries, Forestry and Conservation issued a formal Ministerial Direction to AFMA to implement a range of measures to address overfishing and to prevent overfishing in the future. The Ministerial Direction identified the need for urgent action to halt overfishing and to recover overfished stocks rapidly to sustainable levels.

The Ministerial Direction to AFMA contained a number of actions, including:

- adoption of world's best practice harvest strategies for all Commonwealth-managed fisheries to ensure a strategic, science-based approach to setting total allowable catch levels;
- implementing the government's long held policy of introduction of output controls in the form of individual transferable quotas in all Commonwealth fisheries, unless strong reasons exist to do otherwise;
- establishment of a system of independent surveys to increase the transparency and integrity of catch and effort information; and
- enhanced monitoring of fishing activity, for example, by using observers and, increasingly, electronic means (such as vessel monitoring systems and on-board cameras).

The gross value of production from state and territory wild catch fisheries in 2004-05 rose by AUD 4.1 million to AUD 1.15 billion. However, with the value of production of Commonwealth wild catch fisheries falling from AUD 342 million to AUD 323 million, Australian wild catch fisheries production as a whole continued to decrease in 2004-05.

The Australian government's, *Looking to the Future: A Review of Commonwealth Fisheries Policy*, commits to exploring means of ensuring that traditional indigenous fishing is more effectively incorporated into Commonwealth fisheries management. The Australian government will also examine opportunities for the involvement of indigenous people in commercial fishing and aquaculture and ways to improve economic benefit and work on the development of an Aboriginal and Torres Strait Islander fishing strategy. An analysis is also proposed to identify and compare the supply chain used by commercial indigenous fishers and non-indigenous fishers, including market prices received for catch that can assist to obtain similar economic benefits in the future as non-indigenous commercial fishers.

## Capture fisheries

### Fish stock status

The number of primary stocks or species classified as not overfished has remained stable since 1997. However, since 1992 the number of primary stocks or species classified as overfished increased from five to 17 in 2004. The number classified as uncertain has increased from a mean of 12 in 1993-96 to a mean of 36 in 1998-2004. The large number of stocks classified as uncertain (41 in all) is a cause for concern. These stocks require assessment to establish an appropriate classification. The level of uncertainty highlights the importance of applying a precautionary approach in fisheries management.

Of the 74 target species for which statistics were available in 2004, 17 were classified as overfished – an increase of one from 2002-03, 17 as not overfished and 40 as uncertain. The number of species classified as overfished has increased from five in 1992 to 17 in 2004. Lower priority species and bycatch species have not been classified. Of the primary species or stocks classified in *Fishery Status Reports 2002-2003*, the following remain classified in *Fishery Status Reports 2004* as subject to overfishing and/or are overfished: southern bluefin tuna; eastern gemfish; school shark; southern scallop; Torres Strait sandfish, black teatfish

and surf redfish (bêches-de-mer, trepangs or “sea-cucumbers”) and rock lobster; Coral Sea black teatfish; orange roughy in the Southern and Eastern Scalefish and Shark, and South Tasman Rise fisheries; blue warehou; redfish; silver trevally, and Indian Ocean bigeye tuna. Species newly classified as subject to overfishing are pink ling and Pacific Ocean bigeye tuna, but these stocks are not classified as overfished.

AFMA has implemented management measures intended to bring about the recovery of most overfished stocks, but it will be some years before the adequacy of these measures will become apparent for many of these stocks. The status of most of the species caught incidentally to target species has not been assessed, even though they may contribute substantially to the market value of a fishery.

### **Management of recreational fisheries**

Recreational fishing in Australia is defined as fishing that is not for commercial purposes, including charter fishing, but excluding traditional indigenous fishing. The Australian government can manage recreational and charter fishing if this power is written into a Commonwealth fisheries management plan or temporary order. However, the day-to-day management of recreational and charter fishing is for the most part undertaken by the state and territory governments. The main forms of management action within Australia’s recreational fisheries include controls on the types and amounts of gear that may be used; the size (minimum and/or maximum), sex and/or number of fish that may be landed of a given species; seasonal and or area closures, and prohibition on the sale of fish.

### **Monitoring and enforcement**

AFMA administers compliance programs directed at both domestic and foreign fishing vessels, covering licensed and illegal fishing activity. The Commonwealth also has flag state responsibilities for fishing undertaken by Australian boats on the high seas under international treaties and agreements. AFMA’s main monitoring and enforcement functions include:

- ensuring compliance with AFMA’s domestic fisheries management measures;
- ensuring licensed foreign boats comply with conditions for fishing within the AFZ; and
- surveillance and apprehension of unlicensed foreign vessels fishing in the AFZ, including conducting deterrence.

Effective compliance is achieved through a combination of measures, including continued education and stakeholder participation in the development of management rules, effective law enforcement deterrents involving targeted operations and inspections, intelligence gathering, risk assessments and mitigation measures. Specific measures include monitoring activities and a comprehensive catch/landing reporting system for quota. In the majority of fisheries managed by AFMA, vessel monitoring systems are used to provide real-time position reporting of boats and movements in and out of port. Vessel monitoring systems will be mandatory on all Commonwealth licensed fishing vessels by July 2007.

Illegal foreign fishing in Australia’s northern waters, mostly by Indonesian fishers, continues to occur, with a record number of apprehensions for the 2005-06 financial year. Illegal fishing incursions present an unacceptable risk to Australia’s fish stocks and marine life, and the vessels and crews pose a range of environmental, quarantine, health and security threats to Australia.

Australia remains very concerned about the effect of increasing IUU fishing on world fish stocks and the marine environment. A strong stance has been taken on the issue through a broad international strategy including on-the-water presence and diplomatic measures supported by a comprehensive legislative framework. In response to increasing numbers of IUU fishing incursions in Australia's northern exclusive economic zone (EEZ), the Australian government has continued to commit increased resources to combat against IUU fishing. Over AUD 750 million has been committed since 2005, in addition to the significant resources already dedicated to existing measures. These increased resources have significantly increased Australia's on-the-water enforcement capacity, including an expanded Joint Offshore Protection Command to control and co-ordinate all on-the-water operational activities for civil maritime security, and continued funding for the Southern Ocean armed patrol programme.

Numbers of apprehensions and interceptions of illegal foreign fishing vessels have steadily increased since 2000 with record numbers achieved in 2005. The trend has been maintained in 2006. By September 2006, Australian authorities had already apprehended 282 vessels, surpassing the record number of apprehensions in 2005.

### **Multilateral agreements and arrangements**

Australia is a member of a number of regional fisheries management organisations (RFMOs), including the Commission for the Conservation of Southern Bluefin Tuna, the Indian Ocean Tuna Commission and the Western and Central Pacific Fisheries Commission (WCPFC). Through these organisations, Australia continues to pursue the adoption of conservation and management measures, underpinned by appropriate compliance arrangements, designed to ensure tuna resources in these oceans are maintained at levels that can be sustainably utilised in the long term. Australia is also an active member of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

## **Aquaculture**

Aquaculture is an important component of Australian fisheries production. In 2004-05, the value of aquaculture production fell by 14% to AUD 611 million, driven by a fall in the value of southern bluefin tuna production. The value of Australian aquaculture has continued to be primarily derived from four sectors: oysters (pearls and edible), salmon, tuna and prawns.

Since 1999 the Australian government has continued to be actively involved in encouraging the aquaculture industry to expand and become internationally competitive and sustainable. In 2003 the Australian government, in partnership with industry, implemented the Aquaculture Industry Action Agenda (AIAA) for the Australian aquaculture industry. The Australian government undertook major initiatives as part of the AIAA. These initiatives are:

- developing a National Aquaculture Policy Statement, which will send a clear signal to all members of the aquaculture industry, as well as domestic and international investors and the wider Australian community that there is strong support in this country for a sustainably managed aquaculture sector;
- promoting a regulatory and business environment that supports an efficient and effective aquaculture industry, and helps attract new investment;

- implementing an industry-driven action agenda that will help build a responsive and competitive industry that can work closely with government and the Australian community;
- ensuring the industry grows within an ecologically sustainable framework, which will help ensure aquaculture expands its production base by improving its long-term sustainability and access to resources;
- protecting industry from aquatic diseases and pests to help protect Australia's relatively clean, green and disease-free natural resource base;
- investment promotion and attraction to realise aquaculture's goal of tripling its worth to AUD 2.5 billion by 2010. There will need to be a substantial capital investment across the industry for this goal to be realised;
- promoting aquaculture products in Australia and overseas to capitalise on our widespread and hard-won reputation as a supplier of safe, wholesome and high-quality products;
- maximising the benefits of targeted research and innovation and share experiences with "best practice" operations;
- making the most of education and workplace training to improve the skills and flexibility of workers in the aquaculture sector, and convert the industry's intellectual capital into a highly competitive product; and
- creating an industry for all Australians, including promoting indigenous aquaculture development through initiatives such as the *National Aquaculture Development Strategy for Indigenous Communities in Australia*.

## Fisheries and the environment

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC), Commonwealth fisheries are subject to strategic environmental assessments under Part 10 of the EPBC Act, and are also assessed against the export provisions of Part 13A and the protected species provisions of Part 13 of the EPBC Act. All State-managed fisheries with an export component also need to be assessed under Part 13A of the EPBC Act in order to enable product from those fisheries to be exported and, if they operate in Commonwealth waters, under Part 13. The management arrangements for each fishery are assessed against the *Guidelines for the Ecologically Sustainable Management of Fisheries* and, once accredited, the fishery is considered to be managed in an ecologically sustainable way.

The *Natural Heritage Trust* (NHT) was established by the Australian government in 1997 to help restore and conserve Australia's environment and natural resources. The NHT brings together the efforts of individuals, communities and governments to target Australia's environmental problems at their source. In 2001, the government announced an additional AUD 1 billion for a second phase of the NHT from 2002-07 with funding provided for environmental activities at community, regional and national levels. A number of fish and marine related projects are being funded at the national level.

In 2005, the Australian government brought its *Marine Bioregional Planning* programme directly under the EPBC Act. The plans will be known as Marine Bioregional Plans to reflect the part of the EPBC Act under which they will be established. This initiative gives new impetus for the implementation of Australia's Oceans Policy by streamlining the planning process and providing greater guidance about marine environment conservation priorities. The process includes the identification and establishment of marine protected areas

(MPAs) in the Commonwealth managed waters around Australia (which excludes the coastal waters managed by the States and Northern Territory).

The development of a *National Representative System of Marine Protected Areas* (NRSMPA) is a key component of Australia's Oceans Policy. The NRSMPA is a commitment to establish a national system of MPAs that aims to contain a comprehensive, adequate and representative sample of Australia's marine ecosystems. Several marine protected areas have been established since in launch in 1998.

## Government financial transfers

The Australian government policy is that fisheries management regimes are designed to facilitate market based autonomous adjustment to changes in fisheries management arrangements. Estimates of transfers to the fishing industry from the Australian government amounted to AUD 49.16 million and were exclusively used on general services.

On 23 November 2005, the Australian government announced a AUD 220 million structural adjustment package for the Australian fishing industry which included a range of new fishing management measures in the Commonwealth fisheries, the declaration of new MPAs in the South-east Marine Region and a range of assistance measures designed to reduce fishing capacity and better position the industry to be profitable and self-adjust in the future. The competitive tender process is specifically focused on reducing excess fishing capacity in fisheries that are subject to over-fishing or at significant risk of over-fishing.

## Post-harvesting policies and practices

There are general requirements in the *Australia New Zealand Food Standards Code* (the Food Standards Code) that all foods offered for sale should be safe for human consumption. In March 2005, the Food Safety Australia New Zealand (FSANZ) Board approved the *Final Assessment Report for the Primary Production and Processing Standard for Seafood*. That report contains a scientific evaluation of risk within the seafood industry and management options to minimise this risk. It proposed applying basic food safety requirements to the seafood industry and documented food safety management systems to the highest risk sector of the industry, seafood businesses that handle oysters and other bivalves.

## Outlook

The Australian fisheries industry has been through a period of substantial challenge and change in recent years. The combined impacts of softening global demand, a stronger Australian dollar which has encouraged imports and discouraged exports, generally declining fishery resources and declining fisher returns has placed pressure on many parts of the industry. These circumstances have arisen despite a generally positive consumer attitude to seafood and willingness by consumers to increase the amount of seafood in the diet.

The recently announced AUD 220 million federal government restructuring package *Securing our fishing future* aims at reducing overfishing in some of Australia's most pressured fisheries by removing excess capacity from the industry. The package is a positive step for the long-term welfare of the industry. The switch by some fisheries to Statutory Fishing Rights (SFR)-based fishing permits, along with improved science regarding the available commercial catch, will obviously cause some pain while a fishery adjusts through rationalisation. However, it will help put these fisheries on a more sustainable long-term footing.

Another positive sign has been the rapid growth in aquaculture in recent years. The two primary drivers of this have been the Tasmanian salmon sector and the tuna ranching operations of South Australia. Businesses in these sectors are demonstrating that innovation and investment in technology and proven land based farming techniques can help drive productivity and industry growth.

### **Notes**

1. See also [www.afma.gov.au/](http://www.afma.gov.au/), [www.affa.gov.au/](http://www.affa.gov.au/), [www.australia.gov.au/161](http://www.australia.gov.au/161).
2. References made to the Australian or Commonwealth government throughout this paper mean the Federal government of Australia.

PART III  
*Chapter 2*

## Canada

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## Main characteristics of the Canadian fisheries sector

Commercial harvest of fish and seafood products has declined since 2003 from CAD 2.6 billion to CAD 1.9 billion in 2005. The overall volume of Canadian commercial landings has also declined from 1.11 million tonnes (mt) in 2003 to 1.02 mt in 2005. The decline in value is due in part to the appreciation of the Canadian dollar relative to the United States dollar, as the majority of Canadian fish and seafood products are exported to the United States.

Canada uses a variety of instruments to manage fisheries. Those instruments deal with input (e.g. limited entry) or output (Individual Quota) controls and other various types of controls (e.g. by-catch limits, observer coverage). The *Species at Risk Act* (SARA) 2003 provides a framework for protecting species at risk under Federal jurisdiction. This has resulted in new management measures including by-catch measures or gear modifications to protect specific species.

Recreational fishing is an important and growing segment of Canadian fisheries. In total, anglers spent CAD 4.7 billion on recreational fishing within Canada in 2000.

Fisheries and Oceans Canada (DFO) has had increasing involvement with Aboriginal groups over the past 15 years. Today, DFO has one of the largest federal on-the-ground presences in coastal Aboriginal communities and is, therefore, in a position to contribute to the broader objectives of improving the socio-economic conditions of Aboriginal peoples and their communities.

Aquaculture operations can be found all across Canada, producing diverse species under a variety of culture methods. In 2004, the Canadian production of aquaculture was valued at CAD 527 million, and employed approximately 16 000 people. In 2004, 145 840 tonnes of cultured seafood were produced from approximately 454 firms across the country. A total of 73 coldwater species are farmed in Canada, with the predominant species being Atlantic salmon, rainbow trout, mussels and oyster.

Fish consumption per capita in Canada declined to a record low in the mid 1990s and then soared to a record high of 10 kg per person in 1999. Consumption of fish has been generally steady in the past several years, reaching 9.78 kg per person in 2003.

In 2005, Canada exported fish and seafood products to more than 100 countries, totaling CAD 4.3 billion. The United States remains Canada's top export destination accounting for more than 60% of all Canadian fish and seafood exports. Canada's imports of fishery products remained steady at just over CAD 2 billion in 2005. Fresh and frozen shellfish remain the leading import items, representing 37% of the total value of imports of fisheries products in 2005, with a value of CAD 767.7 million.

Global competition, rising fuel costs and the appreciation of the Canadian dollar relative to the US dollar are posing challenges for the Canadian fish and seafood industry along the seafood value chain (i.e. harvesting, processing, trade and distribution, and retail).



## Canada – Summary statistics

Figure III.2.1. **Harvesting and aquaculture production**

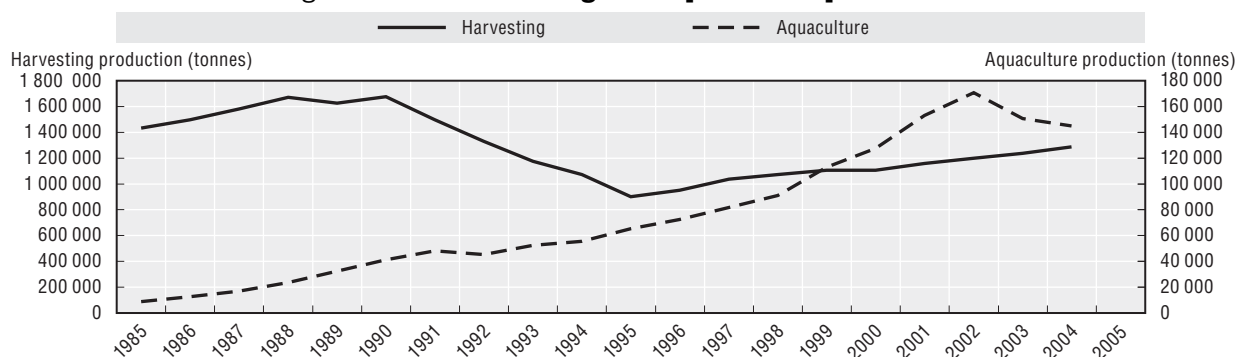


Figure III.2.2. **Key species landed by tonnage in 2004**

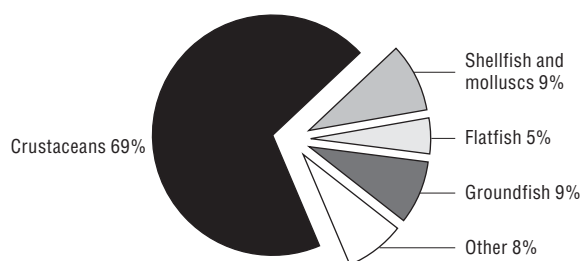


Figure III.2.3. **Trade evolution**



Figure III.2.4. **Evolution of government financial transfers**

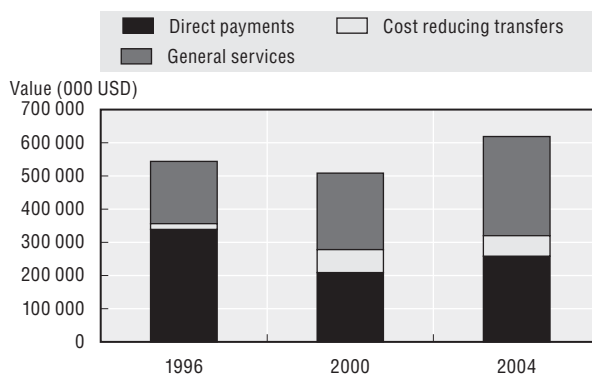


Figure III.2.5. **Production profile**

	1996	2004
Number of fishers	n.a.	41 043 <sup>1</sup>
Number of fish farmers	n.a.	7 200 <sup>2</sup>
Total number of vessels	27 105 <sup>3</sup>	22 966
Total tonnage of the fleet	n.a.	n.a.

n.a.: Not available.

1. Does not include recreational fishers (32 538 in Atlantic, 8 505 in Pacific).

2. Data in 2003.

3. Vessels in 1997.

Source: Figures III.2.1 and III.2.3: FAO; Figures III.2.2, III.2.4 and III.2.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The Constitution Act 1867 gives the federal government exclusive jurisdiction over all aspects of fisheries and fish habitat management in marine waters. In inland waters, where there is a property right to fisheries, constitutional jurisdiction is a shared federal-provincial-territorial responsibility. The federal government, led by Fisheries and Oceans Canada (DFO), is responsible for the conservation, protection and sustainable use of all fisheries and fish habitat in Canada. It has the right to preserve, protect and manage the fisheries and to legislate with respect to the protection of fish habitat and waters frequented by fish, whether they occur in Canada's exclusive economic zone (EEZ) or inland waters. Provinces and territories have arrangements for the administration of federal fisheries regulations, which empower provincial and territorial officials responsible for enforcing relevant provincial and territorial legislation to administer and enforce federal fishery legislation. Concerning aquaculture, responsibility is shared by Federal, provincial and territorial governments.

### Capture fisheries

#### **Status of fish stocks**

On the Atlantic Coast, stocks show different short-term outlooks. The major invertebrate resources, as well as pelagic species, remain relatively healthy although there have been declines in some lobster fishing areas and downward fluctuations in crab abundance that are part of their long-term natural cycles of abundance. This contrasts with the state of most groundfish stocks, which remain at or near record low levels.

On the Pacific Coast, despite some local concerns that led to conservation measures, the major stocks are at or above long-term average conditions. Concerning Pacific salmon, while some stocks remain strong, other co-migrating stocks are less abundant primarily due to poor marine productivity and as a result, fisheries on some stocks have been restricted to protect weaker stocks. Conservation measures in place to protect weaker stocks have provided mixed results for sockeye, coho and chinook salmon. Some stocks have responded to measures such as reduced fishing pressure and recovered, while other stocks have not, despite extensive conservation measures.

#### **Resource management**

Canada has held several major program and policy reviews over the last several years to examine the way fisheries are managed and to develop a plan of action to modernise fisheries management governance. These reviews, developed and confirmed with the participation of resource users and others, have resulted in Fisheries Management Renewal (FMR). FMR is a package of program and policy renewal activities that are based on the principles of stability, transparency and predictability. The four objectives of FMR are: strong conservation outcomes, shared stewardship, stable access and allocation, and a modernized compliance regime. FMR objectives are being implemented incrementally, in a manner consistent with the constitutional protection provided to Aboriginal and treaty rights and consistent with international fisheries treaties. Conservation outcomes will be achieved by working with resource users to develop risk management frameworks into fisheries management planning that includes the application of the precautionary and

ecosystem approaches. Shared stewardship will be achieved by promoting collaboration, participatory decision-making, shared accountability and responsibility with resource users and others with an interest in the fishery resource.

### **Recreational fisheries**

A complex mix of federal, provincial and territorial jurisdictions is responsible for the management of Canadian recreational fisheries. These responsibilities are based on judicial interpretations, as well as specific federal/provincial/territorial agreements and Memoranda of Understanding. With respect to freshwater species, provinces and territories are generally responsible for: management and allocation of freshwater species (where delegated), licensing, enforcement, industry promotion and marketing. The federal government retains management responsibilities in tidal waters. The recreational fisheries are major economic generators in Canada. In particular, the Pacific coast marine recreational fishery, catching primarily salmon and halibut, is significant.

### **Aboriginal fisheries**

The key program in place with respect to Aboriginal fisheries is the Aboriginal Fisheries Strategy (AFS). The approach focuses on more structured relationships including co-management approaches aimed at building fishing capacity, and incentives to support Aboriginal communities' participation in fisheries management. The Allocation Transfer Program is an integral component of the AFS, which facilitates the voluntary retirement of commercial licences and the issuance of licences to eligible Aboriginal groups in a manner that does not add to the existing fishing effort, thereby providing communities with much needed employment and income. Since then, other programs and initiatives have been implemented to provide Aboriginal fisheries with capacity to manage their commercial fishing operations. Those programs also aim at improving their participation in decision-making processes for aquatic resources and oceans management, diversification of the catch in the inshore fishery, improving overall fishing skills, as well as improving safety and vessel maintenance.

### **Monitoring and enforcement**

Conservation and Protection (C&P) activities are an integral consideration under a Departmental initiative to redefine and modernise DFO's compliance management approach which began in early 2006. This initiative is focused on re-designing and modernising the departmental compliance program integrating cross-sectoral compliance issues and needs into a comprehensive DFO compliance strategy and response, ensuring innovation and the optimal use of available resources. Overall the Department's objective is to achieve a more balanced approach to achieving compliance: education and shared stewardship; monitoring control and surveillance; and major case investigation.

In 2005, Canada released its National Plan of Action to Prevent, Deter and Eliminate IUU fishing (NPOA-IUU). This plan elaborates and recommends solutions to Canada's IUU fishing concerns with respect to overcapacity, lack of effective flag State control by both contracting parties and non-contracting parties, and non-compliance with no consequences by contracting parties to regional fisheries management organisations (RFMOs). The DFO's minister also joined in 2004 the High Seas Task Force (HSTF), an international, ministerial task force dedicated to the fight against IUU fishing activities on the high seas.

At the same time, Vessel Monitoring System (VMS) has been used as a fisheries monitoring and enforcement tool for several years in Canada. In the past two years, however, steps have been taken to significantly increase the use of VMS in many of the major fisheries.

## **Aquaculture**

Progress in aquaculture policy has been made through the implementation of the Program for Sustainable Aquaculture (PSA) and the development of the National Aquatic Animal Health Program (NAAHP). Since 2004, the implementation of PSA has centered its work on key areas: environmental and biological sciences development, R&D projects funding, sanitation programs and enhancement of DFO's legislation, regulation and policies. The NAAHP is being implemented to ensure that cultured and wild stock of finfish, shellfish and crustacean are monitored and managed to guarantee they are free of disease.

## **Fisheries and the environment**

With the passage of the *Oceans Act* (1996), followed by the release of Canada's Oceans Strategy (2002), the government of Canada established a new legislative and policy framework to modernise oceans management. Both of these are founded on an ecosystem-based and integrated approach to oceans management. Guided by these principles the government of Canada announced its intention to develop an Oceans Action Plan in 2004. In February 2005, the government of Canada released the government-wide Oceans Actions Plan (OAP) and confirmed funding for Phase I targeting eighteen key areas over a two year period of the Oceans Action Plan. This first phase will be implemented over two years (2005-07) and will focus on improving oceans management and preserving the health of a marine ecosystem that is based on the principle of integrated management.

Sustainable development commitment has become an increasingly essential element of Canadian public policy. Guidelines on common federal objectives were recently developed to enhance policy coherence and accountability in the government of Canada's approach to sustainable development (SD). These include taking action on Canada's Oceans Strategy through implementation of the OAP. The OAP established a new policy framework to modernise oceans management based on SD, integrated management, and the precautionary approach. SD commitments also include the implementation of the Environmental Process Modernisation Plan, which provides a number of improvements in processes and partnerships to maximise opportunities to conserve and protect fish habitat. These guidelines will influence the evolution of the next round of departmental Sustainable Development Strategies (SDS) for 2007-10.

## **Government financial transfers**

Government subsidies for fishing activities are discouraged in Canada and all contributions aimed at price and vessel support have been phased out. The Federal Public Investment for Primary Fish Processing Activities Policy restricts (federal) investment to initiatives involving: research and development, market penetration, secondary value added processing, aquaculture, and rationalisation/consolidation of processing facilities. The purpose of the policy is to ensure that those funds allocated to support community diversification initiatives inside and outside the fishery do not augment primary processing capabilities.

Ongoing financial transfers to the industry are designed to promote the transition towards responsible fisheries practices and reduce dependence on the fishery. These transfers have taken the form of license retirement, fisheries adjustment, and regional economic development initiatives designed to promote the restructuring of Canada's fisheries.

The Federal government provides general services to the fishing sector in the form of fisheries management, fisheries research, and harbour services. Government expenditures on these services in 2004 were: CAD 180.4 million for fisheries management, CAD 110.6 million for fisheries research and CAD 94.6 million for harbour services. The total expenditure for general services in 2004 is estimated to be CAD 388 million. Assistance in the form of employment insurance for fishers decreased from CAD 337.7 million in 2003 to CAD 311.2 million in 2004. The total assistance provided in 2004 amounted to CAD 756 million.

### **Post-harvesting policies and practices**

As an export-oriented fishing nation, Canada devotes considerable effort to the safety and wholesomeness of its fish products. Those concerns are addressed through national programs. They consist in quality management for fish processing establishments and aquatic animal health plans to protect aquatic animals from the harmful effects of diseases and to maintain the seafood industry's competitiveness in international markets. Other programs aim to avoid the extra pressure that over-capacity in the processing sector can place on the supply of natural resources. DFO also provides science and management information for stocks undergoing eco-labelling certification.

### **Markets and trade**

In 2005, Canada exported fish and seafood products to more than 100 countries, totaling CAD 4.3 billion. The United States (US) remains Canada's top export destination accounting for more than 60% of all Canadian fish and seafood exports. The value of exports to member States of the European Union decreased 3.4% from CAD 505 million in 2004 to CAD 487.7 million in 2005. Exports to Central and South American countries increased by 26% while exports to Japan decreased by 5.2%. Canada's imports of fishery products remained steady at just over CAD 2 billion in 2005. Fresh and frozen shellfish remain the leading import items, representing 37% of the total value of imports of fisheries products in 2005, with a value of CAD 767.7 million.

The Canadian government is currently engaged in market development activities that encourage all partners in the export value chain to work more effectively and efficiently together. Moreover, the continued restructuring of the Canadian seafood sector has led to the development of more co-management associations.

There were no significant changes in Canadian legislation concerning sanitary requirements for traded fish and seafood products in 2004 and 2005. With respect to the Most-Favoured-Nation (MFN) rates of duty for fish and fish products, there were no changes in the Customs Tariff in 2004 or 2005. Implementation of the MFN tariff reductions resulting from the WTO Uruguay Round of multilateral trade negotiations was completed in 1999 and no unilateral reduction of the MFN rate occurred in 2004 or 2005. Fish, crustaceans, mollusks, and other aquatic invertebrates of Chapter 3 of the Customs Tariff are largely duty-free and Canada maintains no tariff rate quotas on fish and fish products.

## **Outlook**

The Canadian fish and seafood industry along the value chain will continue to adapt to the pressures of globalisation and attempt to take advantage of the opportunities it presents.

Fisheries and Oceans Canada (DFO) will continue to monitor the status of Canadian fish stocks and ensure that the Total Allowable Catch (TAC) is in line with conservation measures.

DFO will continue to work towards improving conservation outcomes by implementing an effective risk management framework based on the precautionary and ecosystem approaches.

PART III  
*Chapter 3*

## **European Community**

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## **Main characteristics of the European Community fishing sector**

The EU is a major world fishing power and the leading market for processed products and aquaculture. In 2005, the EC25 recorded a EUR 11.65 billion trade deficit in fishery products, with imports of EUR 14.09 billion and exports of EUR 2.44 billion. Norway is the primary supplier of fishery products to the Community (16.7% of the EC25 imports), while Japan is the number one consumer of EC25 exports (11.7%).

The CFP reform, approved in December 2002, is a turning point in fisheries management. The new CFP takes more account of the impact of fisheries on the environment and favours sustainable development. The Reform included strict capacity management measures to ensure the steady decrease of the EU fleet. It also put an end to public aid for the renewal of the fishing fleet and for the export of capacity to third countries. The new capacity management regime has now been successfully running for more than three years.

Another significant change is the greater and earlier involvement of stakeholders in the CFP process through the creation of Regional Advisory Councils (RACs). These concern specific fishing areas or fisheries and will include RACs for the North Sea, Baltic Sea, Mediterranean Sea, North Western Waters, South Western Waters, Pelagic stocks and Distant Water Fisheries. The North Sea (November 2004), Pelagic (August 2005), North Western Waters (September 2005) and Baltic Sea (March 2006) RACs have already been put in place. Discussions on the others continue.

A Control Agency has been created and will become operational from 1 January 2007. Its main objective is to contribute to achieve more effective and uniform application of the rules of the CFP through the co-ordination of operational control and inspection activities by member States. The Control Agency will organise the deployment of national control and inspection means according to a European strategy.

The EU Vessel Register, in existence since 1990, has been adapted and its role strengthened as an instrument for fleet management. All EU fishing vessels are registered (89 200 as at the end of 2005) and can be consulted on-line at the EU's website.<sup>1</sup>

## **ADDITIONAL DETAILS**

### **Legal and institutional framework**

The Community's competences extend 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 and the registration of fishing vessels fall within the competence of member States under the conditions laid down in Community law. Areas such as research, technological development and development co-operation are shared by the Community and member States.



## Capture fisheries

### Management

On the basis of the Treaty establishing the European Community, the European Community has exclusive competence for the conservation and management of marine fish stocks. It therefore has responsibility for the adoption of all relevant rules in this area and for external arrangements with third countries, which are then applied by member States.

The Community aims to progressively implement an ecosystem-based approach to fisheries management that contributes to efficient fishing activities with an economically viable and competitive fishing industry, while minimising the impact of fishing on marine ecosystems. To this end, in the reported period, the EC Council adopted 8 regulations concerning the conclusion or the renewal of fisheries protocols and agreements with third countries for a value of EUR 60 million. In addition, the Scientific, Technical and Economic Committee for Fisheries (STECF) was reformed by a Commission decision in August 2005.

Five recovery plans have been adopted by the Council since February 2004, with a further one under discussion as well as a maximum annual fishing effort Regulation for certain fishing areas and fisheries. Emergency measures were set up twice in 2005 for the protection and recover of the anchovy stock as well as a review of certain access restrictions such as the Shetland Box and Plaice Box. The power and capacity of the Deep-sea species fishing fleet has also been adjusted downwards to match effort to fishing opportunities in accordance with scientific advice. Technical measures have also played a role, particularly for the conservation of certain stocks of highly migratory species. An Action Plan for the Mediterranean is likely to be formally adopted later in 2006.

After accession of Baltic States, some Baltic stocks became shared stocks only with Russia and the International Baltic Sea Fishery Commission (IBSFC) consequently ceased to function from 1 January 2006.

## Aquaculture

The Financial Instrument for Fisheries Guidance (FIFG) regulation was amended in July 2004 in order to increase the focus of structural financial aid on horizontal measures and “clean” technologies. In 2005, the Commission adopted two proposals for a Council Directive to update, recast and consolidate the animal health rules in relation to the trade in aquaculture products, including disease prevention and control. Certain costs related to the eradication of diseases in aquaculture will be eligible for Community public support by the European Fisheries Fund, although this proposal is awaiting adoption by the Council.

In December 2005, the Commission proposed a regulation on organic production and labelling of organic products, in which the Commission states that in the future it will establish production rules, including rules on conversion, applicable to organic aquaculture. It is still under discussion in the Council and European Parliament.

## Fisheries and the environment

The new CFP takes more account of the impact of fisheries on the environment and favours sustainable development. The process to integrate interactions between fisheries and marine ecosystems into the workings of the Commission Fisheries Policy has evolved through a series of stages and reached its conclusion with the adoption by the Commission of an Action Plan in 2002. The main challenge for the immediate future is the full implementation of this new policy. Actions already taken include legislation on the

protection of cetaceans from by-catch, on vulnerable deep-water habitats from the effect on trawling, and on the protection of deep-water coral reefs from the effects of fishing, amongst others

### **Government financial transfers**

The FIG is the leading form of financial assistance to the sub-sector. Its main purpose is to assist in fishing-reduction efforts decided by the Council, which sets out (for each member State) the objectives for fleet restructuring and the means to achieve them. The FIG budget for 2000-06 amounts to EUR 3.7 billion. For the period 2007-13, the Council has adopted a Council Regulation<sup>2</sup> establishing a European Fisheries Fund (EFF) with a total budget of EUR 3 849 million. The EFF will succeed the FIG. The EFF outlines how EU and national finances can be applied in order to promote sustainability, growth, employment generation, innovation, regional development, improved competitiveness and provides a basis for the member States national strategic plans. The EFF defines the legislative and financial framework for the sustainable development and the restructuring of the fishery, inland fishing, aquaculture sectors and other fisheries areas. Its main purpose is to help the reduction of fishing pressure to allow the recovery of fish stocks, encourage the use of more environmentally friendly equipment and assist in collective initiatives.

### **Post harvesting policies and practices**

New food safety legislation in the EU has been in place since 1 January 2006. The new “hygiene package” consists of 5 laws in the form of EU Regulations.

### **Markets and trade**

The budgetary appropriation payments for market interventions in fishery products amounted to EUR 18 million in 2004, of which EUR 14 million was spent. For 2005, the budgeted amount for price support interventions was EUR 18.2 million.

Trade defence measures, including anti-dumping measures, were imposed on imports of large rainbow trout originating in Norway and the Faeroe Islands and imports of farmed salmon originating in Norway. Trade-restrictive measures were imposed on Bolivia, Cambodia, Equatorial Guinea, Georgia and Sierra Leone in 2004 in response to ICCAT recommendations. Earlier sanctions concerning Belize, Honduras and Saint Vincent and the Grenadines were lifted at the same time. In 2005, in response to ICCAT recommendations, the measures applicable to Cambodia, Equatorial Guinea and Sierra Leone were also lifted.

A new Generalised System of Preferences (GSP) consisting of three schemes of arrangement was adopted in 2005 to apply for the period 1 January 2006 to 31 December 2008. All beneficiary countries enjoy the benefit of the general arrangement with the special incentive arrangement for sustainable development and good governance (the “GSP+”) providing additional benefits for countries implementing certain international standards in human and labour rights, environmental protection, the fight against drugs, and good governance. The special arrangement for least-developed countries (LDCs), also known as the “Everything But Arms” (EBA) initiative, provides for the most favourable treatment of all, with the aim of granting LDCs “duty-free and quota-free” access to the EU’s market.

### **Information and labelling**

A stakeholder consultation was held in Brussels at the end of 2005 and consultations on eco-labelling will continue throughout 2006.

The FIG for the period 2000-06 includes measures aimed at supporting the fish processing and marketing sectors, in particular to encourage capital investments, find and promote new markets outlets and other operations such as systems to improve and control quality, traceability, health conditions etc.

A general trend exists towards a reduction in the number of enterprises but an increase in the size of enterprises and an increased focus on the production of added-value and convenience products. The industry need to adapt continuously to a growing depending on imports for the supply of raw materials, strong competition from third country products, increasing regulatory requirements in terms of food safety and environmental issues and strong buyer-power associated with large retail chains.

### **Outlook**

The European Commission will discuss a range of important fisheries issues in 2006 in addition to routine activity on technical/conservation areas, market monitoring and control and inspection. The EFF remains an important structuring tool for the fisheries and aquaculture sectors and their associated industries *e.g.* processing. The EFF will outline how EU and national finances can be applied in order to promote sustainability, growth, employment generation, innovation, regional development and improved competitiveness in order to provide a basis for member State national strategic plans. The Maritime Green Paper was launched in 2006 in order to determine how an integrated approach to EU maritime activities can best be translated into innovative cross-sectoral policies that generate sustainable economic growth and jobs. The Green Paper is the official starting point for the launch of a broad consultation within the EU and major third country partners.

In line with the commitment to the 2015 sustainable development targets adopted in Johannesburg, the Commission is initiating a debate on MSY strategies for Community fish stocks. Such an initiative is already in line with current management efforts to recover the viability of certain fish stocks. In connection to this, the Commission has committed to undertake Impact Assessments (IAs). An IA for fisheries regulation will be required in the future and will identify, qualify and quantify the likely environmental, economic and social impacts resulting from new legislation. IA will also explicitly compare and contrast various policy options available and involve stakeholder participation.

### **Notes**

1. [www.EURopa.eu.int](http://www.EURopa.eu.int).
2. Council Regulation (EC) No. 1198/2006 of 27 July 2006 (OJ No. L 223 of 15.08.2006).



PART III  
*Chapter 4*

# Belgium

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### **Main characteristics of the Belgian fishing sector**

In 2004, the total catch by Belgian vessels remained stable compared to 2003 at 23 682 mt (+0.2%). In 2005, the total amount of fish caught by Belgian vessels decreased by 9% to 21 545 mt. The total value of the catches in both Belgian and foreign ports amounted to EUR 86.1 million for 2004 (-5%) and EUR 86.3 million for 2005 (+0.2%).

The number of fishing vessels in Belgium has steadily declined since the 1950s, from around 450 to 121 in 2005 with total power of 65 643 kw and gross tonnage of 22 686 GT. In order to reduce its fleet capacity and adapt to the EU plan for adjusting fishing capacity, the Flemish government decided to decommission 10 more vessels in 2006.

A number of restrictions were adopted in order to limit the activity of recreational fisheries to reasonable levels and to avoid competition between professional and non-professional activities.

Fish consumption has declined to about 12 kg per capita in 2005, but with increasing consumption of fresh molluscs. Molluscs and crustaceans are the most common sea product with almost 78% of Belgian families buying such products at least once a year in 2005.

Belgium's degree of self-sufficiency in fisheries products is very low and imports are the main source of fish products. Imports by value are 12 times higher than national landings. Belgium mainly exports to the Netherlands, France, Denmark and Germany.

## Belgium – Summary statistics

Figure III.4.1. **Harvesting and aquaculture production**

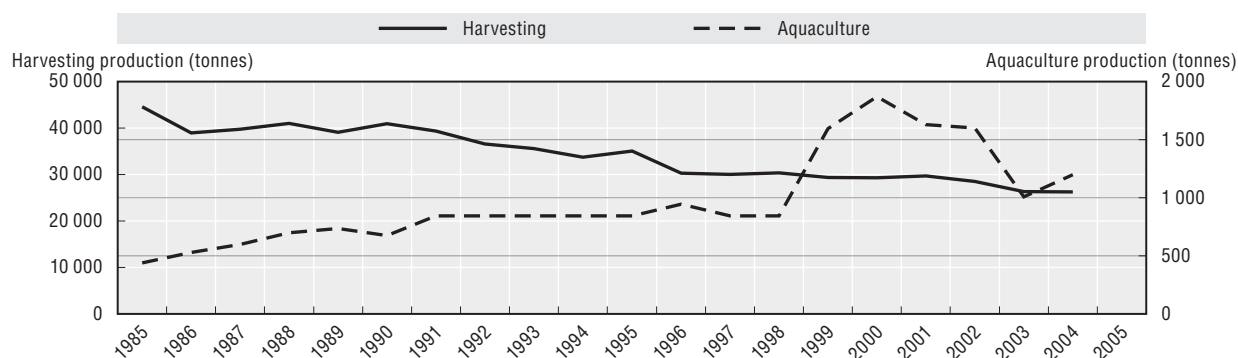


Figure III.4.2. **Key species landed by value in 2005**

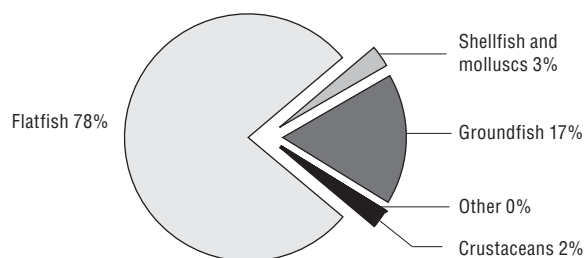


Figure III.4.3. **Trade evolution**

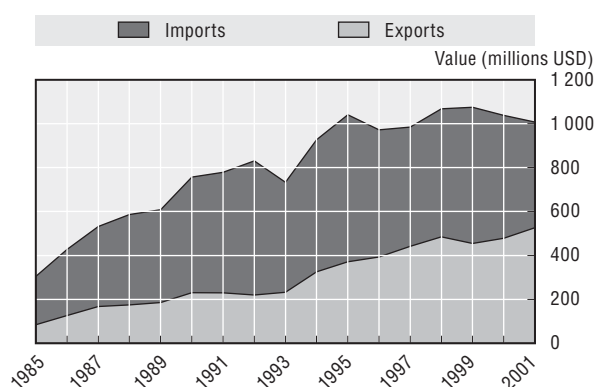


Figure III.4.4. **Evolution of government financial transfers**

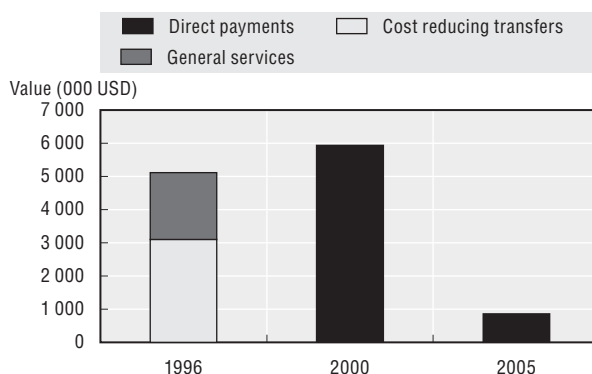


Figure III.4.5. **Production profile**

	1996	2005
Number of fishers	600	860
Number of fish farmers	n.a.	143
Total number of vessels	146	121
Total tonnage of the fleet	22 557	22 686

n.a.: Not available.

Source: Figures III.4.1 and III.4.3: FAO; Figures III.4.2, III.4.4 and III.4.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

Starting from 1 January 2002, the EU Common Fisheries Policy (CFP) was entirely “regionalised”, meaning that decisions in Belgium are now taken at the level of the governments of Flanders and Wallonia. In practical terms, marine fisheries are managed by the Flemish authorities while aquaculture is a matter of consultation between both governments.

A national co-ordination exercise has been on-going between the federal state and the Flemish region. This led to the creation of a coast guard structure.

In December 2002, access to the three nautical mile zone was limited to fishing vessels less than 70 GT. In 2005, the Flemish government set a new system for fishing licences that includes temporary measures for the conservation and sustainable exploitation of fish resources.

### Capture fisheries

Table III.4.1 provides relevant data on the general performance of the fleet for the period 2003-05. It shows the limited weight of the sector, a decrease in the number of vessels, a simultaneous rise in engine power and a reduction of vessel tonnage and total catch. This table also illustrates the decrease in the value of catches and the mean price of landings.

Table III.4.1. **Structure and performance of the fleet**

	2003	2004	2005
Number of vessels	125	123	121
Average capacity (kW)	535	542	543
Average tonnage (GT)	190	189	187
Total catch (ton)	23 637	23 682	21 545
Total value of catches (million EUR)	90.4	86.1	86.3
Mean value of catch (EUR/kg)	3.8	3.6	4.0

To ensure year round activity by the national fleet and preserve the performance of vessels, national measures were taken to swap quotas with other EU member States, increasing the available quota of some species. At the same time, catch and activity limitations were imposed to ensure that the available quota would last throughout the year. In spite of these limitations, some fishing grounds had to be closed early in 2004 and 2005.

A principal characteristic of the Belgian fleet is that it is almost entirely dedicated to demersal trawlers. In 2004 and 2005, demersal species constituted 90% of total landings, of which sole represented 20% by tonnage and 50% by value. At the same time, Belgian fishers, like their EU colleagues, have experienced a 37% rise in fuel costs from 2003 to 2004, impacting negatively on vessel profitability.

### Recreational fisheries

The use of towed gear for non-professional shrimp fisheries is restricted to the three nautical mile limit with a number of additional restrictions concerning gear, catch



composition, the fishing period and legal use of catch. The use of static gear is strictly forbidden and angling has been subject to catch limitations since 2003. Fishing activities on beaches are also regulated in order to limit these to recreational practices.

### **Monitoring and enforcement**

Data on fish sales in Belgian auctions (Zeebrugge, Oostende and Nieuwpoort) are received electronically and are complemented by information from logbooks. Sales at foreign auctions – predominantly in the Netherlands – are also reported in electronic format on a monthly basis.

Since 2004, almost the entire fleet has been equipped with VMS allowing for a near-realtime follow-up of positions. Controls were implemented in 2004, increased in 2005 and are detailed in Table III.4.2.

**Table III.4.2. Details of control activities**

Controls	2004	2005
In auctions	43	48
Elsewhere	14	37
At sea (boardings)	78	151
By airplane	228 vessels	254 vessels

The Navy's fishery protection vessels spent 68 days at sea in 2004, during which 78 boardings with complete inspections of fishing vessels were undertaken. In 2004, 14 infringements were noted. For 2005, 85 days at sea resulted in 151 boardings and the recording of 11 infringements. An aerial surveillance program was agreed with the authorities in charge of the application of the Bonn Agreement. In total, 59 serious infringements of fisheries regulations were reported in 2004 and 40 in 2005.

### **Government financial transfers**

Table III.4.3 gives an overview of government financial transfers and their breakdown between national and European contributions. GFTs have dropped drastically for marine capture fisheries between 2004 and 2005.

**Table III.4.3. Overview of government financial transfers 2004-05**

000 EUR

	2004			2005		
	National contribution	EU contribution	Total	National contribution	EU contribution	Total
Marine capture fisheries	2 810	2 283	5 093	529	164	693
Aquaculture	0	0	0	0	0	0
Marketing and processing	173	518	691	148	444	592
<b>Total</b>	<b>2 983</b>	<b>2 801</b>	<b>5 784</b>	<b>677</b>	<b>608</b>	<b>1 285</b>

## Post harvesting policies and practices

Post harvesting policy and food safety are a competence of the Federal Food Agency ([www.favv-1eafsc.fgov.be](http://www.favv-1eafsc.fgov.be)).

## Markets and trade

### Markets

Table III.4.4 provides an overview of Belgian consumption of fish and fish products from 2003 to 2005. In 2005, the average Belgian consumer bought 6.8 kg of fresh fish, molluscs and crustaceans and 5 kg of processed fish, molluscs and crustaceans. In volume terms, the share of fresh molluscs and crustaceans continues to grow, partially as a result of their introduction to hard discount stores. 75% of fresh mollusc and crustacean consumption is made up of mussels. The number of buyers of fresh fish, molluscs and crustaceans diminished from 87.8% in 2003 to 86.3% in 2005. Molluscs and crustaceans have the greatest market penetration, with almost 78% of Belgian families buying such products at least once a year in 2005.

Table III.4.4. **Belgian consumption patterns 2003 to 2005**

	2003	2004	2005
<b>A. Total fresh fish, molluscs and crustaceans (kg/capita)</b>	7.01	7.21	6.82
Fresh seafood	1.96 (28%)	2.05 (28.4%)	1.79 (26.2%)
Molluscs and crustaceans	4.07 (58.1%)	4.19 (58.1%)	4.13 (60.6%)
Fresh water fish	0.98 (14%)	0.97 (13.5%)	0.90 (13.2%)
Spending/EUR per capita	56.9	57.6	55.1
Mean price in EUR/kg	8.12	7.99	8.08
Penetration (%)	87.8	86.8	86.3
<b>B. Total processed fish, molluscs and crustaceans (kg/capita)</b>	4.68	4.83	5.02
Preparations of fish, molluscs and crustaceans	2.23 (47.6%)	2.29 (47.4%)	2.25 (44.8%)
Frozen fish, molluscs and crustaceans	1.38 (29.5%)	1.44 (29.8%)	1.60 (31.9%)
Smoked fish	0.78 (16.7%)	0.81 (16.8%)	0.86 (17.1%)
Canned fish	0.29 (6.2%)	0.29 (6%)	0.31 (6.2%)

The market for processed fish, molluscs and crustaceans continues to grow. Consumption of pre-prepared fish increased by 17% over the past 6 years. With 2.25 kg per capita in 2005, consumption of pre-prepared fish was bigger than consumption of fresh seafood (1.79 kg/capita). Smoked fish is an increasing market thanks to the growing consumption of smoked salmon.

### Trade

As explained under general characteristics, Belgium is highly dependent on imports for its fish consumption. The major importers of Belgian fisheries products are the Netherlands, France, Denmark and Germany. Table III.4.5 illustrates trade in fish products in Belgium (National Bank of Belgium).

Table III.4.5. **Foreign trade by Belgium in fishery products 2004 and 2005**

000 EUR

	2004		2005 <sup>1</sup>	
	Import	Export	Import	Export
Fresh fish (excl. filets and fish meat)	112 021	70 679		
Frozen fish (excl. filets and fish meat)	39 139	33 672		
Fish filets and fish meat	295 938	186 119		
Fish salted, smoked and dried; fishmeal for human consumption	46 774	13 454		
Crustaceans	336 168	213 079		
Molluscs	128 321	38 017		
<b>Total</b>	<b>981 068</b>	<b>562 137</b>	<b>1 066 798</b>	<b>618 380</b>

1. No details available.

## Outlook

At the EU-level, a recovery plan for flatfish in the North Sea is in place. This plan will join the already existing recovery plans for cod, northern hake and, more recently, sole, in the Gulf of Biscay that Belgium has access to. The management of “inputs” fishing effort and days at sea limitations gains increasing importance. Management of “outputs” such as TAC’s and quotas will increasingly move towards a multiannual approach.

In Belgium, the scrapping of vessels in 2006 and continued search for more environmentally-friendly and less fuel-consuming fishing will lead to a fleet that can fish in a sustainable and profitable way.



PART III  
*Chapter 5*

## **Czech Republic**

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### **Main characteristics of the Czech Republic fishing sector**

The Czech Republic is a landlocked country with no sea fisheries but important aquaculture (pond-based) production of carp. Carp breeding is rooted in the history, culture and society of the Czech Republic and has proved highly profitable since the 15th century. The Czech Republic has over 24 000 ponds and tanks, mostly in southern Bohemia and covering a total of around 50 000 hectares.

Pond aquaculture is subject to restrictions governing surface-water use. Output is contingent on rational harvesting levels, which in turn are based on external initiatives for maximum environmental protection. Most problems are caused by silting in the ponds as well as from other functions not directly related to production such as flood prevention, environmental protection and recreation.

In 2005, approximately 8 000 tonnes of live fish were sold domestically (45% of total production), the majority of which was carp. 8 300 tonnes of live fish were exported (47% of production) and 1 500 tonnes were used in processing (8% of production). Imports of fish (consisting almost entirely of sea fish) and other aquatic animals totalled 38 700 tonnes in 2005. Annual consumption of fish and fish products in the Czech Republic has been 5 kg per capita for decades.

Freshwater fish account for one kilogram of this consumption and the remainder consists of imported sea fish. In the Czech Republic, mandatory compliance with EU rules, laws and standards regarding free trade and movement of goods exists. Companies in this sector are privately owned (as one of two types of limited-liability Company). The market is not regulated by the State and is fully transparent.

In 2003 and 2004, the main export destinations for fish and fish products from the Czech Republic were Germany, Slovakia, Austria, Belgium and Poland. This remained the case for 2005, although France had replaced Belgium in fourth place.

The fisheries sector in the Czech Republic is responsible for 0.04% of GNP. This amounts to CZK 1.1 billion. The gross agricultural output of the Czech Republic accounts for 4.42% of GNP.

## Czech Republic – Summary statistics

Figure III.5.1. **Harvesting and aquaculture production**

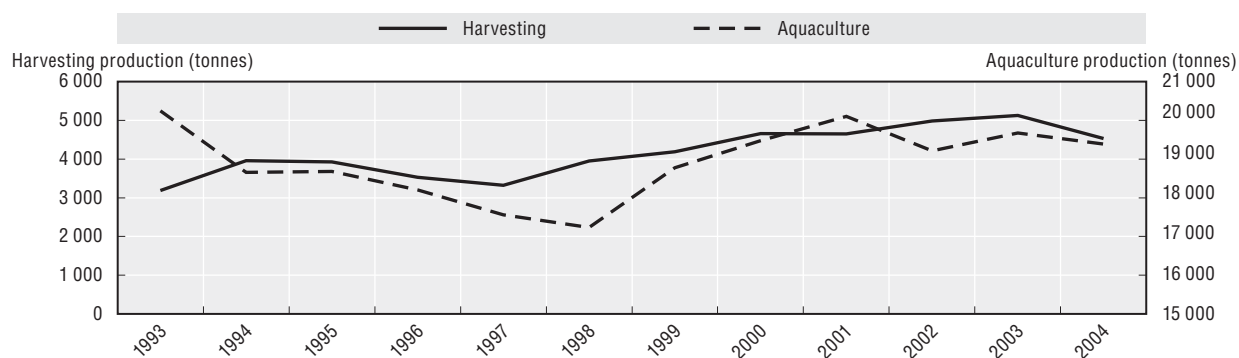


Figure III.5.2. **Species produced by value**

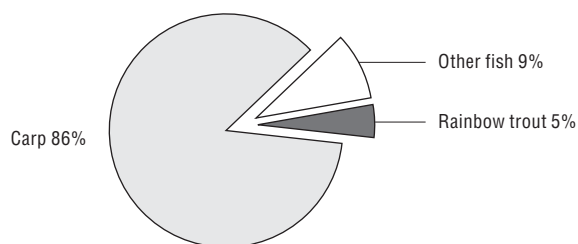


Figure III.5.3. **Evolution of government financial transfers in aquaculture**

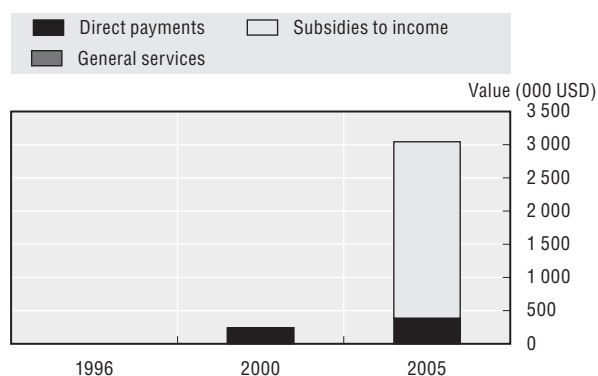


Figure III.5.4. **Trade evolution**

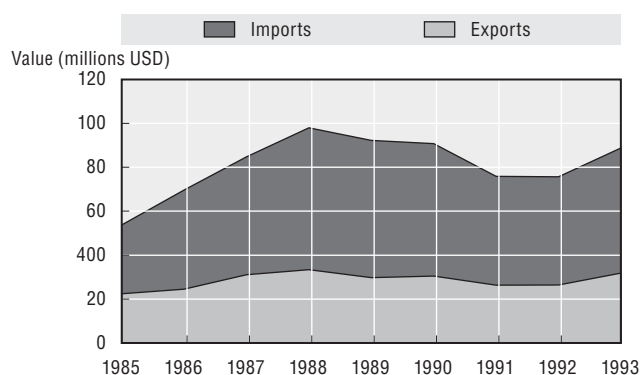


Figure III.5.5. **Production profile**

	1996	2005
Number of fishers	n.a.	n.a.
Number of fish farmers	2 495 <sup>1</sup>	1 679
Total number of vessels	n.a.	n.a.
Total tonnage of the fleet	n.a.	n.a.

n.a.: Not available.

1. Fish farmers in 1999.

Source: Figures III.5.1 and III.5.4: FAO; Figures III.5.2, III.5.3 and III.5.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

Fishing activities are defined by relatively new legislation (Act No. 99/2004) covering two basic areas: pond fish-farming and the production of freshwater fish; and fishing activities in fishing reserves (recreational/sport fishing).

National legislation on fish production is closely based on the provisions of EU legislation. The Act also addresses the issue of the protection of aquatic resources. It identifies the authorities responsible for fisheries, i.e. municipal and regional authorities and ministries, and specifies that the Ministry of Agriculture is responsible for fisheries management at central government level.

### Management

The Czech Republic became an EU member on 1 June 2004, and has participated in the following programmes in connection with this membership:

- a) The EU's SAPARD (Special Accession Programme for Agriculture and Rural Development) programme was designed to provide support for measures aimed at increasing the efficiency and competitiveness of the agricultural and agribusiness sectors, job creation and sustainable economic development in rural areas. The programme provided an EU pre-accession strategy for the 10 candidate countries acceding in 2004. The SAPARD Programme was available to these candidate countries from May 2002 until end-2005. The Czech Republic granted the subsidies provided under this programme primarily for the renovation of fish-processing facilities and covered 14 projects in total.
- b) The EU's Financial Instrument for Fisheries Guidance (FIFG) programme aimed to ensure a balanced use of fisheries resources. It also promoted competitiveness in the sector and the development of areas dependent upon it. One of the FIFG areas of action was also the development of aquaculture. This programme lasted (in the Czech Republic) from April 2004 until April 2006.
- c) The Czech operational programme Rural Development and Multifunctional Agriculture supports 21 projects in fish processing, markets and marketing of fish products; aquaculture/fish farming; activities performed by fishery specialists and promotional advertising measures. The programme also supports the food safety of fishery products. Three government authorities in the Czech Republic are responsible for consumer protection: the State Inspectorate for Agriculture and Food, the Czech Trade Inspectorate, and the State Veterinary Administration (government).

### Aquaculture

Annual aquaculture production in the Czech Republic is 20 000 mt (live weight). Fish farming has developed in artificial bodies of water which are located chiefly in provincial regions. In all, there are some 24 000 ponds and tanks in the Czech Republic, covering a total surface area of approximately 52 000 hectares. Aquaculture relies on labour recruited primarily in regions characterised by a lack of stable jobs.

These figures refer to imports of sea fish, consumption of which is rising continuously in the Czech Republic, with imports increasing accordingly.

Average yield per hectare is around 40 kg. Average annual consumption of freshwater fish is around 0.88 kg per inhabitant (excluding production for own consumption).



Table III.5.1. **Fish imports**<sup>1</sup>

	Tonnes	CZK	EUR
2003	31 180	1 432 966 503	44 988 359
2004	35 643	1 485 622 262	46 669 305
2005	38 746	1 821 969 940	54 643 160

1. Ornamental freshwater and sea fish are not included.

Table III.5.2. **Exports – carp (live)**

	Tonnes	CZK	EUR
2003	8 114	420 494 712	13 154 792
2004	11 668	420 106 444	13 341 844
2005	8 233	385 866 882	8 680 045

## Fisheries and the environment

Many of the ponds in the Czech Republic used for aquaculture are retention ponds and are strong enough to contain heavy runoff during floods. The large number of ponds makes it possible to conserve a variety of animal and plant species. Ponds have a positive impact on the level of groundwater and help purify surface water. They also play a very important role in shaping the landscape and are a source of recreational and leisure activities.

Carp production accounts for 87% of the total volume of commercial fish produced in the Czech Republic. The live carp market is closely associated with the Christmas and Easter holidays and the tradition of eating carp during these holiday periods continues. Carp production stands at 17 000 tonnes per year and is evenly divided between the domestic and foreign markets. The market for other types of freshwater fish is limited due to the economic constraints of fish farming.

Processing capacities are sufficient in the Czech Republic as most facilities do not process large quantities. Processing plants comply with EU provisions and requirements.

## Government financial transfers

Programmes that are compatible with EU legislation have been maintained and continue to receive subsidies, which must be used to support the sector (pond fish farming and breeding in the Czech Republic). The subsidies provided in this field are as follows:

- a) Support aimed at maintaining and improving the genetic potential of fish, including monitoring of fish yield (subsidy granted in 2005: CZK 4 565 744).
- b) Support aimed at conserving and promoting the genetic resources of fish (subsidy granted in 2005: CZK 4 272 000).
- c) Support for broader and easier access to information and key concepts from the scientific sphere and research (subsidy granted in 2005: CZK 124 000).
- d) Support for education programmes to improve conditions in organisations providing practical training for pupils (subsidy granted in 2005: CZK 1 094 494).
- e) Support for pond functions not related to fish production (such as flood prevention, environmental protection, aquacultural functions, recreation, protection of vegetation, game and birds); this support is granted as part of the general support provided to the Czech regions.

The main functions of the pond-based aquaculture industry are water storage through a system of dams, flood prevention in the region and improvement of water quality (subsidy granted in 2005: CZK 68 244 870).

### **Information and labelling**

For freshwater fish products, two trademarks are registered in the Czech Republic: Český kapr (Czech Carp) and Třeboňská kapr (Třeboň Carp). These have been developed on the basis of the genetic identification of the provenance and origin of products. The Czech Ministry of Agriculture has established a "KLASA" national label of quality, indicating that certain Czech food products are certified as being of high quality. The KLASA label of quality has been granted to several Czech carp and Třeboň carp products. End consumers should have accurate information about the origin and quality of products, and this is one of the main purposes of product labelling under legislation in force in the Czech Republic.

Fish processing companies in the Czech Republic are currently dynamic and keep consumers informed. There are about 12. These companies currently process 4 500 tonnes of end products per year and are now functioning comfortably at 36% of capacity. Most of the companies have been renovated through the EU SAPARD or FIGP Programmes. Some of these companies also process imported sea fish. Some 2 600 people work in Czech fishery production (1.66% of employment in agriculture) and fisheries accounts for 0.00027% of GDP of the Czech Republic.

### **Outlook**

While the trade balance for freshwater fish is always positive, the overall trade balance irrespective of species is systematically negative. This is due to substantial imports of marine species, which are not produced on Czech fish farms. Most imports come in processed form. The bulk of exports are carp.

PART III  
*Chapter 6*

## Denmark

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## Main characteristics of the Danish fishing industry

Since the reform of the European Union's Common Fisheries Policy (CFP – 2002) Danish fishing policy has also changed at the national level. A more individual quota management system, as well as a higher degree of ownership of fishing rights for individual fisherman, has been introduced. This reform follows similar regulatory reforms for pelagic and industrial fisheries.

Overall, capacity continues to fall and it is expected that this trend will continue as regulatory reform it possible to concentrate fishing rights among fewer vessels. Studies on the assessment of overcapacity in the fishery have confirmed that there is still some overcapacity in the short term. The European Union policy on fleet and fleet capacity has already been implemented using a tight entry-exit system. This has been made more flexible by allowing individual transfers of capacity rights.

Denmark exported 1 030 685 metric tonnes (mt) of fish in 2005, at a value of DKK 17.6 billion. Landings by the Danish fleet amounted to 916 401 mt in 2005. As the processing industry also depends on raw material from abroad, imports amounted to 1 326 153 mt in 2005, with a value of DKK 11.2 billion, and in 2004, 1 259 568 mt with a value of DKK 9.9 billion. In 2004 (end of year), the fishing fleet employed 3 497 people. The fishing sector, including aquaculture and trade, employed approximately 13 000 people. The fleet consisted of 3 274 vessels and 92 074 GRT in 2005, 151 vessels and 4 511 GRT less than in the previous year.

Government financial transfers to the fishing industry have focussed on scrapping overcapacity and projects to develop and adjust the sector. Less money has been spent on aid to direct investments. Total government transfers for the period 2000-06 (national and EU), amounts to EUR 718.4 million, of which EUR 374.1 million is for aquaculture, processing and fishing ports, EUR 82.2 million for adjustment of the fishing fleet and EUR 82.1 million for innovative actions, marketing and pilot projects. The national support scheme includes financial assistance for young fishers, experimental fisheries and fisheries consultants.

Developments in the aquaculture sector are based on recommendations by advisory boards for freshwater, marine fish, and marine shellfish. The marine advisory board developed a national GIS-map showing these areas. The environmental rules for marine fish farming in 2006 were readjusted, so as to provide for a flexible regulation system based on the documentation of environmental effects rather than production limits by way of fixed feed quotas. As for the shellfish sector, new regulations include 10-year licenses that can be prolonged. A permanent shellfish advisory committee has been appointed in order to integrate all relevant commercial and environmental aspects in the administration and development of the industry. In the freshwater farming sector, under new rules, a pilot scheme allows production to increase by up to 130%, strongly linked to investment in equipment, control and management for environmental purposes. Annual production of freshwater fish (mainly rainbow trout) was about 26 000 mt in 2005, produced by 311 farms. The number of sea farms in 2005 was 25 and production from these was about 7 800 mt. The sector employs approximately 700 people.

## Denmark – Summary statistics

Figure III.6.1. **Harvesting and aquaculture production**

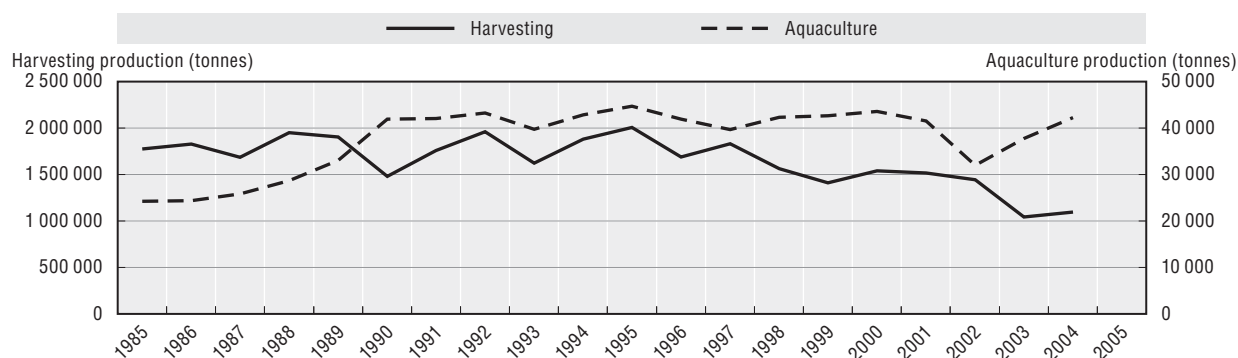


Figure III.6.2. **Key species landed by value in 2005**

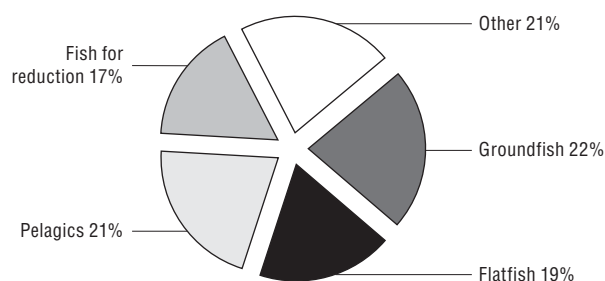


Figure III.6.3. **Age structure of fishers**

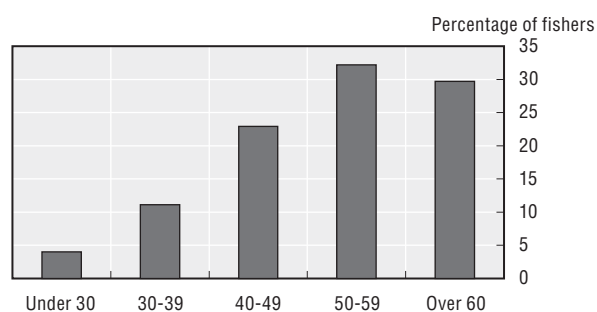


Figure III.6.4. **Evolution of government financial transfers**

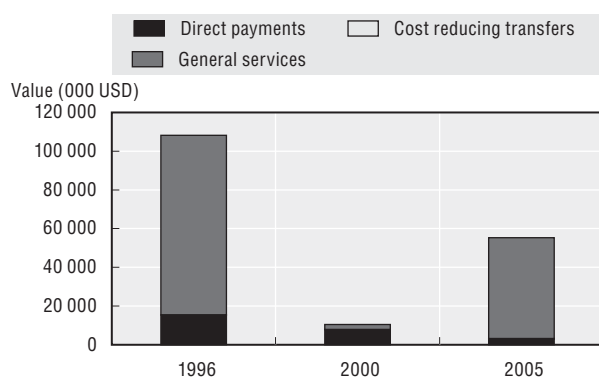


Figure III.6.5. **Trade evolution**

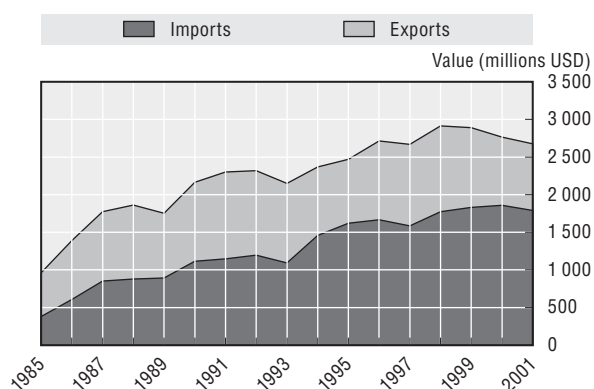


Figure III.6.6. **Production profile**

	1996	2005
Number of fishers	4 611 <sup>1</sup>	3 497 <sup>3</sup>
Number of fish farmers	1 049 <sup>2</sup>	700 <sup>3</sup>
Total number of vessels	4 830	3 268
Total tonnage of the fleet	109 435	91 468

1. Fishers in 2000.
2. Fish farmers in 1998.
3. Data in 2004.

Source: Figures III.6.1 and III.6.5: FAO; Figures III.6.2, III.6.3, III.6.4 and III.6.6: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The responsible authority for monitoring and enforcing EU and national conservation policies is the Danish Directorate of Fisheries ([www.fd.dk/](http://www.fd.dk/)), which is part of the Ministry of Food, Agriculture and Fisheries ([www.fvm.dk/](http://www.fvm.dk/)). The Directorate carries out inspections at sea and of landings, as well as verification of EU marketing standards. Inspection of veterinary standards is the responsibility of the Danish Veterinary and Food Administration, part of the Ministry for the Family and Consumer Affairs.

National legislation aims to utilise fishing opportunities while ensuring that Danish quotas are not exceeded. Technical rules are determined by the EU on the basis of scientific advice and are assessed regularly. The 1999 Fisheries Act covers the protection of fish stocks, regulations on commercial and recreational fisheries, first hand marketing and duties. Minor changes were made in 2002.

In the context of the EU's European Fisheries Fund, a new national strategy for the fisheries sector is being developed. This will be part of a new 7 year programme for the development of the fisheries sector. In parallel a new plan of action for the fisheries sector is being developed at national level.

### Capture fisheries

#### Management

After a temporary scheme with IQs (individual quotas) for mackerel and certain species fished for industrial purposes in the North Sea, ITQs were introduced in the Danish mackerel fishery from 1st January 2006 and will be introduced for sprat from 1st January 2007. Other species may follow. Moreover, from 1st January 2007, Fixed Quota Allocations (FQA) will be introduced in most of the remaining Danish fishery, including demersal species. These FQAs can be acquired together with the vessel to which the quotas are allocated.

On 1st January 2003, ITQs were introduced in the Danish herring fishery in the North Sea, the Skagerrak and Kattegat. The purpose of the scheme was to enable the concentration of quotas among fewer vessels in order to optimise the fishery and the economy of the vessel and to improve the quality of the fish. The ITQs were allocated to about 100 vessels. Vessel owners are entitled to transfer fishing rights to other registered vessels. On 1st January 2006, 40 vessels held ITQs (herring).

A committee comprising members from the Ministry of Food, Agriculture and Fisheries, from industry, research institutions, professional organisations, other NGO's and a number of specialists from universities etc. has reported on the state of knowledge regarding the impact of the environment on fishery resources. The work covered the impact of, among other things, top predators, habitat changes, climate and pollution. The report of the committee has led to more focused research on the topics mentioned.

For the largest fjord in Denmark – the Lime Fjord – a fisheries management plan is in force in order to restore fish stocks and to ensure a versatile fish life in the fjord. The plan is the result of a joint working project between the Ministry of Agriculture, Food and Fisheries and the Ministry of the Environment, together with the relevant regional authorities. A main consequence of the plan is to place further restrictions on mussel dredging in the fjord through a reduction of the area where mussel fishery is allowed and gradually reduce the size of the fleet of mussel dredgers as fishers leave the profession.

The recreational fishery is regulated by means of restrictions on the amount and kind of gear used. It is forbidden to sell fish caught in the recreational fishery and there are no limits to the value of catch. Apart from these regulations, national measures include the release of fish and research financed by the fees charged for fishing permits.

### **Monitoring and enforcement**

To ensure proper monitoring, and as part of the EU's cod recovery plan, Denmark has introduced national legislation which requires that the first hand sale of all cod caught in the North Sea and Skagerrak, or landed in Skagen or in any Danish port facing the North Sea and Skagerrak, is carried out at public auctions (in Denmark or abroad). These rules apply to landings of cod from both Danish and foreign vessels as well as transit from another EU country or third country.

With respect to industrial fisheries, in 2000 the EU closed the fishery for sand eel in the Firth of Forth area off the coast of Scotland, while maintaining commercial and scientific monitoring. The closure was initially for three years (2000-02), but has been extended and is still in force in 2006. The monitoring is being carried out by 6 Danish commercial industrial fishing vessels in close collaboration with the UK authorities and the Commission.

## **Aquaculture**

Except for fully re-circulated eel farms, all Danish fish farms have to be officially approved in accordance with the Danish Environmental Protection Act. In order to meet the environmental requirements for freshwater farming, there are strict and fixed limits on feed use and 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 local authorities. When stipulating these requirements, broad environmental considerations are taken into account. Since the introduction of these regulations in the late 1980's, only one new fish farm has been approved.

In 2004, new Danish rules came into force for farming freshwater and saltwater fish under an organic label. Farmed fish for labelling may be treated with antibiotics only once, there is a ban on adding colour to the feed and GM feed is not permitted. However, GM fish or biologically treated fish are allowed. A few freshwater farms have joined the programme, but production is still on a small scale. Negotiations on common EU regulations for organic fish are expected in the near future.

Aquaculture production in Denmark is mainly concentrated on rainbow trout (*Oncorhynchus mykiss*), farmed in freshwater ponds and in off-shore or land based marine aquaculture. In addition, eel is farmed in re-circulated freshwater tanks. Mussels, oysters and crayfish are produced in small quantities. Turbot fry is produced mainly for export. A variety of other species are raised primarily for restocking.

Annual production in freshwater ponds in 2005 was about 26 000 mt (all figures for 2005 are provisional), compared to about 30 000 mt in 2004. In 2004, the number of freshwater fish farms was 316 and has been further reduced to 311 in 2005. The number of sea farms in 2005 is 25 and the production from these is about 7 800 mt, i.e. roughly unchanged for many years. In recent years, the sale of juvenile fish for restocking purposes has represented an increasing share of total turnover. Until now, Danish shellfish production from aquaculture has been limited. From 2004 to 2005, however, there has been an increase in the production of shellfish from 57 to 280 mt.

## Government financial transfers

Most support schemes for fisheries are part of EU schemes. The structural scheme is financed by the EU and Danish public funds, whereas aid in the framework of the market organisation is entirely financed by the EU. Table III.6.1 shows the latest budget for structural aid which has been approved by the European Commission.

Table III.6.1. **National aid and aid from the EU Financial Instrument for Fisheries guidance for the period 2000-06**

EUR million

	Total investment including private contributions, FIFG and national aid	FIFG	National
1. Adjustment of the fishing fleet	82.2	41.1	41.1
2. Renewal and modernisation	173.6	26.0	8.7
3. Aquaculture, processing, fishing ports, etc.	374.1	80.4	49.9
4. Innovative actions, marketing, pilot projects	82.1	38.4	35.8
5. Technical assistance	6.5	3.2	3.3
<b>Total</b>	<b>718.4</b>	<b>189.2</b>	<b>138.8</b>

National support schemes include financial assistance for young fishers, experimental fisheries, fisheries consultants and the Innovation Law which provides assistance for research and development within agriculture and fisheries. N support schemes are directed specifically towards the fishing industry.

## Markets and trade

Knowledge of domestic consumption of seafood products is limited as no official seafood consumption statistics exist. However, some *ad hoc* surveys are available. The last consumer survey dates from 2001 and suggests an annual per capita consumption of EUR 80, corresponding to total Danish consumption of EUR 430 million. The quantities consumed are not known, but are estimated to be in the range of 20-25 kg live weight per capita. By value, shrimps, whitefish, salmon, trout and herring account for two thirds of total consumption. Seafood products are sold in several different product forms with canned, preserved and fresh being the most important. However, there are indications that the consumption of farmed fish such as salmon has been increasing over a longer period. This is also the case for imported cold water shrimp. At the same time, the consumption of traditional species such as whitefish, flatfish and herring is falling. Fresh fish and convenience seafood products are on the increase and as international trade increases, the supply of fish becomes wider.

Denmark is a major exporter of fish products – ranked sixth in the world, according to the FAO. At the same time, Denmark is a major importer of raw materials used for further processing and re-export. Danish imports and exports are shown in Table III.6.2.

Exports consist of several different species. Salmon (including trout) is economically the most important, followed by whitefish, shrimp and fishmeal and fish oil. Trade in salmon has been increasing, whereas trade in whitefish has been decreasing. Other EU countries purchase five-sixths of Danish exports, while exports to other parts of the world, including Central and Eastern Europe and China, are increasing. Russia receives an increasing amount of herring and cold water shrimps, whilst China increasingly imports



Table III.6.2. Imports and exports of Danish fish products 2004 and 2005

2004	Exports		Imports	
	Tonnes	DKK million	Tonnes	DKK million
Unprocessed	380 776	6 291	424 273	4 823
Semi-processed	168 709	4 891	71 384	1 928
Processed	117 133	3 553	65 002	1 847
Fish meal and oil	388 621	1 725	698 909	1 297
<b>Total</b>	<b>1 055 239</b>	<b>16 460</b>	<b>1 259 568</b>	<b>9 895</b>
2005	Exports		Imports	
	Tonnes	DKK million	Tonnes	DKK million
Unprocessed	337 459	6 916	423 508	5 147
Semi-processed	180 342	5 160	91 318	2 477
Processed	125 647	3 772	74 474	2 059
Fish meal and oil	387 238	1 779	736 851	1 473
<b>Total</b>	<b>1 030 685</b>	<b>17 627</b>	<b>1 326 153</b>	<b>11 156</b>

Notes: Fish products for consumption: unprocessed: HS-codes 0301, 0302, 0303, 0306 and 0307, semi-processed: 0304 and 0305, processed: 1604 and 1605. Fish meal and oil: both unprocessed and processed: 0511, 0508, 1504, 2301, 2309. Seaweed (1212.20. 00) is not included in the figures.

Source: The Danish Directorate of Fisheries Foreign Trade Register – 2005 are preliminary figures.

cod and cold water shrimp. Herring and cold water shrimp are used for domestic consumption, whereby frozen cod is thawed to just above zero degrees Celsius, filleted, and re-exported mainly to the EU and USA. This is mainly done on Danish owned filleting factories which have outsourced their processing activities due to lower wage costs.

Imports of significant quantities originate from a relatively limited number of countries. Salmon is imported from Norwegian farms, cold water shrimp from Greenland and Canada, herring from Norway, and halibut from Greenland. Whitefish has traditionally been supplied by Norway and the Faeroe Islands, but today supplies are widening. Falling European supplies of cod are to some extent being replaced by imports of Alaska Pollack from the USA and Russia and hoki from New Zealand.



PART III  
*Chapter 7*

## **Finland**

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## Main characteristics of Finnish fisheries

Finland's commercial fishing industry captured 88 313 tonnes of fish in 2005 with a value of EUR 17.0 million. This was slightly less than the previous year. A principal characteristic of the Finnish industry is its heavy reliance on sprat (for fishmeal and oil and fodder in the fur industry) and herring. Catches of these two species make up 95% of total landings. Landings, in general, have been falling for the last decade and are today half of mid 1990 figures.

An important recreational fishery supplements commercial catches. Some 1.9 million persons took part in this type of fishing in 2005, catching some 38 000 tonnes of a wide variety of fish with an estimated value of EUR 46 million. Thus, this sector is far more important value-wise than the commercial sector. It is also the recreational sector which, together with aquaculture production of 15 000 tonnes, provides fish for human consumption. Perch, trout and pike perch are the most important species.

The total amount of financial support to the industry from the Finnish government, including national schemes, co-financing and Åland County's share, was about EUR 14.9 million in 2005, some EUR 1.1 million more than the previous year. This corresponds to almost 90% of the landed value in the commercial sector. National financial support is mainly provided to two schemes *i.e.* commercial fishing vessel insurance plus the transportation of fish from remote fish landing sites. National- and EU-financed projects in 2005 mainly concerned the withdrawal of vessels, processing and marketing, fishing port facilities and the construction of vessels.

Finland differs from most other countries in the respect that not only land but also water areas are objects of private ownership. This is of great importance to the management of fisheries, especially as the legal position of private ownership is traditionally strong in Finland. Today, Finnish water areas can be divided into three groups on the basis of ownership: some areas are owned by individual persons, such as parcelled water areas (these areas are most common in the southern and western parts of the country). Secondly, areas that are jointly owned by groups of private real estate holders. Finally, outside village boundaries (and in the middle of the largest lakes), public water areas are owned by the state.

In recent years, TACs and quotas approved at the IBSFC- and EU-level have largely restricted fishing, particularly in the herring fishery. At the national level in 2003, the fisheries management authority initiated five regulations for the management of the herring fishery to ensure constant and even supply of herring year-round. These regulations defined closed periods or time restrictions for pelagic fishing. As for salmon, the current management system is based on time, area and size restrictions.

## Finland – Summary statistics

Figure III.7.1. **Harvesting and aquaculture production**

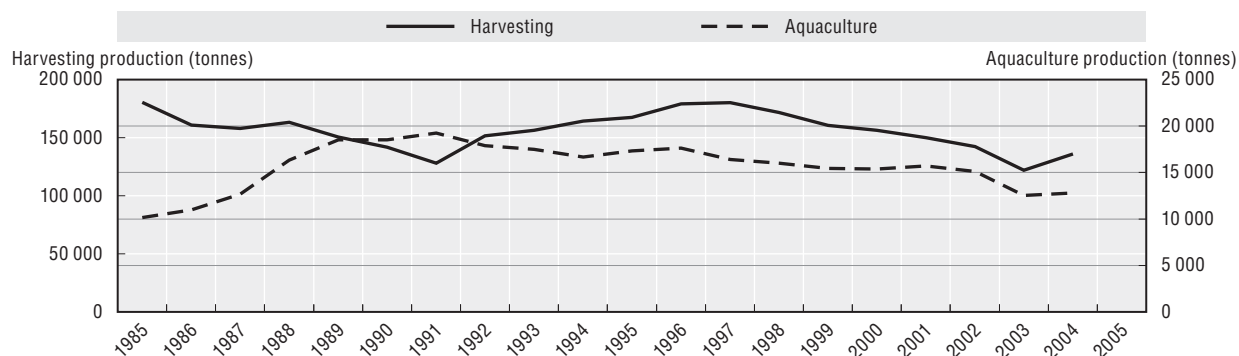


Figure III.7.2. **Key species landed by value**

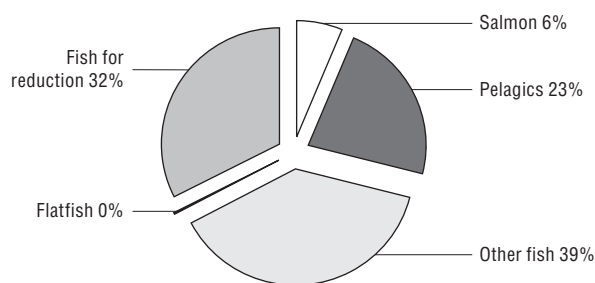


Figure III.7.3. **Age structure of fishers**

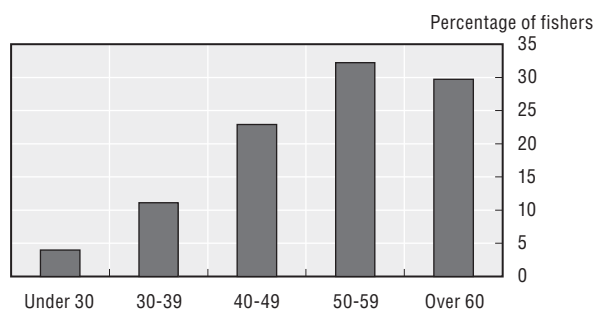


Figure III.7.4. **Evolution of government financial transfers**

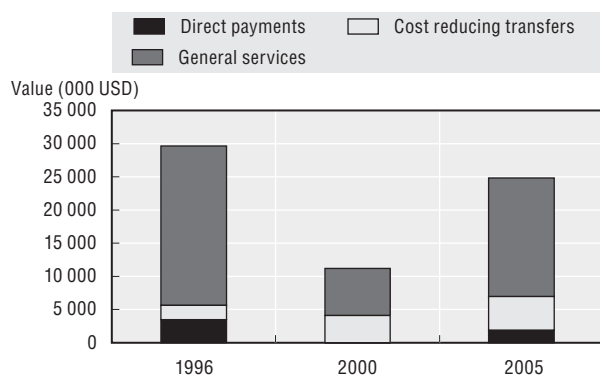


Figure III.7.5. **Trade evolution**

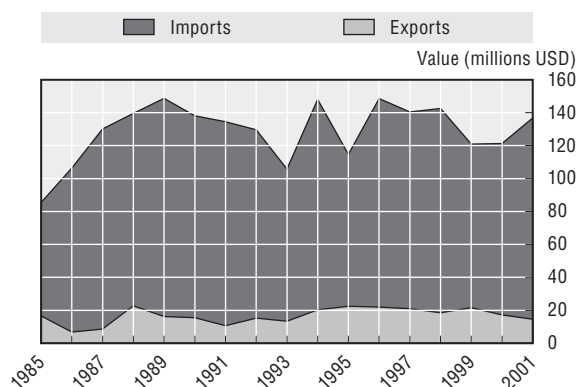


Figure III.7.6. **Production profile**

	1996	2005
Number of fishers	4 140	2 755
Number of fish farmers	1 049 <sup>1</sup>	428
Total number of vessels	4 026	3 265
Total tonnage of the fleet	23 846	16 948

1. Fish farmers in 1998.

Source: Figures III.7.1 and III.7.5: FAO; Figures III.7.2, III.7.3, III.7.4 and III.7.6: OECD.

## ADDITIONAL DETAILS\*

### Legal and institutional framework

#### *Resource management, national measures*

Resource management in Finland is harmonised with the Common Fisheries Policy of the EU. Finland also implements Community legislation on the common market system, structural assistance, fishing vessel registers, control systems etc. In this respect, the Finnish fishing vessel register includes all vessels engaged in commercial maritime fishing and is constitutes an element of the Community's fishing vessel register. The catch register and first buyer register are also maintained in accordance with the appropriate control system applied by the EU Common Fisheries Policy.

#### *Recreational fisheries*

In 2004, a total of 298 977 government fishing management fees were issued, providing EUR 5.68 million. In 2005 the figures were 287 640 licenses and EUR 5.44 million. The license fee was EUR 20 per individual per year and EUR 6 per 7 days. This revenue financed the management of fisheries organisations, fishing areas, fish stocks, scientific research and extension work in the field of fisheries. In addition to fishing management fees, government provincial lure fishing fees were issued. These permitted fishing with one rod. This fee was EUR 27 per year and EUR 6 per 7 days. The revenue for 106 070 licenses totalled EUR 2.19 million in 2004 and 105 312 licenses totalled EUR 2.17 million in 2005. These funds were distributed to the private water owners.

Table III.7.1. **The recreational fisheries catch and its value in 2004**

Species	Catch (tonnes)	Value (EUR '000)
Perca fluviatilis	11 746	11 394
Esox lucius	9 826	9 335
Rutilus rutilus	4 171	667
Sander lucioperca	2 265	7 180
Abramis brama	2 022	809
Coregonus lavaretus	1 929	5 452
Coregonus albula	1 915	3 408
Lota lota	1 160	3 284
Salmo trutta	711	1 632
Oncorhynchus mykiss	603	1 537
Salmo salar	334	638
Thymallus thymallus	209	508
Others	1 315	313
<b>Total</b>	<b>38 208</b>	<b>46 157</b>

### Government financial transfers

#### *National financial support*

New fishing loans from private banks for fishing vessels, gear and equipment, with government interest rebate schemes, have not been granted since 1995. In 2004, the rate of interest on old loans decreased to 2.5%, according to reference rates by the Finnish Bank.

\* The Finnish Fisheries Department of the Ministry for Agriculture and Forestry runs an English language website at: [www.mmm.fi/en/index/frontpage.html](http://www.mmm.fi/en/index/frontpage.html).

As a result, interest on old loans was not subsidised between 2004 and 2005. As before, a fisheries insurance scheme was maintained by six fisheries insurance associations plus one private insurance company in Åland County. The majority of indemnification comes from the government. Only commercial fishermen are entitled to insure their vessels, gear and equipment under this scheme, which applies to the Baltic Sea region. The insurance scheme will be aligned with the common market organisation system of the European Union in a few years' time.

Total insured capital was stable from 2001-03, at EUR 51.4 million (2001), EUR 50.9 million (2002) and EUR 51.3 million (2003). In 2004, capital decreased to EUR 44.4 million and further to EUR 39.8 million in 2005. The number of accidents decreased from 708 (2003) to 563 cases (2004) and further to 539 cases in 2005. The level of total claims has also been quite steady. In 2003, this figure was EUR 1.5 million, in 2004 EUR 1.8 million and in 2005 EUR 1.5 million. The government subsidy was EUR 1.20 million in 2004 and EUR 0.76 million in 2005.

Åland County's economic assistance programme is by and large the same as in other parts of Finland. In Åland, transporting catches from the archipelago to the mainland was subsidised by EUR 84 000 in 2004 and EUR 56 000 in 2005. This subsidy totalled EUR 164 000 in 2003. A fisheries insurance scheme was subsidised in 2004 by EUR 23 000 and in 2005 by EUR 36 000.

### **EU FIFG co-financed programs**

According to Community structural assistance rules in the fisheries sector in the EU, the sector in Finland is granted economic assistance according to the Financial Instrument on Fisheries Guidance (FIFG) regulations. Assistance to fisheries is granted from three structural programs; Objective 1 for Eastern Finland, Objective 1 for Northern Finland, and the Fisheries program for areas remaining outside Objective 1. Current structural programs (2000-06) began on 1 January, 2000. However, no payments were debited during the first year of the programs.

Structural assistance may be granted for permanent withdrawal and transfer of vessels, construction (only until 31.12.2004) and modernisation of vessels, development of aquatic resources, aquaculture, fishing port facilities, processing and marketing, inland water and winter fishing, small scale coastal fisheries, socio-economic measures, sales promotion, operations by members of the trade and technical support. Fisheries assistance commitments in these programs amounted to EUR 12.4 million in 2004. The national share was EUR 6.6 million and that of the Community EUR 5.8 million. The figures for 2005 totalled EUR 14.7 million, of which the national share was EUR 8.0 million and that of the Community EUR 6.7 million.

### **Structural adjustment of the fishing fleet**

Finland implemented the fourth Multi-Annual Guidance Program of Community fishing fleets during the years 1997-2002 (MAGP IV). Finland managed to fulfil the requirements of the MAGP before the end of 2002. The Community's fleet management system was renewed from the beginning of 2003 and special capacity reference levels for the fleets of Community member States was launched. The Finnish reference level for the fishing fleet is 23 203 GT and 216 195 kW. Two separate decommissioning schemes (vessel scrapping with community aid) of the Finnish fleet were carried out during the periods of 1997-99 and 2004-06. During 2000-03, however, the decommissioning scheme was not in use. The total capacity reduction with public aid, during the years 1997-99, was 827 GT and

4 158 kW. The equivalent reduction during the years 2004-06 was 1 378 GT and 6 025 kW. As of 31 December 2005, the total fleet size was 17 283 GT with a power of 172 715 kW and thus well below the reference level set by the Community.

## **Aquaculture**

The total number of fish farms in 2005 was 548 units (2004: 565 units). 154 were sea farm units and 394 inland farm units (2004: 163 and 402 units respectively). Of this, 218 units were engaged in fish production for human consumption. In 2004, the corresponding figure was 225 units. Food production facilities are mostly marine net cages and are commonly situated in the coastal archipelago area. The remainder of the farms produce juveniles for stocking and breeding purposes, either in farms (2005: 102 units and 2004: 98 units) or in natural food ponds (2005: 286 units and 2004: 293 units).

Aquaculture production for human consumption consists mainly of large-size rainbow trout. Its production with roe was around 14 065 tonnes in 2005 and 12 686 tonnes in 2004. The production value (excluding VAT) was EUR 40.8 million (includes roe) in 2005 and EUR 35.1 million in 2004. For other fish species, the corresponding figures were 662 tonnes and EUR 3.3 million, 486 tonnes and EUR 2.5 million. Of this, as much as 605 tonnes and EUR 3.0 million (426 tonnes and EUR 2.3 million in 2002), was powan (*Coregonus lavaretus*) production.

## **Markets and trade**

### ***Commercial capture fisheries sector***

The Finnish fishing vessel register is managed in accordance with Common Fisheries Policy Regulation (EC) 2371/2002 and European Commission Regulation (EC) 26/2004. Registered fishing fleet capacity at the end of 2005 consisted of 3 265 vessels (2004: 3 393 vessels). There were 127 pelagic trawlers engaged in Baltic herring and sprat fisheries (2004: 145 vessels) but only 2 bottom trawlers in the cod fishery (2004: 2 vessels). The number of passive gear vessels engaged in salmon fishery and bottom gillnet fishing of cod was 47 (2004: 55 vessels). The rest of the units (small boats), 3 096 in 2005 and 3 195 in 2004, were used in the small scale coastal fishery (Baltic herring, salmon and brackish water non-quota species).

The total marine commercial catch in 2005 was 88 313 tonnes with a value of EUR 17.0 million. In 2004, this catch was 92 001 tonnes. The most important species are Baltic herring and sprat, which together constitute about 95 % of the catch volume.



PART III  
*Chapter 8*

**France**

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## Main characteristics of the French fishing sector

With landings totalling 631 000 tonnes in 2004 for a turnover of EUR 1.1 billion, France (including overseas *départements* – DOM) ranks third of European Union countries, with 11% of catches.

The French fleet makes nearly two-thirds of its catches in the north-east Atlantic, the waters of which wash the European coastline. Thirty per cent are made in the tropical waters of the Atlantic and the Indian Ocean (tuna fish in particular), and 7% in the Mediterranean. Metropolitan landings fell sharply in terms of tonnage (-8%) and value (-10.4%) compared to 2003. The three main species remain, in terms of value, tuna, monkfish and sole.

At the end of 2004, the French fishing fleet was made up of 7 880 vessels (metropolitan France and DOM), representing 9% of the European Union fleet and 15% of its power. Most of its vessels (some 5 500) in all maritime regions are under 12 metres. Over 40% of the 141 vessels longer than 25 metres are registered in Brittany.

Shellfish farming is the leading aquaculture activity in France with a turnover of EUR 380 million for a production of 192 000 tonnes. In full-time equivalent, shellfish farming employs 10 500 persons. Production (measured in consumer sales) is very stable over the long term despite more marked temporary variations. Over 10 years, the drop has been only 1% (less than 0.1% a year on average) and remained stable in 2002 compared to 2001. Turnover for shellfish farming was estimated at EUR 371 million in 2002.

Consumption of all fishery and aquaculture products taken together is some 2.1 million tonnes (live weight equivalent), corresponding to more than twice national production which, in 2004, amounted to 854 600 tonnes.

National expenditure (excluding national subsidies to act as the counterpart to Community aid), relates essentially to management and monitoring, research, technical support and maritime education, as well as the risks of resource harvesting (bad weather unemployment payments) and interest subsidies in the case of fisheries loans.

Half of imports, the total cost of which was EUR 3.7 billion in 2005, come from European countries (including Norway and Iceland) and half from the rest of the world. The main supplier countries are the United Kingdom, Norway, Spain, Netherlands, and Denmark.

France is also an exporting country. French exports of aquatic products for human consumption come to some 480 000 tonnes a year (live weight equivalent) with a value, in 2005, of EUR 1.3 billion. Three-quarters of such exports go to other European Union countries, especially Italy and Spain.

## France – Summary statistics

Figure III.8.1. **Harvesting and aquaculture production**

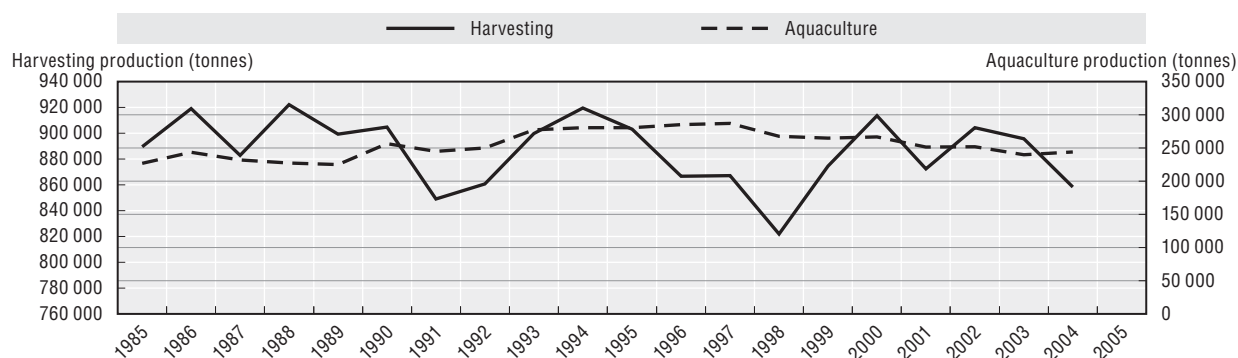


Figure III.8.2. **Key species landed by value in 2004**

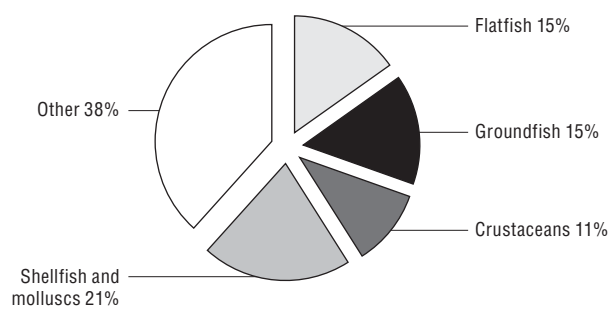


Figure III.8.3. **Age structure of fishers**

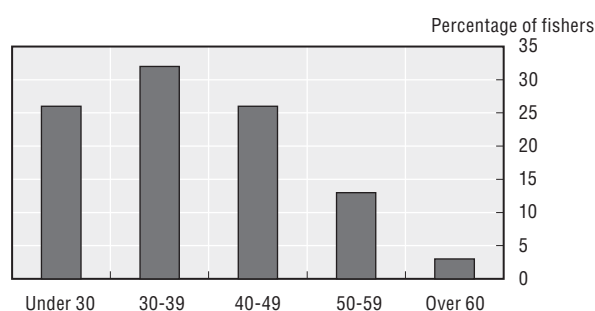


Figure III.8.4. **Evolution of government financial transfers**

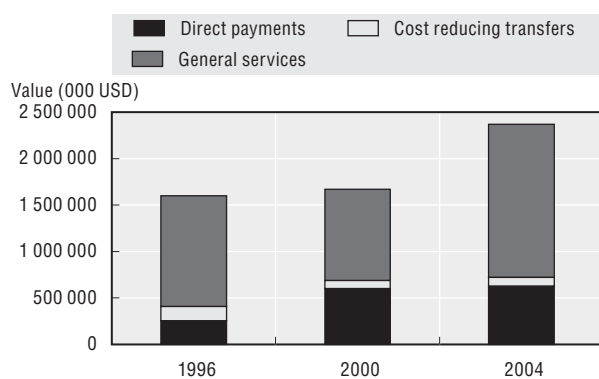


Figure III.8.5. **Trade evolution**

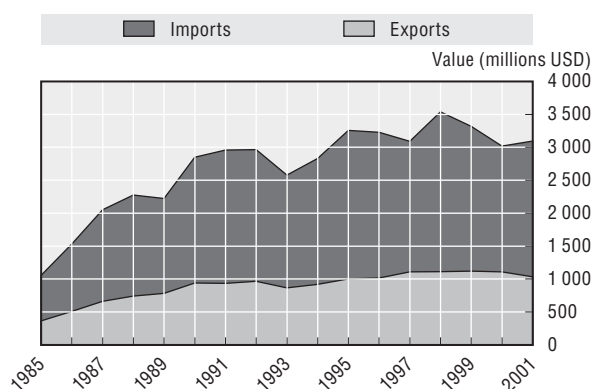


Figure III.8.6. **Production profile**

	1996	2005
Number of fishers	38 270	25 459
Number of fish farmers	n.a.	n.a.
Total number of vessels	6 473	5 359
Total tonnage of the fleet	197 740	199 225

n.a.: Not available.

Source: Figures III.8.1 and III.8.5: FAO; Figures III.8.2, III.8.3, III.8.4 and III.8.6: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The sea fishing and aquaculture industry is managed first of all within a European framework with the implementation of the Common Fisheries Policy (CFP), and also in a national context where different elements of the fisheries policy have been established. The CFP provides for resource management measures, but the setting up of such measures, the status of fishermen and enterprises, organisation of procedures and the marketing of maritime products fall within the jurisdiction of France.

### Capture fisheries

#### *Performance*

Metropolitan landings of fresh fish fell by 8% over the previous year and dropped below 350 000 tonnes, due in particular to a reduction in catches of anchovies, cod, saithe and mussels. Deep-frozen and processed production fell by 1.6% in 2004 because of the 5% drop in catches of tropical tuna.

#### *Stock status and management*

One of the main players involved in assessing resources in the north-east Atlantic is the International Council for the Exploration of the Sea (ICES). The assessments commissioned by the European Union for the stocks harvested by its fleet serve to adjust the diverse measures taken at EU and national level, in cases where they report that biological over-fishing is jeopardising the future of a particular species.

Resources of interest to other regions and of sufficient importance to be addressed at the international level are monitored by scientific committees in the relevant regional fishing organisations (RFOs).

Lastly, some stocks are monitored at national level: inshore stocks in French metropolitan waters, monitored mainly by IFREMER (*e.g.* major crustaceans, scallops) or stocks in the waters off France's overseas *départements* and territories (DOM/TOM), not subject to the CFP, such as toothfish off the islands of Kerguelen and Crozet, monitored by the *Muséum national d'histoire naturelle*.

#### *Managing commercial fishing*

Managing commercial fishing in France involves several management instruments. Community quotas apply to a large number of stocks. Other instruments have been put into place, such as limiting catch capacity by reducing fishing effort. A European Community management regime focusing on fishing effort for demersal species, deep water species and specific shellfish and crustaceans entered into force in 1995 and has been amended since.

As regards species subject to Community quotas, each year the French authorities allocate to producer organisations the fishing quotas awarded to France by the European Union. For the year 2005, these quotas amounted to 373 000 tonnes, increased to 388 000 tonnes after transfers with other member States. In addition to these quotas, special fishing licences and permits are issued by management bodies to limit access to fisheries.

For species not subject to Community quotas, some stocks require regulation at national or regional level. Examples include fixed stocks such as scallops, or migratory fish living alternatively in seawater and in freshwater.

In the Mediterranean, France has formulated a special national system for resource management which lays down the general conditions for Mediterranean fisheries. Harvesting is based on a system of licences for specific types of gear, e.g. bottom trawls, mid-water trawls, seines and small-scale inshore gear.

The French Southern and Antarctic Territories (FSAT) are not covered by the EU Common Fisheries Policy. Various legal instruments lay down rules for resource management and more specifically the total allowable catch (TAC) and the technical requirements governing fishing. The regulatory system also includes the measures adopted by France as a member of the Commission for the Conservation of Antarctic Living Marine Resources (CCAMLR). France is extremely concerned about illegal, unregulated and unreported (IUU) fishing which targets the FSAT in particular, and develops policing resources and close co-operation with neighbouring countries to combat this serious problem.

### **Monitoring and enforcement**

Responsibility for enforcing sea fishery controls lies with the Ministry of Agriculture and Fisheries which decides how this will be done at sea and on land, and may call upon the maritime affairs services and regional surveillance and rescue operations centres for that purpose. It also uses the services of the French Navy, police (*gendarmerie*), customs, competition authorities, consumer affairs services, the fraud squad and veterinary services. Responsibility for co-ordinating the services involved on the ground lies with the maritime Prefects (at sea) and the regional and departmental Prefects (on land).

### **Aquaculture**

The leading producer of oysters in the European Union, France ranks second for aquaculture overall, behind Spain and in front of Italy. Turnover in land-based fish farming was estimated at EUR 100 million for a production of 45 000 tonnes of freshwater fish. The turnover in marine fish farming was estimated at EUR 50 million for a production of 7 000 tonnes of fish and crustaceans.

### **Government financial transfers**

Measures have been taken to reorganise the industry so as to enable better resource management and promotion, as well as measures for crisis recovery. A plan to protect and restructure enterprises was added to the decommissioning plan for the year 2006 with a budget of EUR 26 million, so as to make it possible for the fleet format to adapt to the resources available and to improve, in the medium and long-term, the viability of fishing enterprises. Under this protection and restructuring plan with its budget of more than EUR 20 million, consolidation loans are available as well as structural subsidies for replacing engines, upgrading fishing gear, etc.

Until 2002, financial measures to reduce fishing effort had been used in order to reduce the capacity of the French fishing fleet by 3%. As from 2003, the CFP imposed an additional 3% reduction of the fleet compared to the reference levels of end 2002. In order to achieve these objectives, a decommissioning plan was implemented over the period 2003-04 with a budget of EUR 400 million. Furthermore, fleet renewal subsidies were discontinued as from the end of 2004. In 2006, a EUR 26 million decommissioning plan was introduced. It should affect 80 vessels resulting in a reduction of 23 300 kW.

## Fisheries and the environment

As far as environmental policy is concerned, France is party to regional Conventions dealing with protection of the marine environment and biodiversity. At Community level, the reform of the CFP has enabled environmental issues to be better taken into account in the fishing industry. At national level, commercial fishermen are increasingly involved in bodies for the management of nature reserves.

## Post-harvesting policies and practices

The drive to modernise the fishing industry (distribution/marketing) and make it more competitive is focusing on the following strategic areas:

- improving conditions for the landing and initial sale of fish, in particular prior-to-landing reporting, harmonised auction grading practices, and collective investment in fishing ports and wholesale fish markets.
- modernising enterprises downstream in the industry (fish trade, processing), particularly in terms of product quality and traceability/identification.
- developing innovation and research into new processes at every stage of the industry, be it production and marketing, quality enhancement or new product development.

The processing sector, which includes frozen, tinned, and refrigerated delicatessen produce (Figure III.8.5), comprises 300 enterprises for a turnover of EUR 3 billion and some 14 000 jobs (Source: OFIMER/IFREMER 2004). The French processing industry mostly uses imported produce, in particular salmon, Alaska pollack, shrimp and scallops. Little is exported on the other hand, mainly tins of tuna.

Tinned and sterilised produce accounts for 30% of turnover in this sector, frozen produce for 23%, smoked/cured produce for 20% and fresh delicatessen produce for 22%. Twenty four per cent of firms are located in Brittany, 22% further down the Atlantic coast, 18% on the Channel-North Sea coast, 20% on the Mediterranean coast and 15% inland.

## Markets and trade

Fresh fish is landed at more than 1 400 sites in 419 ports and is sold in registered fish markets located all along the French coastline. In addition there are 42 fish auctions, and 75% of fresh fish is actually sold by auction: 37% is the product of offshore fishing, 33% of inshore fishing and 30% of small-scale fishing.

The fish trade is shared among a few large companies and many small enterprises, with only 8% of companies accounting for 47% of turnover, the remaining 53% being shared between 82% of enterprises.

Large and medium-sized stores sold 61% of all fishery and aquaculture products taken together, restaurants 29% and fishmongers 9%. But this depends on the type of product. Thus, for fresh products, the share of large and medium-sized stores is only 47%, with fishmongers accounting for 20%

Imports are high in volume, totalling some 1.1 million tonnes net a year, which represents 1 700 000 tonnes in live weight equivalent. Imports have been growing steadily for the last 15 years but there has been an acceleration since 1998. Half of these imports come from European countries (including Norway and Iceland) and the other half from the rest of the world, the total cost in 2005 reaching EUR 3.7 billion. The main supplier countries are the United Kingdom, Norway, Spain, Netherlands and Denmark.

Exports may be divided into four main categories: exports of products not much consumed in France, exports of products for processing abroad before being re-imported into France, the re-export of products which have simply transited French territory, and the export of processed products using imported raw material.

## Outlook

France has just formulated a fishing Plan for the future (*Plan d'avenir pour la pêche – PAP*). This Plan is a strategic framework in which objectives are to be identified as are the tools needed to adapt the industry to increasing constraints and enable it to modernise. In order to carry out this work, a strategic national “Fisheries and Aquaculture” committee, bringing together a wide range of fisheries and aquaculture representatives, was set up in November 2005. Regional committees have been created in each coastal region, including the overseas *départements* (DOM).

It is proposed, under the PAP, to focus on several themes:

- Responsible resource management.
- Modernisation of the information system.
- Improvement of business profitability.
- Strengthening of the professional and administrative structures.
- The attractiveness of the industry.
- Product promotion.
- Safety.
- Support for the development of aquaculture.
- Overseas *départements*.





PART III  
*Chapter 9*

## Germany

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## Main characteristics of the German fishing sector

In 2005, the German fisheries sector experienced increased landings and profits compared to previous years. Rapidly increasing fuel prices, however, had a negative impact on the overall result. With a degree of self-sufficiency of merely 25%, both the processing industry and consumers in Germany are still heavily dependent on imports from other EU member States and from third countries. Per capita fish consumption has stabilised at approximately 14 kg, thereby remaining below the global mean value established by FAO. The most important fish for consumption are Pollock, herring, tuna and salmon.

In 2004, a total of 240 000 mt of fish and fishery products were landed by German fishing vessels. In 2005, this number rose to 253 000 mt while value increased from EUR 177 million to EUR 211 million. For many of the economically important fish species, a general tendency towards higher prices was reported. At the same time, fuel prices, which rose considerably in 2005, had a negative impact on operating results.

In 2004, fish consumption declined compared to the previous year, demonstrating general consumer reluctance as a result of unsatisfactory economic development in the Federal Republic of Germany. Since fish and seafood are relatively expensive foodstuffs and predominantly consumed away from home, consumer retrenchment such as eating out, had a negative impact on per capita consumption (13.8 kg) of fisheries products. The improving economic situation in 2005, however, resulted in renewed consumer spending that also became apparent in fish consumption. Avian influenza and the spoilt-meat scandal in Germany also gave rise to a higher consumption of fish and seafood as an alternative to poultry, pork and beef. According to preliminary data, per capita consumption rose to 14.8 kg in 2005.

The share of fisheries products from aquaculture experienced a steady rise on the German market. As a result, freshwater fish (including salmon), a category that mostly consists of fish from aquaculture, accounted for 21% of the whole domestic market for fisheries products in 2005. With a market share of about 9%, crustaceans and molluscs, which in some cases also come from aquaculture, showed a rising trend.

This dependence on imports is especially high for deep-frozen white fish fillets, salmon and tuna products. With approximately 30% in 2005, the share of domestic catch in total volumes of herring showed a rising trend. In 2004, importing operators benefited from the strong euro that resulted in lower import prices. In 2005, however, the euro fell again.

In terms of value, the most important supplier country outside the Community was Norway, which benefited from a rising demand for salmon. Within the Community, Denmark, the Netherlands and Poland were the most important suppliers, with Polish deliveries of smoked salmon and trout increasing considerably.

## Germany – Summary statistics

Figure III.9.1. **Harvesting and aquaculture production**

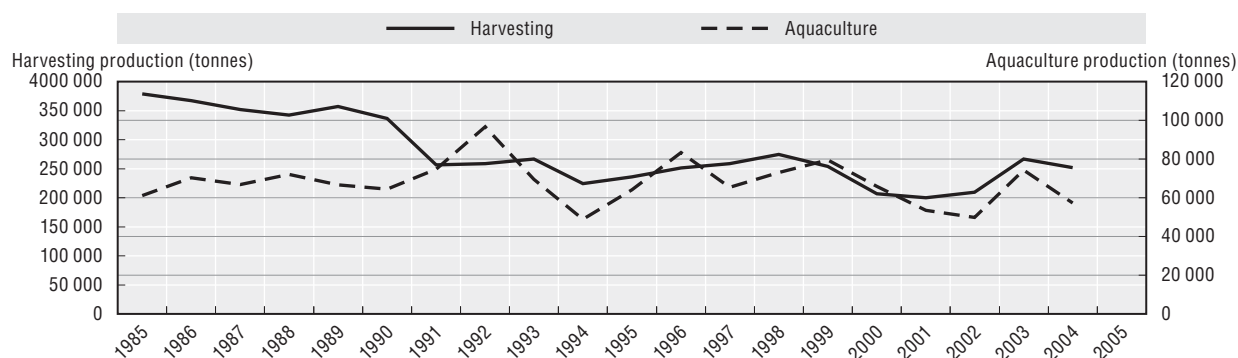


Figure III.9.2. **Key species landed by value in 2005**

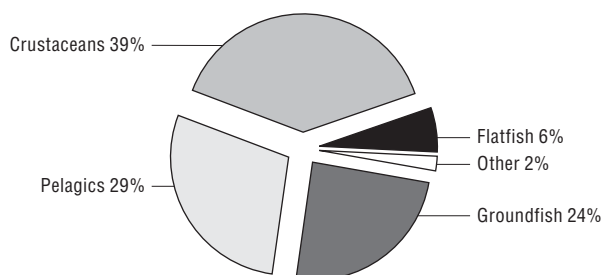


Figure III.9.3. **Age structure of fishers**

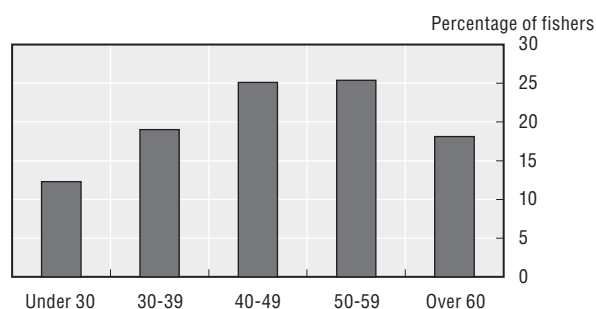


Figure III.9.4. **Evolution of government financial transfers**

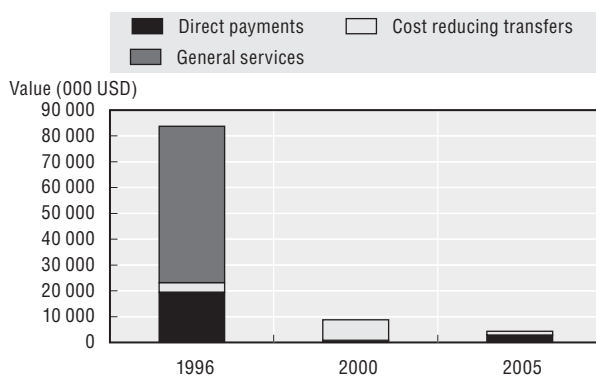


Figure III.9.5. **Trade evolution**

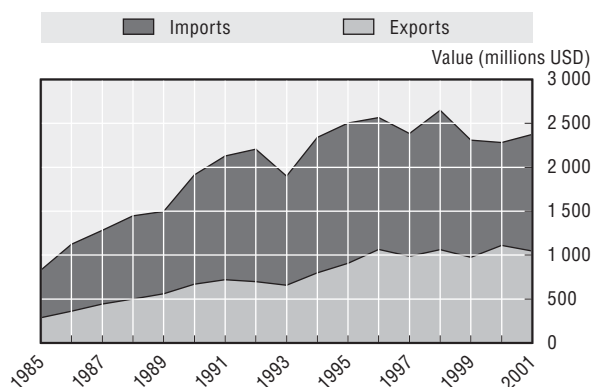


Figure III.9.6. **Production profile**

	1996	2005
Number of fishers	4 360 <sup>1</sup>	2 184
Number of fish farmers	n.a.	n.a.
Total number of vessels	2 371	n.a.
Total tonnage of the fleet	73 058	n.a.

n.a.: Not available.

1. Fishers in 1999.

Source: Figures III.9.1 and III.9.5: FAO; Figures III.9.2, III.9.3, III.9.4 and III.9.6: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

As a member of the European Community, Germany's fisheries policy is the implementation of the CFP. Within the Federal Government, responsibility for sea and inland fisheries as well as aquaculture matters lies with the Ministry of Food, Agriculture and Consumer Protection (BMELV). Implementation of the CFP rules, primarily interpreted in national law by the Sea Fisheries Act, is incumbent upon the Länder (regional governments) in close co-operation with the BMELV.

### Capture fisheries

The structure of the German fishing fleet is relatively stable. No significant changes have been recorded regarding number and capacity of active fishing vessels. The German fleet consists of 2 120 vessels with a total tonnage of 64 000 GRT and a total engine power of 160 000 kW. Only 10 of these vessels are engaged in deep-sea trawling. Due to their construction, these vessels meet requirements for fishing activities both within EU waters and third country or international waters. All vessels of this fleet category already process and freeze their catch at sea. The other vessels are active in deep-sea and coastal fisheries; mostly in the North and Baltic Seas. A large number of these vessels are open vessels and smaller cutters mostly used for daylight fishing.

Table III.9.1. **Structure of the German fishing fleet (as of 31 December 2005)**

Overall length	Number	Engine power in kW	Tonnage in GRT
< 10 m	1 623	25 557	2 870
10-< 12 m	109	10 087	1 293
12-< 15 m	64	9 510	1 361
15-< 18 m	162	29 693	5 413
18-< 24 m	99	22 150	7 926
24-< 40 m	45	23 064	8 608
> 40 m	19	39 076	36 584
<b>Total</b>	<b>2 121</b>	<b>159 137</b>	<b>64 055</b>

Vessels of the deep-sea trawler fisheries sector contributed a total of 130 000 mt to overall landings, 50 000 mt of which were landed in Germany and 80 000 mt abroad. In order to improve operating conditions for these vessels, shipping companies involved in deep-sea fishing co-ordinated fishing voyages in a way that, on the one hand, the deep-sea fleet could be put to optimum use while taking account of economic considerations, and, on the other hand, could make best use of available German catch quotas. As in previous years, fishing for pelagic species such as herring, mackerel, horse mackerel and blue whiting in the North Atlantic, has been good. In spite of a high utilisation rate, the catch quotas assigned were sufficient to secure fishing activities all year round. Redfish fishing in the Irminger Sea, however, was difficult and the available quotas could not be fully utilised. On the other hand, the Greenland halibut catch remained stable and satisfactory and vessels operating off Greenland made full use of the catch quotas assigned. The same holds true for catches of cod, haddock and saithe in Norwegian waters.

German cutter and coastal fisheries remained relatively stable in 2004 and 2005. Despite good catches and sufficient quotas, the saithe fishery in the North Sea reported some difficulties as market prices in 2004 were not sufficient to cover costs and higher prices in 2005 were cancelled out by increased fuel prices. Plaice and sole catches suffered from low quotas that partly resulted in a cessation of fishing activities. Additionally, catch restrictions in the form of a days-at-sea regime in the North Sea further deteriorated the economic situation in the fisheries sector. With a catch level of about 15 000 mt in addition to rising prices, shrimp fishing developed positively, also aided by the founding of a cross-border producer organisation with members from Germany and the Netherlands. This way, producers were able to strengthen their market position compared to wholesalers, which, together with a forward-looking control of supply, had a positive impact on overall annual results for fisheries in Germany.

In 2005, a separate stock management system for cod was implemented for the first time in the Baltic Sea as the eastern stock is in a poor state. This also resulted in quota shortages. Pelagic fishing of herring and sprat yielded satisfactory results. Nevertheless, herring amounts and sizes were not sufficient to satisfy the demand of the processing plant in Sassnitz. The sprats can be marketed as fish for consumption at reasonable prices.

### **Management**

During the period under review (2004/05), no substantial changes in German fisheries management were reported. New fishing vessels can still only be put into service if, at the same time, old vessels of at least the same tonnage (GRT) and engine power (kW) are permanently withdrawn from operation. This rule, which has been embodied in the German Sea Fisheries Act since 1986, was also implemented into Community law with the introduction of the new Basic Regulation on Fisheries [Regulation (EC) No. 2371/2002]. Modernisation measures for existing fishing vessels leading to increased tonnage and engine power are only authorised if corresponding old capacities are withdrawn. This ensures that the fishing capacity of the fleet does not increase. It should also be mentioned that the maximum capacity established by the European Commission for the German fleet is not fully utilised.

The basic principles regarding the allocation of quotas did not change in 2004/05. Following a hearing of fishing associations, available catch quotas continue to be first distributed among the operators engaged in deep-sea trawling and cutter fisheries. As a rule, operators active in deep-sea trawler fisheries obtained individual catch licences to fish individual stocks in different sea areas and/or joint catch licences for several operators, enabling the fleet to operate more flexibly. Different fishing management instruments are applied to manage species like plaice, saithe, sole, cod and herring, which play an important role for operators engaged in deep-sea and coastal fisheries and for some other species whose full quota utilisation is expected to be reached at an early stage. In part, operators are granted individual catch licenses that allow for individual exploitation of the quotas assigned. In some cases, however, catch licenses for certain groups of vessels are granted or maximum catch levels over certain periods are established.

### **Recreational fishing**

The number of active anglers in Germany is estimated at 1.5 million, showing an upward trend. A basic precondition for acquiring an angling licence, necessary also for line-fishing, is to prove extensive knowledge of fishery biology, hydrology and animal

welfare as well as water conservation. As there are no comprehensive catch records, information on catches made by anglers is based on estimates. These estimates amount to approximately 17 000 mt (about 11 kg per angler). Catches may not be commercially marketed. The Länder have adopted varying rules governing closed seasons and minimum sizes of the fish concerned. Moreover, there are usually water-related restrictions on fishing gear and catch levels in place.

## Aquaculture

Except for shellfish fishing, all aquaculture operations in the Federal Republic of Germany are commonly carried out in inland waters. As inland fisheries are incumbent upon the Länder, there is no specific federal aquaculture policy. Nevertheless, some federal laws such as the Federal Water Act (WHG), the Animal Welfare Act, veterinary legislation and the Federal Nature Conservation Act, also have an impact on aquaculture operations. No significant changes were reported for aquaculture operations during the period under review. On 20 December 2005, however, the Ordinance on Notifiable Animal Diseases was modified. Because of its infectious nature, the Koi Herpes Virus disease (KHV) was included in the list of notifiable animal diseases, whereas the spring viraemia of carp (SVC) was deleted from the list. In Germany, the often restrictive policy regarding water-management authorisation often proves to be an inhibiting factor for the expansion of aquaculture production, *e.g.* in the form of net cage systems. The concerns of aquaculture operators are also affected by EU directives that are implemented by the Länder. Important examples here are the FFH Directive, the Water Framework Directive and the Habitats Directive.

The large number of cormorants, which is further increased by protective measures under the above-mentioned EU Directives, constitutes a major problem for the aquaculture sector. Several Länder support their aquaculture operators by means of special cormorant ordinances (shooting permits for cormorants) or compensatory payments in cases of hardship. Nevertheless, the results reached so far are not satisfactory. For this reason, some aquaculture operators are calling for “European Cormorant Management” and the classification of the cormorant as a species of huntable game.

Other EU Directives relevant for German aquaculture concern the recognition of aquaculture operators and areas as free from specific fish diseases. The number of pest free operators increased to approximately 120. Several areas were granted pest free status.

Shellfish production is the only sector to be directly recorded by the federal authorities. Its value varies widely depending on larval supply, reaching 18 000 mt, worth EUR 11 million in 2004 and 11 000 mt, worth EUR 9 million in 2005. Aquaculture production from inland waters, however, is recorded or sometimes just estimated by the individual Länder. In spite of some minor fluctuations, this type of aquaculture is relatively stable. More than 400 full-time flow-through systems and almost 10 000 part-time flow-through systems produce approximately 20 000 mt of rainbow trout for consumption, 3 000 mt of rainbow trout (fingerlings) for stocking and about 2 000 mt of additional species (mainly common trout and char) amounting to a total value of more than EUR 100 million. The second largest segment of aquaculture includes carp pond farming. In this sector, nearly 200 full-time and about 12 000 part-time operators produce approximately 12 000 mt of food carp, 4 000 mt of carp for stocking and about 1 000 mt of additional species (other cyprinids, perchids, wells catfish, pike, sturgeon, small fish species) amounting to EUR 50 million. With about 30 systems and a total production of approximately 700 mt per

year, technical husbandry systems (closed recirculation systems) play a minor part in Germany. These production methods are used for relatively high-priced fish species such as eel, European wells catfish, carp for stocking, sturgeon, hybrid striped bass and pike-perch amounting to a total value of about EUR 4 million. Furthermore, minor amounts of rainbow trout, sturgeon, carp and pike-perch worth EUR 2 million are produced in about 20 net cage systems.

## Government financial transfers

Within the scope of the Common Fisheries Policy, Germany was provided Government Financial Transfers (GFT) to the amount of EUR 216 million from the FIFG Structural Fund (Financial Instrument for Fisheries Guidance) for the period between 2000 and 2006. Responsibility for the implementation of funding programmes lies with the Länder. The federal government plays only a minor role.

Funding priorities from 2000 to 2006 included the following sectors:

- Processing and marketing.
- Fishing port facilities.
- Modernisation of vessels.
- Aquaculture.
- Innovative measures.

## Markets and trade

The distribution of fish consumption among the individual product areas remains relatively stable. Deep-frozen fish and canned food/marinades each accounted for about one third. As regards deep-frozen fish, fillets and fish fingers made from Alaska pollock are predominant, whereas herring is the most important fish when it comes to canned food and marinades. Crustaceans and molluscs, fresh fish (showing a downward trend), smoked fish, fish salads and other fisheries products were consumed less frequently. Alaska Pollock continues to be the most consumed fish in Germany. According to provisional data, however, herring might catch up in 2005. Salmon, which enjoys ever growing popularity, momentarily ranks third, with tuna beaten into fourth place.

Germany's supply of fisheries products was still mainly imported. The degree of self-sufficiency during the period under review was approximately 25%. Although domestic enterprises engaged in sea fisheries and aquaculture made an important contribution to securing the basic supply of seafood products, they did not produce enough to fully supply the processing industry with the necessary raw materials. The dominant role of imports in ensuring the market supply of fisheries products is reflected in the sector's negative balance of trade:

Table III.9.2. Imports and exports in Germany

	Import		Export		Balance of trade	
	Quantity (t)	Value (1 000 EUR)	Quantity (t)	Value (EUR 1 000)	Quantity (t)	Value (EUR 1 000)
2004	828 906	2 272 039	391 716	987 240	-437 190	-1 284 799
2005	826 888	2 454 547	335 315	954 659	-491 573	-1 499 888





PART III  
*Chapter 10*

**Greece**

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## Main characteristics of the Greek fishing sector

Greece has a national deficit of fish products of approximately 110 000 mt. However, fresh products show a surplus of 41 000 mt, due to the high share in exports of aquaculture products.

Consumption of processed products has shown an increasing trend over the past few years. Per capita consumption for Greece reached 22.2 kg, 2.3 kg lower than the Community mean (EU15) which is 24.5 kg. A slight increase in the consumption of frozen products has occurred in the sector over the last few years.

The main export markets for Greece are the EU countries (over half of the production of fish and shellfish species is directed to the markets of Italy, Spain, UK, Germany, etc.).

Ninety six per cent of all vessels are coastal fishing vessels. Fishing in national territorial waters is permitted only to vessels flying the Greek flag and holding a vessel fishing license. Fishing vessels owned or operated by citizens of Third Countries may engage in fishing where a bilateral fishing agreement exists and reciprocal rights exist for Greek fishing vessels. Foreign citizens are permitted as employees on Greek fishing vessels.

Greece also has access to fishing opportunities in Senegal, Guinea Conakry and Guinea Bissau through the EU's Third Country Agreements.

Although Greece has a long tradition of aquaculture activities, the greatest developments in Greek aquaculture occurred after 1985, based on national and European Community policy; pre-existing geomorphological, climatological and hydrobiological conditions; investment interests; commercial conditions, including increasing demand for fresh fish products; and the development of technology concerning life cycles of cultured fish.

Most Greek sea-farms use open cage systems and are located along the coast. This kind of culture system has proven to be the most cost-effective. Seabass and Gilthead seabream are by far the most important species. Shellfish is the second most important species, while species like rainbow trout, eel, common seabream, sharpsnout seabream, white seabream, red porgy and common dentex, are beginning to make their way into the industry.

Fleet management is regulated by the European Common Fisheries Policy. member States may apply for measures that adapt their fishing fleet capacity in order to achieve a stable balance between fishing capacity and fishing potential. In Greece, alongside new fleet capacity, a corresponding capacity was also withdrawn.

Public aid for processing and marketing is granted only by means of European Community regulations, especially through the Third Community Framework Support. Financial aid is provided in the form of financing constant asset for structural actions that meet the aims of Community development and the principles of the Common Fisheries Policy. For 2004-05, public aid afforded in the sector of processing reached EUR 9 714 million for 2004 and EUR 9 489 million for 2005.

## Greece – Summary statistics

Figure III.10.1. **Harvesting and aquaculture production**

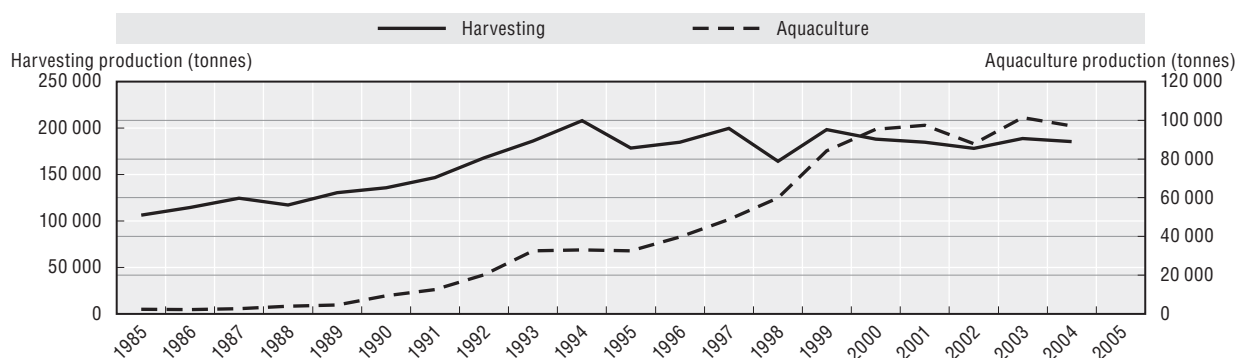


Figure III.10.2. **Key species landed by value in 2005**

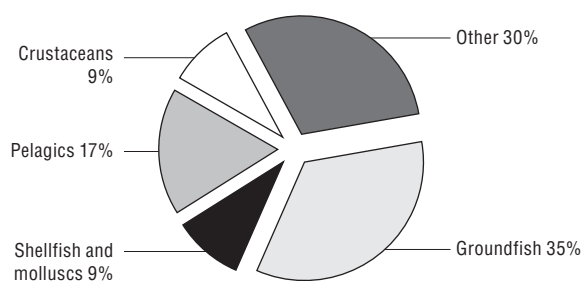


Figure III.10.3. **Trade evolution**

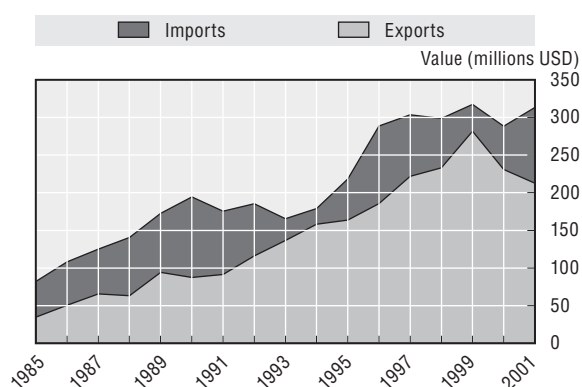


Figure III.10.4. **Evolution of government financial transfers**

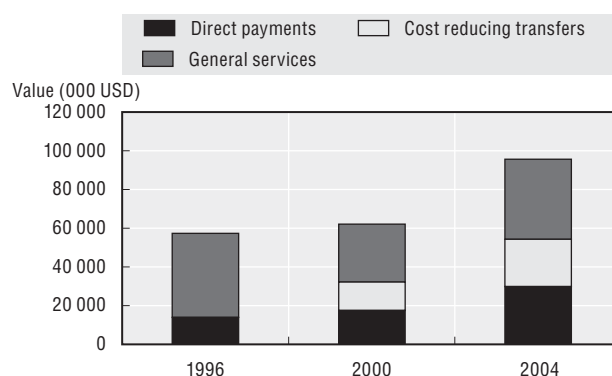


Figure III.10.5. **Production profile**

	1996	2005
Number of fishers	40 145 <sup>1</sup>	30 502
Number of fish farmers	4 850 <sup>1</sup>	5 860
Total number of vessels	11 524	18 275
Total tonnage of the fleet	123 406	92 917

1. Data for 1998.

Source: Figures III.10.1 and III.10.3: FAO; Figures III.10.2, III.10.4 and III.10.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The Greek fishing sector subscribes to the major objectives of the European Common Fisheries Policy as well as national policy, which includes, the rational management of fisheries resources within the framework of sustainable exploitation; protection of aquatic species and ecosystems; management of fleet capacity; strengthened control and inspection of fishing activities and measures combating illegal fishing; and financial support to the fisheries sector through the adoption of structural measures.

The Ministry of Rural Development and Food is responsible for exercising fisheries policy at the national level. This entails implementing the rules of the European Common Fisheries Policy by issuing regulatory measures for capture fisheries in Greek territorial waters. The legislative process involves the opinion of the Fisheries Council, at which representatives from scientific fisheries bodies and producer organisations participate.

### Capture fisheries

The marine fisheries sector makes a significant economic, social and cultural contribution to the mainland and islands of Greece.

#### *Fishing fleet*

The Greek fishing fleet consists of four basic vessel categories. Small scale coastal fishing vessels are equipped with static gear (nets, longlines, flying-lines) and with beach seines. Off-shore fishing vessels use bottom trawls and big purse seines. Distant-water fishing vessels use bottom trawls outside Greek territorial waters. Sponge-fishing vessels are the fourth category.

The total number of vessels in 2004 was 18 545 with a gross tonnage (GT) of 95 435. By 2005, vessel numbers had dropped to 18 275 and GT to 92 917.

In accordance with CFP obligations, satellite monitoring appliances were installed on all fishing vessels longer than 15 metres in 2004 and 2005. In 2004, EUR 240 000 was set aside for this purpose. This was EUR 781 923 in 2005.

The number of people employed in the marine fisheries sector was estimated at 40 492 in 2004 and 39 162 in 2005. Of the 2005 figures, all employees in the harvesting sector were full-time. Around one quarter of workers in the aquaculture industry were part-time. Twice as many workers work full-time in the processing sector as part-time, with equal numbers of men and women employed overall, although a greater percentage of men are employed full-time.

#### *Management and conservation of fisheries resources*

The CFP includes regulations for the management and conservation of fisheries stocks and the protection of ecosystems in community waters, applies technical measures for fisheries resources in the Mediterranean and for the management of the large pelagic fishes.

National legislation includes area and time restrictions on harvesting aquatic organisms and on fishing gear; technical specifications for fishing gear; minimum landing sizes; licenses and penalties for infringements.

Tuna (*Thunnus thynnus*) is the only species in the Mediterranean for which a TAC is applied. The catch quota for Greece in 2004 was 326 tonnes and 323.4 tonnes in 2005.

### **Status of fish stocks**

The status of commercially important fish stocks is provided by National Research Institutes financed by the EU (MEDITs, SAMED) as well as a National Programme of Fisheries Data Collection, co-financed by the EU. It collects data on fishing effort, production, landings, discards and fish data processing.

### **Recreational fisheries**

Recreational fishers are governed by the provisions of a Presidential Decree at the national level. Regulated measures include permitted gear, quotas and time prohibitions. Recreational fishers are prohibited from disposing of catch.

### **Monitoring and control**

The Ministry of Mercantile Marine implements the provisions of fishing legislation (community and national) and, in case of infringements, imposes administrative penalties (fines, temporary withdrawal of vessels and fishing licenses).

The application of new technologies, information networks, new control systems adjusted to Community requirements and the continuous training of control bodies, supports efforts to combat illegal fishing.

1 660 certified infringements took place in 2004, for which administrative penalties of EUR 967 860 were imposed. This was 1 518 in 2005 at a cost of EUR 794 959.

However, the monitoring and enforcement of landing procedures is not yet fully implemented. Difficulties were encountered in collecting and electronically recording landing declarations. Nevertheless, large pelagics, including bluefin tuna, are better monitored as they fall within the quota management system. Catches for large pelagics are recorded on an individual basis. A monitoring and control system of imports and exports exists for bluefin tuna, swordfish and tuna.

## **Aquaculture**

Significant aquaculture development has resulted in remarkable results, not only regarding the production of domestic fresh, cheap and high quality fish (especially Seabass and Gilthead seabream), but also the creation of a socio-economic structure that involves, both directly and indirectly, thousands of employees, particularly in fisheries dependent areas of the country. In addition, mariculture is the only productive activity that has colonized uninhabited islands and rock-islands, which are normally excluded from other investments.

Recent business activity has led to remarkable investments in substructure, technology, knowledge and exports of products.

The development and management of the aquaculture Sector, is implemented in multi-annual or annual action projects by the Ministry of Rural Development and Food (MRDF) – General Directorate for Fisheries and the CFP.

Focal points of Greek policy in the aquaculture sector include an increase in the supply of products with high nutritional value and quality, at satisfactory prices, as well as the improvement of hygienic conditions in production; the rational fishing management of inland waters, within the framework of sustainable development; a reduction in fish imports and increase in exports; an increase in the number of employment opportunities and the prevention of population removal from their homelands, especially on small

islands and in poor regions, as well as better working conditions and equality between men and women; differentiation in fishery production, by adopting new technologies in the culture of aquatic species, and measures for environmental protection; an improvement in the competitiveness as well as the commercial and administrative organisation of aquaculture companies, by introducing new technologies and better terms of co-operation among companies; increase financial viability by decreasing production costs.

These policies have been in place since 2000, through financial contributions through the “Community Support Framework”. Several co-financed measures and actions are also in place.

All farming of fish and shellfish in Greece requires a license from a Regional Fisheries Authority. There is also a system of limited entry for Seabass and Gilthead seabream in order to control their production. No new licenses have been issued since August 1994. A limited entry of new licenses is in place for euryhaline Mediterranean species such as common seabream, sharpnose seabream, white seabream, red porgy and common dentex.

Since 2004, a Bluefin Tuna (BFT) farm has been authorised to conduct fattening operations on bluefin tuna caught in the Convention area. The farm has been declared in the ICCAT Register of BFT fattening farms. The Ministry of Rural Development and Food inspects and monitors the BFT fattening activities in the framework of ICCAT Resolutions and European Regulations.

National legislation regulates the operation of farming in a consistent way for all species (tuna and other fish).

### **Production facilities, values and volumes**

Quantities of blue fin tuna (BFT) engaged for fattening purposes during 2004 were 420 mt, 785 mt in 2005 (635 mt caught by French vessels and 150 mt caught by Greek vessels). 578 mt of bluefin tuna was marketed during 2005.

### **Monitoring and enforcement**

The “Information System for Input, Control and Analysis of Aquaculture Data” includes and national management as the direct reference centre (network, via e-mail). Data includes all available information for each producer: production, employment, licenses, funds, etc.

## **Fisheries and the environment**

Fishing by drift-nets is restricted to Greek territorial waters and pelagic trawls are not used by Greek fishing vessels in order to protect the environment. Protection zones have also been established that restrict or limit fishing.

In order to minimise the impacts of aquaculture procedures, research is currently being undertaken on how to contribute to a better and more sustainable development and the management and control of aquaculture units as an integrated part of a holistic approach to Greek coastal management. Such a development of the aquaculture sector, in a specific area, will lessen the conflicts with other interested parties in coastal areas (e.g. tourism, industries, residences, recreational facilities) but, at the same time will allow an efficient control system.

## Government financial transfers

Aid granted during 2004-05 for fleet restructuring amounted to EUR 28 487 000. The Greek government co-finances projects with the European Commission according to its Operational Fisheries Programme (OFP 2000-06). Measures and actions for the fishing fleet relate to the adaptation of fishing effort; the renewal and modernisation of fishing vessels; accompanying socio-economic measures (allowances, financial compensation to fishers and boat owners); additional measures for the improvement of small scale coastal fisheries.

These measures are based on a legislative framework (Ministerial Decisions) that define the terms and conditions of structural regulation and national legislation, eligibility criteria, the maximum amounts of co-finance, priorities based on criteria, as well as management and control systems from submission to the approval of demands and granting of aid.

Transfers to the sector are in accordance with EU regulations, including co-financial aid (Direct payments) from FIFG (Financial Instrument for Fisheries Guidance) and ERDF (European Regional Development Fund) and operational support costs (General services).

## Trade and markets

Modern life has influenced nutritional habits, resulting in movements towards processed products with nutritional values, conversion of family units to organized plants and changing labour patterns from seasonal to full-time and more experienced employment.

Through the Third Community Framework of Support, the advertising and promotion of aquaculture products (sea bass and sea bream) is planned. These actions are to be set out during 2006.

The marketing of fish products is supported by a public network of 11 auction halls. Products from the collective fishery are mainly marketed in wholesale through auction halls, while aquaculture products are marketed through private installations for packaging and distribution. Recently, the Chios Auction Hall moved to a new, modern installation, benefiting fishermen in the outermost islands of eastern Greece.





PART III

*Chapter 11*

**Ireland**

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## Main characteristics of the Irish fishing sector

In 2004, landings of fish (quota and non-quota species) by Irish registered vessels totalled almost 308 425 metric tons (mt) with a total value of EUR 141.5 million. In 2005, total volume was 284 067 mt with a corresponding value of EUR 169 million.

In 2005, Irish seafood exports amounted to nearly 200 000 mt valued at EUR 354 million. At this time the seafood sector faced many challenges particularly in respect of supply. This resulted in exports declining by a substantial 62 100 mt or 24% in volume from the 2004 figure. However the decline in value was only 7%.

Within the EU (total exports EUR 380.7 million), the main countries exported to in 2004 were France (EUR 91 million), Spain (EUR 57 million), Great Britain (EUR 57 million), Germany (EUR 29 million) and Italy (EUR 24 million). Outside the EU the main countries exported to were Japan (EUR 17 million) and South Korea (EUR 12 million).

The main species harvested were (pelagic) mackerel, horse mackerel, herring, blue whiting; (demersal) whiting, haddock, megrim, ray (shellfish) whelk, blue mussel, edible crab, nephrops.

The term "pressure stock" is applied to certain, high demand species. Such species are subject to additional management measures controlling times, areas and weekly or monthly amounts fished. An added stipulation requires early notification of intention to fish. Open and closed seasons are imposed where necessary.

Total allowable catches (TACs) for deep water species were adopted for the first time in 2002 (fixing quotas for 2003 and 2004). In December 2004, Total Allowable Catches were fixed for the years 2005 and 2006.

Aquaculture production increased from 58 354 mt in 2004 to 61 037 mt in 2005 while the corresponding values also increased from EUR 98.1 million (2004) to EUR 105.6 million (2005).

Research carried out by BIM, the Irish Sea Fisheries Board, shows a steady increase in national seafood consumption levels. Research carried out in November 2003 showed 76% of adults served any kind of fish in the home in the two-week period preceding the research, with 43% of households served fresh whitefish, 35% frozen fish and 15% fresh salmon. The latest research findings from BIM (2006) show the number of times people are eating fish increased from 59 times per year in 2003 to 68 times per year during 2005. Consumers' acceptance that seafood is a vital part of a healthy balanced diet has emerged as a key driver for increased seafood consumption with BIM's survey showing 52% of people who eat fish, claim to do so because seafood is "good for them". BIM has also developed the Quality Seafood Programme (QSP).

## Ireland – Summary statistics

Figure III.11.1. **Harvesting and aquaculture production**

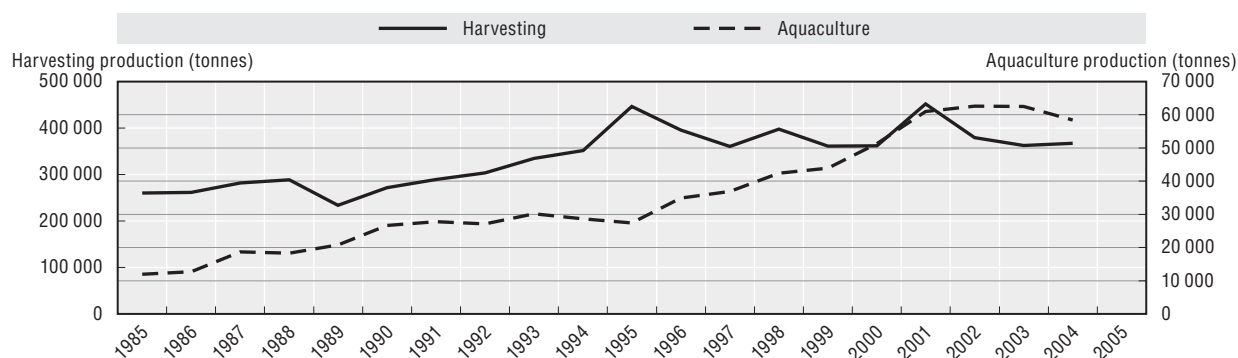


Figure III.11.2. **Key species landed by value in 2003**

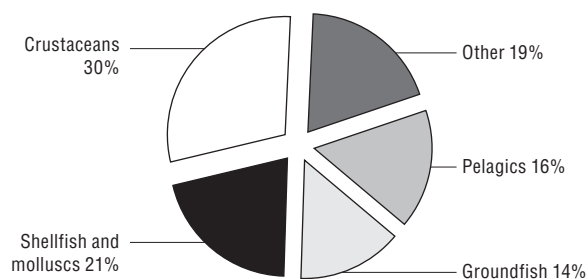


Figure III.11.3. **Trade evolution**

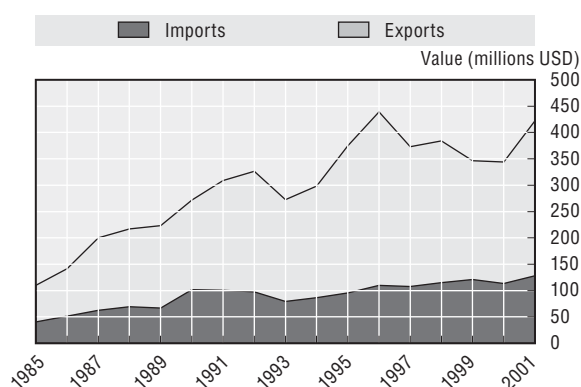


Figure III.11.4. **Evolution of government financial transfers**

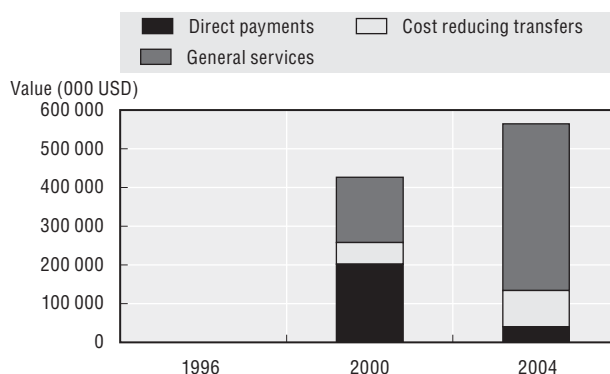


Figure III.11.5. **Production profile**

	1996	2005
Number of fishers	10 040 <sup>1</sup>	5 037
Number of fish farmers	2 638 <sup>1</sup>	1 936
Total number of vessels	1 249	n.a.
Total tonnage of the fleet	61 128	n.a.

n.a.: Not available.

1. Data in 1998.

Source: Figures III.11.1 and III.11.3: FAO; Figures III.11.2, III.11.4 and III.11.5: OECD.

## **ADDITIONAL DETAILS**

### **Legal and institutional framework**

As a member of the European Union, Ireland implements fisheries policies that are decided at the European level in the context of the Common Fisheries Policy (CFP), which was revised in 2002. Within this framework, Ireland implements policy at central government level through the Department of Communications, Marine and Natural Resources.

The national legal framework comprises the Fisheries Acts, 1959 to 2006. Statutory Instruments are promulgated under this framework for such measures as quota management, fishery closures, licensing regimes, effort control and technical conservation measures.

In the period in question, a review of the existing national legislation in this area commenced with a view to updating it to ensure Ireland's compliance with the obligations of the CFP. This review was completed early in 2006 with a new Act, the Sea Fisheries and Maritime Jurisdiction Act 2006, enacted on 4th April 2006. This Act, coupled with a further Act introduced in 2003, means that the national framework for the implementation of sea fisheries law has been updated.

This modern legal framework will ensure our full and continued compliance with the control obligations of the Common Fisheries Policy (CFP) and will allow for the implementation of the CFP. This enactment also allows for the introduction of secondary legislation (Statutory Instruments) to bring into force EU and national control and conservation measures (approximately 25 Statutory Instruments have been introduced to date). In addition, new Fishery Management Notices are now in place to provide for the management of Ireland's quota and fishing effort entitlements.

### **Capture fisheries**

#### ***Status of fish stocks***

In terms of waters adjacent to Ireland and according to scientific advice, stocks in particular difficulty include cod in Area VIa (which includes waters to the west and north of Ireland) and the Irish sea. These stocks are subject to recovery plans.

#### ***Employment***

In total, around 11 665 people are employed directly in the sea fishing, aquaculture and support industries. Of these, 5 037 are employed in the fishing fleet, 3 507 in seafood factories, 1 936 in the aquaculture industry and some 1 185 in ancillary employment servicing the industry.

#### ***Management of commercial fisheries and management instruments***

With annual quotas imposed on all the principal species at EU level, the objective of fisheries management is to regulate and maximise the catching, sale and processing of fish within the limits set. Each month, on the basis of national quota allocations, the Department of Communications, Marine and Natural Resources, following consultation with the industry, decides on management regimes for the following month. These management regimes involve catch limitations per vessel and are implemented by means of Fishery Management Notices.

### **Deep water species**

Under the EU Regulation adopted in 2002, and implemented at national level by Statutory Instrument in 2003-06, participants in this fishery are required to hold a permit (fishing authorisation), which is granted to an applicant who has met criteria as laid down in the Statutory Instrument.

Participants in this fishery are then issued with monthly notifications advising them of catch restriction limits. These monthly limits are set following consultation with the industry and take into account the uptake to date of the available quota.

### **Access to waters outside the EU**

Ireland participates in the “northern” pelagic agreements, which the EU negotiates with Norway, the Faroe Islands, Iceland and Greenland. Ireland has a particular interest in mackerel, herring (Atlanto-Scandean), horse mackerel and blue whiting. It also participates in the albacore tuna fishery (Atlantic Ocean north of 5° North) regulated by ICCAT. There are a few vessels which partake in more distant water fisheries.

Participation by foreign (EU and non-EU) vessels in Irish waters is governed at the EU level under the CFP. However, the control and monitoring of this is enforced by the Irish authorities.

### **Recreational and Inland fisheries**

The Department of Communications, Marine and Natural Resources, Inland Fisheries Division, has overall responsibility for the conservation, management, regulation and development of inland fisheries. The Central Fisheries Board is responsible for policy advice, administration of national and EU funding programmes, promotion and marketing of angling, management of fish rearing operations and co-ordination of the work of the seven Regional Fisheries Boards, which are responsible for environmental quality and for developing and protecting the fisheries resource. The responsibilities of the boards also extend to coastal waters within the 12-mile limit.

Under the Fisheries Acts, a number of regulations are in place to protect species such as salmon and sea trout. The principal conservation measures for wild salmon and sea trout are enshrined in the Wild Salmon and Sea Trout Tagging Scheme Regulations, which were revised for the 2006 season and were accompanied by the introduction of other salmon conservation measures.

## **Aquaculture**

### **Policy developments**

A new Irish Quality Trout Scheme and an Irish Quality Mussel Scheme were both fully approved in 2003, setting standards for these two sectors.

In July 2003 ECOPACT, an Environmental Code of Practice for Aquaculture Companies and Traders, was launched. It is a new initiative designed to ensure the widespread introduction of independently certified environmental management systems into the Irish aquaculture industry.

### **Multilateral agreements and arrangements**

On 19 December 2003, Ireland formally ratified the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 referring to the Conservation and Management of Straddling Fish

Stocks and Highly Migratory Fish Stocks. (It was decided that competence in this Agreement should be shared by the Community and the member States.)

## Government financial transfers

For the two years under review, the following direct payments (capital grants) were made to the sector:

Table III.11.1. **Government financial transfers**

EUR million

	Grants paid	
	2004	2005
Fleet and fisheries	10 240	7 849
Aquaculture	4 482	6 834
Processing and marketing	3 370	2 776
<b>Total</b>	<b>18 092</b>	<b>17 459</b>

### Cost-reducing transfers

Other than the application of EU-wide taxation arrangements concerning fuel, cost-reducing transfers are not a feature of the sector.

### General services

Insofar as the provision of general services is concerned, these relate primarily to costs associated with administration, research and the undertaking of supporting projects in the fields of training, stock sustainability and fisheries product optimisation. In 2002, including with respect to inland and recreational fisheries, some EUR 57.3 million was incurred in these activities; the figure for 2003 was EUR 52.1 million.

### Social assistance

A social welfare scheme entitled "Fishing Assist" is available for fishermen, which provides a level of assistance in the absence of fishing activity for a minimum specified period.

### Structural adjustment

The "Supporting Measures for Sea Fisheries Development" provides grant-aid of EUR 25 million over the period of the National Development Plan (2000-06) to put in place structures to promote the sustainable development of the sea fisheries industry at sea and ashore and support its diversification in the coastal regions.

## Post-harvesting policies and practices

### Policy changes

A Code of Practice regarding the risk categorisation, inspection frequencies and sampling protocol for fish and shellfish premises and products ensures the safety of seafood produced and placed on the market. A Code of Practice also exists for marine biotoxins in shellfish, which outlines how Ireland meets its obligations under European legislation to have a national marine biotoxin monitoring programme to monitor shellfish harvesting areas for the presence of toxins produced by several different species of marine phytoplankton.

### **Information and Labelling**

Since July 2003, in accordance with the requirements of Council Regulation No. 104/2000 (EC), labelling systems giving traceability information in respect of a wide range of seafood and aquaculture products have been in operation in Ireland.

### **Processing and handling facilities**

The period under review has seen a general consolidation in terms of processing facilities, with a smaller number of larger plants, and a concentration on value-added product, due to smaller volumes available for processing. On board, the emphasis has moved towards ensuring quality of fish rather than on-board processing.

### **Markets and trade**

Exports of salmon in fresh/chilled form declined 31% in volume (4 660 mt) and 24% in value (EUR 19.2 million) from 2004 levels. However exports of smoked salmon increased by 17% in volume and in value by 11% to EUR 5.9 million.

A significant contributor to the overall total decline in exports in 2005 was the fact that exports of mackerel and horse mackerel declined by 29% to EUR 59.4 million. Exports of whitefish declined by 12.6% in volume. It should be noted that the value of whitefish exports increased slightly from the 2004 level to EUR 59 million. Overall shellfish exports declined 8.3% in volume and 3.8% in value to 39 172 mt valued at EUR 126.5 million. However, exports of Dublin Bay prawns increased.

The French market declined by 4% in value in 2005 from the previous year, due largely to a decline in salmon and mussel. Germany showed a fall of 13.5% in value from the 2004 level due to a sharp fall in pelagic exports. There was an increase in Italian exports due largely to increased export of Dublin Bay prawns.

The estimated value of seafood imports declined by 24% to EUR 92.4 million in 2003 while volumes fell by 58% to 26 440 mt, largely because of a sharp fall in imports of pelagic fish for processing and re-export. Imports of whitefish declined 18% in value to EUR 26 million and 19% in volume to 6 298 mt.

### **Outlook**

The need to ensure sustainable development of fisheries remains the highest priority, with scientific advice remaining pessimistic for many stocks. Ireland made the fast-tracking of environmentally-friendly fishing methods a central theme of its Presidency of the EU from January to June 2004. This has resulted in a Commission Communication and Council Conclusions outlining a number of measures to be taken in this regard over the coming years. At national level, an independent economic assessment is being undertaken of the fishing possibilities available to the whitefish fleet, currently and going forward, including a review of the quota management system. This review is expected to be completed by the end of 2006.

The need for enhanced and consistent control and monitoring is another high priority for Ireland. The reformed Common Fisheries Policy has placed particular emphasis on this area and measures are planned within this framework in the coming years.

The need for greater stakeholder involvement in fisheries management has been addressed with the establishment of Regional Advisory Councils. This is a development greatly welcomed by Ireland at both administrative and industry level. At national level advisory committees have been established for key inshore fisheries, which are involved in the development of local management plans.





PART III  
*Chapter 12*

**Italy**

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## Main characteristics of the Italian fishing sector

Between 2004 and 2005, overall production in Italy has shown a trend reversal compared with previous years through increased production and stable revenues. This positive trend is due to changes in the aquaculture sector, as capture fisheries output has shown a steady decline as a result of fleet reductions following the EU's permanent withdrawal programme.

In addition to the reduction of fishing capacity largely involving very old and scarcely efficient vessels, a substantial decline in fishing activity has been registered and this proved to be the most influential variable which brought about significant drops in production levels. Decreases in fishing activity were partly due to the success of the national temporary withdrawal programme and partly due to the self-imposed "responsible" behaviour of fishermen who aimed to avoid excessive fishing pressure. Furthermore, the rise in fuel prices induced many fishermen to limit fishing days in order to reduce costs.

In 2005, external trade of fish products displayed a negative trend. Exports and imports decreased both in terms of volume and in value. These indicators confirm the persisting deficit in the balance of Italian fish trade. This propensity to import, which amounts to 67% both in volume and in value, implies that over two thirds of domestic demand is met by importing foreign products.

The catch composition of Italian marine fisheries is extremely heterogeneous, reflecting both the different gears in use in various fishing grounds and the high levels of biodiversity among aquatic resources. The main species group is small pelagics – anchovy and pilchard. Among demersal fish, the most abundant species landed are red mullet and hake. An important portion of total Italian landings is cephalopods, comprising cuttlefish, octopus (*Octopus vulgaris*) and horned octopus. The deep-water rose shrimp and the Mantis squillid are the most important crustaceans landed. Among large pelagics, the main species landed are bluefin tuna, albacore and swordfish. Hydraulic dredgers land about 14 300 tonnes of striped venus.

The volume of seafood consumed in 2005 amounted to around 424 000 mt (EUR 3 711 million), with an increase of 1.9% compared to 2004. Of total annual consumption, 51.4% consisted of fresh or chilled fish products, 22.9% of frozen seafood, 20% of preserves and the remainder 4.3% of salted and dried fish products. In 2004 the per capita apparent consumption of fishery products amounted to 21.5 kg,<sup>1</sup> showing an increase of 0.3% in comparison to the previous year. 54% of fresh product is sea fish, 26% molluscs, 14% fresh water fish and 6% crustaceans. For frozen seafood, consumption rose by 2.1%, while the average price decreased by 4%. In total, the average price of fishery products decreased by 0.5% in 2004-05.

## Italy – Summary statistics

Figure III.12.1. **Harvesting and aquaculture production**

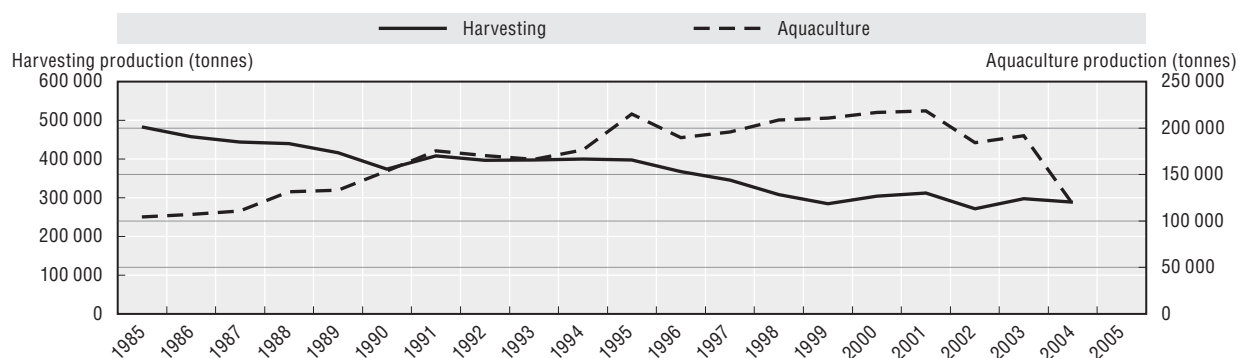


Figure III.12.2. **Key species landed by value in 2005**

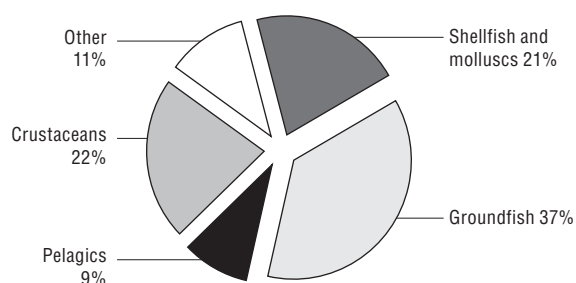


Figure III.12.3. **Trade evolution**

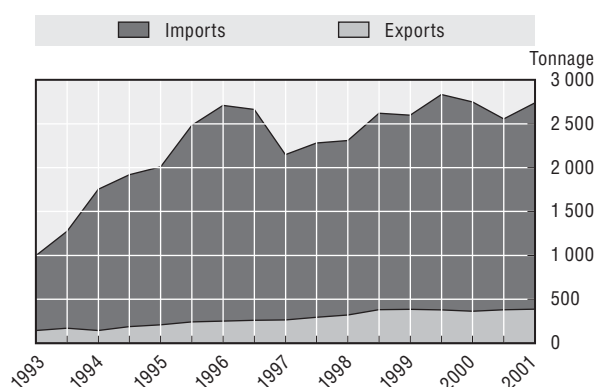


Figure III.12.4. **Evolution of government financial transfers**

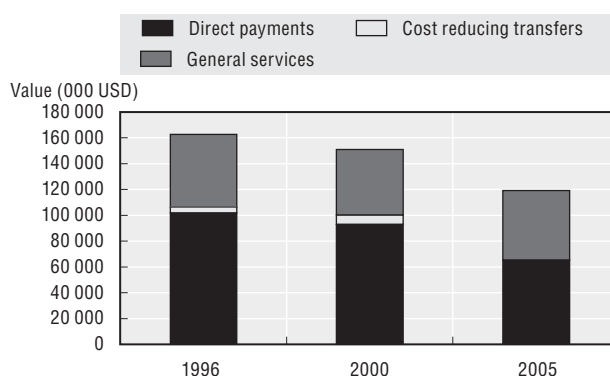


Figure III.12.5. **Production profile**

	1996	2005
Number of fishers	45 689 <sup>1</sup>	32 174
Number of fish farmers	n.a.	n.a.
Total number of vessels	16 325	14 304
Total tonnage of the fleet	260 602	198 997

n.a.: Not available.

1. Fishers in 1997.

Source: Figures III.12.1 and III.12.3: FAO; Figures III.12.2, III.12.4 and III.12.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

As a European Community Member State, EU Council regulations have direct application in Italy and national fisheries policies are integrated with the EU Common Fisheries Policy.

Constitutional reform in Italy has resulted in greater devolved powers to the administrative Regions and laws have been modified. One of the main changes made by this legislation concerns the reform of the national fleet register and the introduction of new rules concerning flexible composition of crew, the minimum size of some species and surveillance procedures. This reform also provides a new regulatory framework to enhance devolution, concerted action with regions and the role of producer organisations. Furthermore, a new Annual Plan has called for incentives to support future voluntary insurance policies and reviews the definition of rural entrepreneur, which also includes entrepreneurial side activities such as processing, conservation, trade in fish products, income integration and the associations and consortia of rural entrepreneurs. Aquaculture farmers and fishery entrepreneurs are considered to be rural entrepreneurs. This approach follows the path set by the Common Agriculture Policy and the Common Fisheries Policy of the EU.

### Capture fisheries

Italian fish production has seen a steady decline over the last few years (Tables III.12.1 and III.12.2). Between 2004 and 2005, landings decreased by 7% from 288 284 to 268 368 mt. In 2005, the value of production remained approximately constant, although with a slight increase of 1%.

The persistency of productive decline is mainly related to the reduction of activity that affected most fleet segments. In 2005, days at sea declined from 2 205 to 2 024. Compared to 2004, overall activity was reduced by 17%. The decrease in the fishing activity was, at least partially, a result of a decision by sector operators to reduce fishing effort with a view to avoiding market saturation and to protect the resource. In 2005, the rise in the price of fuel was also an exogenous factor that further damaged the sector.

Table III.12.1. **Capacity and economic indicators by fleet segments, 2004**

	Total fleet	Trawlers	Pelagic fleet	Dredges	Small scale fishery	Multipurpose vessels	Longlines
<b>Capacity indicators</b>							
Volume of landings ('000 ton)	288 284	101 898	91 242	23 412	47 515	14 920	9 296
Value of landings (EUR million)	1 380	621	159	81	341	94	83
<b>Economic indicators</b>							
Fleet – number of vessels	14 873	3 049	444	713	8 880	1 218	569
Fleet – total GT ('000)	201	129	27	9	15	9	11
Fleet – total GRT ('000)	172	102	22	7	23	9	10
Fleet – total kW ('000)	1 213	607	123	77	222	105	79
Days at sea ('000)	2 205	484	57	71	1 325	179	89
LPUE	11	6	35	32	14	11	6
Employment	35 069	10 209	3 213	1 428	14 999	3 408	1 811

Source: IREPA.

Table III.12.2. **Capacity and economic indicators by fleet segments, 2005**

	Total fleet	Trawlers	Pelagic fleet	Dredges	Small scale fishery	Multipurpose vessels	Longlines
<b>Capacity Indicators</b>							
Volume of landings ('000 ton)	268 368	99 892	82 824	17 812	44 076	13 747	10 017
Value of landings (EUR million)	1 388	682	134	62	339	85	86
<b>Economic indicators</b>							
Fleet – number of vessels	14 304	2 956	458	706	9 359	434	391
Fleet – total GT ('000)	199	127	29	9	18	6	10
Fleet – total GRT ('000)	169	100	23	7	26	5	8
Fleet – total kW ('000)	1 184	591	133	76	256	60	69
Days at sea ('000)	2 024	493	54	64	1 194	138	81
LPUE	11	6	33	27	14	13	7
Employment on board	32 174	10 295	2 888	1 439	13 173	2 599	1 779

Source: IREPA.

In 2004, the Italian fishing fleet consisted of around 14 800 fishing vessels with a total tonnage of 172 000 GRT and 201 000 GT and an engine power of 1 213 000 kW. The fleet is divided into trawlers, the pelagic fleet, dredges, the small-scale fishery, multi-purpose vessels and longlines. Between 2004 and 2005, vessel numbers declined for all fleet segments with the exception of the pelagic fleet (Tables III.12.1 and III.12.2).

The small-scale fishery is the primary segment in terms of vessel numbers, accounting for 65% of the total. It also accounts for a quarter of the national value of landings. Fishermen represent around 40% of national total with an average crew of 2 men.

The trawler fleet represents the main segment in terms of capacity, amounting respectively to 64% and 50% of total GRT and kW. In 2005, this segment accounted for 37% of total national catches and 49% of total value of landings, employing around 10 200 fishermen (32% of full time fishers). Despite the reduction of 2% in the volume of landings between 2004 and 2005, this segment has registered an increase of 10% in total revenues and a general improvement of average productivity.

The pelagic fleet consists of around 450 vessels, representing 3% of the total number of vessels and 13% of total GRT. It is composed of purse seiners concentrated in Sicily and the Tyrrhenian Sea and by midwater pair trawlers that operate exclusively along the Adriatic coast. The pelagic fleet lands a high volume of small pelagic species (80%), anchovies and pilchards especially and accounts for 31% of total national landings. In 2005, as a consequence of capacity reduction, this sector decreased by 9% in volume of landings and by 16% in revenue. On the contrary, this segment also shows the highest level of landings per unit of effort (LPUE), due to a new management approach implemented in 2001 and mainly based on self-management and control of landings.

The dredger sector is based almost exclusively on the Central-North Adriatic coast and in 2005 consisted of 706 vessels, representing 5% of the total number of vessels and 4% of total GRT. This fishery is highly specialised, targeting mainly clams (*Chamelea gallina*), whose consistency is subject to strong variations from year to year. Between 2004 and 2005, after a positive trend, clam landings have reduced by 24%, both in terms of value and volume. However this segment, thanks to a positive experience of self-management, shows high landings per unit of effort (LPUE).

The segment of multi-purpose vessels is composed of polyvalent vessels using passive gears (mainly nets) in combination with mobile gears (mainly trawls) according to season, demand and fishing grounds.<sup>2</sup> In 2005, they accounted for 3% of the total number of national vessels and GRT and represented 5% of national landings in volume and value.

The longline sector is comprised of many types of set and drift longlines targeting species such as swordfish, bluefin tuna, albacore tuna, hake and exc. production is concentrated in the Tyrrhenian littoral and particularly in Sicily, where the largest fleet exists. In 2005, the number of longlines decreased by 31% with respect to 2004, production registered an increase of 8% and 3% respectively by volume and value.

Official data on employment is available only for the harvesting sector. In 2005, 32 174 fishers were employed, approximately 2 890 fewer than in 2004. The major drops were found in multi-purpose vessels (-24%), the small scale fishery (-12%) and the pelagic fleet (-10%).

### **Management**

In 1989, the Italian government imposed a freeze on the number of fishing licenses that could be granted for fishing in Italian waters. Fishing by means of bottom and mid-water trawl nets has for a long time been subject to annual, temporary suspensions so as to allow fish stocks to recover. In the Adriatic Sea, bottom and mid-water trawlers cannot operate on Fridays, Saturdays, Sundays and during annual holidays. In addition, during summer time, bottom and mid water trawls are suspended for a minimum of 30 days to a maximum of 45 days. About 900 Italian vessels were initially authorisation to fish juveniles.

In accepting the common limitations of the CFP, Mediterranean EU member States asked and obtained a derogation for a transitory regime from the European Community. During recent years, the Italian government has ensured a significant reduction in authorized vessels, limited the catch to one target-species and reduced the fishing period to 60 days. Given these conditions, currently 420 vessels (less than 10 GT and whose engine power does not exceed 100 Hp) continue to fish juveniles of anchovy ("Bianchetto"). Limited quotas of juveniles of clams and other listed species can only be gathered for aquaculture or stocking purposes. This activity is also strictly regulated with a relevant control system on listed authorized fishermen. Other juveniles cannot be landed and their commerce is punished with suspension of the commercial activity license (market, restaurant etc.) for a minimum of 5 days to a maximum of 10 days.

An ICCAT plenary session decides the EU Bluefin tuna annual TAC (Total Allowable Catch). The EU shares its TAC in "nationals quotas" that member States manage. Each year the Italian government examines listed vessels to check that they are respecting EU regulations adopted to implement ICCAT recommendations. A portion of the Italian "quota" is allotted to those registered vessels that receive a positive appraisal.

In order to ensure the sustainable exploitation of bivalve molluscs, the Italian government froze the number of dredges in each maritime district until 2008. In 1995, the government transferred the management to Consortia that operate in accordance with the relevant provisions of Ministerial Decrees. The management consortia must directly ensure that general Italian rules on bivalve molluscs are respected and Consortia are required to provide the local Coast Guard Authority with catch data no later than the fifth day of each month. The start of the closed season is determined by the Local Fisheries Commissions. The gathering of bivalve molluscs is subject to daily bag limits. It is

prohibited to gather any species of clam or mussel which is less than 1.5 cm and 2.5 cm in length respectively. Accidental catches of undersized individuals is tolerated when it is less than 10% of the total catch. Management consortia reduced the impact of these accidental catches by adding juvenile catches to nursery zones. On the basis of the general measures fixed by the Italian government and mentioned herein, some management consortia added further, more restrictive measures concerning seasonal conditions. In order to ensure the sustainable exploitation of bivalve molluscs within fishing areas, management consortia were authorized to devise technical measures, propose increases or decreases to the number of fishing permits that could be issued for the gathering of bivalve molluscs and establish fisheries reserves. In view of the positive results of this experience in the Adriatic Sea, the Italian government decided to extend this management system to areas of the Tyrrhenian.

### **Recreational fishing**

No authorisation is required to engage in sport or recreational fishing within Italian waters. For this reason no official data on the number of sport fishermen and catches are available. The only exception relates to the recreational bluefin tuna fishery. Only in this case are sport fishermen required to register on a ministerial list in order to obtain catch quota. According to this list, a total of 1 826 sport fishermen presented a formal request to obtain a bluefin tuna catch quota that, in 2005, amounted to a total of 171 tonnes, corresponding to 4% of the TAC allocated to Italy. Fish caught in recreational fisheries cannot be sold. Individuals involved in sporting competitions are required to be members of a national sport fishing federation and to report catch data. Catches are subject to a 5 kg daily bag limit. The harvest of mussels for recreational purposes is subject to a 3 kg daily bag limit.

### **Aquaculture**

Administrative powers concerning aquaculture management have been transferred to Regional Authorities, while general guidance and co-ordination tasks are still performed by the Central government, especially as regards the interaction with capture fisheries.

The Italian aquaculture sector, with 808 sites and 7 700 employees<sup>3</sup> accounts for over 40% of national fish production and for 28% of total revenues. In 2004, overall production of aquaculture reached 232 800 tonnes corresponding to EUR 554.71 million. Compared with 2003, aquaculture production recorded an increase of 21% both in terms of volume and value.

Prevailing cultured species are mussels and clams, which together account for 71% in volume and 48% in value. Finfish species are trout (39 000 mt) seabass (9 700 mt), seabream (9 050 mt), eel (1 600 mt) and mullets (3 000 mt), representing 29% of total production in volume and 52% of total sales.

### **Government financial transfers**

Total government financial transfers were around EUR 200 million in 2005, showing a decline of 7% in comparison with 2004 (EUR 215 million). Only two kinds of transfers have been financed: Direct Payments and General Services. Direct payments primarily concerned vessel decommissioning payments, permanent and temporary joint ventures, renewal of vessels, aquaculture projects, processing and marketing of fisheries and aquaculture products and modernisation of vessels. General Services referred to fishing port facilities,

research, technical support and marine training. Between 2002 and 2005, total government transfers increased by 18%. Over the same period, direct payments decreased by 9% while General Services grew from EUR 41 208 million to EUR 83 488 million.

The National Solidarity Fund for Fisheries and Aquaculture was created in 2004 for the backing of fisheries and aquaculture companies affected by natural disasters or exceptional marine and meteorological conditions. Additionally, since 2003, FIGF funding can be used for income support and unemployment insurance. Funding amounts to EUR 961 000 and was available in all parts of Italy outside Objective 1 areas. Such socio-economic measures cover income support in case of permanent withdrawal or accidents.

## Markets and trade

Spain and France are the most important markets for Italian exporters of seafood products, although in 2004-05 Germany became the third major export market with 9.5% of total exports. The most important suppliers are European countries, representing more than 55% of total imports to Italy. Tuna, cod, cuttlefish and shrimp represent the highest imported volumes and value, even if imports of swordfish, seabass, seabeam, anchovy, cuttlefish and octopus increased substantially between 2004 and 2005.

In 2005, the deficit in the trade of ichthyic products amounted to some EUR 2.85 billion, an increase of 7.4% compared with 2004. During this period, the balance sheet was characterized by an increase both in total export value (+11.61%) and in imports (+8%). In terms of quantities, the deficit worsened again in 2005, with a 2.1% increase compared to the previous year.

On the contrary, in 2004 external trade of fish products displayed a positive trend. Exports improved and increased both in volume and value. Imports grew in terms of quantity but decreased in terms of value. Home consumption of fresh seafood increased by 2.4% while prices remained stable over the years 2004-05 (up 0.1%).

Table III.12.3. **Import-export trade of fishery products**

	2004	Var. 04-03%	2005	Var. 05-04%
<b>Tonnes</b>				
Import	836 000	0.8	859 000	2.9
Export	121 000	2.5	131 000	7.4
Balance	-714 000	0.5	-728 000	2.1
<b>EUR million</b>				
Import	3 074	-2.2	3 319	8.0
Export	422	2.1	470	11.6
Balance	-2 652	-2.9	-2 849	7.4

Source: Icrum data processed by IREPA.

## Notes

1. The apparent consumption is calculated as the difference between exports and internal production on the one hand and imports on the other.
2. In 2005, there was a reclassification of this segment as a result of the fact that many multi-purpose vessels using passive gears and with overall length less than 12 meters were moved into the small scale fishery segment.
3. Source: ISMEA, 2006.



PART III

*Chapter 13*

**The Netherlands**

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## Main characteristics of the Netherlands fisheries sector

The Netherlands' resource management and conservation policy is 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 fisheries. The Department of Agriculture, Nature and Food Quality is responsible for the formulation and implementation of policies for, among other areas, the sea fisheries, aquaculture, inland fisheries and recreational fisheries. Various management measures have been put into place to ensure equilibrium between fleet size and available resources. Some measures are of a technical nature and aimed at a capacity reduction, like decommissioning schemes, licensing systems and fishing gear measures. Another important measure aimed at reducing catches by means of quota regulations is a co-management scheme which has now developed into an ITQ system.

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. In 2004 the fleet consists of 367 cutters, 17 trawlers and 87 dredgers and the value of total landings were EUR 441 million. The annex presents data on the value of fisheries for the last few years. The employment in the fisheries sector adds up to approximately 14 000 in 2004. Of this number 2 180 are fishers, 400 people are employed in auctions, 6 400 work in the processing industry and wholesale, and finally there are 5 000 retailers. The recreational fisheries are regulated by restrictions on the amount and kind of gear used. It is forbidden to sell fish caught in recreational fisheries. No major changes were introduced in the management of recreational fisheries.

Aquaculture is concentrated on the production of shellfish, in particular mussels and oysters in coastal estuaries. Beside that, intensive land-based culture of finfish takes place in closed recirculation systems. Major species are eel and catfish. No major changes were introduced in the policies regarding aquaculture, nor were any major laws or regulations introduced which directly affected the aquaculture sector. However, the mussel production is under scrutiny, due to the fact that part of the production activities takes place in a national wetland area (the Waddenzee) and cockles production is no longer allowed as of 2006.

With regard to financial transfers, structural adjustment programmes concern a decommissioning scheme for the removal of vessels from the fleet; this measure used a total of EUR 29 million which was disbursed under the FIG. In addition there is a scheme for innovations in aquaculture in 2004. In total 8 projects were approved with EUR 3 million contribution from FIG. Revenue enhancing and cost reducing transfers are not used in Netherlands.

The increasing fuel prices added up to the negative impact on the marine fisheries sector. Since the fishing opportunities of plaice and sole in the North Sea have declined, the processing industry in the Netherlands is getting more dependent on imports from the EU and from third countries. The consumption of fish has increased slightly to about 51 500 tonnes in 2005. This is an increase in volume of about 15%.

## The Netherlands – Summary statistics

Figure III.13.1. **Harvesting and aquaculture production**

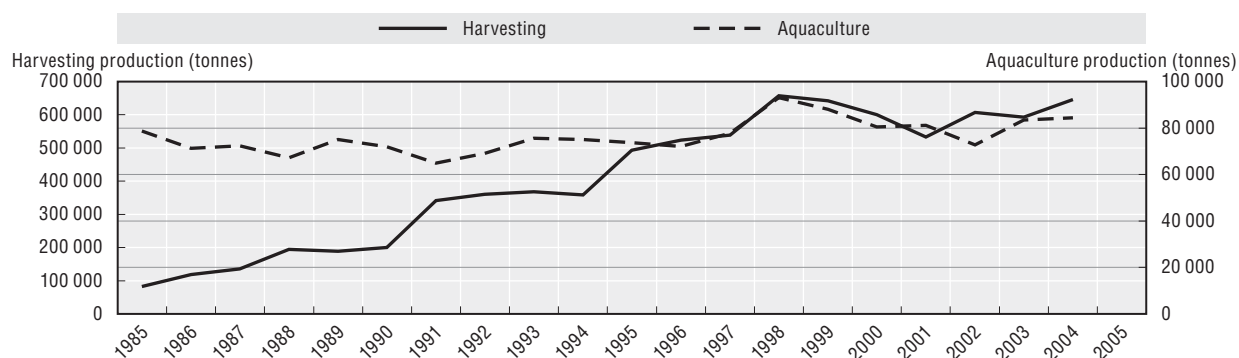


Figure III.13.2. **Key species landed by tonnage in 2005**

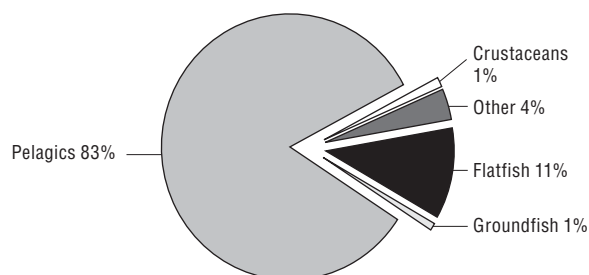


Figure III.13.3. **Trade evolution**

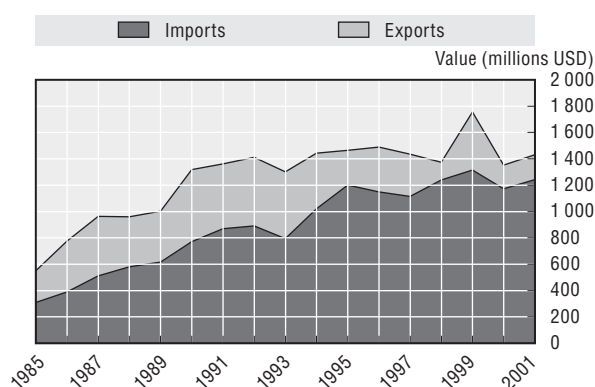


Figure III.13.4. **Evolution of government financial transfers**

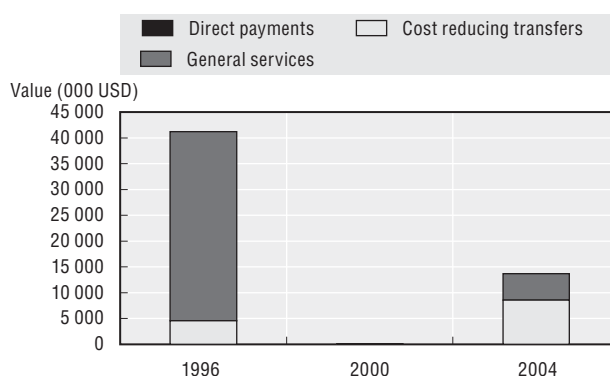


Figure III.13.5. **Production profile**

	1996	2005
Number of fishers	4 425 <sup>1</sup>	2 181 <sup>2</sup>
Number of fish farmers	225 <sup>1</sup>	85
Total number of vessels	1 057	894
Total tonnage of the fleet	177 820	172 195

1. Numbers in 1997.

2. Fishers in 2004.

Source: Figures III.13.1 and III.13.3: FAO; Figures III.13.2, III.13.4 and III.13.5: OECD.

**ADDITIONAL DETAILS (further particulars available at [www.minlnv.nl](http://www.minlnv.nl))****Legal and institutional framework**

The Netherlands' resource management and conservation policy is 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 fisheries. The department of Agriculture, Nature and Food Quality is responsible for the formulation and implementation of policies for, among other areas, the sea fisheries, aquaculture, inland fisheries and recreational fisheries.

**Capture fisheries**

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 employment in the fisheries sector adds up to approximately 14 000 in 2004. Of this number 2 180 are fishermen, 400 people are employed in auctions, 6 400 work in the processing industry and wholesale, and finally there are 5 000 retailers.

**Management of commercial fisheries**

In the period 2004/05 no major changes were implemented in the management regime in the Netherlands. The co-management system, which started in 1993, is still 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 transferable quota (ITQs), by means of renting ITQs and days-at-sea within the co-management groups. In 2005 government and industry have agreed to extend the co-management system to other aspects of the CFP than quota management.

A national eel management program has been formulated. Possible actions regarding fishery and improvement of habitat and migration were elaborated together with stakeholders. Implementation is pending the approval of the European Eel management measures.

In 2005 a Task Force on transition of the North Sea fisheries to more economic profitable and sustainable fisheries started its work. In this Task Force, representatives of government, industry, science and groups in society representing the public interest will develop ideas how to adapt the Dutch North Sea Flatfish fisheries sector to changing circumstances and to conduct its activities on a sustainable basis.

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 is recently revised.

**Management of recreational fisheries**

The recreational fisheries are regulated by restrictions on the amount and kind of gear used. It is forbidden to sell fish caught in recreational fisheries. No major changes were introduced in the management of recreational fisheries.

### **Monitoring and enforcement**

The Netherlands has implemented several instruments in the framework of the cod recovery plan in order to comply with the CFP obligations. In conformity to EC measures the Netherlands implemented VMS systems on vessels larger than 18 metres. The Netherlands promotes regional co-operation between the North Sea member States in the fields of inspection, control, enforcement and implementation of EC regulations. In order to facilitate this co-operation the EU North Sea member States founded in 2004 the so called Scheveningen Group. The Netherlands also promotes co-operation in the new control agency that is set up recently in Vigo by the European Union.

### **Aquaculture**

Aquaculture is concentrated on the production of shellfish and includes, in particular, mussels and oysters in coastal estuaries. Beside that, intensive land-based culture of finfish takes place in closed recirculation systems. Major species are eel and catfish. No major changes were introduced in the policies regarding aquaculture, nor were any major laws or regulations introduced which directly affected the aquaculture sector. However, the mussel production is under scrutiny, due to the fact that part of the production activities takes place in a national wetland area (the Waddenzee) and cockles production is no longer allowed as of 2006.

### **Food safety information and processing industry**

In 2002 the General Food Law (Regulation 178/2002/EG) established the European Food Safety Authority and the general principles for a European basis of food safety and food safety policy. Earlier the HACCP (or a system equivalent to this) was prescribed by different European directives since 1993. After the entry into force of the General Food Law new European regulations have been formed and others have been renewed. An important feature of the Regulations on the hygiene of foodstuffs is the identification of the primary responsibility of the food business operator.

The Dutch system and fishery will have to be update and adjusted to the new European regulations on food safety, like the obligation for traceability (before January 2005) and the compliance with the HACCP principles, before the beginning of the year 2006.

The Netherlands follows the product information requirements established by the EU. There are no additional requirements. In May 2006 the Pelagic Freezer-trawler Association (PFA) was awarded the Marine Stewardship Council (MSC) certification for sustainable fisheries for its North Sea herring fisheries. The North Sea brown shrimp fisheries, is in the pre-assessment stage of the MSC programme.

The Dutch processing industry is mainly focussed on flatfish. Supply is closely related to catch opportunities. Since the catch opportunities are declining the industry is getting more dependent on imports from other EU members and from third Countries. No further structural changes took place in the processing industry.

### **Domestic consumption**

About 51 000 tonnes of fish was consumed in 2005. This is an increase in volume of about 15%. The Dutch spend EUR 409 million in 2005 on domestic fish consumption. This is an increase of 38% compared to 2000. The last few years the consumption of fish in the

Netherlands is slightly increasing. Fish consumption is still relatively low, compared to neighbouring countries. The Dutch eat fish once in two weeks time.

## **Markets and trade**

### **Trade**

Imports in 2005 increased 18% in volume compared to 2000 and the export volume by 42%, including re-export. In 2005 imports were up in value compared to 2000 by 25%. Exports value increased 34% since 2000. Import value amounted to EUR 1 840 million in 2005, with shrimp, cod, plaice and salmon as the leading species; export value added up to EUR 2 730 million, with shrimp, plaice herring and mussels being the most important species. Most of the imports originated from Denmark, Germany, the UK and Belgium. 80% of the exports have the EU as point of destination; especially Italy, Germany, Belgium, and France.

## **Outlook**

At both the community and national level work is on-going on further developing and implementing the new CFP. After the Council decision on the new European Fisheries Fund the Netherlands started with the preparation of a national strategic plan and an Operational Program for the programming period 2007-13. In January 2006 the European Commission presented a proposal for long term management of plaice and sole. This proposal provides for a set of harvest control rules in combination with effort management. The Council will take a decision on this management plan in 2006.

At national level the discussion between government and industry about an extension of the co-management scheme continues. Rules on the limitation of engine power of fishing vessels will come into operation in 2006. In 2007 a joint government – industry group will start discussions on how to bring the EU rules on technical measures with regards to nets under co-management. In this respect the introduction of the OMEGA mesh gauge is of importance. The work of the Scheveningen group will continue; in 2006 and following years the control Agency will take over part of the tasks of this group. The results and recommendations of the Task Force on transition will be implemented in 2006 and the years following.

More attention is given to aquaculture policy development within the context of the EU Action plan for sustainable development of aquaculture. At community as well as at national level recovery plans are being developed for several species like cod and eel.

PART III

*Chapter 14*

**Portugal**

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## Main characteristics of the Portuguese fishing sector

Countries in southern Europe such as Portugal have small-scale fisheries with a large number of small vessels in communities all along the coast. In the case of Portugal, there are social, economic and territorial aspects to fishing that need to be preserved. The annual consumption of fish per head in 2004 was 45.3 kg, an increase of over 3.9% on 2003 (43.6 kg).

Portugal's trade balance for fishery products remains in the red. In 2004 it fell from EUR 672.6 million to EUR 669.7 million, but rose in 2005 to EUR 713.6 million. 6.1% growth in 2005 from 2003 was due to an increase in imports. In the same time period, exports grew by 8.5%, from EUR 335 million to EUR 364 million.

Frozen fish is the main import commodity with 28.6% in value and 37.8% in volume terms, followed by salted, dried and smoked fish with 25% in value and 15.1% in volume terms, and then crustaceans and molluscs, with 22% in value and 18% in volume terms. Canned products came first in terms of exports, with 24.3% of the total value followed by frozen fish, with 15.2% and wet fish with 14.8%. The growth in exports is mainly due to a rise in the average export price, since the increase in volume did not exceed 0.6%.

In 2005, Portuguese output of fishery products (excluding aquaculture) both within and outside national zones was 212 000 mt. Landings in national ports of fresh and chilled fish in 2005 amounted to around 156 000 mt, down 3.2% from 2004 figures. However, landings of domestic products in foreign ports increased by 11 000 mt, an increase of 10% compared to 2004, providing a total of 167 000 mt. In 2005, the main species in volume terms were once again sardine, horse-mackerel and octopus, totalling 50 389 mt, 13 927 mt and 10 924 mt, respectively. At 31 December 2005, the country's registered fishing fleet was comprised of 9 955 vessels totalling 108 814 GT and 384 560 kW in engine power. Tonnage decreased by 1% and engine power was down by around 3.3% compared to 2004.

Aquaculture output in 2004 was 6 801 mt, down 15.4% on 2003, owing to mortality in the production of bivalve molluscs in the Ria Formosa. Over 86% of output in 2004 was produced in sea- or saltwater. The main species was clam, followed by gilthead bream and bass.



## Portugal – Summary statistics

Figure III.14.1. **Harvesting and aquaculture production**

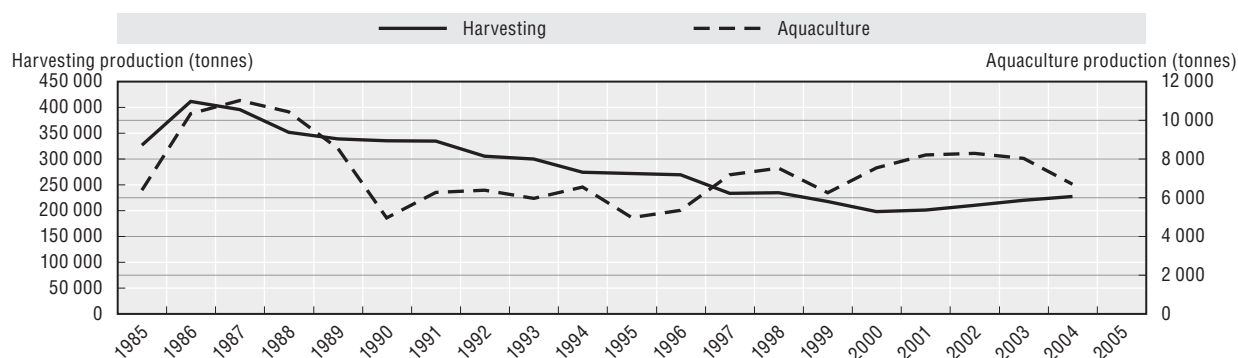


Figure III.14.2. **Key species landed by value in 2005**

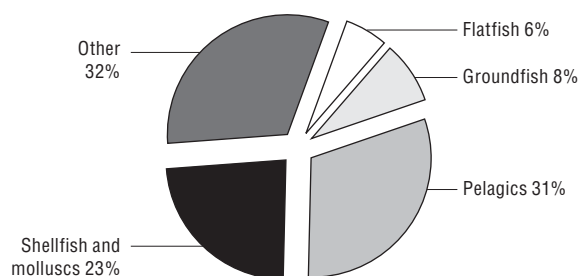


Figure III.14.3. **Trade evolution**

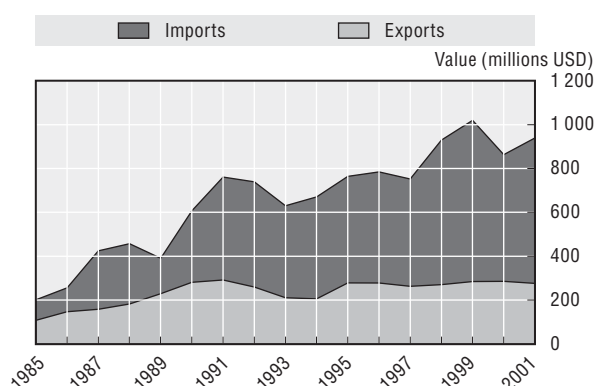


Figure III.14.4. **Evolution of government financial transfers**

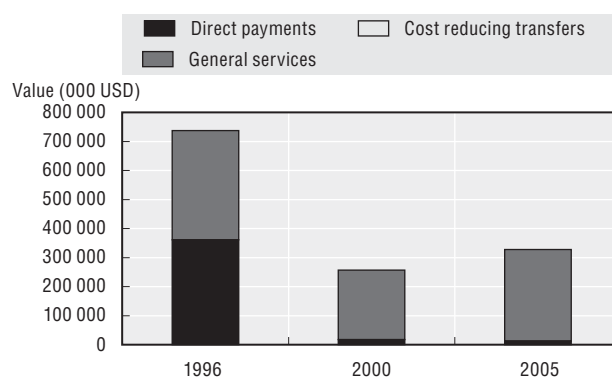


Figure III.14.5. **Production profile**

	1996	2005
Number of fishers	27 199 <sup>1</sup>	21 345
Number of fish farmers	n.a.	n.a.
Total number of vessels	14 061	10 089 <sup>2</sup>
Total tonnage of the fleet	125 903	112 977 <sup>2</sup>

n.a.: Not available.

1. Fishers in 1998.

2. Data for 2004.

Source: Figures III.14.1 and III.14.3: FAO; Figures III.14.2, III.14.4 and III.14.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

Responsibility for managing the fisheries sector lies with the government within the framework of the CFP. Portugal has two particular areas of concern: ecosystem based management that preserves biodiversity and integrates environmental considerations, while the other related to social and economic issues.

### Capture fisheries

Stock status assessments by the International Council for the Exploration of the Seas (ICES) and other international organisations concerning resources of interest to the European Community indicate a trend similar to previous years regarding biomass abundance, recruitment and fishing effort, in particular for hake, anglerfish and Norway lobster (*Nephrops*) which are harvested by the Portuguese fleet. Octopus, shrimp and cuttlefish have similar life-cycles, with considerable abundance variability. In terms of volume, most of the catch comprises small pelagics, including sardines which have a short life-cycle and high abundance variability, depending on the environmental conditions affecting spawning and hence annual recruitment. Demersal species, with their longer life-cycles, are showing signs of overfishing and their medium-term recovery will require an increase in the number of adult fish, achieved by allowing recruits to reach maturity.

Southern hake is showing a decline in its capacity to reproduce and is currently subject to an EU recovery plan. The Norway lobster stock in mainland waters is also subject to a recovery plan. The spawning-stock biomass has been stable in recent years and the stock appears to have recovered from the low levels recorded from 1996 to 2001. In the past three years, catches of anglerfish (monk and blackbellied angler) have been the lowest on record. Spawning-stock biomass levels are low and mortality is high. Biomass levels for megrim (including fourspotted megrim) have been stable since the 1990s. The status of blue whiting requires management of the current fishing effort, together with measures to protect juveniles. The combined mackerel stock (Southern, Western and North Sea) is outside the acceptable biological limit and the spawning-stock biomass is below the precautionary threshold. The spawning-stock biomass of Iberian sardine fluctuates because of annual recruitment, and is currently estimated to be near average (431 000 mt in 2004).

As for other pelagics, there is some uncertainty regarding the delimitation of stocks and reference points in terms of management although a degree of stability exists. Deep-sea stocks are important, not only because they support traditional fisheries, but also because they are widely scattered throughout the EEZ, including the Autonomous Region archipelagos. Given the extreme vulnerability of these resources, the latest scientific advice recommends an overall reduction in fishing opportunities based on the precautionary principle. However, the same scientists acknowledge the stability of black scabbardfish which is harvested with long-line gear in the mainland EEZ.

### Management

The current situation in Portugal continues to be reviewed in terms of fishing methods, the fleet and local fishing communities with a view to drawing up appropriate and realistic management measures relating to the use of specific gear and the introduction of a licensing system that would allocate fishing opportunities more equitably so as to promote sustainable resource use and ensure stability in the sector. Socio-economic studies of the sector were

conducted within the framework of the comprehensive and integrated management of resources and production, with regard not only to on-board fishing but the harvesting of marine life in general. Awareness was raised throughout the industry about the need to protect the resource effectively and ensure the future of fishing. The necessary adjustments were made to fishing licences and specific rules were introduced, including daily catch limits for dredgers, following the publication of ministerial orders regulating the use of various types of gear. Checks continued on fishing effort for species subject to recovery plans, special management measures and/or fishing quotas and also the harvesting of marine life, in compliance with the legislation. Technical management measures were adopted for deep-sea species at the Community level. As these resources are highly vulnerable, additional rules for access to this fishery have also been laid down at a national level.

Portugal, as a member of the EU, benefits from fishing opportunities afforded by agreements between the European Union and third countries, particularly in Africa (Mauritania, Senegal, Guinea-Bissau, Cape Verde, São Tomé, Comoros, Seychelles, Madagascar, Mauritius, Gabon, Côte d'Ivoire, Guinea, Equatorial Guinea, Mozambique and Kiribati) and cod and redfish quotas allocated by Norway under the Agreement creating the European Economic Area. In 2004 and 2005, Portugal acquired redfish quotas under EU fisheries agreements with Greenland, as a result of quota transfers between member States.

Portugal's main fishery agreements covering the Atlantic focuses on crustacean fisheries, either as Community fisheries agreements with Guinea-Bissau, Mauritania and Senegal, or as chartering arrangements or joint ventures, for instance with Mozambique and Brazil. A substantial share of Portugal's surface long-liners operates in the EEZs of Cape Verde, Guinea, São Tomé, the Comoros, Madagascar and the Seychelles.

### **Recreational fishing**

Owing to the need for a broad public debate on an initial proposal to regulate recreational fishing, a consultation was launched (involving the most representative associations and federations) to promote better acceptance among stakeholders. Draft regulations on the conditions applying to recreational fisheries have accordingly been tabled, prior to publication. These conditions cover access to resources, characteristics and gear, restrictions and bans on the harvesting of vulnerable species, conservation areas and possible licensing procedures.

### **Monitoring and enforcement**

The General Directorate for Fisheries and Aquaculture is the fisheries authority in charge of co-ordinating inspection and surveillance by all of the entities in SIFICAP (System of Supervision and Fishing Activity Control, including the Navy, the Air Force and the tax authorities).

## **Aquaculture**

The initiatives conducted during the reference period were aimed at increasing fish supply, in particular the farming of new species to help meet the demand for fishery products. To this end, Portugal encouraged trials with native species and new production techniques, as well as the building/modernisation of depuration and shipping centres for bivalve molluscs. Under the current Community Support Framework (CSF III), priority was given to work on environmental projects and regulations in areas such as waste treatment and the use of alternative energy sources or innovative technologies.

## Government financial transfers

Following further structural adjustments in 2004 and 2005, Portugal continued to implement Community and domestic support programmes for the fishing industry as part of the MARE programme (for the sustainable development of the fishery industry) and the MARIS programme (the fishery component of the Regional Programmes for the Mainland), under the Third Community Support Framework for 2002-06.

A special measure under the Third Community Support Framework concerns the execution in 2004 and 2005 of a special measure taken under the Financial Instrument for Fisheries Guidance (FIFG) for owners and crews of vessels formerly operating in Moroccan waters under the fishery agreement that ended in 1999, ending in 2004. Other projects, financed exclusively from domestic funds under the Regulations for the SIPESCA Fishery Incentives Scheme, have promoted local and inshore fishing through supporting the renewal and modernisation of small vessels, to improve safety and working conditions and the handling and conservation of fish on board; fostering competitiveness without increasing fishing effort; investing in quality and promoting the use of more selective and environment-friendly gear; promoting initiatives to improve the organisation and capacity of small-scale fishing and solve the problems specific to fishing communities.

A total of EUR 4 445 056 was awarded in grants for 254 projects involving the construction of new vessels, together with a total of EUR 3 596 530 for 364 modernisation projects.

## Processing

Fresh and frozen products are the leading sector in terms of both units and output (96 500 mt or 46%). It directly employs a workforce of 2 892 (45% of all jobs in the fishing industry). The salting and drying sub-sector, almost exclusively based on salt cod, has seen a rise in the number of production units and accounts for 37% of output in terms of volume (77 000 mt in 2005). It employed 1 362 workers (21% of the industry total). There has been a clear decline in imports of wet salted cod in recent years, and an increase in the use of frozen fish; this has helped to push up the value of exports (up 49% in 2003 alone). However, this is still a sub-sector that supplies the domestic market with a species that is unavailable in Portuguese waters and subject to heavy catch restrictions. Canning is a sub-sector that makes a positive contribution to the trade balance as it imported over 18 000 mt but exported 21 000 mt during the year. This is an export sector and one that makes the most of domestic resources, in particular sardines, Spanish mackerel and, more recently, tuna.

## Markets and trade

Quality control for fish and aquaculture products is on the rise in Portugal, in particular for cod products in various forms. A working party has been in existence since 2002 to discuss and propose initiatives to enhance sardine quality through the industry, from catch to consumer. Protection has begun of bivalve-mollusc protection zones owing to the nature of these species and the marine environment where organic and inorganic substances may affect product quality.

Cod was still Portugal's main fishery import, most of it destined for the processing industry. Since 2000, this product has benefited from a reduced tariff rate of 3% and a zero-rated annual quota of 10 000 mt per annum. Since October 2003, the domestic salt/dried cod sector has benefited from the introduction of a zero-rated quota of 50 000 mt for chilled or frozen cod for the processing industry.

## Outlook

In line with responsible and sustainable resource use, policy in the sector will aim to rebuild and stabilise fishery production, essentially by seeking to implement a structural modernisation policy for production, the processing industry and aquaculture, by directing investment towards the demands of competitiveness, without prejudice to the new Common Fisheries Policy. It will also aim to reinforce scientific research by supporting the development of new methods of assessing resource abundance and distribution, and more detailed work on oceanography and the interaction between fisheries and the environment. It will also aim to develop alternative sources for the supply of fish, by raising the quality and broadening the range of aquaculture products, develop vocational training and gear it to the needs arising from changes in the sector, taking into account the qualifications required on the job market and the technical/vocational profile of those working in the industry, step up inspection and surveillance work by optimising the human and material resources available and regulate recreational fishing so as to ensure that it is sustainable and does not compete with commercial fishing.



PART III

*Chapter 15*

**Slovak Republic**

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## **Main characteristics of the Slovak fishing sector**

The Slovak Republic is a land-locked country without marine fisher, fishing vessels or suitable waters for commercial inland fishing. The fisheries sector in the Slovak Republic therefore consists only of aquaculture and fish processing.

A large part of aquaculture fish production is as spawn material for restocking purposes. Regular annual restocking is necessary to maintain an ecological balance and the biodiversity of original fish species as a limited self-reproduction of fish occurs in Slovak water bodies.

The relative importance of the fisheries sector to the national economy can be expressed as a proportion of GDP, to which it contributes a 0.002% share. Despite this relatively low value, the fisheries sector significantly contributes to the protection and enhancement of the environment, preservation of genetic diversity and social non-production benefits from structures used for fish farming, such as landscaping, flood protection, water retention and rural development.

Approximately 80% of freshwater fish is sold live. Most of the fish produced is sold at the end of the calendar year, in connection with typical harvesting of fish ponds and seasonal demand.

The consumption of fish in the Slovak Republic has consistently been around 4.3 kg per capita per year, of which freshwater fish constitutes less than a kilogram. Domestic aquaculture production of fish makes up around 40% of freshwater fish consumption. The rest is provided by imports.

In 2005, 1 131 tonnes of freshwater fish was imported to the Slovak Republic (including 819 tonnes of live freshwater fish) and 12 994 tonnes of sea fish. The biggest importer of freshwater fish (carp) was the Czech Republic with 807 tonnes.

Total exports were 1 080 tonnes. Of this, 1 078 tonnes of (secondarily) processed sea fish were re-exported. On a little freshwater fish is exported.



## Slovak Republic – Summary statistics

Figure III.15.1. **Harvesting and aquaculture production**

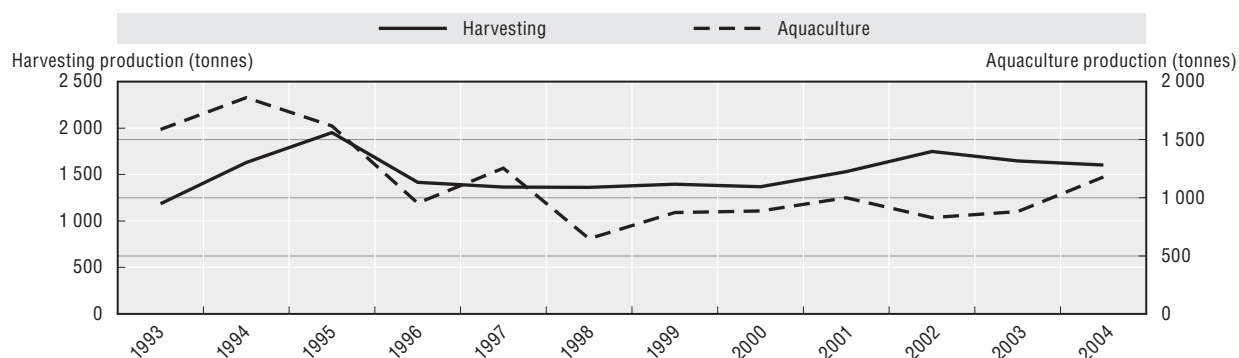


Figure III.15.2. **Key species produced in aquaculture by tonnage in 2005**

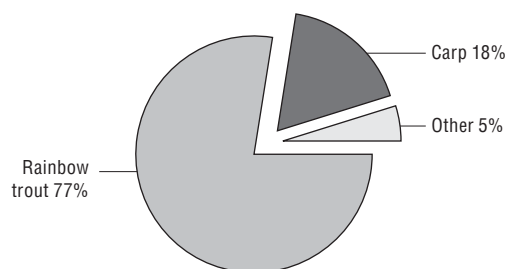


Figure III.15.3. **Trade evolution**



Figure III.15.4. **Evolution of government financial transfers**

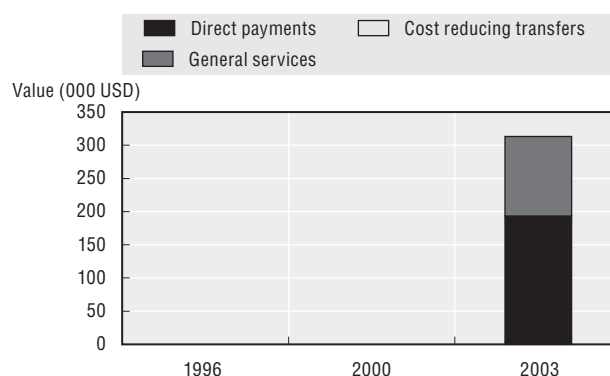


Figure III.15.5. **Production profile**

	1996	2005
Number of fishers	n.a.	n.a.
Number of fish farmers	n.a.	382
Total number of vessels	n.a.	n.a.
Total tonnage of the fleet	n.a.	n.a.

n.a.: Not available.

Source: Figures III.15.1 and III.15.3: FAO; Figures III.15.2, III.15.4 and III.15.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

In addition to the Common Fisheries Policy (CFP), basic legal instruments dealing with the fishery and its related sectors in the Slovak Republic include Act 194/1998 on the breeding of agricultural animals, Act No. 139/2002 on fisheries, Act No. 488/2002 on veterinary care and Act No. 364/2004 on water use.

The water management Act enables the exploitation of surface and underground waters for fish farming provided a special permit is granted. In accordance with this Act, water used by and discarded from fish farms is not deemed as used water. As a result, exploitation of surface and underground water by fish farms is not charged.

Protected predators (such as cormorants, grey herons, river otters and others) currently cause significant damage to fish farmers. Most fish farms are not sufficiently equipped against these predators. Compensation to aquaculture is provided for by Act No. 543/2002 Coll. on nature and landscape protection. In reality, however, compensation is complicated by the fact that the Act does not provide for compensation for enterprises operating on rented land.

Aquaculture and processing are under the competence of the Ministry of Agriculture, while recreational fisheries (and water management) belongs to the competences of the Ministry for the Environment.

### Aquaculture

Aquaculture in the Slovak Republic can be grouped into two specific categories: fish pond management and trout rearing. Current fish ponds and fish farming facilities were mostly built in the second half of the 20th century. In many cases, they were built on plots with unresolved ownership issues.

According to 2005 statistics, the Slovak Republic has 487 aquaculture ponds with an area of 1 612 ha. For rearing of lowland species of fish (carp, crucian carp, bighead carp, grass carp, pike, pike-perch and European catfish) there are a further 42 small water reservoirs of some 500 ha. In 2005 production reached 200 tonnes (statistics do not include fish fry, which is approximately 600 tonnes). The production of salmonids (trout, brook trout, grayling, Danube salmon) in special fish farming facilities is around 800 tonnes, covering an area of 153 772 m<sup>2</sup> (of which 2 304 m<sup>2</sup> is cage culture) and of a volume of 14 582 m<sup>3</sup>.

According to available statistics, in 2005 there were 382 persons employed in aquaculture. Of this number, 248 persons worked full-time and the remaining 134 persons worked by agreement or as seasonal workers.

### Management of recreational fisheries

Organisations holding an authorisation from the Ministry for the Environment, may annually place approximately 1 500 tonnes of spawn material from lowland fish species and 3 000 000 pieces of salmonoid spawn in water courses. Approximately 120 000 recreational fishermen annually catch between 1 500 and 1 700 tonnes of fish in the Slovak Republic.

### Processing

The capacity of processing plants for freshwater fish is 855 tonnes. However, processed volumes per annum do not exceed 350 tonnes. The capacity for sea fish is approximately 22 000 tonnes but the volume processed in a year range from 14 000 to 15 000 tonnes.

9 processing plants have been approved for fisheries and aquaculture products. Entry into the EU and associated mandatory compliance with EU requirements has resulted in a reduction in the number of businesses from 21 (in 2003) to the current nine. As a consequence, falling employment has been experienced in recent years. In 2002, 1 017 persons were employed. By 2004 this has dropped by 17.2% to 868, of which 506 were women.

### **Government financial transfers**

Within the scope of the Common Fisheries Policy, Government Financial Transfers (GFT) for fisheries in the Slovak Republic reached EUR 2.6 million (EUR 1.8 million from the Financial Instrument for Fisheries Guidance and EUR 780 000 EUR from the state budget) for the period 2004 to 2006. Since 2004, there has been no other state aid for fisheries in the Slovak Republic. Funding priorities for 2004-06 included both aquaculture and processing sectors.

Follow-up support from the European Fisheries Fund for the period 2007 to 2013 is being prepared at present. Previous measures for aquaculture and processing will be extended to marketing, education and animal health measures.



PART III  
*Chapter 16*

## **Spain**

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## Main characteristics of Spanish fisheries

The publication of a White Paper on Fisheries in Spain in 2005, based on a description of the current status of fisheries and the fishing industry as a whole, has fuelled debate between central government, the Autonomous Communities and all fishery-related sectors. With the active involvement of NGOs, the debate has centred on identifying and diagnosing failures and problems in the fishing sector.

All Spanish fishing vessels over 15 metres in length, together with all those operating in international waters or the waters of third countries, must carry on-board satellite monitoring systems. In 2005, the Fisheries Monitoring Centre, which reports to the General Secretariat for Sea Fishing, handled over 7 million position reports from 2 675 Spanish and 441 foreign vessels (in 2004 this was 5 057 423 position reports from 2 152 Spanish and 422 foreign vessels).

In 2004 and 2005, support for the permanent withdrawal of fishing vessels benefited 346 vessels, with reductions in tonnage of 17 523.61 and 15 088.78 GRT respectively.

Spain has 21 marine fishery reserves, nine of which are fully or partly government-run. Annual expenditure on these nine reserves amounts to some EUR 5.5 million, most of which is used for surveillance but also for monitoring studies, infrastructure and extension campaigns.

The real consumption of fish in 2004 was 37.2 kg per person per year and 37.4 kg per person in 2005, an increase of 4.8 and 0.2%, respectively. Spanish household spending on fishery products amounted to EUR 179.65 per person per year in 2004 and EUR 185.50 in 2005, an increase of 3.2%, and accounted for 13.3% of total food purchases (fresh fish: 16.3 kg per person per year; frozen fish: 4.5 kg. per person per year; crustaceans and molluscs: 11.6 kg. per person per year; preserves: 5 kg. per person per year).

## Spain – Summary statistics

Figure III.16.1. **Harvesting and aquaculture production**

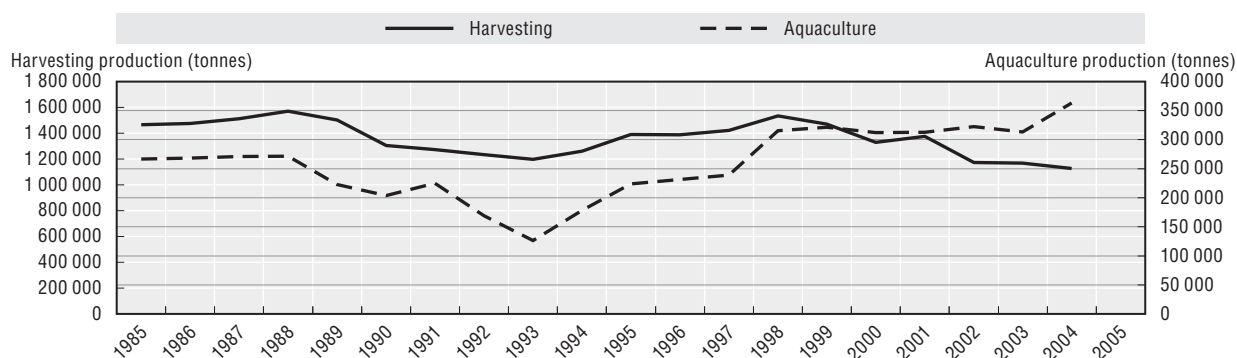


Figure III.16.2. **Key species landed by value in 2005**

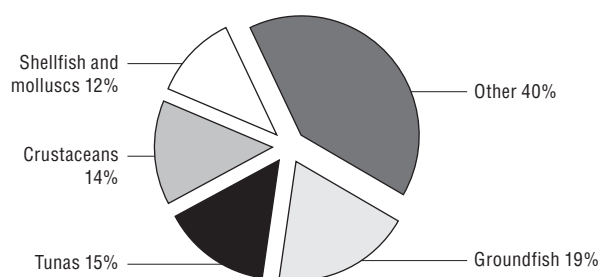


Figure III.16.3. **Age structure of fishers**

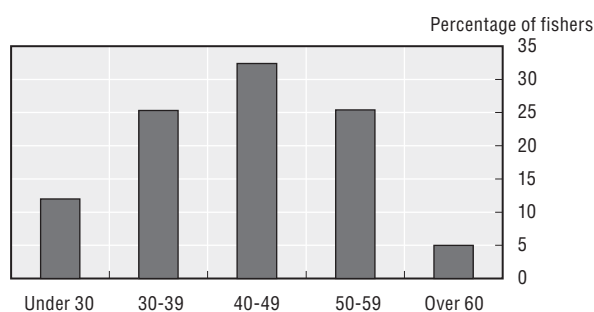


Figure III.16.4. **Evolution of government financial transfers**

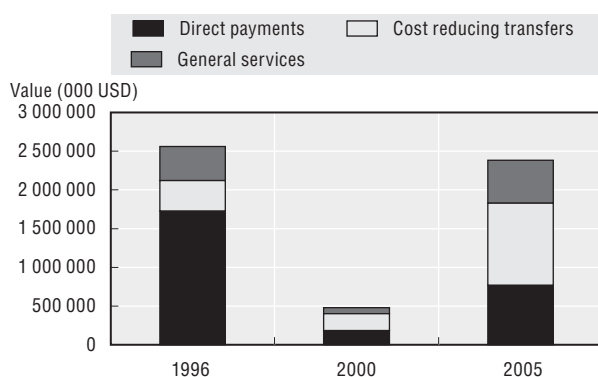


Figure III.16.5. **Trade evolution**

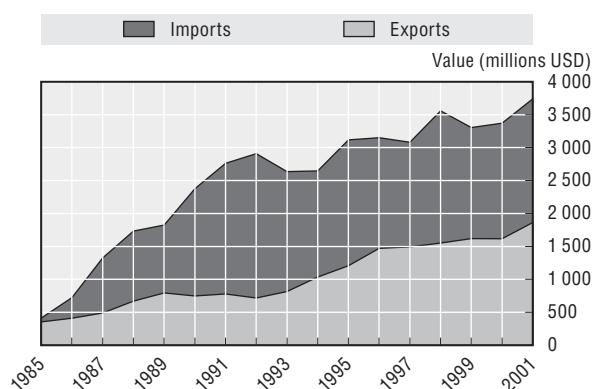


Figure III.16.6. **Production profile**

	1996	2005
Number of fishers	67 726 <sup>1</sup>	36 709
Number of fish farmers	9 115 <sup>2</sup>	8 388
Total number of vessels	18 094	13 695
Total tonnage of the fleet	614 374	487 140

1. Fishers in 1998.
2. Fish farmers in 2000.

Source: Figures III.16.1 and III.16.5: FAO; Figures III.16.2, III.16.3, III.16.4 and III.16.6: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

As a member of the European Union, the management and conservation of sea fishery resources by Spain is in line with EU regulations. As for the assignment of domestic responsibilities, the Spanish Constitution defines the respective jurisdictions of central government and the 10 coastal Autonomous Communities. Fishing in internal waters is the responsibility of the Autonomous Communities while the central government has full jurisdiction in matters relating to sea fishing. With regard to the development of the fishing industry and commercial activity, however, central government only establishes the fundamental principles governing such activities. The Autonomous Communities, for their part, can adopt provisions that complement legislation in these two areas and proceed to implement them. Furthermore, the Autonomous Communities have sole jurisdiction over fishing in internal waters, the harvesting of shellfish, and aquaculture. Responsibility for fisheries research and oceanography lies with the Spanish Institute of Oceanography (IEO), which reports to the Ministry of Education and Science.

### Capture fisheries

#### Management

For management purposes, Spanish sea fishing is divided into four distinct groups depending on the zone of activity, i.e. fishing in national waters, fishing in Community waters, fishing in third country waters, and fishing in international waters whether regulated by multilateral organisations or not.

To meet one of the goals of the policy developed by the Ministry of Agriculture, Fisheries and Food, a Comprehensive Recovery Plan for all Resources in National Waters is being drawn up. Co-operation was also stepped up between the central government and the Autonomous Communities in such fields as port inspections, monitoring and surveillance of fishing activities, action against illegal fishing, and the marketing of undersized fish. To this end, port inspection programmes were carried out in 2004 and 2005 which targeted freezer vessels from the NAFO, NEAFC, Hatton Bank, Norwegian, Svalbard and 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 Mauritania; fishing and merchant navy vessels of third countries landing in Spanish ports; and vessels flying flags of convenience and possibly fishing illegally on the high seas.

Bilateral fishing agreements with third countries are negotiated by the European Commission. 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.

Apart from the mandatory presence on board of international observers as required by RFOs such as NAFO, CCAMLR, IATTC and ICCAT, the Spanish authorities require fleets operating in certain international areas to carry scientific observers under the auspices of the IEO (Spanish Institute of Oceanography), who monitor fisheries, assess stock status and gather other biological and environmental data. The IEO also conducts experimental fishing initiatives when there is an opportunity to open new fisheries



Table III.16.1. **Main areas and stocks fished by Spain in 2004/05**

Area	Stocks
EU waters in the Atlantic Ocean <sup>1</sup>	Hake, anglerfish, megrim, Norway lobster, poutassou, anchovy, sardine, mackerel and Atlantic horse mackerel chinchard
Mediterranean Sea	Hake, mullet, prawn and anchovy
Waters off North-west Africa and the Canary Islands	Cephalopods, hake, gamba, sardine and Sparidae
Atlantic Ocean, Mediterranean Sea and Indian Ocean	Bluefin tuna, white tuna, albacore, bigeye tuna, skipjack and swordfish
North Atlantic and Arctic Oceans	Cod (Svalbard), redfish (Reikjanes Ridge), deepwater prawn
Angola	Benthic crustaceans
Falkland Islands	Cephalopods and hake
Newfoundland	Cod, Greenland halibut, American plaice, yellowtail flounder and redfish, deepwater prawn

1. From western Scotland to the Straits of Gibraltar.

### Recreational fishing

Recreational fishing in Spanish waters is regulated by central government, with the exception of inland waters, regulated by the Autonomous Communities. A total of 1 565 new licences were granted by central government in 2004, and 1 960 in 2005. The vessels concerned target species subject to differentiated protection measures, as set out in Annex III of the Order of 26 February 1999 laying down regulations for recreational sea fishing.

### Fisheries and the environment

IEO researchers monitor marine contamination on an ongoing basis via a network of locations throughout Spanish waters and red tides to check the safety of molluscs in Galicia. Oil pollution is still being monitored in the Galicia area following the oil spill from the "Prestige".

### Government financial transfers

Most transfers took the form of support awarded by Spain and co-financed by the FIG, and amounted to EUR 327 922 million in 2004 and EUR 329 216 million in 2005 (provisional data). Also included were final payments awarded as part of specific EU measures relating to Morocco under Regulations (EC) No. 2561/2201 and 2325/03, amounting to EUR 9 938 million in 2004. EU support awarded by EAGGF-Guarantee amounted to EUR 1 669 million in 2004 and EUR 2 673 million in 2005, together with domestic support for training.

As of 31 December 2004, specific types of government support were no longer authorised including fleet renewal and transfer of vessels to third countries as part of joint ventures. In 2004 and 2005, support for structural adjustments was fully consolidated within the framework of the FIG. Support for the permanent withdrawal of fishing vessels benefited 346 vessels and the respective reductions in tonnage were 17 523 and 15 088 GRT.

In 2004 and 2005, and in accordance with basic market regulations, producer organisations presented, respectively, 30 and 29 new operational programmes to promote rational and sustainable resource use and market-oriented production to optimise catches.

### Markets and trade

The FROM (Fund for the Regulation and Organisation of the Market in fish and marine culture products) programme for the 2002 and 2003 financial year consisted of measures to promote different species of fish caught – whether fresh, frozen or preserved – and

products of sea and mainland aquaculture. Of special significance were the campaigns to protect species and in particular, prevent the catch, sale and consumption of alevin. Two campaigns promoting the consumption of fishery products in general and the other aimed at school-age children and young people, continued.

Another highlight was the publicity drive in 2005 to stress the importance of the fish and sea-food industry and inform the public about harvesting methods from sea to plate.

## **Outlook**

Under the EU's new Common Fisheries Policy, Spain will continue to pursue the consolidation of fishing as a responsible economic activity, consistent with a comprehensive marine ecosystem-based approach. Spain will thus be continuing its initiatives for stronger action against illegal, unreported and unregulated fishing.

The Spanish Fisheries Authority will continue its work to complete the Comprehensive Recovery Plan for all Fishery Resources in National Waters by 2006. In 2006, there are plans to open the Marine Reserve of *Cala Ratjada*, the tenth to be managed by the Spanish government. The Spanish government also intends to create at least one marine protected area in 2006. Heading the list of potential sites is the Banco del Danés (or "El Cachucho" bank), in the Cantabrian Sea. It will be set up in accordance with the requirements of the EU Habitats Directive and the Ospar Convention.

PART III  
*Chapter 17*

**Sweden**

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## Main characteristics of the Swedish fishing sector

For some years now the fishing sector in Sweden has been declining. 2005 landings amounted to 248 000 mt valued at SEK 877 million, 50 000 mt and SEK 300 million less than five years earlier. The Baltic Sea is by far the most important fishing area, accounting for almost 60% of landings. In 2005, roughly half of those landings took place abroad (in Denmark in particular) where prices are higher. Herring, sprat and cod are the major species, albeit the variety of species caught is considerable and includes a number of freshwater fish.

In public waters, the responsibility for management lies with the government and regional or local authorities. Normally, waters around the coast and in lakes are privately owned up to 300 meters from the shoreline, meaning that conservation and management rests with the owners. In lakes, many private water-owners have created management areas with uniform fishing rules.

Total allowable catches (TAC), fishing effort and licences, technical measures and control and enforcement are the management measures most commonly used in Sweden. Access to fishing is limited by vessel permits and professional fishing licenses issued by the Swedish Board of Fisheries (SBF). Licences for professional fishing are granted for individuals and a vessel permit is required for all fishing vessels more than five metres in length. Effort is defined as capacity, in tonnage or engine power, multiplied by activity expressed in days at sea, and can be regulated through the allocation of special fishing permits stating the terms of access and to specific fisheries.

Total aquaculture production (rainbow trout and mussels are the most important species) amounts to 6 800 mt with a value of SEK 144 million. 242 farms employ 500 persons and produce for both consumption and the release of fry for restocking streams (salmon and trout).

The number of vessels engaged in fishing has been decreasing; in 2005 the total fleet was 1 589 units, a 14% reduction on 2001. The average age of vessels is 33 years and has been increasing considerably in recent years. Some 4 000 persons are employed in the harvesting and processing sector. Recreational fishing is an important activity in Sweden with 1.4 million participants spending an estimated 22 million days catching 26 000 mt of fish (mainly pike and perch). Recreational fishers expended SEK 2.3 billion on these activities.

## Sweden – Summary statistics

Figure III.17.1. **Harvesting and aquaculture production**

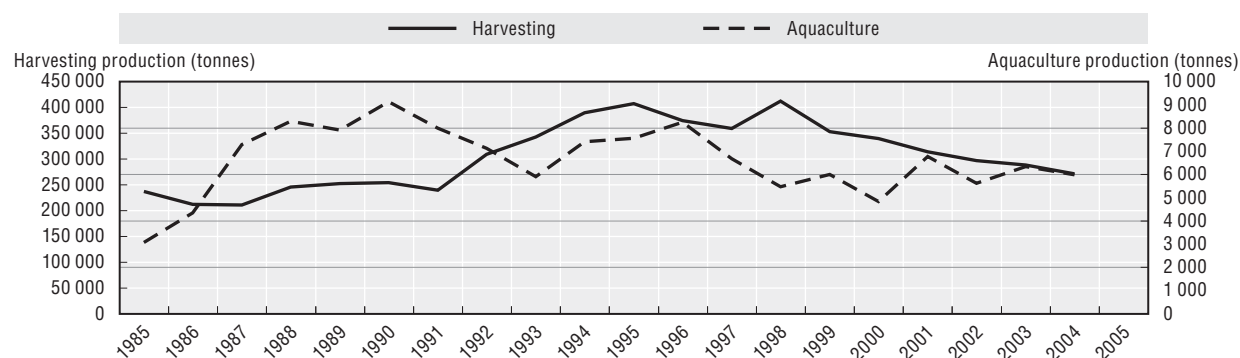


Figure III.17.2. **Key species landed by value in 2005**

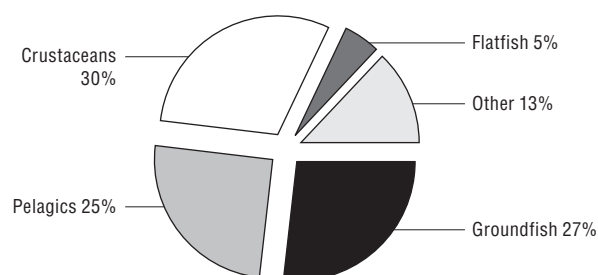


Figure III.17.3. **Age structure of fishers**

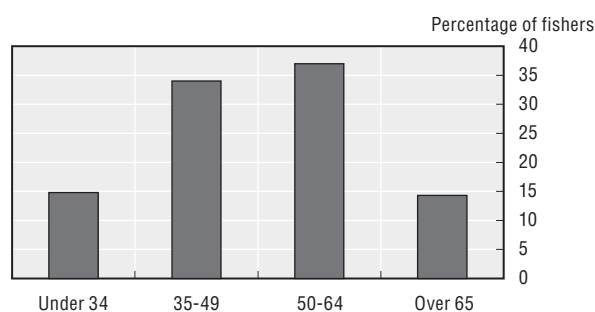


Figure III.17.4. **Evolution of government financial transfers**

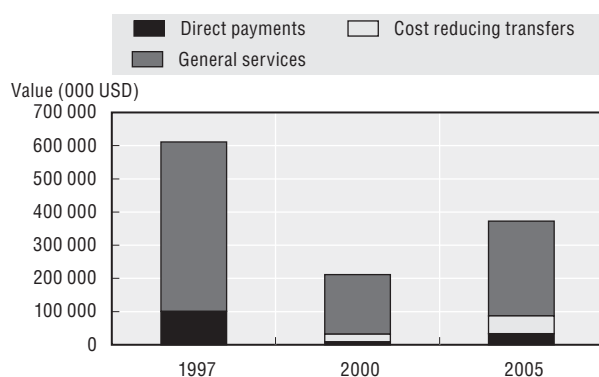


Figure III.17.5. **Trade evolution**

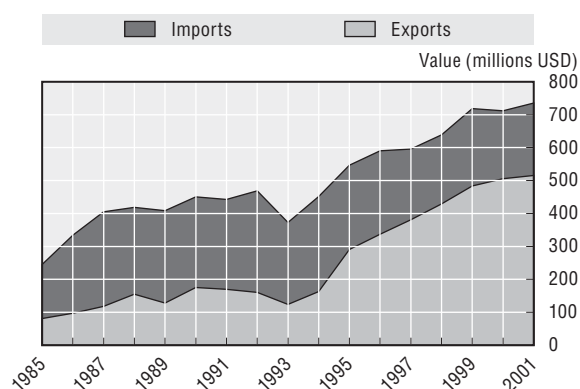


Figure III.17.6. **Production profile**

	1996	2005
Number of fishers	2 823 <sup>1</sup>	1 902
Number of fish farmers	n.a.	500 <sup>2</sup>
Total number of vessels	1 769	1 589
Total tonnage of the fleet	51 134	44 105

n.a.: Not available.

1. Fishers in 1998.

2. Fish farmers in 2004.

Source: Figures III.17.1 and III.17.5: FAO; Figures III.17.2, III.17.3, III.17.4 and III.17.6: OECD.

## ADDITIONAL DETAILS\*

### Capture fisheries

In 2003, 190 processing plants existed with a total production value of SEK 3 900 million (EUR 400 million) in 2003. The total number of employees was 1 691, of which half worked in the five largest plants located on the west coast of Sweden. Production is mainly directed towards herring and cod, but also to some degree, prawn, salmon, cod roe and mackerel. Employment has decreased by 6% since 2002 although value addition is more or less unchanged. Volume and landings in 2001-05 are shown in Table III.17.1.

Table III.17.1. **Landings by Swedish vessels 2001-05 by quantity and value**

	Landings in Sweden		Landings abroad		Total landings	
	000 mt	SEK million/EUR million	000 mt	SEK million/EUR million	000 mt	SEK million/EUR million
2005	121	608/66	127	269/29	248	877/95
2004	112	564/61	150	243/27	262	807/88
2003	106	590/65	174	280/30	280	870/95
2002	126	721/79	158	343/37	284	1 064/116
2001	123	741/97	175	433/51	298	1 174/138

### Fishing fleet

The Swedish fleet structure is provided in Table III.17.2; it is still dominated by small vessels. The characteristics of the average vessel of the fleet are shown in Table III.17.3 below.

Table III.17.2. **Fishing fleet structure in 2001-05**

	2001	2002	2003	2004	2005
Number of vessels	1 848	1 818	1 715	1 597	1 589
Total GT	47 300	45 908	44 762	44 447	44 105
Total kW	229 478	224 731	220 969	222 800	216 965

Table III.17.3. **Characteristics of the average vessel in the Swedish fishing fleet**

	2001	2002	2003	2004	2005
Tonnage (GT)	26	25	26	27	28
Engine power (kW)	124	124	129	133	136
Length (m)	10	10	10	11	10
Age (year)	22	23	24	27	33

Large pelagic vessels accounted for more than 40% of the total national landed value and 80% of landed volume in 2004. This segment sustained heavy losses in 2004 and will probably do the same in 2005 as fuel price affect this segment very heavily; about 40% of total costs are attributed to fuel. However, revenue for this segment will probably increase, mainly due to both higher prices and increased volume of herring for human consumption.

\* Additional information available on [www.fiskeriverket.se/pdf/om\\_fiskeriverket/engelsk.pdf](http://www.fiskeriverket.se/pdf/om_fiskeriverket/engelsk.pdf).

A small pelagic segment targeting vendace in the northern part of the Baltic has improved profitability in 2004. This will probably also be the case in 2005.

Vessels targeting cod were affected by the cod crisis in the Baltic Sea and the North Sea. One out of three segments targeting cod showed a slight improvement in their profitability in 2004 but the other two experienced a worsening in their situation. For 2005, all cod segments will likely make losses as landings were reduced as a result of diminishing catch quotas. The segment fishing northern prawn made losses in 2004 but may rebound in 2005 as prices have increased considerably. Vessels fishing Norway lobster had a bad year in 2004 but improved considerably in 2005, also due to increased prices. The profitability of the coastal small scale fishery declined.

### **Management**

An effort management project in the Kattegatt has been initiated jointly by the European Commission, Denmark and Sweden, aiming to replace the present quota regime with an effort management system. The proposal originates from the North Sea Regional Advisory Council (RAC). The preparation is well advanced and the aim is to start the new system as from 1 January 2007.

In 2003, several changes were made to the National Fisheries Act. As a result of these new regulations, a greater capacity for regional considerations exists when handling national quotas and setting the rules for fleet capacity. In addition, increased obligations to report sales of fish, more limited fishing licenses in certain cases, extended authority to do on-board control and more severe penalties in case of infringements are also included. In 2004, prohibitions on areas available for trawling were extended to 4 nautical miles from a baseline in the Skagerrak and 3 nautical miles from a specific coastline in the Kattegat on the West coast of Sweden.

The Sami population who make their living from reindeer breeding in the northern part of Sweden have special fishing rights in areas allocated to their profession.

Continued high priority was given to enforcement and control during 2004 and 2005. In May 2005, the SBF and the Swedish Coast Guard – the two bodies mainly concerned – have intensified their co-operation through the establishment of a common Fisheries Competence Centre. Control measures are operated via a system based on risk analysis and a considerable part is devoted to cod recovery plans. Designated ports, requirements for pre-notification and intensified reporting make controls more effective. Further developments within the CFP and national policy are expected to involve increasing requirements for special fishing permits for certain species, as well as allocation of individual vessel quotas.

### **Aquaculture**

A regulation prescribing that salmon and sea-trout stocked in the sea should have their dorsal fin removed was passed in 2003. New regulations prescribing that imported crustaceans be kept in closed systems before being placed on the market was also passed. The salmon parasite *Gyrodactylus salaris* became a notifiable disease in 2002. Regulations concerning stocking of salmonids in rivers on the Swedish west coast that are free of the parasite were sharpened in 2003.

A general trend in the sector has been rationalisation and concentration towards bigger companies in order to gain scale advantages and reduce production costs.

Nevertheless, only small variations both in terms of production volumes and values can be noticed during the last three years. The variations in volume are mostly due to climatic factors including extreme temperatures and precipitation, and in some cases due to outbursts of diseases. High price competition from neighbouring countries has also had a negative impact on the sector. The value of aquaculture production reached SEK 143.7 million in 2004.

## **Fisheries and the environment**

Sweden has 16 environmental quality objectives that describe the qualities the environment and common natural and cultural resources must have in order to be ecologically sustainable. The overriding aim is to solve all of the major environmental problems within one generation

The most relevant objectives for fisheries are the interim targets for “A balanced marine environment, flourishing coastal areas and archipelagos” and “Flourishing lakes and streams”. The targets include, *inter alia*, long-term protection by establishing marine protected areas, adopting a strategy for the preservation and use of cultural heritage and agricultural landscape in coastal and archipelago areas, the introduction of action plans for endangered marine species and fish stocks, reduction of by-catch of marine mammals, and a reduction in catches of fish juveniles.

In 2004 and 2005, the authorities carried out a range of projects linked to these targets. More detailed information and annual progress reports on the overall work with national environmental objectives can be found on the web: [www.internat.environ.se](http://www.internat.environ.se) or [www.miljomal.nu](http://www.miljomal.nu).

## **Government financial transfers**

Government financial transfers to the fishing industry amounted to SEK 302 million in 2005, of which SEK 210 million was for general services, SEK 68 million for cost reducing transfers and SEK 25 million for direct payments. The responsibility for administering support is shared between the SBF and Regional County administrations. The SBF has responsibility for the distribution of transfers and issues general guidelines to the County administrations that have responsibility for granting aid for aquaculture, the processing industry, inland fishery and, in the north of Sweden, fishing port facilities. The SBF is also responsible for the remainder as well as for control and surveillance

Total government financial transfers increased between 2003 and 2005. The increase in spending in 2004 and 2005 has been mainly on pilot projects and aquatic resources. In addition to the support provided in Tables III.17.4 and III.17.5, a special unemployment fund exists for fishermen. As a general rule, the unemployed fisher must be at the disposal of the labour market. It is possible for a fisherman to receive unemployment benefits in certain circumstances. In total SEK 35 million (EUR 3.8 million) was paid to fishermen in 2005, compared to SEK 29.6 million (EUR 3.2 million) in 2004.

## **Information and labelling**

KRAV ([www.krav.se/english](http://www.krav.se/english)) is organised as an incorporated association and is a key player in the organic market in Sweden. KRAV represents farmers, processors, trade and also consumer, environmental and animal welfare interests. KRAV develops organic standards and inspects these standards. Since 2001, KRAV has been engaged in a project to develop standards, inspection and certification for sustainable fisheries in Scandinavian waters.



Table III.17.4. **Number of farm sites and production**

Species	No. of farms		Production (mt liveweight)	
	2003	2004	2003	2004
Rainbow trout	110	103	4 886	4 851
Eel	3	2	194	158
Arctic char	15	15	324	329
Blue mussels	15	17	1 742	1 435
Crayfish	110	105	7	0
<b>Total</b>	<b>253</b>	<b>242</b>	<b>7 153</b>	<b>6 773</b>

Table III.17.5. **Overview of government financial transfers SEK million/  
EUR million**

	2002	2003	2004	2005
Direct payments	49.2/5.4	27.0/2.9	21.7/2.5	24.8/2.9
Cost reducing transfers	26.6/2.9	39.9/4.4	61.0/7.1	67.9/7.9
General services	164.8/18.0	202.8/22.3	228.9/26.6	209.5/24.3
<b>Total</b>	<b>240.6/26.3</b>	<b>269.7/26.6</b>	<b>311.6/36.2</b>	<b>302.2/35.1</b>

In February 2004, KRAV confirmed criteria for eco-labelling of marine captured fish. The rules, control and certifying system were developed within a project financed by, among others, KRAV, the Swedish Ministry of Agriculture, different county administrative boards and the SBF. One of the main criteria was that the stock concerned must be within ecologically safe limits with the methods and gears used being harmless to the environment. There should be full traceability of the fish and the products derived thereof. So far, shrimp and herring from the Skagerrak and the Kattegatt have been labelled.

## Outlook

The work towards a more sustainable fishery will continue. At the national level, the continuing implementation of national environmental objectives will be fundamental for national fisheries management. There will also be more focus on coastal fisheries. The government has taken initiatives to continue and increase this work with new forms for co-management in coastal areas as well as in inland fisheries. Increased stakeholder involvement in decision-making and fisheries management is likely.

The capture fishery is expected to remain under continued economic pressure due to its large fishing capacity in relation to available resources as well as increasing and lasting fuel costs. However, 2005 saw price increases for many important species. The processing industry will probably experience a decrease in the number of employees due to normal automation and movements to low cost countries with parts of or whole processing. The aquaculture sector is experiencing serious problems with international competition but will in any case probably stay at its present low level of production. There are some signs of an increase in blue mussel production.



PART III

*Chapter 18*

**United Kingdom**

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### **Main characteristics of the UK fishing sector**

In 2005, UK Fisheries Administrations initiated the Quota Management Change Programme. The aim of the programme is to deliver the benefits of individual quota holdings and transferability, in particular increased certainty about individual fishing rights and improved transparency in quota trading. It is due to report after three years.

In September 2005, UK Fishery Departments introduced a scheme of registration for buyers and sellers of first sale fish and designation of fish auction sites. Cross checking these sales notes with landings data will improve the monitoring and control of landings of fish taken from European Community and other waters, and ensure that such landings are properly recorded and capable of verification. The measures will also satisfy consumers and those involved in secondary processing or distribution of fish regarding the provenance of fish and that it has been legitimately caught.

In January 2005, a ban was introduced on all UK registered vessels pair trawling in area VIIe, up to 12 miles in order to reduce cetacean bycatch.

In January 2006, under the Restrictive Shellfish Licensing Scheme all vessels under 10 m in England and Wales are now required to complete a monthly shellfish activity return.

In the UK, over 95% of quotas in EU waters are allocated through Producer Organisations (“the sector”). The remaining quota is divided between the “non-sector” (vessels over 10 metres in overall length but not members of a producer organisation) and the under 10 metre fleet. In 2004 and 2005, guaranteed minimum allocations continued to apply to a range of quota allocations for the non-sector and vessels of 10 metres and under.

## United Kingdom – Summary statistics

Figure III.18.1. **Harvesting and aquaculture production**

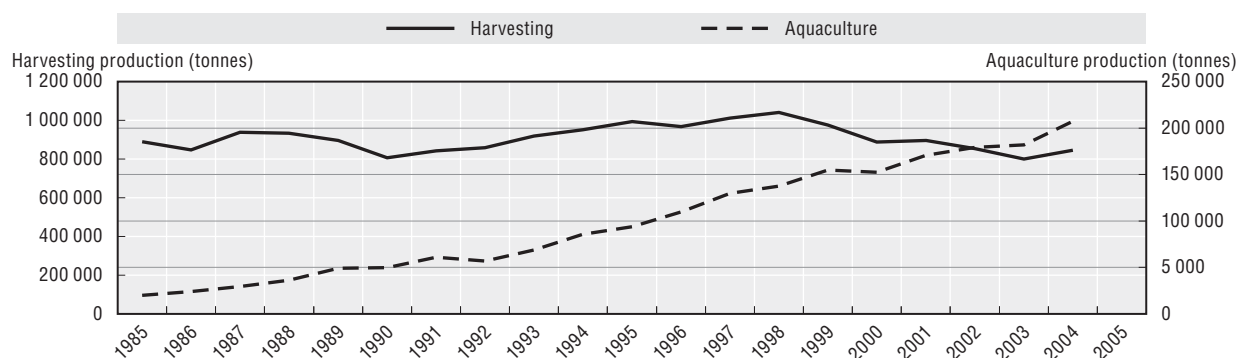


Figure III.18.2. **Key species landed by value in 2005**

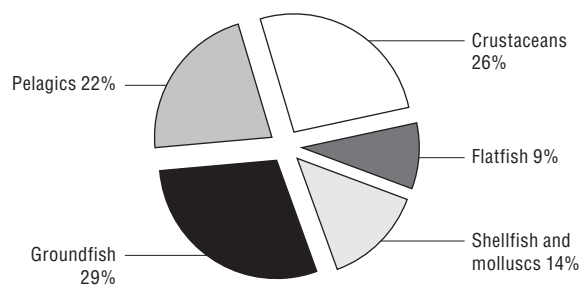


Figure III.18.3. **Age structure of fishers**

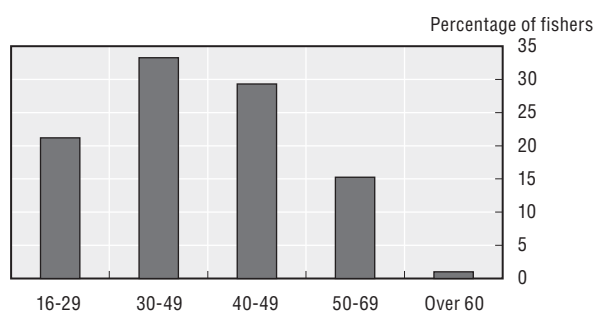


Figure III.18.4. **Evolution of government financial transfers**

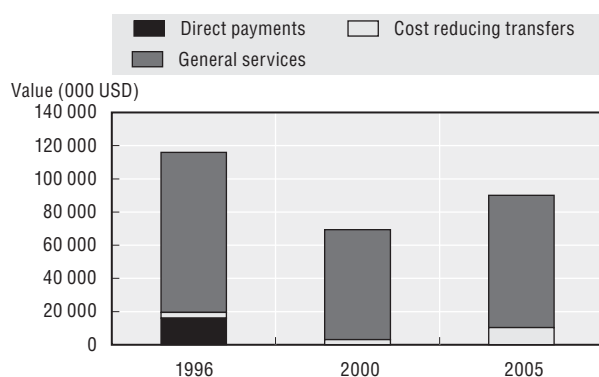


Figure III.18.5. **Trade evolution**

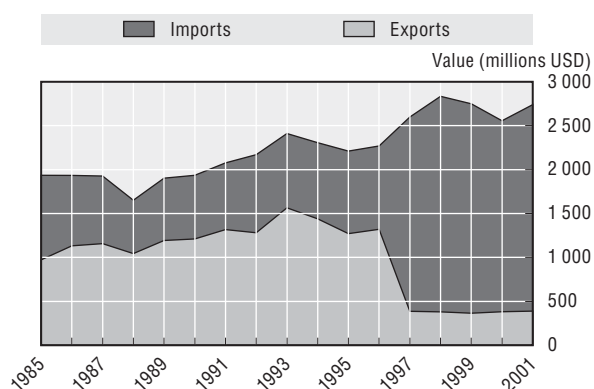


Figure III.18.6. **Production profile**

	1996	2005
Number of fishers	19 044	12 647
Number of fish farmers	n.a.	n.a.
Total number of vessels	8 648	6 722
Total tonnage of the fleet	251 761	218 134

n.a.: Not available.

Source: Figures III.18.1 and III.18.5: FAO; Figures III.18.2, III.18.3, III.18.4 and III.18.6: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

Responsibility for fisheries in the United Kingdom lies with the Secretary of State for Environment, Food and Rural Affairs, Scottish Ministers, the Minister of the Welsh Assembly Government and Northern Ireland Ministers.

Any person wishing to fish under the British flag and against UK quotas may do so only with a fishing vessel which is both registered and licensed by the UK authorities. In order to register a fishing vessel, the owners should be UK citizens, EU citizens established in the UK or companies incorporated within the EU with a place of business in the United Kingdom. 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 achieved.

As a condition of registration all fishing vessels must be managed, controlled and directed from the UK. A restrictive licensing 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.

### Capture fisheries

#### *Employment, structure and performance of the fleet*

In 2005, approximately 12 467 fishers were employed in the fish catching sector, approximately 806 fewer than in 2004. This fall was accounted for by a drop of 136 employed in part-time fishing and a drop of 670 employed in full-time fishing. In 2003 there were 11 774 people employed in the sector: 972 less than in 2002.

At the end of 2005, 6 706 vessels were in the UK (excluding the Isle of Man and Channel Islands) fishing fleet, 311 fewer than at the same time in 2004. The registered gross tonnage of the fleet fell by just over 2% to 218 134 mt in 2005. There were 5 571 vessels of less than 12m in length in 2005 (4.5% less than in 2004) and the number of vessels of over 12 m in length went down by 2.6% to 1 151.

#### *Landings*

The volume of total landings by UK vessels in domestic ports remained relatively stable in 2004 and 2005 at around 460 000 mt, though the value of landings increased by 12% from GBP 405 million in 2004 to GBP 450 million in 2005. Despite the increase in the value of fish landed, profitability remained poor in many sectors (particularly the white fish fleet) given the increases in the price of fuel.

In 2005, flatfish accounted for 9% of all landings by value, groundfish accounted for 30%, pelagic fish 22%, crustaceans (including lobster and shrimp) 26% and molluscs (including scallops, mussels and squid) 14%. By value, the key species listed below accounted for around two thirds of all landings by UK vessels in the UK:

- Sole and plaice are the two key flatfish species. Landings of sole by UK vessels into UK ports declined by 11% to 1 818 mt in 2005 compared to 2004, although the value of these landings remained relatively constant at around GBP 13 million. The quantity of plaice landed in the UK declined by 6% though the value of landings also remained the same at around GBP 4 million.

- Of groundfish, cod and haddock are the two key species. The quantity of cod landed declined by 9% to 13 759 mt in 2005, while the value of landed fish was only 4% lower at GBP 21.8 million. Compared to 2004, landings of haddock increased by 4% to 47 342 mt in 2005 and the value of haddock landed increased by more than 15% to GBP 37.7 million.
- Mackerel and herring are the two key pelagic species. While the quantity of mackerel landed declined by over 18% to 94 000 mt in 2005, the value of landings increased by more than 37% to 78.2 million in 2005. The price of herring has also been rising: the quantity of herring landed increased by 31% to 73 800 mt in 2005, while the value of landings more than doubled to over GBP 16 million.
- Nephrops and lobster are the two key crustacean species. Landings of nephrops increased by 10% to 33 600 mt in 2005 while the value of landings increased by nearly 19% to GBP 84 million. The value of lobster landed went down by 10% to GBP 11.4 million in 2005.
- Scallops are the key species of mollusc: whilst the quantity of scallops landed declined by 3.5% to 20 300 mt in 2005, the value of landings increased slightly to just less than GBP 32 million.

Landings by UK vessels into foreign ports increased by 9% from 192 000 mt in 2004 to 210 000 mt in 2005, though the value of these landings decreased slightly from GBP 107 million in 2004 to GBP 106 million in 2005.

Between 2004 and 2005, landings by foreign vessels into domestic ports increased by more than 20% to around 147 000 mt; the value of these landings increased by nearly 48%. This increase was largely due to an increase in cod landings.

### **Resource management**

During 2004 and 2005, 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 contributed to the UK's MAGP objectives.

### **Fisheries science**

UK government funding of marine fisheries R&D was GBP 4.6 million in 2005/06 compared to GBP 5.4 million in 2004/05. Funding for fisheries monitoring was GBP 12.8 million in 2005/06 compared to GBP 12.4m in 2004/05.

### **Enforcement and control**

The Fisheries Departments in the UK continued to give high priority to fisheries control and enforcement and in 2005 spent some GBP 26.2 million on an integrated programme of aerial, surface and port surveillance, compared to an equivalent figure GBP 24.2 million in 2004. From 1 January 2004, the requirement for UK fishing vessels to carry satellite monitoring terminals and submit regular position reports was extended to vessels over 18 metres in overall length. The further extension of this requirement to vessels over 15 metres overall length took effect from 1 January 2005.

## **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-salmonoid finfish species such as turbot, halibut, cod and sea bass, have produced encouraging results. With the exception of some new fish farms based on re-circulation, technology and production facilities have changed little since 1997. There are more than 1 000 fish and shellfish farming businesses in the UK operating on 1 400 sites and directly employing more than 3 000 people (some 2 500 in Scotland). The total estimated employment figure rises to over 6 000 when transportation, marketing and processing activities are taken into account.

### ***Production volume and values***

Overall production of aquaculture products for 2004 was nearly 200 000 mt. This was made up of 160 000 mt of salmon (mainly in Scotland), 16 000 mt of rainbow trout and around 22 000 mt of molluscan shellfish (80% in England and Wales). The total value at first sale of aquaculture products in 2004 was in excess of GBP 350 million.

### ***Policy development***

The aim of Fisheries Administrations is, "a fishing sector that is sustainable and profitable and supports strong local communities, managed effectively as an integral part of coherent policies for the marine environment". A summary of policy measure to meet this aim are described at the start of this document.

## **Fisheries and the environment**

Since 1999, the only type of waste that is routinely considered for disposal at sea around the coast of the UK is material dredged from ports and harbours and small quantities of fish waste. Strict licensing controls operate under the Food and Environment Protection Act (FEPA). The purpose of this licensing regime is to protect the marine environment and to prevent interference with other uses of the sea (including fishing). Before issuing a licence for sea disposal, the licensing authority is required to have regard to the practical availability of any alternative ways of dealing with the material and applicants are required to investigate the possibility of using some or all of the material beneficially, for instance, for beach replenishment or for salt marsh regeneration. Sea disposal is also considered only after a rigorous scientific assessment of the impact of the material on the marine environment.

FEPA also controls a wide range of construction works undertaken at sea. These controls are central to the application of the UK government's policy of sustainable development in the marine sector. When considering an application for consent, the licensing authority has to weigh the perceived socio-economic benefits of the project against the potential impact upon the environment and loss of natural resources and other assets, including fishing. Schemes to offset rising sea levels and to produce renewable energy (offshore windfarms) are examples where detailed scientific evaluation is necessary to minimise any adverse environmental effects upon fisheries and indeed may even offer stock enhancement opportunities.



The discharge of radioactive waste into 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. In 2003, in respect of the regulation of fisheries for marine environmental purposes, national powers were used to introduce The Fal and Helford (Prohibition of Scallop Dredging) Order 2003 (SI 2003/2513) to protect a vulnerable habitat from the impact of damaging fishing gear. In January 2005, a ban was introduced on pair trawling in area 7E, in the coastal zone out to 12 miles, to reduce cetacean bycatch.

No significant environmental issues arose in connection with aquaculture in 2004/05. Fish farm effluents are monitored by the Environment Agency which enforces strict discharge consents to protect the quality of receiving waters.

### ***Processing, handling and distribution***

During 2003, there was a 13% decrease in the total supply of fish available for domestic use, which was largely due to a 23% increase in the amount of fish exported.

## **Government financial transfers**

Provision of government aid to the fishing industry in the UK is under the EU 2000-06 Financial Instrument for Fisheries Guidance (FIFG) Programme. The European Fisheries Fund will replace the FIFG fund from 2007 to 2013.

### ***Vessel modernisation***

EU schemes aid the cost of adopting sustainable catching methods or facilities to maximise the quality of fish on board vessels. In some areas of the UK, this measure also covers crew comfort and working conditions. Grants are not available for increased fishing effort and/or an increase in fishing capacity.

### ***Structural adjustment***

The EU's Financial Instrument for Fisheries Guidance (FIFG) maintains CFP funding for structural measures covering the industry as a whole. In April 2001, the Fisheries and Aquaculture Structures (Grants) Regulations 2001 were introduced, providing for national back-up aid in England 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 (for quality improvements and more selective fishing methods only), safety training for fishermen, decommissioning, protection and development of aquatic resources, improvement of fishing port facilities, processing and marketing of fishery and aquaculture products, product promotion, and other projects for the collective benefit of the fishing industry. The regulations provide for the implementation of the UK's programme for implementing FIFG, which was adopted by the Commission on 27 December 2000. Similar regulations were introduced in Scotland, Wales and Northern Ireland.

### ***Assistance for aquaculture***

Government funding for aquaculture R&D through Defra was around GBP 1.9 million in 2001. SEERAD R&D funding for 2001 was GBP 1 million. In addition, there was ongoing

funding of a 5 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 National Statistics publication, *Family Food in 2004-05*, showed that UK household purchases of fish increased from 156 g per person per week in (2003-04) to 158 g per person per week in 2004/05, an increase of 1.3%. Expenditure has increased by over 5% from GBP 0.94 per person per week in 2003/04 to GBP 0.99 in 2004/05. Twenty three per cent of this expenditure was on ready meals, 16% on white fish and 14% on takeaway fish.

Under EU support arrangements, if a member of a Producer Organisation (PO) puts fish up for sale for human consumption but cannot find a buyer at or above the pre-set withdrawal price, the fish must be permanently withdrawn from the human consumption market and a claim for aid made by the PO. The Rural Payments Agency reported that from April 2005 to the end of March 2006, payments were made for UK withdrawal claims to a value of GBP 253 000 compared to GBP 573 000 in the same period in the previous year. There was therefore a 56% reduction in withdrawal payments in 2005 compared to the previous year. Ninety eight per cent of the withdrawal claims were for catches of cod, herring, mackerel, hake or haddock.

### Trade

Between 1994 and 2005, total imports of fish and fish preparations have increased from 458 000 mt to around 717 000 mt (an increase of approximately 57%). In value terms, total imports rose in 2005 to GBP 1 686 million, a 14% increase on 2004. In 2005, total exports of fish and fish preparations amounted to 458 000 mt product weight, a decrease of 4.2% on 2004. In terms of value, total exports increased by 4.4% in 2005 to GBP 925 million.

### Sanitary regulations

EC legislation is transposed into UK legislation that sets minimum standards for the production and marketing of fish and shellfish. These shellfish regulations require that live bivalve molluscs other than wild Pectinidae, are harvested from waters classified according to their microbiological quality. This determines when they can be placed on the market for human consumption. Harvesting areas are also monitored for the presence of marine biotoxins and chemical contaminants. It is expected that fishery products meet the microbiological criteria set down in Commission Decision 93/51/EEC for the production of cooked crustaceans and molluscan shellfish. This acts to provide the microbiological benchmark to ensure the safety of public health in relation to the production of fishery products.

### Labelling

Since 1 January 2002, new EU provisions require that certain fish and fish products must, when offered for retail sale to the final consumer, be labelled with the commercial name of the species, method of production and the catch area. Regulation also includes traceability provisions, labelling information, as well as the scientific name of the species and information to this effect is available at all stages of the marketing chain. The Regulations are directly applicable in the UK and the enforcement provisions have been made in Fish Labelling Regulations for the UK.

PART III  
*Chapter 19*

## **Iceland**

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## Main characteristics of the Icelandic fishing sector

The most important Icelandic fishery by far is the groundfish fishery and the most important species are cod, haddock, redfish, Greenland halibut and saithe. In recent years, the average yield from groundfish fisheries has been just under 500 000 mt annually, representing 70-75% of total landed value. Pelagic fisheries (capelin, Icelandic and Atlanto-Scandian herring and more recently blue whiting), are by far the largest in terms of volume with almost 1.1 million mt. However, most of these pelagic catches serve as input into relatively low value reduction (fishmeal and fish oil) processes; catches of pelagic fish have been decreasing in recent years. Crustaceans and mollusks *e.g.* shrimp, Norway lobster, scallops and ocean quahog, account for a small volume of landings and have been decreasing considerably in recent years. The total first-hand value of Icelandic catches has been steady between 2003 and 2005 at around ISK 68 billion. In 2005, 1 449 active fishing vessels took part in the fishery.

Icelandic fisheries are heavily export oriented. The total quantity of marine products exported in 2005 amounted to 755 000 mt, as compared to 828 000 mt in 2004. The average export volume for the last two decades was around 641 000 mt. The value of marine exports in 2004 was USD 1.8 billion compared to USD 1.5 billion in 2003.

The overall aim of the Icelandic fisheries management is sustainable use of marine resources. The Fisheries Management Act provides for a system of individual transferable quotas (ITQs) in all commercially important stocks that are allocated to individual fishing vessels. 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). The size of each vessel's annual catch quota in a specific fishery is a simple multiple of the TAC for that fishery and the vessel's quota-share. Both the permanent quota-shares and the annual catch quotas are transferable, subject to certain restrictions, and perfectly divisible. In addition to the TACs, various management measures encourage the optimal exploitation of fishing stocks, including 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.

In 2004, there were 51 aquaculture stations in Iceland and 48 in 2005. In 2004 and 2005, Icelandic production of farmed species reached 8 200 mt, mainly of salmon.

## Iceland – Summary statistics

Figure III.19.1. **Harvesting and aquaculture production**

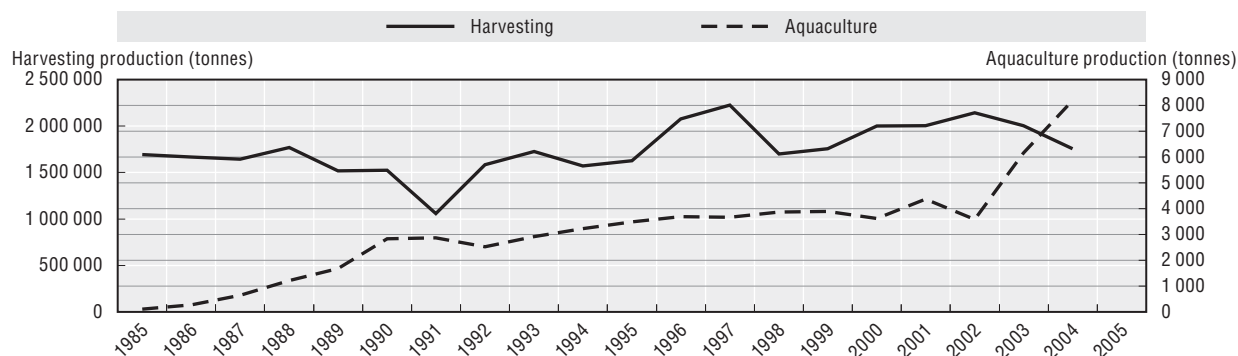


Figure III.19.2. **Key species landed by value**

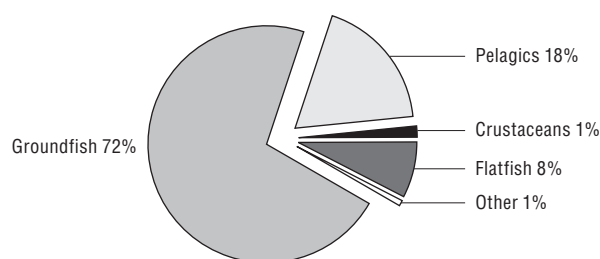


Figure III.19.3. **Age structure of fishers**

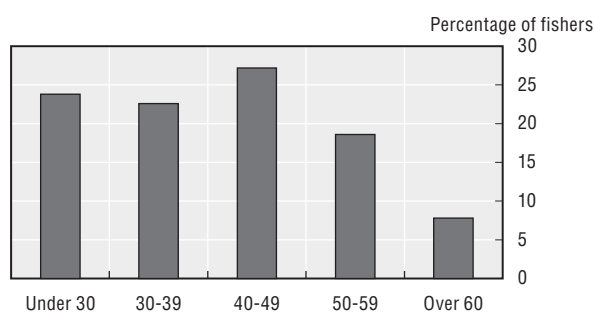


Figure III.19.4. **Evolution of government financial transfers**

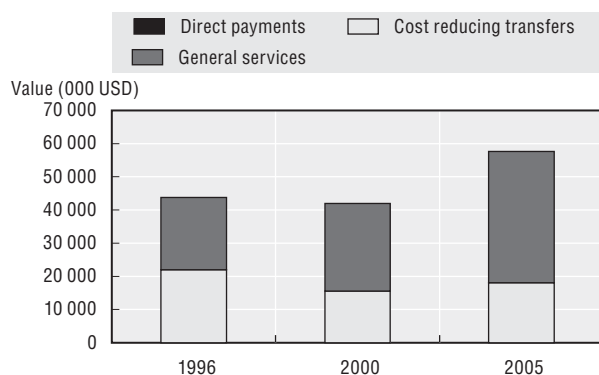


Figure III.19.5. **Trade evolution**

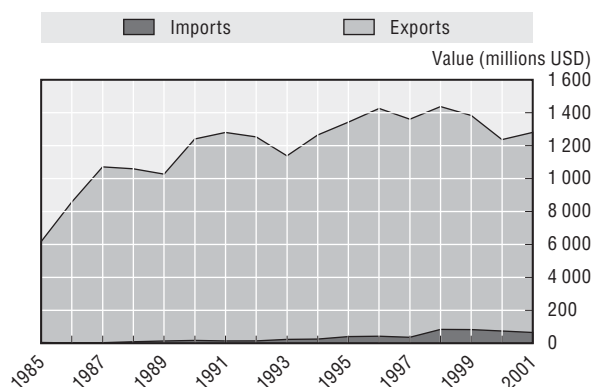


Figure III.19.6. **Production profile**

	1996	2005
Number of fishers	6 000	4 450
Number of fish farmers	n.a.	156
Total number of vessels	2 261	1 449
Total tonnage of the fleet	139 414	174 080

n.a.: Not available.

Source: Figures III.19.1 and III.19.5: FAO; Figures III.19.2, III.19.3, III.19.4 and III.19.6: OECD.

## ADDITIONAL DETAILS\*

### Capture fisheries

In 2005, demersal species accounted for 72% of the catch value of ISK 48 billion, but only 29% of the catch volume. Pelagics, on the other hand, only contributed to around 18% of the value but comprised 69% of the volume. Cod maintained its place as the single most important species in the Icelandic fishery, making up 39% of the value of total landings but only 10% of the volume.

Table III.19.1. **Total catch and catch value 2003, 2004, 2005**

	2003	2004	2005
Total catch (in thousand mt)			
Cod	206	227	212
Haddock	60	85	97
Pollock	52	63	68
Redfish	111	85	78
Flatfish	37	31	27
Herring	250	224	265
Capelin	676	516	595
Blue whiting	502	422	266
Shellfish	46	33	14
Other	40	42	47
<b>Total</b>	<b>1 979</b>	<b>1 728</b>	<b>1 669</b>
Catch value (ISK billion)			
Cod	26 052	27 979	24 924
Haddock	5 864	7 660	8 881
Pollock	2 489	2 778	3 086
Redfish	7 915	6 356	7 132
Flatfish	6 047	6 152	5 077
Herring	3 667	4 550	7 149
Capelin	4 878	4 033	5 031
Blue whiting	3 442	2 820	1 489
Shellfish	3 729	2 491	1 497
Other	3 195	3 156	3 654
<b>Total</b>	<b>67 278</b>	<b>67 975</b>	<b>67 920</b>

Net earnings for the entire fishing sector as a proportion of income was 10% for the year 2003 and 5.9% for the year 2004. Profits from fishing and processing of demersal species were approximately 10% in 2003 and 7.5% in 2004. Profits from shrimp fishing and processing were about 10.8% in 2003 and 0.8% in 2004. Profits from fishing and processing capelin were 7.7% in 2003 and 0.8% in 2004.

All catches by Icelandic vessels must be weighed and recorded at the port of landing by local port authorities. Ports of landing are then required to send information on a daily basis directly to the Directorate of Fisheries database. This means the Directorate always has up to date figures on catches and can conduct real time management and surveillance. This information is publicly available on the web, which ensures transparency.

\* Further particular on the Icelandic fisheries sector is available on: [www.fisheries.is](http://www.fisheries.is).

Foreign investment in companies engaged in fishing and in companies applying for a licence to carry out whaling within the Icelandic territorial waters is restricted, as is foreign investment in primary fish processing (excluding retail packaging and later stages of preparation of fish products for distribution and consumption). No vessel owned or operated by a foreign party may engage in fishing or fish processing in Icelandic waters, apart from those authorised under bilateral fishing agreements.

Only the following persons may conduct fishing operations within the area of Icelandic fisheries jurisdiction according to existing laws on Fishing Rights within the Icelandic Territorial Waters, or own or run enterprises engaged in fish processing:

- a) Icelandic citizens and other Icelandic persons.
- b) Icelandic legal persons which are wholly owned by Icelandic persons or by Icelandic legal persons which:
  1. Are controlled by Icelandic entities.
  2. Are not under more than 25% ownership of foreign residents calculated on the basis of share capital or initial capital. However, if the share of an Icelandic legal person conducting fishing operations in the Icelandic fisheries jurisdiction or fish processing in Iceland is not above 5%, the share of the foreign resident may be up to 33%.
  3. Are in other respects under the ownership of Icelandic citizens or Icelandic legal persons controlled by Icelandic persons.

In this context, fish processing refers to freezing, salting, drying and any other processing which protects fish and other marine products from decay, including the production of fish-oil and fish-meal. However, processing in this context does not include smoking, pickling, canning and retail packaging or further processing designed to render products more suitable for distribution, consumption or cooking.

### **Fishing fleet**

The fishing fleet consists of several vessel types. The official statistics divide the fleet into three main categories:

- a) Trawlers: These are relatively large fishing vessels usually between 200 and 2 000 GRT and between 130 and 300 feet in length. They are almost exclusively engaged in the demersal fishery employing bottom and occasionally mid-water trawl.
- b) Decked vessels: This class of decked vessel covers many different types of vessels and a wide size range. Decked vessels include specialized scallops draggers, longliners and purse seiners as well as unspecialized vessels. They range in size from 10 GRT to over 2 000 GRT.
- c) Undecked, small vessels: This class of fishing vessel covers numerous vessels of sizes up to 10 GRT, although most are under 6 GRT. Most of these vessels are technologically advanced and driven by powerful engines.

Further details about the Icelandic fishing fleet are set out in Table III.19.2. It should be kept in mind that not all vessels are active but may be lying idle. For example, in 2005, only 1 449 vessels were active.

### **Catches and stock status**

Table III.19.3 provides an overview of the Icelandic catches between 2003 and 2006.

Table III.19.2. **The Icelandic fishing fleet (2005)**

Type of vessels	Gross tonnage (GRT)	Number of vessels	Mean age (years)
Trawlers	80 936	65	23.0
Decked vessels	96 679	862	20.0
Undecked vessels	3 915	825	20.0
<b>Total</b>	<b>191 587</b>	<b>1 752</b>	

Source: Statistics Iceland.

Table III.19.3. **TACs for the fishing years 2003/04, 2004/05 and 2005/06**

In '000 tonnes

Species	Fishing year 2003-04	Fishing year 2004-05	Fishing year 2005-06
Cod	179	209	205
Haddock	55	75	90
Pollock	45	50	70
Redfish	60	57	57
Oceanic redfish	55	35	19
Greenland halibut	23	23	15
Plaice	5	5	5
Dab	7	7	5
American plaice	5	5	5
Witch	2	2	2
Lemon sole	2	2	2
Herring	105	110	110
Capelin	765	737	771
Inshore shrimp	2	1	1
Offshore shrimp	30	20	10
Scallops	4	0	0

For cod, all cohorts since 2001 are estimated smaller than average except for 2002, which were close to average size. First estimates of the 2005 cohort suggest that it could be of similar abundance to the 2002 cohort. Mean size of the 2001-05 cohorts is around 121 million (as 3 years old recruits). For haddock, year classes 1998-2200 are estimated to be large, year class 2003 very large, 2001 small and 2004-05 about medium sized. The large year classes 1998-2000 led to a rapid increase in the stock size from 2001 to 2004. The fishable stock of saithe is estimated to be 315 000 mt and spawning stock biomass 118 000 mt in 2006, slightly higher than the 2005 estimate. In 1997-2000, fishable stock size and spawning stock biomass were at a minimum, but have increased considerably in size since then. The spawning stock of herring was estimated to be 702 000 mt in 2005 and was assessed to be 672 000 mt by the summer of 2006. It is predicted that the 1999 and 2000 year classes will continue to be the most abundant during the 2006/07 season, representing respectively 30% and 26% by weight.

Complementing the Icelandic fisheries policy is the Oceans Policy, issued in 2004, outlining the government's policy regarding ocean pollution and environmental change, marine biodiversity, use of the sea bed resources, navigation and tourism. As climate change is especially important for island nations that to a great extent rely on fisheries, Icelandic research is also addressing such issues. In the spring of 2006 a report on the protection of vulnerable marine areas was completed. It contains a description of the existing protection of marine areas in Icelandic waters. Closures of marine areas are widely used in fisheries management for protection of fish in the spawning period and to protect juveniles.



### **Recreational fishing**

Leisure fishing for personal consumption is authorised without a special permit. Such fishing may only be pursued with hand lines without an automatic jigger. The catch may not be sold nor used for financial gain. The Minister of Fisheries may annually permit a specific number of public ocean rod and reel fishing derbies. However, the catch shall not be included in the catch quotas nor used for financial gain although it can pay for the cost of the competition.

### **Management**

In 2002, the Fisheries Management Act introduced into government policy the principle that parties granted rights to utilise natural resources should pay a fair price for such rights. This fee, effective from the 2004-05 fishing season, is calculated as a special fee on the calculated aggregate profits of the fishing industry. Initially, the fee amounted to 6% of the calculated profits but will increase to 9.5% in 2009. When fully in effect, this charge could, at current operating conditions, amount to an additional 2% of the gross revenues of the fishing sector. From the beginning of the fishing year, starting 1 September 2006, all boats and vessels in the Icelandic fishing fleet are subject to the ITQ system.

### **Multilateral arrangements**

Iceland participates in a number of regional fisheries management bodies including NEAFC, NAFO and ICCAT and has bilateral fisheries agreements with the EU, Norway, Greenland, the Russian Federation and the Faeroe Islands.

Iceland and the EU meet each year to review their bilateral fisheries agreement. The agreement provides a capelin quota for Iceland of 30 000 mt from the EU in exchange for a redfish quota of 3 000 mt, which the EU may catch within Icelandic jurisdiction. Since the middle of 2005, the EU has not been able to provide 30 000 mt of capelin due to its revised bilateral agreement with Greenland. Ways to re-establish the balance of the agreement are under consideration.

An agreement in force from 2003 between Iceland, Norway and Greenland provides for the utilisation of the capelin stock between Iceland and Jan Mayen. A bilateral agreement between Iceland and the Faroe Islands on pelagic stocks is also in force. According to the latter, Iceland may catch blue whiting, Atlanto-Scandic herring, 2 000 mt of herring other than Atlanto-Scandic herring, and 1 300 mt of mackerel, within Faroese jurisdiction. Within Icelandic jurisdiction, the Faroese may catch blue whiting and capelin.

An agreement has been in force since 1999 between the governments of Iceland, Norway and the Russian Federation concerning certain aspects of co-operation in the area of fisheries. When this agreement was concluded, the total allowable catch in the Barents Sea was 480 000 mt of cod, of which Icelandic fishing vessels were allowed to catch 8 900 mt in Norwegian and Russian jurisdictions. Iceland's proportion of the total catch quota remains constant despite changes in the TAC, unless the TAC falls below 350 000 mt, in which case the Icelandic quota is suspended. The agreement provides a capelin quota for Norway that can be caught within Icelandic jurisdiction, as well as 500 mt of ling and tusk. If the Icelandic quota is suspended, these quotas are also suspended.

According to a bilateral agreement with the Faroe Islands on fishing in Icelandic waters in 2006, Faroese vessels are permitted to catch up to 5 600 mt of demersal fish within Icelandic jurisdiction. Cod catch is not to exceed 1 200 mt.

Iceland is a member of two international bodies that have responsibilities regarding the conservation, management and sustainable use of marine mammals: The North Atlantic Marine Mammal Commission (NAMMCO) and the International Whaling Commission (IWC). A scientific programme allowing for limited catching (39 animals in 2005 and 50 animals in 2006) of minke whales is now in progress.

### **Government financial transfers**

Total net transfers associated with Iceland's fishery policies amounted to ISK 1.4 billion in 2004 and ISK 1.9 billion in 2005. Transfers are only for general services. These figures do not include tax deductions for fishermen. The sector pays for some services they receive, *e.g.* from the Directorate of Fisheries. The harvesting sector also pays a surveillance fee to the Directorate in addition to the fishing fee.

### **Seafood information and labelling**

The Ministry of Fisheries in Iceland initiated active consultation and co-operation with national stakeholders as well as the other Nordic countries in order to analyse seafood information and labelling trends as well as to find the best way to respond to requirements from buyers for additional information on the use of marine resources. As early as 1999, the Ministry of Fisheries established the website information centre: [www.fisheries.is](http://www.fisheries.is). It provides detailed information on Icelandic management and implementation of decisions on the use of marine living resources, use of gear as well as on fish processing and environmental considerations in the Icelandic fisheries sector. A still more comprehensive information centre is now under construction that will give further in-depth information and answers to various aspects of Icelandic fisheries management to the public and retailers of Icelandic seafood. An eco-label for fisheries products of Icelandic origin has not yet been created.

Icelandic Fisheries Laboratories are very active in research on traceability in co-operation with European and Nordic colleagues and Icelandic companies. Increasing use of such systems help not only trace a fillet of a fish to the date and place where it was caught, and its subsequent processing, but also to manage fishing operations better as such detailed information accumulates.

### **Marketing and trade**

Producers are increasingly focusing on the market for fresh fish, mainly fillets, and moving away from the market for frozen products. Because of this, factory trawlers are now, to some degree, bringing fresh fish to land-based production. Also, low prices for shrimp have led to restructuring in the shrimp industry, where a number of factories have been closed and production moved to other factories.

In 2005, the value of marine products exported to the European Economic Area, which is the most important market for Iceland, amounted to 78% of the total value. The value of exports to North America amounted to around ISK 10 billion (9%) and to Asia ISK 8 billion (7.3%). In 2005, as in previous years, the UK was the leading market; marine products sold to the UK amounted to ISK 28.5 billion and comprised 26% of total export value of marine products. The value of fish products exported to the US amounted to ISK 10 billion, or 9.3% of total export value.

Table III.19.4. **Quantity of Icelandic marine exports 2003-05**

In mt

	2003	2004	2005
<b>Total</b>	<b>808 958</b>	<b>827 537</b>	<b>754 514</b>
Fresh or chilled	105 285	96 219	89 993
Frozen	260 292	313 815	330 028
Salted/dried	52 922	54 917	49 732
Meal/fish oil	355 048	321 146	245 694
Other	22 173	26 039	24 133

Source: Statistics Iceland.

Table III.19.5. **Value of Icelandic marine exports 2003-05**

In USD millions

	2003	2004	2005
<b>Total</b>	<b>1 481</b>	<b>1 736</b>	<b>1 752</b>
Fresh or chilled	193	276	317
Frozen	753	876	917
Salted/dried	301	349	334
Meal/fish oil	230	228	179
Other	5	7	6

Source: Statistics Iceland.

## Outlook

All signs indicate that the TAC for the 2006/07 fishing year will be similar, in terms of cod equivalents, to that of the 2005/06 fishing year. Exports of marine products are also expected to be similar in 2006 to those of 2005 in terms of quantity, but value will be higher due to the depreciation of the ISK and higher market prices. A reasonable performance is predicted for the fishing sector for 2006 but the outlook is not as good for the processing industry. Continuing development and discussion is expected in international markets on ecolabelling and methods of ensuring food safety and traceability so that consumers have healthy products.



PART III  
*Chapter 20*

**Japan**

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## Main characteristics of the Japanese fishing sector

Fisheries production (including marine fisheries, inland-water fisheries and aquaculture) has decreased in quantity since 1989. Production amounted to 5 775 794 tons in 2004, which decreased to 5 720 603 tons in 2005 (a fall of 1%). The value of fisheries production in 2003 was JPY 1 546 billion (around USD 13.33 billion). It increased slightly to JPY 1 565 billion (around USD 14.27 billion) in 2004.

The number of fishers has been continuously decreasing and is now 26% lower than in 1994 (312 890). More precisely, the number of fishermen in 2004 was 230 730, 3% lower than 2003. Japanese male fishers over 65 years old accounted for 34% of the total male fisher population in 2002, 13% higher than ten years ago. The ageing of the working population over the past decade is remarkable.

The number of fishing vessels has been continuously decreasing since 1980. The total number of registered fishing vessels in 1980 was 410 354. This figure dropped by approximately 20% over two decades, to 337 600 in 2000. Significant capacity reduction has been observed in larger fishing vessels. The number of registered vessels of 10 mt or more has been reduced to less than half over the same period, to 13 732 in 2000. The number of working fishing vessels is less than that of registered fishing vessels. In 2004, the total number of working vessels was 223 818. Of these, 95% or 213 914 vessels were less than 10 mt or vessels without engines.

Japanese imports of fish and fish products, once increasing sharply, were relatively stable in 2003 and 2004. The amounts were 3.3 million and 3.5 million mt in 2003 and 2004 respectively. The value was JPY 1 569 billion (around USD 13.53 billion) in 2003 and JPY 1 637 billion (around USD 14.93 billion) in 2004. Shrimp and prawn have the largest traded value among imported fish products, followed by tuna, salmon, crab, and eel products. China is the largest source of imports of fish products. Japan's exports in fish and fish products are less than 1/10th of its imports in fish and fishery products. In 2004, the quantity of fisheries exports was 0.4 million mt and the value of fisheries exports was JPY 148 billion (around USD 1.35 billion).

Japanese fisheries are faced with a situation of falling production, partly due to declining stocks in adjacent areas, the decline in number and further ageing of fishers and the declining vitality of fishing communities. It is clear that Japan's fishing industry is at a turning point. In 2006, Japan started a regular review process of Basic Fisheries Policy based on the provisions of the "Basic Law on Fisheries Policy", enacted in 2001.

## Japan – Summary statistics

Figure III.20.1. **Harvesting and aquaculture production**

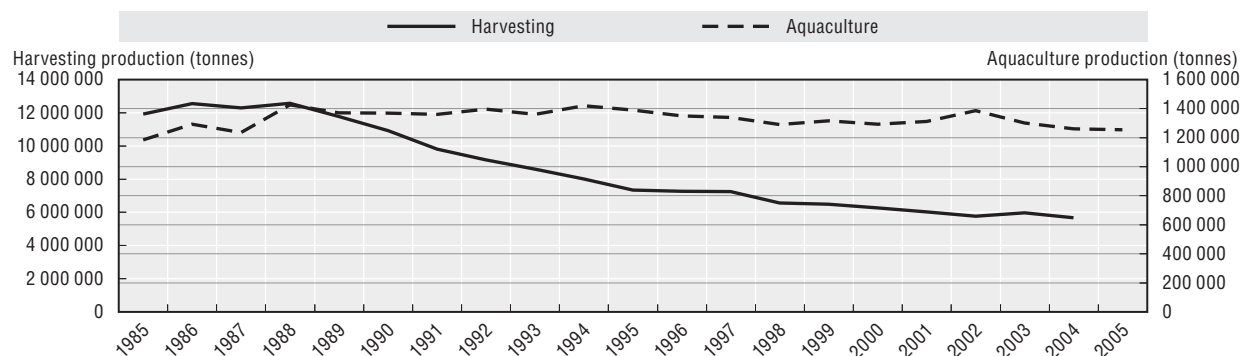


Figure III.20.2. **Key species landed by tonnage in 2005**

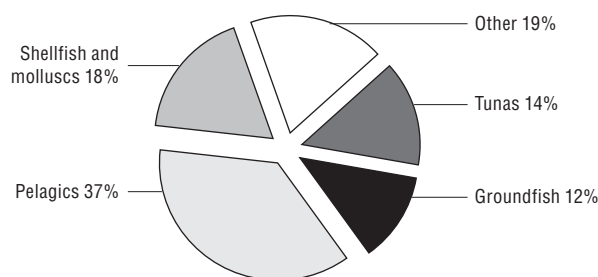


Figure III.20.3. **Age structure of fishers**

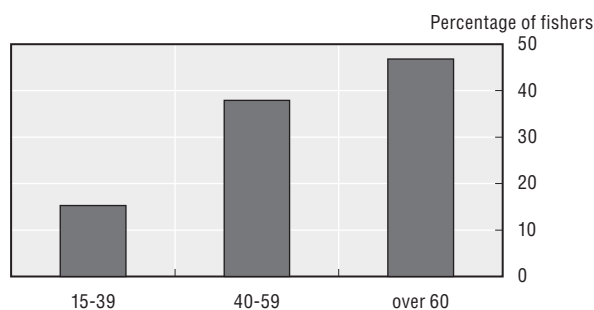


Figure III.20.4. **Evolution of government financial transfers**

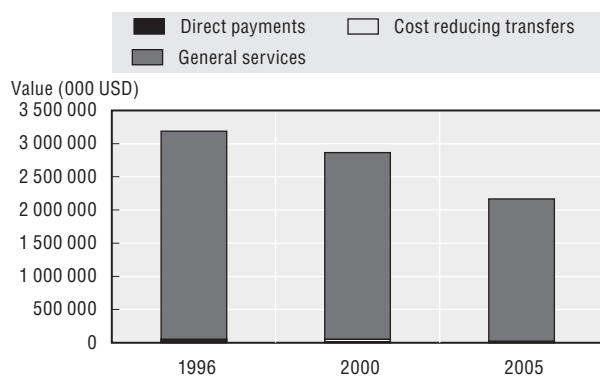


Figure III.20.5. **Trade evolution**

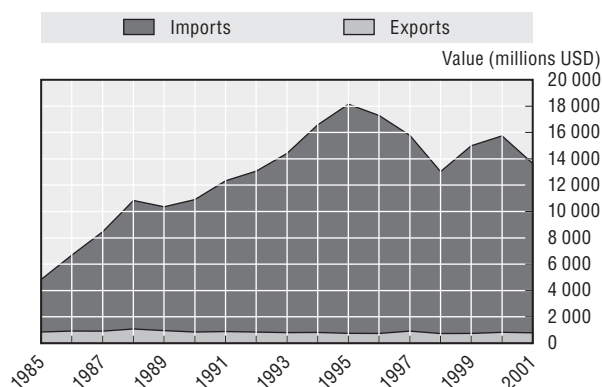


Figure III.20.6. **Production profile**

	1996	2005
Number of fishers	287 380	222 510
Number of fish farmers	62 550	51 317 <sup>1</sup>
Total number of vessels	2 371	n.a.
Total tonnage of the fleet	73 058	n.a.

n.a.: Not available.

1. Fish farmers in 2003.

Source: Figures III.20.1 and III.20.5: FAO; Figures III.20.2, III.20.3, III.20.4 and III.20.6: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The government of Japan enacted the “Basic Law on Fisheries Policy” in June 2001. This law is a guideline for fisheries policy, replacing the “Coastal Fishery and Others Promotion Law” of 1963, whose primary aim was to improve productivity. The Basic Law on Fisheries Policy has two basic concepts: 1) securing a stable supply of fishery products; and 2) the sound development of the fishing industry to promote the appropriate conservation and management of marine living resources. It also clearly establishes the basic direction for measures to be implemented under these concepts.

Japan manages its fisheries through fishing effort regulation such as limitations on the number of licenses issued and restrictions on fishing methods as well as Total Allowable Catch (TAC) systems. The principal laws are, “The Fisheries Law”, the “Living Aquatic Resources Protection Law” and the “Law Concerning Conservation and Management of Marine Living Resources”. These principal laws were also amended in keeping with the concept of the “Basic Law on Fisheries Policy”. The central and prefectural governments regulate fishing effort in terms of fishing method.

The national Total Allowable Catch (TAC) system assigns TAC allocations to each fishery separately, not to individual fisherman. While seven fish species are subject to the TAC system covering 1 301 thousand mt (or about 29% of total fishing in Japan) in 2005, the Total Allowable Effort (TAE) was established as a system to manage total allowable effort with the amendment of the “Law Concerning Conservation and Management of Marine Living Resources”.

### Capture fisheries

The condition of the main fish stocks has been monitored for the past 20 years. In 2004, the resource levels of 12 stocks, including saury, common squid and sea bream were high, but the resource levels of 49 fish stocks such as common mackerel, sardine, Alaska Pollock, and snow crabs, were low. Another 30 stocks, including Jack mackerel and sand fish, were middle of the range.

It is necessary to rebuild important marine living resource levels either by reducing excessive fishing effort or ensuring environmental changes in fishing grounds. Japan established a framework for resource recovery plans to implement the necessary measures for rebuilding resources in a comprehensive and planned manner; such as the reduction of Total Allowable Effort (decrease the number of boats, suspend operations, improve fishing gear, etc.), active resource enhancement (releasing fry, etc.) and the preservation and rehabilitation of fishing grounds (sea grass beds, tidal flats, etc.). National or local governments assume a role in formulating these plans.

### Access agreements

The agreements between governments permitting Japan’s fishing vessels access to fishing in foreign waters are as follows (as of 2006): Australia (since 1979), Canada (since 1978), China (since 1975, new agreement since 2000), France (since 1979), Kiribati (since 1978), Republic of Korea (1965, new agreement since 1999), Marshall Islands (since 1981), Morocco (since 1985), Russia (since 1984), Solomon Islands (since 1978), Senegal (since 1992), Tuvalu (since 1986). Among these agreements, those with Russia, China and Korea are mutual fishing access agreements.



The private-sector based agreements permitting Japan's fishing vessels access to fishing in foreign waters are as follows (as of 2006): Cape Verde, Cote d'Ivoire, Fiji, Gabon, Gambia, Greenland, Guinea, Guinea Bissau, Madagascar, Mauritania, Mauritius, Micronesia, Mozambique, Nauru, Palau, PNG, Sao Tome and Principe, Seychelles, Sierra Leone, St. Helena, and Tanzania. Most of the above agreements are tuna fisheries. Terms and conditions of the access agreements vary from country to country.

### **Monitoring and enforcement**

When fisheries agreements between Japan and Korea, and between Japan and China, entered into force, Japan implemented marine living resource management measures in its EEZ in accordance with LOS. Japan also implemented enforcement measures such as the seizure of illegal fishing gear on foreign fishing vessels licensed by Japan to operate in its EEZ. Operations by foreign vessels in the Japanese EEZ are prohibited unless permitted under a bilateral fisheries agreement.

### **Control of recreational fishing**

Based on the provisions of "The Fisheries Law" and the "Living Aquatic Resources Protection Law", the prefectural governors may issue regulations for the control of recreational fishing. These provisions regulate fishing gears and methods for recreational fishing. Many prefectural governors may also establish catch prohibition areas and regulate fish size. In general, the total catch by recreational fishers is marginal. The estimated catch by recreational fishers, who employed professional guides in marine boat fishing, was 29 300 mt in 2002, which accounted for 2% of the commercial catch in the same year and the same coastal area.

The number of persons who engage in marine recreational fishing with guided boat services has reached 4 487 thousand man-years (2002). As recreational fishing and the fishing industry use the same waters, conflicts between commercial fishers are reported concerning the use of fishing grounds/water resources and the place of moorage for vessels, etc. Each prefecture takes measures in order to resolve these conflicts. For example, some prefectures have held meetings to discuss marine utilisation in order to promote rule making for a marine area on a local basis.

### **International conservation agreements**

Japan is a member of several international frameworks for the conservation and management of tuna stocks such as ICCAT, IATTC, CCSBT and IOTC. Japan joined the Western and Central Pacific Fisheries Commission (WCPFC) in July 2005. Japan continues to take measures against Illegal, Unreported, and Unregulated (IUU) fishing. It has started a new global trade monitoring and controlling system, based on the ICCAT, IOTC, and IATTC positive listing schemes, from November 2003. Only tuna products caught by Large Scale Tuna Long-line Vessels (LSTLVs) listed in the positive lists are allowed to enter the Japanese market.

## **Aquaculture**

The aquaculture sector suffers from the environmental deterioration of aquaculture grounds due to excessive stocking intensity and over-feeding for increased production as well as environmental pollution due to public pollution. There is a movement to diversify aquacultured species, leading to more imports of yellowtail seed and similar species, e.g. "kanpachi". As a result, the possibility for foreign disease is increasing. In order to

resolve these problems, “The Law to Ensure Sustainable Aquaculture Production” was established in May 1999. The law provides a framework for secure and sustainable aquaculture. The law includes systems for promoting voluntary plans to maintain and improve the environment of aquaculture grounds by fishing co-operatives and measures for the prevention of specific fish diseases.

Production has been levelling off recently due to the limited availability of suitable production sites and over-supply. The amount of aquaculture production has been relatively stable for the past 10 years with an annual output of 1.2-1.4 million mt every year. In 2004, the quantity of aquaculture production was 1 260 617 tons (31% of the total quantity of fish production), slightly decreased from 1 305 652 in 2003 (22% of the total quantity of fish production). However, the total value of aquaculture production has decreased continuously due to the general price decrease of fish and fishery products in Japan. In 2004, the value of marine aquaculture amounted to JPY 448 billion (around USD 4.09 billion).

### **Fisheries and the environment**

The natural condition of the seashore (seaweed beds, tidal lands, sand beaches) has deteriorated rapidly due to coastal development and other human activities, as well as natural factors including the rise of sea water temperatures. 65 156 hectares, or approximately 30% of the seagrass beds in Japan disappeared during the period from 1978 to 1998. 33 241 hectares, or around 40% of the tidal lands in Japan vanished during the period between 1945 and 1998.

Recently, government efforts have been strengthened to remove sediments and release seagrass spores. Fishers also frequently organise beach clean-up activities. Government statistics show that more than 90% of fishing communities were engaged in beach clean-ups in 2003. Fisheries organisations were also frequently engaged in the organized planting of trees in their own basin areas (i.e., upstream mountains). This is because members of coastal communities generally share the view that forests, rivers, and coasts constitute one integral ecosystem.

Some attempts have been made to improve the energy efficiency of fishing operations. These efforts included the introduction of Light-Emitting Diodes (LEDs) as a substitute for traditional electric bulbs providing on-board lighting squid jiggers operating at night. Substantial increases in oil prices occurred during the first half of the year in 2005, further promoting these attempts. The price of vessel fuel in 2005 was twice as much compared with the fuel price in 2000. The rise of fuel costs brought adverse effects to the financial situation of fishing entities, as they generally were unable to recover costs due to the current weak selling price of fish and fish products.

### **Government financial transfers**

Government financial transfers in Japan declined from JPY 272 billion (around USD 2.34 billion) in the fiscal year 2003 to JPY 267 billion (around USD 2.44 billion) in 2004.

Japan does not have government payments for fisheries products, investments in new vessels or access fees to foreign waters. Only one direct payment program is for the reduction of the national fishing fleet that started in 1981 (JPY 1 996 million in 2004). A total of 1 615 mid- to large-scale fishing vessels were scrapped under this program between 1981 and 2004. The type of vessel included, but was not limited to high sea

driftnet fishing vessels, large- and mid-sized purse seines, large trawlers, large- and mid-sized squid jiggers, and pelagic tuna long liners. All fishing licenses of the scrapped vessels were revoked.

The major form of cost reducing transfer in Japan is the interest subsidy. The interest subsidy program is designed to assist structural adjustment of small- and mid-size vessels under certain conditions. Its main purpose is to contribute to the introduction of advanced fisheries management for the structural adjustment of coastal small fisheries. The actual difference between the commercial and the subsidized interest rates are within a range of 1.25% to 0.01% in the fiscal year 2000. The renewal of small fishing boats and equipment was supported by this program in an effort to facilitate the improvement of worker safety on family-owned coastal boats. This program does not contribute to the increase of fishing capacity as Japan restricts the number of fishing vessels as well as the size of each vessel through the government licensing scheme.

The most significant general services expenditure is in the construction of public infrastructure, including fishing ports, breakwaters, public wharves, navigation routes, coastal community roads, community water supplies, sewage systems and park facilities around ports. This accounts for approximately 70% of government financial transfers related to fisheries. As of 2004, there were 2 927 fishing ports in Japan, located in geographically disadvantaged areas. This expenditure does not constitute payments to the fishing industry but rather to construction sectors. General services, other than coastal infrastructure construction, include a wide variety of government transfers: 1) Government costs for monitoring, surveillance and control of fishing operations; 2) Official development assistance for foreign countries in the fishing sector; 3) Domestic education and information dissemination services related to fisheries; 4) Research and development including the operating costs of the National Institute for Fisheries Research and the National Fisheries University.

## Post-harvesting policies and practices

The number of fish processors has decreased recently to a total of 10 795 in 2004. Small-scale operators, who employ less than 20 people, account for three quarters of the total number of processors.

Inspectors of food hygiene appointed by local governments have conducted surveillance of bacteria numbers, anti-bacteria substances, environmental pollutants in food and the proper utilisation of food additives. They have conducted this surveillance by sampling at wholesale market, cold storage facilities, retail stores, etc., based on the "Food Hygiene Law". All marine products (domestic products or imported products) are subject to surveillance.

Large fish processors have started to introduce the HACCP system for quality and sanitation control purposes. In some cases, firms have to invest in these facilities. These requirements make it difficult for small and medium sized processors to introduce HACCP. To resolve these problems, the government introduced loans for the introduction of the HACCP system and developed manuals of quality management of fish products under HACCP.

Consumer interests and concerns regarding the freshness and safety of food are increasing. Consumers also want necessary information in order to inform their own decisions on purchases. The "Law Regarding the Adjustment of the Standardisation and

Quality Display for Agriculture and Forestry Goods” was revised in 1999. Accordingly, all unprocessed seafoods and several processed seafoods are now required to display necessary information such as the origin of the produce.

In May 2003, the Food Safety Basic Law was enacted in order to alleviate consumer concerns over food safety. In July 2003, the Ministry of Agriculture, Forestry and Fisheries established the Food Safety and Consumer Affairs Bureau that deals with consumer relationships and risk management in the field of food production and distribution.

On 29 May 2006, Japan introduced the positive list system for agricultural chemicals remaining in foods: a system that prohibits the distribution of foods that contain agricultural chemicals above a certain level if “maximum residue limits” have not been established. The agricultural chemicals include pesticides, feed additives and veterinary drugs. This activity was based on the Law to Partially Revise the Food Sanitation Law of 2003.

## Marketing and trade

### Marketing

The principal marketing channel for fisheries products is as follows: after landing, prices are set and products are sorted at the wholesale market in production areas according to destination. Fish is supplied to retailers through the wholesale market in consuming areas. Final retail sales for consumers are made through large supermarkets or traditional fish mongers.

In recent years, the share of the large supermarkets and retailers is increasing. 68% of consumers selected large supermarkets as a place to purchase fish products in 2003. This is a remarkable increase compared with the figure of 49% in 1993. Convenient location and price competitiveness in supermarkets are the main reasons. Consequently, the share of traditional fish mongers (or small fish retailers) decreased to 15% in 2003.

Direct purchases and imports by retailers (*e.g.* supermarket and restaurant chains) have increased. In addition, final consumers purchase more fishery products directly from producer organisations via the internet. These means that more fish products are sold outside wholesale markets in consuming areas.

### Domestic consumption

In Japan, demand for fish products for human consumption has been slightly decreasing. Total demand was 8 202 and 8 005 (preliminary) thousand mt in 2003 and 2004 respectively. Demand, which was 8 874 thousand mt in 1994, decreased by 10% over this decade. Diminishing demand can be partly explained by a decline in the population of younger generations in Japan.

Demand for fish products for non-human consumption peaked in 1989 at 4 436 thousand mt. Demand has been decreasing since then due to the decreased production of sardine and the shift of aquaculture feed to compound feeds. The demand was 2 476 thousand tons in 2004 (preliminary), a reduction of 8% from the previous year.

## Outlook

### *Policy changes*

To promote international co-operation in resource management, Japan has prohibited the import of Atlantic bluefin tuna from certain countries in accordance with ICCAT recommendations. Because a large amount of tuna caught by IUU or Flag Of Convenience (FOC) vessels is still imported despite these measures, the government imposed a requirement for tuna importers to report the name of the fishing vessel in accordance with the provision of the “Law Concerning Special Measures to Strengthen Conservation and Management of Tuna Resources” in 1999. The government also requested importers to refrain from importing fish caught by flag of convenience fishing vessels.



PART III  
*Chapter 21*

**Korea**

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### **Main characteristics of the Korean fishing sector**

Fishery production in 2004 was 2 519 000 metric tonnes (mt) valued at KRW 4 730 billion (USD 4 113 million), an increase of 32 000 mt (1.3%) from 2 487 000 mt in 2003, due to increased production in mariculture.

To address chronic overexploitation of marine fishery resources by over-capacity in coastal and offshore waters, a fleet reduction program known as the “General Buy-Back Program”, has been active since 1994.

Moreover, another buy-back scheme, the “Buy-back Program by International Agreements”, was introduced by the “Special Act for Supporting Fishermen Affected by International Fishery Agreements” which entered into force on 7 September 1999, and aimed to compensate fishermen for losses resulting from international fishery agreements, including agreements with Japan and China. In accordance with this Act, the Korean government scrapped 1 328 fishing vessels between 1999 and 2002, for which KRW 866.4 billion (USD 753.3 million) was spent by 2004.

In addition, the Total Allowable Catch (TAC) system – an alternative to the current fishing license system has been implemented for nine species in full scale since 2004 to aid the implementation of an optimal management system for sustainable fisheries.

The total export value of fishery products in 2004 was USD 1 279 million (406 435 mt), exporting mainly to Japan, China, and the USA. The total import value of fishery products in 2004 was USD 1 961 million (1 238 603 mt), importing mainly from China, Russia, and the USA.



## Korea – Summary statistics

Figure III.21.1. **Harvesting and aquaculture production**

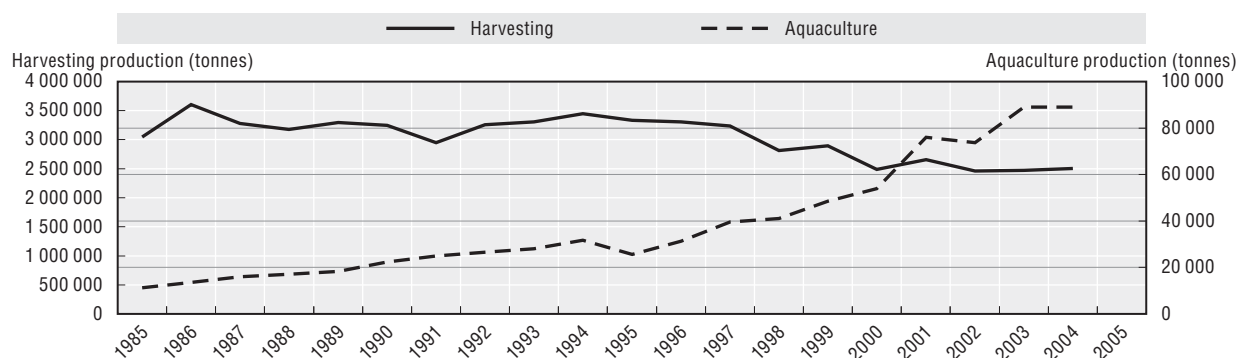


Figure III.21.2. **Key species landed by value in 2005**

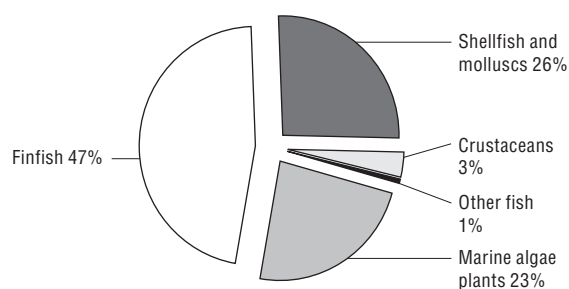


Figure III.21.3. **Age structure of fishers**

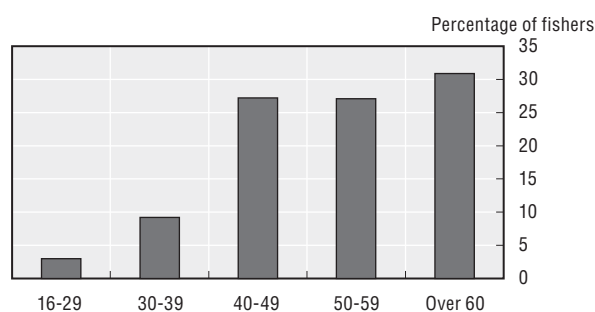


Figure III.21.4. **Evolution of government financial transfers**

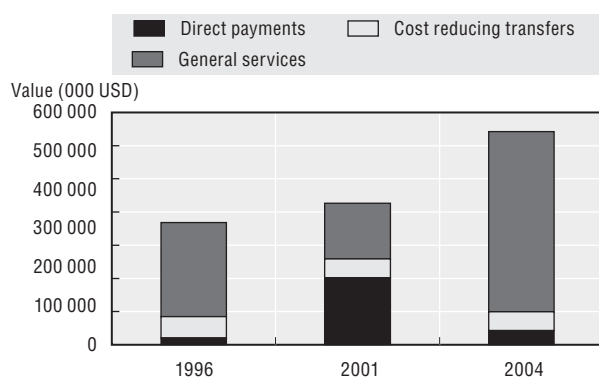


Figure III.21.5. **Trade evolution**

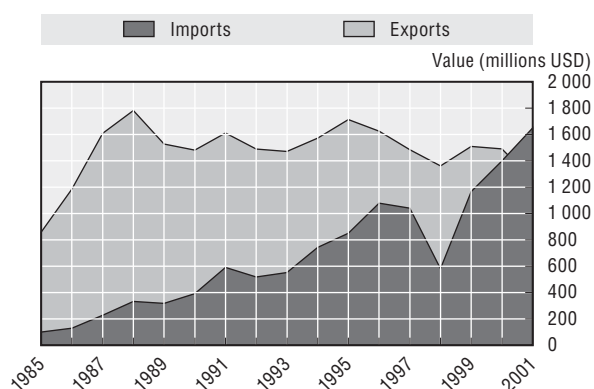


Figure III.21.6. **Production profile**

	1996	2004
Number of fishers	191 365	84 634
Number of fish farmers	63 106	40 609
Total number of vessels	75 244	91 608
Total tonnage of the fleet	971 808	724 980

Source: Figures III.21.1 and III.21.5: FAO; Figures III.21.2, III.21.3, III.21.4 and III.21.6: OECD.

## ADDITIONAL DETAILS

### 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 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 licenses of vessels in the coastal areas. Fisheries resources have been protected mainly through governing the mesh size of fishing nets, fishing grounds, fishing seasons, etc. The TAC system was introduced in 1999 and has been implemented for 9 species since 2004.

The Korean government also started a fishermen-oriented co-management system for more effective implementation of responsible fisheries. Under this system, organisations of fishermen such as a fishery corporation or a group of fishermen in fishing villages set up self-regulations according to relevant fishery-related laws and regulations with the endorsement of the local government; thereby a fishery is controlled. The fishermen-oriented co-management system is designed to enhance the sense of responsibility of the fishermen and to prevent illegal fishing.

### Capture fisheries

#### *Performance*

Catches from coastal, offshore, distant water, and inland fisheries were 1 601 386 mt (valued at KRW 3 514 billion (USD 3 055 million)) in 2004, a small decrease from 1 660 797 mt (KRW 3 605 billion) in 2003. The main factor for the decrease was a fall in catches from distant waters.

In coastal and offshore fisheries, production in 2004 totalled 1 076 687 mt, nearly unchanged from 2003 (1 096 526 mt). The major species in coastal and offshore fisheries were anchovy, squid, hairtail, and horse mackerel. In particular, anchovy, which accounts for the largest proportion of the total catches, was 196 640 mt in 2004, a 21% decrease from 250 106 mt in 2003. The production of squid was 212 760 mt in 2004, a decrease of 8.7% from 233 254 mt in 2003. The production of mackerel was 184 274 mt in 2004, a 50.9% increase from 122 044 mt in 2003.

In distant water fisheries, production in 2004 accounted for 499 400 mt, a decrease of 8.2% from 544 591 mt in 2003. The decrease in production resulted from a dropoff in catches of squid, skipjack, and Alaska pollock.

The population employed in fisheries has been dropping steadily. The number of fisheries households dropped 0.3% from 72 760 in 2003, to 72 513 in 2004. The number of fisheries households in 2004 can be broken down to 52% with fishing vessels, 19.4% without fishing vessels, and 28.6% in aquaculture. The number of households in 2004 in vessel fishing increased by 1.0% (406 households), and in aquaculture increased by 5.1% (1 118 households) from the previous year. The number of fishing vessels decreased in 2004 by 1 649 from 93 257 vessels (744 335 G/T) in 2003 to 91 608 vessels (724 890 G/T). The decrease in number and gross tonnage was a result of the government's fleet reduction program.

### **Status of fish stocks**

Fishery resources in coastal and offshore waters are reported to be somewhat overexploited, particularly in commercially important species such as redlip croaker and Alaska pollock. Catches have been stagnant during recent years with no significant changes despite government policies such as the buy-back program to reduce fishing capacity.

Pelagic species such as anchovies, squid, mackerels, etc., have been found to be relatively abundant, while demersal species such as Alaska pollock have declined due to increased water temperatures.

### **Management of commercial fisheries**

Major management instruments in coastal and offshore areas include: maximum numbers to be licensed, minimum mesh size, fishing grounds, fishing seasons and size of fish, etc. As of 2004, the number of fishing licenses was 66 063 for 17 fishing types including coastal gillnet.

MOMAF (Ministry of Maritime Affairs and Fisheries) implemented a full-scale TAC system for 9 species in 2004, after an experimental period from 1999-2000, which covered four species (mackerel, sardines, jack mackerel, red snow crabs). To operate the TAC system, observers are employed to check the amount of catches at landing places and to collect biological data of the catches. The Korean government will gradually expand the number of species to be covered by the TAC system in order to manage fisheries on the basis of high-quality scientific data.

To effectively implement responsible fisheries, MOMAF introduced fisher-oriented self-management systems in 2001, under which 174 fishing villages were registered as of 2004. Through the system, fishery management focuses on not only preventing illegal fishing and the overexploitation of fishery resources, but also on stabilising incomes for fishermen.

### **Access arrangements**

In June 2001, both the Korea-China Fishery Agreement and the Korea-Japan Fishery Agreement entered into force. As a result, Korea has bilateral fishery management regimes under the UNCLOS and the EEZ systems with neighbouring countries. According to these bilateral agreements, only Chinese and Japanese vessels can gain access to the Korean EEZ on a reciprocal basis.

### **Management of recreational fisheries**

Recreational fishing is popular in Korea. Typically, recreational fishing boats of less than 10 GTs transfer anglers during the commercial fishing off-season. The companies that provide these services for fishing onboard must file with local governments according to relevant acts and regulations. The number of registered fishing boats recorded was 5 191 and the users of these registered boats reached 1 880 000 as of 2004.

### **Monitoring and enforcement**

Monitoring and enforcement are conducted by MOMAF, the Maritime Police and local governments, which together have 101 fishing guidance (and surveillance) ships, 268 patrol vessels, 13 helicopters, 1 aircraft, and 6 969 staff members as of 2004. It was reported that 3 673 national vessels and 443 foreign-flagged vessels violated Korean laws and regulations within the Korean EEZs in 2004.

In order to abide by the conservation and management measures adopted by Regional Fisheries Organisations, the government has been implementing an “Ordinance on Complying with the Conservation and Management Measures of International Fisheries Organisations”. In spite of the government’s efforts to eradicate illegal fishing activities, this issue still remains one of the top priorities in fisheries policy. Thus, the Korean government established a relevant national action plan in February 2005, based on the “International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing”, which was adopted at the 24th FAO/COFI in March 2001.

### **Multilateral agreements and arrangements**

The first APEC Ocean-related Ministerial Meeting was held in Seoul in April 2002. At the meeting, the APEC member economies adopted the “Seoul Ocean Declaration”, which signifies a major milestone for co-operation in the region to work towards the sustainable management of marine and coastal resources. Following this conference, the second APEC Ocean-related Ministerial Meeting was held in Bali, Indonesia in September 2005, where member economies including Korea, adopted the “Bali Plan of Action” aimed at healthy oceans and coasts for the sustainable growth and prosperity of the Asia-Pacific community.

Korea deposited the letter of acceptance concerning the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, in April 2003. Also, Korea has been actively participating in global efforts to promote sustainable use of fishery resources as a member of 16 international fisheries organisations such as ICCAT, CCSBT, IWC, IATTC and WCPFC.

In addition, the Korean government established its basic position for ratification of the United Nations Fish Stocks Agreement (UNFSA) in July 2005, and is currently undertaking due domestic procedures.

### **Aquaculture**

The Culture-based Fishery Promotion Act was established on 14 January 2002. In accordance with this Act, the government set up a 5 year-basic plan to promote culture-based fisheries. In particular, this Act introduces a fish-doctor system to provide expert consultations on fish diseases. Currently, the Korean government is implementing the Aquatic Animal Disease Management Act, in order to establish an efficient response system against cultivated fish diseases and also secure safety of imported fishery products.

The area devoted to mariculture in 2004 was 123 169 hectares, an increase of 1 316 ha (1.0%) from 121 853 ha in 2003. Production in 2004 was 917 715 mt (KRW 1 217 105 million [USD 1 058 352 thousand]), about an 11% increase from 826 245 mt (KRW 1 165 675 million [USD 1 013 630 thousand]) in 2003. The number of households in 2004 was 20 696, a 5.1% decrease from 21 814 in 2003. The major species in mariculture are bastard, jaco pever, oyster, short neck clam, sea mussel, laver, and sea mustard.

### **Fisheries and the environment**

To inspect the environmental impacts on fisheries and estimate the environmental capacity for sustainable fisheries, assessments for factors such as water quality, sediments, distribution of benthos and the status of the use of fishing grounds have been conducted regularly since 1999.

The Korean government has also been operating an effective system to provide early warning forecasts for red tides to mitigate the damages they cause to coastal and offshore fisheries and aquaculture.

In addition, an artificial reef project established 24 types of artificial reefs on 181 000 hectares by 2004, in order to restore fishery resources in an environment-friendly manner.

Another project, the quality seedling/releasing project, has been allotted KRW 21.4 billion (USD 18.6 million) by 2004. The work involves the release of high-value fry suitable for the local marine environment. The Ministry will also invest about KRW 158.9 billion (about USD 156 million) by 2010 to create marine ranches fitting individual sea environments.

Korea is currently managing seven designated special areas amounting to 34 385 hectares to produce shellfish for export. Apart from these areas, the Korean government designated ten fishery resource conservation zones, equivalent to 3 868 km<sup>2</sup>, and has made a significant effort towards the development of environment-friendly fisheries.

### **Government financial transfers**

Total government financial transfers in 2004 were KRW 647 billion (USD 562 million), a decrease of KRW 31.8 billion from KRW 678.8 billion in 2003. Most of the transfers in 2004 were used for fisheries infrastructure such as the improvement of fishing ports (KRW 336 billion [USD 292 million], 51.9%) and resource enhancement (KRW 71.2 billion [USD 61.9 million], 11%). Priority for the transfers has been accorded to the improvement of fish farms (KRW 60.8 billion [USD 52.8 million], 9.4%) as well as the modernisation of fish markets (KRW 44 billion [USD 38.3 million], 6.8%).

### **Post-harvesting policies and practices**

To ensure that seafood is safe and meets international quality standards, the HACCP (Hazard Analysis Critical Control Point) system has been introduced in accordance with the Fishery Products Quality Control Act, which was established in January 2001 through integrating laws controlling fish product quality. Currently, as a trial run, the HACCP system is operating for flatfish and eel species from 20 fish farms.

Meanwhile, the government introduced a traceability system in 2005, and is currently implementing a pilot project for 13 stocks including eel and trout.

Korea is also conducting research on feasibility of the domestic introduction of an eco-labelling system in line with the "Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries", adopted by the FAO in March 2005.

The total number of fish processing facilities in 2004 was 777. Among them there were 701 freezing and refrigerating facilities, 46 processing and handling facilities on ships and 30 others. The number and capacity of freezing and refrigerating facilities are increasing to meet rises in market demand.

## Markets and trade

### Markets

The scale of the Korean fishery market in 2004 was about 55.6 million mt. In terms of supply, total production reached 25.1 million mt (45.2%) while imports recorded 24.7 million mt (44.5%), showing a similarly equivalent ratio.

With regard to demand, domestic consumption recorded 39.2 million mt (70.4%) while exports showed 11.1 million mt (20%). The domestic consumption of fishery products rose to 48.7 kg in 2004 from 33 kg in 1998, indicating that annual consumption of fishery products per capita is steadily on the increase.

### Trade

Exports of fishery products were USD 1 279 million (406 435 mt) in 2004, an increase of 13.3% from 2003 due to increasing exports to Japan. Imports of fishery products in 2004 rose 15.3% in value to USD 2 261 million (1 280 915 mt) from 2003, due to increasing imports from China and Japan. The leading export items were tuna, oysters, squid and bastard, and import items were yellow croaker, roe, shrimp, hair tail and Alaska pollock. The main countries exported to were Japan (65.3%), the US (6.3%), and China (9.7%), and the leading countries imported from were China (40.2%), Russia (12.3%), and Japan (8.0%).

Korea concluded an FTA with Chile in 2002, and with Singapore and EFTA in 2005. Fishery trades between contracting parties are expected to expand, as the Korean government is currently in negotiation for free trade agreements with the USA, Canada, and Mexico.

## Outlook

The primary objective of fishery policy is to improve both fisher and consumer welfare by protecting and recovering fishery resources. For fishermen, the government focuses on the following: a) facilitation of the fishing fleet buy-back program; b) promotion of efforts to foster culture based fisheries and fishery resources; c) expansion of applicable species for the TAC system; d) amendment of fishery-related institutional regimes to harmonise with the fishermen-oriented self-management fishery system; e) prevention of marine pollution; and f) strengthening law enforcement activities to eliminate illegal fishing activities.

To protect consumers, the Korean government will emphasise the quality of fishery products, reinforce rules and regulations relating to seafood sanitation such as the expansion of the HACCP system, and devise a better system to avoid any unnecessary competition in fish markets.

The government will invigorate tourism projects linking fishing villages, fishing ports, and fishery resources to boost the incomes for fishermen. Korea will do its utmost to adapt itself to the ever-changing fishing environment and share in international efforts for the optimum management and sustainable use of marine resources.

PART III  
*Chapter 22*

## Mexico

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## Main characteristics of the Mexican fishing sector

Fishing is a very important activity and contributes significantly to the national economic environment. Fishing is also an important food source for the Mexican population. Likewise, there are major input suppliers to the fishing industry that also generate economic growth. The fishing industry contributes significantly to foreign currency due to the high commercial value of product sales. At the fishing community level, fishing activities have become a fundamental income element for major population groups, as well as driving regional economic development.

Mexico has about 11 500 km of shoreline, a 3 million square km Exclusive Economic Zone (EEZ) and over 2.9 million hectares of inland waters, including 1.6 million lagoons. It also is privileged in its natural endowment due to the surrounding oceanographic phenomena that enhance biodiversity, both in the sea and inland waters.

The regulatory framework for fisheries management covers regulations regarding production systems (method and fishing gear) with access limitations through fishing effort control, limits on the amount of fishing, fishing zones and closed seasons. There are fishing quotas for some species.

Total fisheries production in 2004 was 1 483 220 metric tonnes (mt) (live weight) and in 2005, 1 522 930 mt. On average, 84.6% was from capture fisheries and 14.4% from aquaculture. Main fisheries resources are tuna, shrimps, sharks and sting ray, squid, lobster, clams, oyster, and fresh water grunt (“mojarra”). In 2005, the trade balance registered a USD 159.9 million surplus. Main export markets by volume were the United States, Japan, and Spain. Shrimp, tuna and seaweeds are the main species exported.

In aquaculture, actions to promote and stimulate high yield industrial aquaculture were taken as well as actions to support rural aquaculture, due to its social importance. In 2005, production reached 228 051 mt (live weight) with shrimp, grunts (mojarra) and oyster being the major species.

The Mexican government provides financial support to the sector through a number of programs overseen by CONAPESCA and SARGARPA. In 2004, financial transfers amounted to MXN 1 696 million (USD 150.4 million), most of which was used for cost reducing programs, in particular reducing the cost of fuel used in the harvesting sector. Of the total amount of transfers, MXN 359 million (USD 31.8 million) was used for general services. Transfers represent (2003 figure) 19% of the value of production of the fisheries sector.



## Mexico – Summary statistics

Figure III.22.1. **Harvesting and aquaculture production**

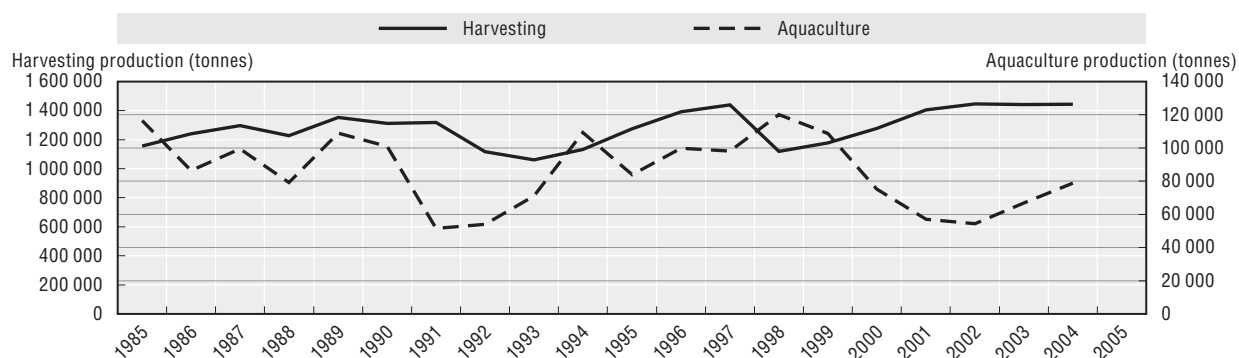


Figure III.22.2. **Key species landed by tonnage in 2004**

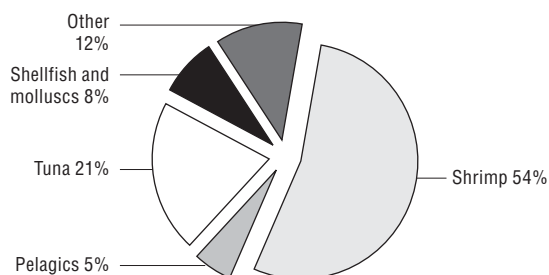


Figure III.22.3. **Trade evolution**

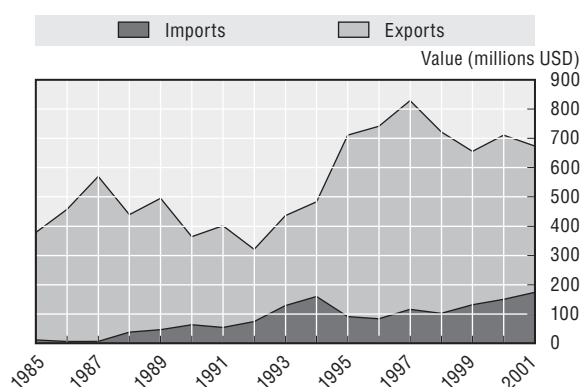


Figure III.22.4. **Evolution of government financial transfers**

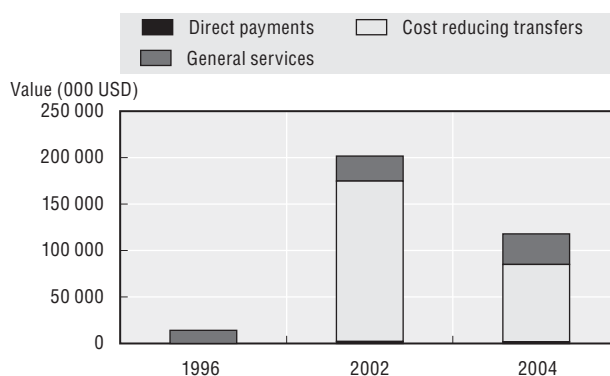


Figure III.22.5. **Production profile**

	1996	2004
Number of fishers	235 345 <sup>1</sup>	255 248
Number of fish farmers	23 505	23 497
Total number of vessels	77 019	91 608
Total tonnage of the fleet	224 749	724 980

1. Data in 1997.

Source: Figures III.22.1 and III.22.3: FAO; Figures III.22.2, III.22.4 and III.22.5: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The National Commission for Aquaculture and Fisheries (CONAPESCA) is the federal body in charge of managing fisheries and aquaculture resources in the country. This responsibility is also shared with state governments. The main legal instruments are the Fishing Act and its Regulations, Official Mexican Standards (NOM), and the Fishery National Charter, all of which create the juridical general framework that governs fisheries and aquaculture activities.

Fisheries activities involving living marine resource exploitation and utilisation are regulated under Article 27 of The Political Constitution of the United States of Mexico, and mainly by the Fishing Act and its Regulations published in the Official Gazette on 22 June and 25 July 1992, respectively. The Act and its Regulations have, *inter alia*, the purpose of ensuring fish resource conservation, exploitation, and rational utilisation.

Fisheries and aquaculture development in federal jurisdiction waters are managed through permits and concessions. Permits are issued for a period of four years and concessions to capture fisheries for up to twenty (20) years and for fifty (50) years in aquaculture. These concessions can be extended.

The Fishing Act does not authorise licenses to foreign vessels to perform fishing operations within the Mexican EEZ. Foreign participation can only be through joint venture enterprises, legally registered under Mexican legislation. Foreign participation cannot exceed 49% of corporate capital. In enterprises that are dedicated to aquaculture, processing or commercialisation, foreign investment can be up to 100%.

Terms and conditions for different species utilisation are established in the Official Mexican Standards (OMS). OMS specifies species, protected species, fishing seasons, authorized capture systems and its characteristics (methods and equipment), operating conditions, minimum sizes and weight, fishing quotas and verification processes. Currently, there are 27 Official Mexican Standards in operation regarding main marine species as well as 3 Official Mexican Standards (NOM) related to health and sanitary aquaculture measures.

Research project development during 2004-05 will contribute to decisions regarding suitable regulations about fishery species and their status. Other management tools used for fishing included effort limitation which is applied to specific fisheries based on the number of permits issued and permanent or temporary closed seasons.

### Capture fisheries

During 2004-05, the fishery sector contributed around 0.14% of Mexico's GNP. In 2004, fish production amounted to 1 463 268 mt (live weight); in 2005 this was 1 522 930 mt. It is estimated that, with current trends, production is now around 1.5 million mt from both aquaculture and capture fisheries production.

Regarding fishing fleets, a small decrease can be observed as a result of the Shrimp Fleet Removal Program. In 2004, the fleet consisted of 106 459 vessels and in 2005, 106 259 vessels. Around 3% of the fleet consists of large vessels (with 10 mt or more of storage capacity), and of these, 66% are for shrimp fisheries, 7% tuna fisheries, 3% sardine and the remaining 24% dedicated to other species.

### **Management instruments**

During 2004 and 2005, management measures were oriented towards effort reduction (vessel numbers authorized to fish), restrictions on destructive practices or those harmful to the environment. Quotashares have been implemented for certain species, as well as protected areas, temporary closed seasons, minimum sizes, and provisions regulating fishing gears and incidental capture.

Shrimp fishery temporary closed seasons were implemented for all marine shrimp species in lagoons, bays and estuaries in the Pacific Ocean, Gulf of California, and Caribbean Sea. Also, a Pacific Ocean Shrimp Fishery Management Plan was published.

The Official Mexican Standards (NOM) projects were reviewed and updated in order to regulate systems methods and those capture fishing techniques banned in Mexican jurisdiction waters. The main objective was to induce species selection and avoid negative impacts on resources, habitats and ecosystems.

Regarding fleet capacity, the Shrimp Vessel Voluntary Removal program has been implemented. Its purpose is to reduce fishing effort on this fishery. Since 2004, 216 permits have been cancelled and another 57 will be cancelled in 2006.

Also, work on a preliminary project to modify *Normas Oficiales Mexicanas* (NOM) (Mexican Official Standards) for small pelagic utilisation is on-going. The purpose is to implement precise provisions on minimum sizes, fishing effort, and by-catch for Monterrey sardine, piña, crinuda, bocona, japonesa, as well as anchovy species, and mackerel.

As for the Mexican tuna fish fleet operating in the Pacific Ocean, joint provisions for a multi-annual program for tuna fish conservation with the Inter American Tropical Tuna Commission (IATTC) framework, have been established. This includes choosing one of the two closed season periods

### **Management of recreational fisheries**

The National Commission for Aquaculture and Fishing is the entity responsible for evaluating and administrating recreational fishing resources and their utilisation, and implementing specific regulations and surveillance.

Sport fishing is practiced with authorised fishing gears, as well as specific characteristics within 50 miles of the coastal zone. Highly migratory species reserved for sport fishing are Blue marlin (*Makaira mazara*), striped marlin (*Tetrapturus audax*), black marlin (*M. indica*), short needle fish (*T. angustirostris*), sail fish (*Istiophorus albicans*) and sword fish (*Xiphias gladius*), dolphinfish (*Coriphaena* spp.), shad (*Megalops atlanticus*) and rooster fish (*Lachnolaimus maximus*).

With the purpose of strengthening sport fishing, an Action Plan titled, “the Sport Fishing Development Integrated Strategy”, was implemented. This aims to achieve rational utilisation and optimal and sustainable activity. Based on scientific research, maximum harvest limits, capture size and weight per zone are established. The promotion of recreational fisheries has shown its first results as the number of permits issued increased from 235 549 in 2004 to 383 024 in 2005, with an approximate value of USD 60 403 462 and USD 55 410 046 for the two years respectively (the decrease in the 2005 figure can largely be explained due to exchange rate changes between the peso and dollar).

### **Monitoring and enforcement**

CONAPESCA is in charge of Fisheries Inspection and Surveillance. In addition to the Fishing Act and Regulations covering monitoring and surveillance, there are other laws which have direct impact, including the Navigation Law, Ports Act, Mexican United States Political Constitution, Ecology Balance and Environmental Protection General Law.

Mexico has reinforced monitoring, control and surveillance through a number of actions. Greater control has been instituted on the granting of permits and concessions. The National Fishing Registration vessels inventory, in which concessions and permits owners are listed, established who has the proper authorisations to perform fishing activities.

Starting in 2005, a Vessel Monitoring System (VMS) program applied to fishing vessels was implemented and, at present, a total of 1 495 devices (VMS) have been installed; 1 259 in the Mexican Pacific Ocean and 236 in the Gulf of Mexico.

The Observers Program has continued and 100% of the tuna fishing and shark fleet that fish in the Pacific Ocean take on board a scientist as an observer. Also, fishing cruisers for tuna fish with long line nets in the Gulf of Mexico have an observer on board.

### **Multilateral agreements and arrangements**

Mexican international fishery policy promotes the establishment of bilateral and multilateral co-operation regarding technological, scientific, economic and commercial relations. Also, within the APEC and FAO framework, Mexico has been actively participating in work focused on creating an Aquaculture Network in the Americas (ANA). The purpose is to work as a regional mechanism to support aquaculture sector development in America. Mexico has offered to host the headquarters.

## **Aquaculture**

Aquaculture development is one of the priorities of Mexico's fishery policy. Changes within the legal framework have been mainly oriented towards favouring culture activities for different species, some of them with a high commercial value like in shrimp culture.

Aquaculture in Mexico represents a real and important alternative to broaden food supply in Mexico. It contributes to food security, foreign currency contribution, foments regional development and diminishes pressure on wild fish resources, mainly in coastal fishing. This activity currently represents over 12% of national production. From a social point of view, rural aquaculture favours community settlements on their own land; strengthening self consumption production capabilities and initiating small regional markets that contribute to family income.

A Rural Aquaculture Program has been implemented. Its main objective is to develop small scale investment projects through economic support for producers located in poor areas. Creating competitive and profitable aquaculture production units will contribute to improved social and economic conditions within rural sectors. The support given to producers allows them to improve conditions regarding basic infrastructure and equipment to develop and strengthen rural production units and use efficient technologies, which subsequently translate into higher yields and improved quality food product production.

In 2004, MXN 77.3 million (USD 6.85 million) were allocated to support 1 206 projects, mainly for equipment, infrastructure, and input improvement. During this period, 819 communities and 401 municipalities were assisted, directly benefiting 17 787 tilapia,

catfish, trout, white fish, ornament fish, bass, oyster and shrimp producers. In 2005, MXN 77.2 million (USD 7.09 million) were allocated to 1 181 production units, in which it is expected to obtain 10 924 mt of production with an estimated value of MXN 166 million (USD 15.24 million) and around 4 628 jobs. These measures supported 11 872 families and 847 communities received benefits. Starting in 2006, resources and implementation of this program have been transferred to state governments; this will allow more attention to the specific needs of each state.

In 2004, there were 2 698 farms with a production area of 67 526 hectares. Of these, 991 produced trout, 767 shrimp, 631 tilapia, and 113 carp, among others. Of these farms 2 453 are ponds, 112 cages, and 20 canals. In 2005, production increased to 238 081 mt.

## Government financial transfers

Within the Country Alliance Program framework, regulations were established regarding productive improvement and fishing chain integration. Chapter 17 of the program refers to Aquaculture and Fishing Programs that grant support to the national fishing sector.

From 2003 to 2006, 1 127 projects and actions with a cost of MXN 2 249 million (USD 204.7 million) were implemented. Support given to production projects created 14 000 direct jobs, benefiting 48 000 families.

Financial assistance was provided through the Programa Alianza Contigo and Programa de Inversion en Materia de Obra Publica. MXN 818 million (USD 75.1 million) was provided under this programme in 2005 for projects related to the development of production projects and action plans, infrastructure, aquaculture support and effort reduction. A recent development has been the vessel retirement scheme. In 2005, 222 shrimp vessels were retired under the scheme.

A major program is the marine diesel subsidy program, which between 2002 and 2004 amounted to MXN 1 780 million (USD 164.96 million).

Finally, the FIRA-FOPESCA provided support to the tune of MXN 1 575 million (USD 145.97 million) in 2003. Money under this program is increasingly related to small scale fleet and aquaculture. The BANCOMEXT, which is Mexico's foreign trade bank, provides assistance to exporting companies (mainly loans).

## Outlook

Mexico will work towards strengthening its competitive position, *inter alia*, through the work of the Product System Committee that plans the development of fishing activity in the short, medium, and long term. The integration of production and organisation in each value chain element is important. It will also be important to further develop management skills, technical capabilities and projects regarding the organisation and implementation of strategic projects.

National per capita consumption will be increased through promotion and consumer campaigns. Measures will be supported by implementing actions to achieve the correct balance between national supply and demand.

Additional training, oriented towards human resource capacity (producers and technicians), will ensure application of best practise in production processes, management, financing, and commercial skills.

The Alianza Program will continue to support capitalisation in this sector, through mechanisms incorporating resource recuperation (financing). The Aquaculture and Fishing Program will continue to promote resource federalisation within this program, with a view to having them implemented by state governments in co-ordination with SAGARPA delegations.

Increased resources will be allocated to Rural Aquaculture National Programs, with a view to achieving greater national coverage.

Finally it will be important to continue to establish vessel monitoring and control through satellite devices, and in this respect CONAPESCA will work determine a Mexican Official Norm NOM062-PESC-2005 to utilise Monitoring Satellite Systems for Fishing vessels. Currently, this is under public consultation.

PART III

*Chapter 23*

**New Zealand**

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## Main characteristics of the New Zealand fishing sector

New Zealand's seafood industry sustainably harvests approximately 750 000 metric tonnes (mt) greenweight (live weight) from wild fisheries and aquaculture each year. The value of this harvest ranges from NZD 1.2-1.5 billion per annum, of which the aquaculture industry contributes about NZD 200 million per annum. Seafood exports consistently rank as New Zealand's fourth or fifth largest export earner. Domestic seafood sales are approximately NZD 150 million annually.

The Ministry of Fisheries is responsible for managing New Zealand's fisheries. It focuses on maximising the value New Zealanders obtain from the sustainable use of fisheries and protection of the aquatic environment. This goal sets the policy direction for fisheries management in New Zealand. The quota management system (QMS) provides for the management of commercial fisheries on the basis of Individual Transferable Quotas (ITQ). Restrictions are placed on the amount of quota that can be held by any one person, including their associates. These range from 10% for some species to 45% for others.

Most commercial fishing is managed under the QMS. 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 allowances 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.

Aquaculture is an important contributor to New Zealand's economy, constituting around 20% of total fisheries value. Aquaculture is based primarily on the farming of greenshell mussels, which is the second largest seafood export item. Other important farmed species include pacific oyster, abalone and salmon. In January 2005, aquaculture reforms integrating coastal planning, aquaculture and fisheries management came into effect. The reforms provide regional councils with greater powers to manage and control the staged development of aquaculture, by requiring new marine farm developments to take place within clearly defined areas called Aquaculture Management Areas (AMAs). The new legislation has also streamlined the application and environmental assessment process for new marine farms.

The New Zealand government does not subsidise the fishery sector, but recovers costs from the commercial fishing industry. Total net transfers to the industry amounted to NZD 53 million, all of which concerned general services and a cost recovery element of NZD 31 million.

Approximately 90% by value of New Zealand's seafood production is exported, with an estimated 70% of export returns from value added to seafood post harvest. Export sales were NZD 1.27 billion in 2004 and NZD 1.26 billion in 2005.

The New Zealand fisheries sector remains under economic pressure due to a strengthening New Zealand dollar against the US dollar and a continued increase in the cost of fuel. This economic pressure has led the industry to further adapt and evolve its operations to maximise economic return.



## New Zealand – Summary statistics

Figure III.23.1. **Harvesting and aquaculture production**

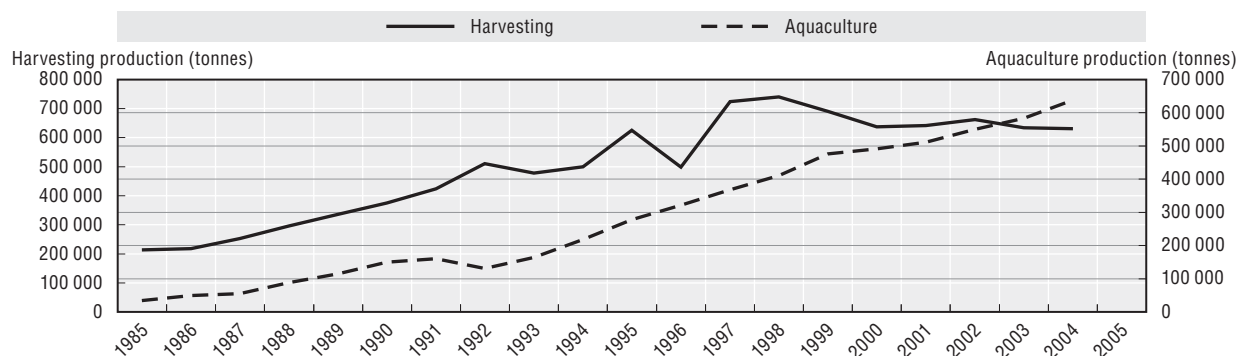


Figure III.23.2. **Key species landed by tonnage in 2005**

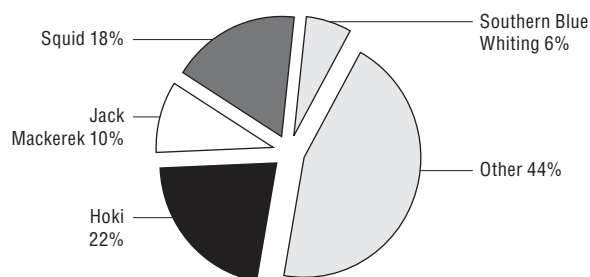


Figure III.23.3. **Age structure of fishers**

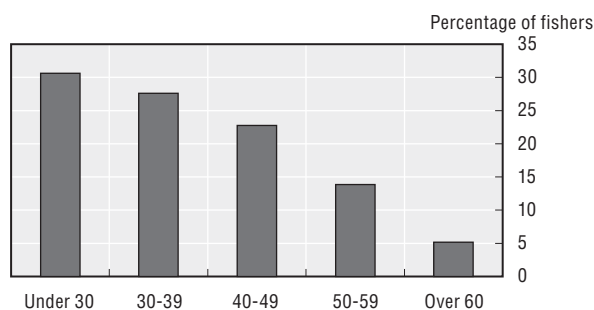


Figure III.23.4. **Evolution of government financial transfers**

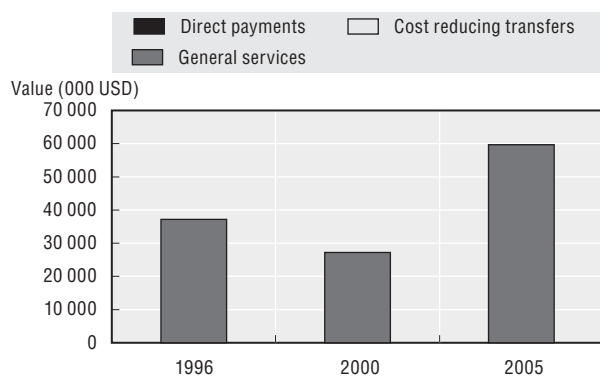


Figure III.23.5. **Trade evolution**

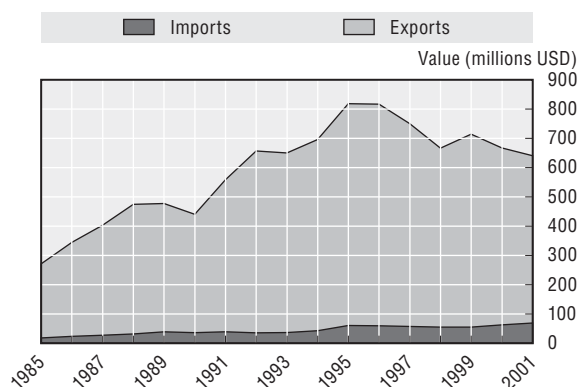


Figure III.23.6. **Production profile**

	1996	2005
Number of fishers	4 918	1 672 <sup>1</sup>
Number of fish farmers	n.a.	641 <sup>1</sup>
Total number of vessels	2 126 <sup>2</sup>	1 654
Total tonnage of the fleet	n.a.	172 644

n.a.: Not available.

1. Numbers in 2004.

2. Vessels in 1998.

Source: Figures III.23.1 and III.23.5: FAO; Figures III.23.2, III.23.3, III.23.4 and III.23.6: OECD.

## **ADDITIONAL DETAILS (see also [www.fish.govt.nz](http://www.fish.govt.nz))**

### **Capture fisheries**

Three objectives contribute to the overall New Zealand goal for the sector; to protect the aquatic environment, to enable people to realise the best value from the sustainable and efficient use of fisheries, and to ensure credible fisheries management. Initiatives in 2004 and 2005 aimed at achieving these outcomes included:

- a) Developing an objectives-based approach to fisheries management through “fisheries plans”. These will state objectives for a fishery and the implementation strategies to achieve those objectives, including research, regulations, and compliance.
- b) Developing a Strategy for Managing the Environmental Effects of Fishing (SMEEF) with associated tools to deliver on the SMEEF, for example, the National Plan of Action for seabirds and New Zealand’s Benthic Impact Strategy.
- c) Establishing a network of Marine Protected Areas to protect New Zealand’s different marine habitats and ecosystems
- d) Commencing work with other government agencies to develop an integrated and consistent Oceans Policy for New Zealand.
- e) Participating and negotiating in two new Regional Fisheries Management Organisations- the South Pacific (SPRFMO) and the South Indian Ocean Fisheries Agreement (SIOFA).
- f) Participating in the World Trade Organisation negotiations to end fishing subsidies and negotiating a free trade agreement with China.
- g) Reforming aquaculture management, removing the moratorium on applications for new marine farms, and finalising the Maori aquaculture settlement.
- h) Improving engagement between the New Zealand government and commercial, recreational and customary interests through:
  1. joint working groups with industry dealing with issues such as strategic compliance, deemed values, and the paua fishery;
  2. regional recreational fisheries forums and the recently established recreational fishing ministerial advisory committee;
  3. customary Maori regional forums;
  4. enacting and implementing the Maori Fisheries Act 2004 which establishing a private trust to allocate the assets transferred from the crown through the Maori fisheries settlement;
  5. upgrading the New Zealand government’s monitoring and surveillance capability, targeting poaching and black-market for paua and rock lobster, and gaining a more accurate picture of the effectiveness of the current compliance regime;
  6. making publicly available information on the status of fisheries and launching a new Ministry of Fisheries website.

### **Management**

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 cases<sup>1</sup> 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.

The Annual Catch Entitlement (ACE) represents the amount of a particular species in a particular area that a fisher is allowed to catch in a particular fishing year without incurring a penalty. Each person's ACE is equal to his or her share of the TACC as determined by their quota ownership and can be freely traded. For all stocks in the QMS, the commercial fisher must balance the catch with ACE or pay the relevant deemed value.

A commercial fisher is required to have an appropriate fishing permit before catching fish, aquatic life or seaweed for sale. Permits are not transferable and to fish without one is a serious criminal offence. Special permits can be issued for research, education and other approved purposes.

Commercial fishing vessels must be registered under the Fisheries Act 1996. Vessel numbers are not restricted. New Zealand commercial fishers can charter foreign flagged fishing vessels to harvest fish. To do so, consent must be given by the Ministry of Fisheries and the vessel must be registered.

The most significant recent change in fisheries management is the development of an objective-based approach to fisheries management using "fisheries plans". Fisheries plans are aimed at:

- i) incorporating the experience and views of stakeholders;
- ii) providing transparency in fisheries management;
- iii) providing a strong link between objectives for a fishery and management – better integrating science, policy, compliance, and other services in fisheries management; and
- iv) specifying the desired performance levels in a fishery through the use of fisheries management standards (i.e. both environmental and stock status).

There are about 130 species fished commercially in the New Zealand Exclusive Economic Zone (EEZ). Seventy per cent of wild fish is caught in deepwater. Major species are squid, hoki, ling, oreo dories, orange roughy, and silver warehou. Important inshore and shellfish species include spiny rock lobster, paua, and snapper.

As at 1 October 2005, there were 92 species and 592 fish stocks in the QMS. Considerable research effort goes into collecting data that can be used to assess the status of the most important stocks. There are 93 stocks of known status comprising over 70% of the total landed catch. Over 80% of these stocks are at, or near, target level. It was estimated (for the 2004-05 fishing year) that:

- 54 stocks were almost certainly near or above their target biomass (usually  $B_{msy}$ ).
- 22 stocks were probably near or above their target biomass.
- 6 stocks were possibly near or above their target biomass.
- 11 stocks were almost certainly below their target biomass.

While the status of many of the small fisheries is unknown, they only account for 28% of the total landings.

In 2004, there were 9 724 people employed in the fishing sector; 1 672 in harvesting, 7 411 in:

### **Recreational fishing**

Basic legal rights for recreational fisheries concern access rights to fish for personal use. Recreational interests are recognised in the Fisheries Act 1996, which establishes an allowance for recreational fishing within the TAC. The public access right is subject to restrictions under the recreational fishing regulations, such as daily bag limits, method restrictions, size limits and seasonal closures. Recreational catch cannot be sold. There are no reporting requirements for recreational fishing. The main recreational species are snapper, blue cod, kahawai, rock lobster, paua and scallops.

### **Customary fishing**

In 1992, an Act of Parliament recognised that the Crown has an obligation to recognise Maori customary non-commercial fishing rights and management practices. The Crown is also obliged to consult and develop policies with *tangata whenua* to help recognise, use and management practices of Maori in the exercise of non-commercial fishing rights. The Fisheries Act provides all customary (commercial and non-commercial) fisheries management tools and processes that are available to Maori in recognition of customary rights.

Maori have become the biggest player in New Zealand's commercial fishing industry, controlling well over half of all commercial fishing quotas. Maori commercial fishing assets have so far been managed by a central commission that has overseen a significant increase in the asset base since the 1992 settlement. This process is changing with the introduction of a Maori Fisheries Bill as a culmination of a process settling Maori claims to commercial fishing.

At the time of the aquaculture reforms, a settlement was negotiated with Maori for grievances regarding commercial aquaculture interests since 1992.<sup>2</sup> Under the Maori Commercial Aquaculture Settlement Act 2004, Maori have the rights to 20% of marine farming space that has been developed since September 1992.

In June 2003, the Treaty of Waitangi Fisheries Commission's proposal for allocating fisheries settlement assets to iwi for the benefit of all Maori, was accepted. In September 2004, the Maori Fisheries Act was passed by Parliament. It contains provisions relating to:

- governance regimes for 58 iwi or iwi groups;
- the allocation and distribution of three classes of assets – quota, cash and company shares;
- establishing a new organisation, Te Ohu Kai Moana (TOKM) – a trust with responsibility for ensuring assets are distributed to iwi and that the benefits of the settlement can ultimately benefit all Maori;
- two further trusts administered by TOKM – one to benefit Maori living away from traditional areas, and the other to develop freshwater fisheries; and
- establishing a commercial asset holding company, Aotearoa Fisheries Limited (AFL) to manage the commercial company assets.

Maori may also seek the establishment of taiapure-local fisheries areas for areas of special significance to *tangata whenua*. Once a taiapure-local fisheries area has been established, a management committee is appointed on the basis of nominations from the local Maori community. Taiapure management committees may recommend the making

of general fisheries regulations to the Minister of Fisheries for the management of fish within the taiapure area, including regulations relating to commercial, recreational or customary fishing. Seven taiapure-local fisheries areas have been established to date.

### **Enforcement and surveillance**

In the past few years New Zealand has undertaken projects to upgrade its ability to perform monitoring and surveillance in its EEZ and the Pacific region. By the end of 2007, the New Zealand Navy will have seven new vessels available for maritime patrol. A project is also well underway to upgrade the capabilities of the New Zealand's fleet of P3 Orions that patrol New Zealand's EEZ. The Ministry of Fisheries has established specialist multidisciplinary teams, including covert teams, to target serious offending.

The Ministry of Fisheries is working in many areas to improve its ability to assess the effectiveness of its monitoring and enforcement (compliance) regime. Work has started on a project to develop a methodology to estimate the extent of illegal fishing. The Ministry aims to take 2 to 3 years to develop a reliable, robust and statistically defensible generic methodology that can then be applied to specific fisheries to estimate the volume of fish removed illegally.

### **Multilateral arrangements**

New Zealand is a member of the Western and Central Pacific Fisheries Commission, the Commission for the Conservation of Southern Bluefin Tuna, and the Commission for the Conservation of Antarctic Marine Living resources. During 2004 and 2005, New Zealand ratified the Western and Central Pacific Fisheries Agreement (ratified in 2003 but the convention came into force in June 2004), accepted the Agreement to Promote Compliance with International Conservation and Management Measures by Vessels Fishing on the High Seas (FAO Compliance Agreement) and ratified the Niue Treaty on Co-operation in Fisheries Surveillance and Law Enforcement in the South Pacific Region.

Work also focussed on developing two Regional Fisheries Management Organisations (RFMOs) i.e. the South Pacific Regional Fisheries Management Organisation<sup>3</sup> and the South Indian Ocean Fisheries Agreement.

## **Aquaculture**

Aquaculture is based primarily on the farming of greenshell mussels. In 2004, exports of greenshell mussels were valued at NZD 141 million. In 2005 this was NZD 167 million, making them the second largest seafood export after squid. Techniques are being trialed to enable a variety of new species to be farmed. These include snapper, scallops, kingfish, mullet, seaweed, rock lobster, fresh water crayfish, sponges, seahorses, and sea urchin.

A total of 898 farms are operating in New Zealand, 645 in the mussels sector, 230 growing oysters and 23 farming salmon. Also in 2005, the value of production reached NZD 298 million, NZD 204 million of which was mussels. Regional councils are required to consider the impact that marine farms have on the aquatic environment, including the sustainability of fisheries resources, when they are providing for aquaculture under regional coastal plans.

## Fisheries and the environment

The Fisheries Act establishes strong environmental obligations, including requirements to avoid, remedy, or mitigate any adverse effects of fishing on the aquatic environment. New Zealand continues to take steps to manage the adverse effects of fishing on the aquatic environment. A Strategy for Managing Environmental Effects (SMEEF), released in August 2005, provides for the co-ordination of the various environmental obligations under New Zealand legislation. The SMEEF should assist New Zealand in meeting its international obligation to implement an ecosystem approach to fisheries. As part of implementing the SMEEF over the coming year, the Ministry of Fisheries will be working on limits surrounding acceptable environmental effects of fishing.

In January 2006, the New Zealand government released the Marine Protected Areas Policy Statement and Implementation Plan (MPA Policy). The objective of the MPA Policy is to “protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand’s marine habitats and ecosystems”.

The New Zealand Minister of Fisheries recently announced a proposal by the fishing industry to close 30%, or 1.2 million square kilometres of New Zealand’s EEZ, and some areas beyond the EEZ, to bottom trawling and dredging. The proposed areas are based on the Ministry for the Environment’s Marine Classification System and have had little or no bottom trawling or dredging in the past. The Fisheries Minister is currently undertaking public consultation.

In 2004, the Ministers of Conservation and Fisheries released New Zealand’s National Plan of Action to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA – Seabirds). The plan sets out a strategic framework to reduce seabird by-catch to sustainable levels, and to continue to reduce seabird by-catch as far as possible. The NPOA – Seabirds establishes agreed codes of practice setting voluntary and regulatory limits on the number of seabird deaths permitted in any one year; placing controls on fishing methods harmful to seabirds and providing for a future legal response if fishing vessels fail to fulfil their responsibilities.

Specific measures are in place to manage the effects of fishing on a number of marine mammal species. These include a by-catch limit for New Zealand sea lions in the southern squid fishery, an industry code of practice designed to reduce by-catch of New Zealand fur seals in the hoki fishery and restrictions in some inshore areas to reduce by-catch of Hector’s dolphin and Maui dolphins.

## Government financial transfers

The New Zealand government does not subsidise the fishery sector, but recovers costs from the commercial fishing industry. Total net transfers to the industry amounted to NZD 53 million, all of which concerned general services and a cost recovery element of NZD 31 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:

- 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 applies to holders of permits, leases or licenses.
- Permit holders levy: applies only to permit holders, and recovers costs related to access to fisheries, and processing of fishing returns.
- Licensed 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.

## Markets and trade

In 2005, squid overtook hoki as the highest value export species. The key export markets for New Zealand's fish products are the European Union (18%), the USA (17%), Japan (16%), and Australia (12%) followed closely by Hong Kong and China. Exports to the European Union have increased in recent times through the opening of new autonomous tariff quotas in the last quarter of 2003 – notably, exports of frozen fillets and blocks of hoki for processing.

The top five export earners and the revenue generated for 2004 and 2005 are shown in the table below.

Table III.23.1. **Top five fishery export earners in New Zealand**

Fishery	2004		2005	
	Tonnes	Export value NZD (million)	Tonnes	Export value NZD (million)
Squid	69 800	172	70 900	168
Hoki	51 000	174	42 800	152
Rock lobster	2 100	102	2 400	114
Orange roughy	6 000	90	5 000	70
Abalone/paua	800	52	700	51

Note: Please note that mussels have been removed because they are not generally a "capture" fishery.

## Outlook

New Zealand is at a turning point in the management of its fisheries resources. The development and implementation of fisheries plans is directed at improving opportunities for those who utilise fisheries resources to contribute to, and participate in, the management of the resource. The QMS remains the preferred system for managing New Zealand's fisheries. Improvements have been made to the QMS and the majority of stocks with sustainability and management concerns will be introduced into the QMS over time. Allocation rights in shared fisheries remain the most contentious issue domestically and developing a framework to address this issue will be important for New Zealand in the future.

An increased environmental focus in the management of fisheries has developed in recent years and is expected to continue developing. This parallels with increasing global focus on environmental issues and an environmentally aware New Zealand public with strong interests in the marine environment.

Internationally, New Zealand will be focussing on the development of new, and strengthening existing, RFMOs and other international fisheries bodies. New Zealand will also continue to promote the liberalisation of trade in fish products within the framework of international and regional bodies such as the World Trade Organisation (WTO).

### **Notes**

1. 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.
2. Those claims relating to interests prior to 1992 continue to be addressed on an iwi by iwi basis through the historical claims process run by the Office of Treaty Settlements.
3. Further details on: [www.southpacificrfmo.org/](http://www.southpacificrfmo.org/).



PART III

*Chapter 24*

**Norway**

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## Main characteristics of the Norwegian fishing sector

With a very long and protected coastline, the Norwegian fisheries and aquaculture sectors have some of the most productive fishing grounds among OECD countries. Capture fisheries produce 2.5 million metric tons with a total value at first hand of NOK 11.7 billion from a wide variety of species. Aquaculture production of Atlantic salmon and rainbow trout was an additional 645 000 tons in 2005, valued at NOK 13.4 billion.

The Ministry of Fisheries and Coastal Affairs is responsible for the fisheries and aquaculture industries, ports and sea transport infrastructure. The administrative measures applied to limit fishing effort in Norwegian fisheries are licences and annual permits, combined with Individual Vessel Quotas (IVQ). All commercial fishing by trawlers and purse seiners requires a license. Long-liners and coastal vessels are regulated through annual permits. Aggregated catch levels are controlled mainly through TACs, which are set annually and cover approximately 95% of the landed value of fish. Only active fishermen are permitted to own fishing vessels in Norway, but dispensations have been granted to allow some industrial corporations to vertically integrate into the catch sector.

Most of the key fish stocks in Norwegian waters are shared with other countries. TACs and national quotas for such joint stocks are determined after negotiations between the countries involved. The Norwegian part of the TAC is divided into quotas for each vessel group. Each vessel is regulated with Individual Vessel Quotas (IVQs) set at a level where the vessel is guaranteed its quota, or at a level that implies a moderate competition between vessels. Guaranteed IVQs mainly regulate vessels holding a licence or an annual permit while quotas that involve competition mainly regulate coastal vessels. The main instruments used to reduce the number of vessels in the offshore fleet have been decommissioning schemes and a quota-transfer system for ocean going vessels and larger coastal vessels called the Structural Quota System (SQS). The SQS was implemented in 2004 for the coastal fleet and in 2005 for offshore vessels.

The total number of commercial fishers in Norway was 14 785 in 2005 operating 7 721 registered vessels. The average age of the fishing fleet is high and increasing and was estimated to be 25.1 years in 2005. Of a total of 18 vessel groups that are included in the annual profitability survey of the Norwegian fleet, 16 showed a positive operating profit in 2005. Total operating profit reached NOK 1.6 billion in 2005.

All farming of fish, shellfish and sea ranching requires a license from the Norwegian authorities. For sea ranching and for sea farming of salmon and trout a system of limited entry exists. These limited licences are allocated through special allocation rounds. The main components of the licence consist of the right to produce specific species in a specific quantity at specific sites. Regulations also restrict the use of antibiotics in fish farming, deal with the handling and disposal of dead fish and instruct license holders to keep logbooks. There is still room for an expansion of the aquaculture industry along the Norwegian coast line. In 2005, there were 2 173 persons employed in the production of grow out fish, breeding stock and R&D of salmon and trout and 851 in the hatchery and juvenile production for salmon and trout.

## Norway – Summary statistics

Figure III.24.1. **Harvesting and aquaculture production**

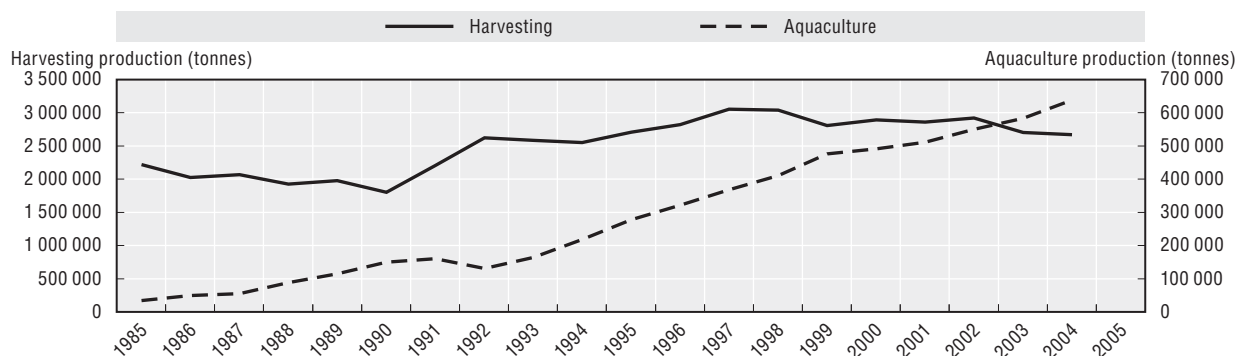


Figure III.24.2. **Key species landed by value in 2005**

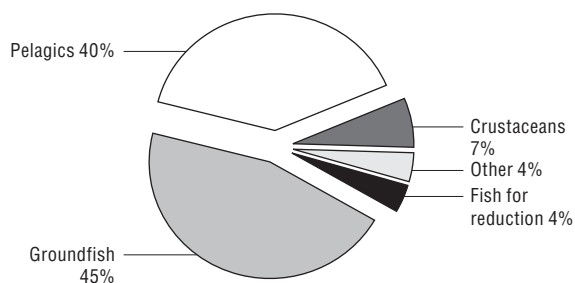


Figure III.24.3. **Age structure of fishers**

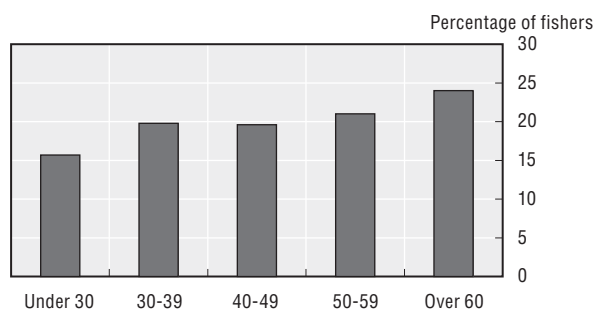


Figure III.24.4. **Evolution of government financial transfers**

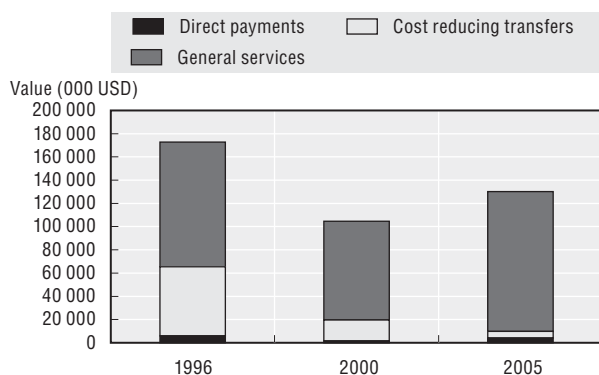


Figure III.24.5. **Trade evolution**

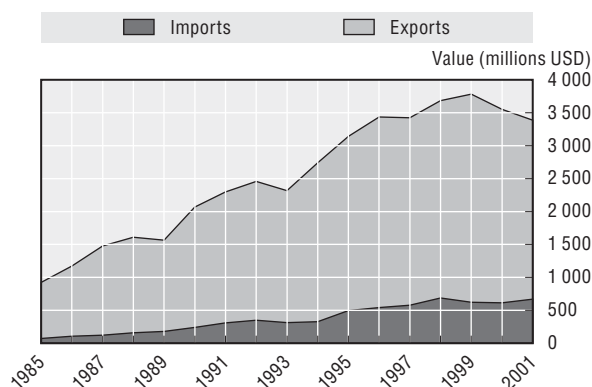


Figure III.24.6. **Production profile**

	1996	2005
Number of fishers	23 395	14 785
Number of fish farmers	4 650	4 203
Total number of vessels	13 932	7 721
Total tonnage of the fleet	340 913	370 651

Source: Figures III.24.1 and III.24.5: FAO; Figures III.24.2, III.24.3, III.24.4 and III.24.6: OECD.

## ADDITIONAL DETAILS\*

### Capture fisheries

#### *Production, fishers and fleet*

Preliminary figures indicate that total Norwegian landings, including seaweed, declined from about 2.7 million metric tons in 2004 to 2.5 million metric tons in 2005. Total first-hand value increased from NOK 10.4 billion in 2004 to NOK 11.7 billion in 2005. In 2003, the total first-hand value was NOK 8.9 billion. Increased groundfish prices made it possible to increase the value of landings.

Table III.24.1. **The percentage share of landed value by the Norwegian fishing fleet 2002-05**

	2002	2003	2004	2005
Groundfish species	47.4	49.6	49.0	48.3
Pelagic fish	43.9	39.5	41.2	44.3
Shellfish	8.4	10.6	9.5	7.1
Seaweed	0.3	0.3	0.3	0.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

The total number of commercial fishermen in Norway in 2005 was 14 785. This was a reduction of 772 full-time fishermen, while part-time fishermen increased slightly by 28 in the same period. The number of fishing vessels registered in the Register of Norwegian Fishing Vessels dropped from 8 187 vessels in 2004 to 7 721 vessels in 2005. In 2003 the number of vessels registered was 9 914 vessels. Removal of inactive fishing vessels from the Register of Norwegian Fishing Vessels and the introduction of an annual fee for registering vessels (introduced in 2004) are the main reasons for the reduction in the number of vessels in this register. The number of fishing vessels in operation was reduced from about 6 900 vessels in 2004 to about 6 400 vessels in 2005. The number of fishing vessels 8 metres and above operating on a whole year basis was reduced from about 2 050 vessels in 2003 to 1 900 vessels in 2004 and 1 700 in 2005.

The average age of the fishing fleet is high and increasing and was estimated to be 24.8 years in 2004 and 25.1 years in 2005. Seventy seven new fishing vessels were built in 2004 and the same number of new vessels in 2005. Nine new vessels were longer than 15 meters in 2004 and only 2 vessels were longer than 15 meters in 2005.

#### **External fisheries relations**

Consultations on bilateral fishing arrangements for 2004 and 2005 were held with Russia, the EU, Iceland, the Faroe Islands, and Greenland. These included exchanges of quotas. The objective of such agreements is to agree on total allowable catch (TAC) and a fair distribution of quotas to develop a reasonable balance in reciprocal fishing possibilities. Norway is also party to a trilateral agreement with Greenland and Iceland about Capelin as well as a coastal state agreement on blue whiting with Iceland, Faroe Islands, and the EU. Norway also participates in regional management commission in the Northwest Atlantic (NAFO) and Northeast Atlantic (NEAFC).

\* See also [www.fisheries.no](http://www.fisheries.no).

## Management

Most of the key fish stocks in Norwegian waters are shared with other countries. TACs and national quotas for such joint stocks are determined after negotiations between the countries involved. The Norwegian part of the TAC is divided into group-quotas. Each group quota is shared between vessels within the group. Each group is regulated either with Individual Vessel Quotas (IVQs) or maximum quotas. IVQs mainly regulate vessels holding a licence or an annual permit and maximum quotas mainly regulate coastal vessels in open access fisheries. Table III.24.2 lists TACs and national quotas in 2004 and 2005 for some of the most important species in Norwegian fisheries, agreed upon by Norway and other parties, specified by economic zone/area and by agreement.

Table III.24.2. **TACs and national quotas in 2004 and 2005 for some of the important species in Norwegian fisheries**

Species	The economic zone of or area	Agreement between Norway and	TAC (tons)		National quota (tons)	
			2004	2005	2004	2005
Cod	North of N62° N <sup>1</sup>	Russia	506 000	492 000	224 600	218 700
	North Sea	EU	27 300	27 300	4 114	4 114
	Skagerrak	EU	3 900	3 900	127	127
Haddock	North of N62° N	Russia	130 000	117 000	71 500 <sup>2</sup>	65 300 <sup>2</sup>
	North Sea	EU	77 000	66 000	14 435	13 918
	Skagerrak	EU	4 755	4 018	200	169
Saithe	North of N62° N		169 000	215 000	154 000	200 000
	North Sea	EU	190 000	145 000	93 800	72 400
Herring	North of N62° N <sup>3</sup>	4			470 250	578 500
	North Sea West of 4° W	EU	460 000	535 000	131 624	155 150
	Skagerrak	Sweden, Denmark	70 000	96 000	9 336	12 804
Capelin	North of N62° N	Russia				
	Iceland, Jan Mayen and Greenland <sup>5</sup>	Iceland, Greenland	985 000	210 000	103 047	33 481
Mackerel	North Sea, North of 62° N and west of 4° W	EU	446 961	344 562	148 728	114 437
Blue whiting	International waters	6				
Redfish	Greenland	EU			5 230	3 500
	NEAFC	NEAFC				
Shrimp	Skagerrak	Sweden, Denmark	10 710	10 710	4 991	4 991
	Greenland	EU			2 830	2 750
	NAFO	NAFO			1 985 <sup>7</sup>	1 985 <sup>7</sup>

1. Norwegian Coastal Cod (20 000 metric tons in 2004 and 21 000 metric tons in 2005) included.
2. Norwegian Coastal Haddock (5 000 metric tons) included.
3. Norwegian Spring Spawning Herring.
4. Due to disagreement regarding the allocation of the Norwegian Spring Spawning Herring stock, the states involved – EU, Norway, Iceland, Faeroe Islands, Greenland and Russia – have not yet adopted a management regime for this stock.
5. Quotas for the 2004/05- and 2005/06-seasons.
6. Due to disagreement regarding the allocation of the blue whiting stock, the states involved – EU, Norway, Iceland, Faeroe Islands, Greenland and Russia – have not yet adopted a management regime for this stock.
7. "Days at Sea".

The national quota of minke whales was set to 670 and 796 animals in 2004 and 2005 respectively. 34 vessels participated in the hunt for minke whales in 2004 and 31 in 2005. The quotas for harp seals in the Barents Sea were set to 10 000 in 2004 and also in 2005. In the areas around Jan Mayen, the quotas for seals were 25 300 in both years (both hooded and harp seals). In addition, there are quotas on coastal seals for recreational hunts only. 4 vessels participated in the commercial hunt for seals in 2004 and in 2005, 6 vessels participated in the hunt.

When minke whaling was resumed in 1993, all participating vessels were required to have an inspector onboard during whaling. Most inspectors were practicing veterinary surgeons. The inspection scheme thus resulted in considerable costs for the public purse as well as the individual whalers. In order to reduce costs, work commenced in 2001 on the development of a recorder, which would replace the inspectors to a great extent. In 2004, a provisional version of the recorder was introduced, while the number of inspectors was reduced at the same time. In 2005, all but 2 vessels were fitted with a voyage recorder (the "blue box"). In 2006, all vessels that participate in whaling should have a recorder fitted onboard. All vessels participating in the seal hunt were required to have inspectors on board to ensure that their hunting activities were performed in accordance with regulations.

The Norwegian input control system relates to vessels allowed to join the various fisheries and to persons who are allowed to own fishing vessels. A person must fulfill a number of criteria to be registered as a fisher. These criteria have been established to achieve the political objective that the ownership of fishing vessels and thus the right to exploit Norwegian fisheries resources shall be exclusively given to active fishermen. The law states that only active fishers can own the majority of the assets of a vessel. An example of this criterion is that fishers must have been participating in active fishing for more than three of the last five years in Norwegian fisheries in order to be entitled to vessel ownership. When this legislation is 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.

In 2005 a "Structural Quota System" (SQS) was introduced for the ocean-going fleet. This system replaced the Unit Quota System (UQS). The SQS scheme is much like the UQS. The SQS allows companies that own two or more ocean-going vessels with similar licenses to withdraw a vessel (the vessel must be scrapped) from the fisheries and to transfer permanently the quota to the other vessel. To avoid concentration of quotas, the SQS scheme is subject to certain limitations. The SQS was implemented in 2004 for the coastal fleet.

### **Regulatory instruments to manage overcapacity**

The main instruments used to reduce the number of vessels in the offshore fleet have been decommissioning schemes and a quota-transfer system for ocean going vessels and larger coastal vessels called the Structural Quota System (SQS). The SQS was implemented in 2004 for the coastal fleet and in 2005 for offshore vessels.

A second quota-transfer system has been developed and implemented as a temporary arrangement in the coastal fleet. Initially, vessels in selected coastal counties were allowed to use a system called the Quota Exchange System (QES). The QES allows two vessel owners to team-up and fish both quotas on one vessel for a limited period. After a short regional trial period, the arrangement was introduced for the entire coastal fleet from April 2004.

A new fund for the decommissioning of home-based fishing vessels up to 15 meters in length and holding annual permit(s) was established on 1 July 2003. The scheme is funded through a fee on the landed value of every Norwegian fishing vessel. The government has so far transferred NOK 52 million (NOK 17 million in 2003 and NOK 35 million in 2004) to the fund, estimated to about 50% of the contribution from the industry. A fee on a landed value of 0.35% for 2003 provided a contribution from the industry to the fund of NOK 17 million. The level of the fee was continued in 2004 and 2005. As for 2006, the fee has been reduced to 0.005% and the government has likewise reduced its contribution. As licenses of the scrapped vessels are withdrawn and redistributed to the remaining home-based vessels, the aim of the fund is to improve the profitability of the remaining vessels.

### **Technical regulations**

Regulations on minimum fish sizes, minimum mesh sizes, gear restrictions in certain fisheries, by-catch rules, discard bans and real time closures and opening of fishing grounds with a high intermixture of undersized fish, are the most important instruments in use in Norwegian fisheries to secure the sound management of marine resources. In the shrimp trawl fisheries north of 62° N, the use of sorting devices for gears is mandatory. The use of sorting grids in the cod trawl fisheries is mandatory within the Norwegian EEZ and the Protection Zone around Svalbard.

Advice from ICES in 2000 indicated that the stock situation for cod in the North Sea was critical. In the bilateral quota agreement for 2001 between EU and Norway it was agreed to implement measures to recover the stock and certain temporary measures were introduced. As from 2002, permanent regulations on mesh sizes in the trawl for demersal species, permanent closure of certain areas for fishing with trawlers with small mesh sizes (industrial trawl) as well as other measures, were introduced. The parties have agreed to introduce additional technical regulations (closure of fishing grounds) if necessary.

The Directorate of Fisheries has, since 1980, conducted a program of removing nets and other gear on an annual basis. The areas that are cleared are selected after consultations between the fishing industry and the fisheries authorities and based on information from the fishermen about loss of nets. In the period 1983 to 2005, 10 814 nets were retrieved. In addition, a substantial amount of anchors, grapnels, trawl wires and line were collected. Most nets are lost in deeper fishing areas between 200 to 800 meters, but also in cod fisheries in relatively shallow waters.

In this respect, the results from an EU-funded project, Fantared 2, in which the Norwegian Institute of Marine Research participated, showed that the chance of losing nets increases with depth and that nets lost in deep waters continue to “fish” for several years, whereas nets lost in shallow waters (0-200 meters) stop fishing within months. The amount of fish caught in “ghost fishing” is difficult to estimate, but may have an impact. For instance, in 2002, 11 tons of fish were recorded in retrieved nets, mainly Greenland halibut, but also some red fish and ling.

In May 2004, new technical regulations were introduced to protect the coastal cod stock. Amongst these are regulations aimed at reducing the loss of nets and a duty on fishers to report loss of nets and to try to retrieve lost nets.

### **Recreational fisheries**

Recreational fisheries (sports fisheries) at sea are regulated by the Act of 3 July, 1983 relating to Salt-Water Fisheries. The Act gives the authorities the ability to regulate both the sports fisheries by foreign tourists as well as the recreational fisheries by Norwegian citizens. The recreational fisheries by Norwegian citizens are regulated by gear restrictions such as handlines, rods, nets with a total length of 210 meters. longlines with maximum 300 angles and maximum 20 pots or traps.

Each recreational fisherman may combine these types of gears according to the number of gears listed. Norwegian citizens may sell the fish through sales organisations. The Act also gives fisheries authorities the possibility to introduce other limitations such as quotas for recreational fishers. From 2005, a recreational fisher may realise sales up to a maximum of 2 000 kg of cod. Meanwhile, foreign tourists that participate in sports fisheries in Norway may only use handlines or rods. Tourists are not allowed to sell their catch. In

June 2006, an export quota on fish and fish products for personal travellers was introduced. The quota limits the amount of fish a person can bring out of Norway to 15 kg plus one trophy fish.

As regards recreational fisheries in rivers and lakes, the fisheries for salmon and trout are regulated by the Act of 15th May 1992, relating to Salmonids and Freshwater Fisheries. As a general rule, anadromous salmonids are protected unless otherwise determined. Regulations permit fishing for anadromous salmonids in rivers and lakes with rod and handline during fishing seasons decided by the country governor. There are different fishing seasons for different areas and rivers. Anglers over the age of 16 must pay an annual fee to the Norwegian government.

### **Aboriginal fisheries**

Norwegian fisheries authorities acknowledge an obligation to maintain a traditional Sami fishery, which is mainly carried out in the coastal areas of 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 a common boat size among Sami fishermen, rather than an ethnic criterion. The Samis 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 Samis, 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.

In June 2006, a committee was appointed with a mandate to consider the Sami people's rights to fish resources off the coast of the northernmost county, Finnmark.

### **Monitoring and enforcement**

In order to manage the different fisheries properly, an extensive system to control 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 fishing activity and check the reliability of catch reports, are logbooks and sales notes. All vessels longer than 13 meters are subject to the logbook provisions. The smaller vessels (13 meters to 20.99 meters) are obliged to fill in 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. The sales note is a sales contract between the fishermen and the buyers. For the authorities, this document 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 fishing activity accordingly.

Vessels from third countries are subject to the same rules as Norwegian vessels when fishing in Norwegian waters i.e. with regard to rules for by-catch, discards, logbooks and use of technical devices such as sorting grids. Foreign vessels fishing in the Norwegian EEZ and Norwegian vessels with on-board processing are obliged to send regular catch reports to the Directorate of Fisheries, who operates the Norwegian system of activity and catch



reports. The vessels must send a message containing information on the catch onboard specified by species and what time the vessel entered into the Norwegian EEZ (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 EEZ (passive code).

The Norwegian fisheries authorities have established 7 checkpoints north of 62° N and 3 flexible checkpoint areas in the North Sea for the purpose of controlling foreign vessels in the Norwegian EEZ. Foreign vessels are obliged to notify the system for quota control in the Directorate of Fisheries no later than 12 hours before arriving at the checkpoint.

Norway decided with effect from 1 July 2000, to require satellite tracking of all fishing vessels over 24 meters. Currently, a total of 400 Norwegian fishing vessels must have tracking equipment installed on-board. This equipment automatically transmits the vessel's position, course and speed each hour, 24 hours a day, regardless of where in the world the vessel is located.

Similarly, foreign fishing vessels fishing in Norwegian waters are subject to satellite tracking. The general rule is for vessels with an overall length exceeding 24 meters. However, due to the bilateral agreement between Norway and the EU, mutual tracking of vessels above 18 meters has been required from 1 July 2004 and above 15 meters from 1 January 2005.

An increasing number of Norwegian fishing vessels utilise an electronic reporting system called SatRap, to transmit reports on activity and catch via the Directorate of Fisheries to the authorities of the coastal state in which the vessel conducts its fisheries. Use of SatRap is now regulated in agreements with the regional fishery organisations NAFO, NEFAC and CCAMLR as well as for specific fisheries in the EU.

### **Multilateral agreements and arrangements**

Norway has actively supported the work of implementing a scheme for port state control in NEAFC according to the FAO IPOA model. This work is still in progress. In addition to signing new agreements Norway currently has such arrangements with fifteen countries; existing agreements have been revised and expanded. In 2005, the ground was laid for increasing effort on measures against IUU fishing in 2006. There are no other changes to Norway's participation status in regional fisheries management organisations and other multilateral and international organisations with competence in fisheries matters during 2004 and 2005.

## **Aquaculture**

Farmed fish represents more than 50% of the total production value of fish and fish products in Norway, even though it represents only 21% of total production volume. Salmon is by far the most important species. Rainbow trout is the second most important species, while species like cod, halibut, arctic char and shellfish are beginning to make their way into the industry. Various laws and regulations regulate the industry.

Most Norwegian sea-farms are open cage systems located along the coast. This kind of system has proven to be the most cost-effective. Each salmon and trout 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 is still room for an expansion of the aquaculture industry along the Norwegian coast line. Table III.24.3 provides a summary of the Norwegian Aquaculture Industry in 2004 and 2005.

Table III.24.3. **Sale (volume and value) and employment in the Norwegian Aquaculture Industry 2004 and 2005**

Type of licence	Sale				Employment	
	Volume (tons/1 000 pcs)		Value (NOK mill)		2004	2005 <sup>1</sup>
	2004	2005 <sup>1</sup>	2004	2005 <sup>1</sup>		
Sea-farm, salmon and trout	627 216	645 824	11 138	13 039	2 275	2 173
Juvenile, salmon and trout	164 767 <sup>2</sup>	174 896 <sup>2</sup>	1 226	1 299	855	851
Other fish species than salmon and trout	5 837	11 521	167	290	446	465
Shellfish and crustaceans	3 817	4 330	21	20	712	656

1. Preliminary numbers.

2. Numbers are in 1 000 pieces.

A new act of law, “The Aquaculture Act”, entered into force on 1 January 2006, replacing the Fish Farming Act of 1985 and the Sea-Ranching Act of 2001. The main purpose of the new Act is to promote and enhance the profitability and competitiveness of the aquaculture industry within the framework of sustainable development and to contribute to value creation on the Norwegian coast.

All farming of fish and shellfish and sea ranching requires a license from the Norwegian authorities. For sea farming of salmon and trout and sea ranching there is also a system of limited entry. These limited licences are allocated through special allocation rounds. The main components of the licence consist of the right to produce specific species in a specific quantity at specific sites.

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 license 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 production. In case of disease, the license 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 fisheries authorities has been given. The Norwegian Food Safety Authority 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. Antibiotics used were reduced from approximately 40 tons in 1990 to approximately 1.2 tons in 2005. Within the same time span, salmon and trout production increased from less than 150 000 tons to approx 645 000 tons.

Feed quotas were introduced in 1996 in order to stabilise production growth and prevent lasting imbalance on the EU-market for salmon. Each licence holder was obliged to not exceed a maximum level of feed used in the production of salmon. The feed quota regime was replaced by a more holistic demarcation system for the production of salmon and trout from 1 January, 2005. Apart from controlling production, the new system also includes environmental and fish health aspects.

Despite the growth in production, a reduction of people employed occurred from 2004 to 2005. This trend has been continuous over the past few years. For the year 2005, there were 2 208 persons registered employed in the production of grow out fish, breeding stock

and research and education of Atlantic salmon and rainbow trout. In the hatchery and juvenile production for Atlantic salmon and rainbow trout there were 873 registered persons employed in 2005.

The number of licences for production of marine fish species has stabilized in recent years. There has, however, been a national focus on cod farming, which has led to an increase in production. This activity with regard to other species in the industry is modest. The number of licences for shellfish has been reduced.

Advances in the profitability of sea farming salmon and rainbow trout depend on developments in the output prices for salmon and trout and a continuous downward slop of unit costs. The profitability in the Norwegian fish farming industry improved sharply in 2005 compared to 2004 and 2003. The main explanation for this positive development was an increase in the average sales price of Atlantic salmon and rainbow trout in the same period. A decrease in the production costs per kilo has also contributed to the increase in profitability.

## Fisheries and the environment

The socioeconomic importance of fisheries and aquaculture in Norway is reflected in the authorities' efforts to establish policies for securing well functioning marine ecosystems both along the coast and within Norway's EEZ. The introduction of ecosystem based management plans is an important part of this. In the spring of 2006, the government submitted a White paper to the Norwegian Parliament on a new, holistic management plan for the Barents Sea and the areas off Lofoten. This management plan balances the various interests of use in the area with an aim to secure, among others; a sustainable harvest of the marine living resources, biodiversity, safe shipping activities and allow for the exploitation of the oil and gas resources of the area.

Coastal zone management is a high priority. 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 environment and 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 at the local level.

Following the 2001 White Paper on Biological Diversity, the Ministry of Fisheries is contributing to the national programme on mapping and monitoring of habitats and species in the coastal zone. The initial emphasis is placed on endangered species.

Norway is the first country to have implemented protection measures for cold-water corals in European waters. In Norway, particularly large amounts of the cold-water coral *Lophelia* have been detected, including the world's largest known *Lophelia*-reef, the Røst-reef. In 1999, Norwegian fisheries authorities established a regulation for the protection of cold-water coral reefs against damage as a result of fishing pursuant to the Sea-Water Fisheries Act and the Act related to the EEZ of Norway. The regulation prohibits intentional and negligent destruction of coral reefs and requires precaution when fishing in the vicinity of known cold-water coral reefs. Furthermore, the regulation gives special protection to some particularly valuable coral reefs by totally banning the use of fishing gear which is dragged along the bottom and may come into contact with the reefs in these specially protected areas. So far, five reefs have been given this kind of special protection; the Sula Reef (1999), Iverryggen Reef (2000), the Røst Reef (2003), Tisler and Fjellknausene

Reefs (2003). In addition, the world's shallowest known *Lophelia*-reef, Selligrunnen, rising up to 39 m depth below the surface, has been temporarily conserved pursuant to the Norwegian Nature Conservation Act by the environmental authorities (2000).

As sustainable development in marine areas is not only dependent on responsible fisheries management, but is equally dependent upon responsibility within other activities that affect the marine environment, Norwegian fisheries authorities thus attach high importance to co-operation with other sector authorities and environment authorities to reveal harmful effects of various activities and to prevent discharge of hazardous substances into the sea.

An important feature of ecosystem management is the interaction between fish and marine mammals. Marine mammals are a renewable resource and also an important component of biological diversity in marine ecosystems. They must therefore be included in a coherent ecosystem-based management regime for Norwegian waters.

### **Government financial transfers**

Government financial transfers to the fishing industry have been provided on the basis of a General Agreement (The Agreement) between the Norwegian government and the Norwegian Fishermen's Association. However, the Norwegian government terminated The Agreement from 1 January 2005. Some of the elements of the Agreement have however been prolonged, including an income support scheme, transportation support, support to a research office (which tests selectivity equipment and removes lost fishing gear) and support to the sealing industry. Some NOK 85 million was available in 2004 through the Agreement and for decommissioning vessels. In addition, transfers for general services amounted to roughly NOK 810 million.

The purpose of the General Agreement between the Norwegian government and the Norwegian Fishermen's Association, signed in 1964, was to ensure that fishermen would reach the same income levels as the average industrial worker. Since 1990, support through this scheme has been reduced significantly, from NOK 1.4 billion (nominal value) in 1990 to NOK 90 million in 2002 and NOK 70 million in 2003. For 2004, the parties did not reach an agreement. As a consequence, the government then decided that an allocated total of NOK 50 million should be shared between the scheme's income support, transportation support, the research office and the sealing industry, hence abandoning the long-line baiting centre support scheme. In addition, NOK 35 million was allocated to the Structural Fund (decommissioning scheme for vessels less than 15 meters).

The minimum wage scheme for fishermen remained during 2004 and 2005. This scheme was established to support fishermen when their income from fishing activity was insufficient due to reasons beyond the fishermen's influence, such as long periods of bad weather, extraordinary ice conditions etc. The weekly pay depends on how much one has received over this scheme during the past three years compared to the maximum payable amount. Recipients of funds from this scheme are basically fishermen on smaller vessels. In 2004, NOK 11 million was paid out through this scheme, while the amount in 2005 was NOK 7.9 million. Considering the relatively low weekly pay, the vessels covered by this scheme are characterized as being small and having lower activity levels.

The purpose of the transportation support scheme is to reduce cost disadvantages caused by geographical or structural conditions. The support is important to maintain a differentiated fishing fleet, and to secure supplies to the processing industry in vulnerable regions. Support is

given for transportation of fish from areas with excess supply to areas with excess demand and from areas where there are no landing facilities. In 2004, NOK 25 million was allocated through this scheme, and in 2005 the amount was NOK 12.6 million.

Support to the Norwegian sealing industry is given to improve the profitability of the industry. According to the Norwegian interpretation of an ecosystem-based management regime, sealing is considered a necessity. However, there is no rationale to increase catch quotas unless there is a demand for seal products. Hence, a profitable industry is an essential basis for rational and sustainable harvesting of marine mammals. Support is hence given as an incentive for sealers to catch the current quota. Sealskins are the main income source of sealing, but prices are insufficient to make the industry profitable. The government has, during the last few years, allocated funds to research and develop projects using seal products. Preliminary results indicate that oil made from seal blubber seems to have many positive effects, e.g. for patients with arthritis. In 2004, six vessels participated in Norwegian sealing, receiving NOK 11.3 million in support. In addition, NOK 3.4 million was allocated to the landing facilities and for research and development purposes. In 2005, the figures were NOK 11 million and NOK 3.8 million respectively.

The total cost of fisheries management (general services) as a percentage of catch value has decreased in the period, and was less than 7% in 2005. The 2004-05 changes are due to higher prices that increase the catch value, hence reducing the management cost/catch value factor. The cost of general services related to the catching sector is presented in Table III.24.4 below.

**Table III.24.4. General Services – the catching sector**

All figures in thousand NOK

	2002	2003	2004	2005 <sup>10</sup>
Ministry of Fisheries	29 818	31 420	30 127	31 800
Membership in international org.	6 060	6 145	6 590	6 870
Institute of Marine Research	145 873	157 674	164 190	146 250
Operations of research vessels	174 802	101 414	95 200	98 700
New research vessel	284 545	67 471	0	0
Directorate of Fisheries	129 436	137 405	137 405	127 210
Coast guard	386 548	389 524	415 792	443 100
<b>Total</b>	<b>1 157 082</b>	<b>886 256</b>	<b>824 521</b>	<b>810 870</b>

10. Balanced budget.

The figures in Table III.24.4 appear as follows:

- Ministry of Fisheries: An estimated 40% of the total costs of the Ministry are related to the catching sector.
- Membership in international organisations: Includes organisations relevant to the catching sector.
- Institute of Marine Research: An estimated 75% of the total costs are related to the catching sector.
- Operations of Research Vessels: 100% of total net costs are expected to relate to the catching sector.
- New Research Vessel: In general, the catching sector benefits from all activities performed by the research vessels. Hence 100% of the transfer is reported here.

- Directorate of Fisheries: The figure represents 50% of the total costs minus user payments.
- The Coast Guard: Most activities of the Coast Guard are to the benefit of the capture fisheries. Hence 60% of the total costs are reported here.

## Post harvesting policies and practices

Recent international food scandals have put more emphasis on the importance of *food safety and quality*. Consumers' expectations and demands are increasingly recognized as a legitimate factor in international food trade. It is no longer sufficient to have a scientific justification that food on the market is safe. The consumers must also perceive the food to be safe and of the right quality in order for them to purchase it. Independent risk assessment and risk communication are important tools to reach this goal.

Norway's policy and practice with regard to safety and quality of seafood is largely an implementation of EEA (European Economic Area) relevant rules. Norway has adopted 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. In relation to countries outside the EEA, an emphasis has been put on obtaining bilateral agreements concerning sanitary and veterinary issues with the quality control authorities in countries representing important markets

The Norwegian fish processing industry has implemented its own-check systems based on the principles of HACCP. The own-check systems cover both food safety and quality aspects and are audited by the Food Safety Authority. Commercial standards are, however, developed and supervised by the seafood industry. The authorities and the related establishments have used a lot of resources to implement and revise this system to ensure the quality of products.

The Norwegian Food Safety Authority, which was established on 1 January 2004, is responsible for seafood safety and quality, as well as fish health and ethically acceptable farming of fish. The Authority was set up following a merger of the Norwegian Animal Health Authority, the Norwegian Agricultural Inspection Service, the Norwegian Food Control Authority, the Directorate of Fisheries' seafood inspectorate, and local government food control authorities.

With respect to labelling, Norway focuses on the development of international quality standards and conformity assessment systems. In this respect, it is important to ensure that technical regulations and standards, including packaging and labelling requirements, do not create unnecessary obstacles to international trade.

## Markets and trade

The domestic market is seen as an important and profitable market for the fishing industry. According to the latest statistics, Norwegians consume about 22.6 kg per capita of fish and fish products annually. Over the last two years there has been a slight increase in Norwegian consumption. The 30-50 age group contribute most to an increase in consumption of fish. Younger and older age groups consume slightly less seafood than the 30-50 age group.

Through marketing activities financed by the fishing industry, the Norwegian Seafood Export Council (NSEC) aims to develop markets for Norwegian seafood at home and abroad. The NSEC's activities encompass marketing and PR, gathering intelligence and

market information and provision of emergency responses. The council has offices in France, Germany, Spain, Portugal, Italy, Brazil, Japan, China and Russia. The NSEC operates under the Fish Export Act of 1990 and the Fish Export Regulation of 1991. In 2005, the NSECs budget was NOK 186.2 million.

Total exports of seafood from Norway reached NOK 31.75 billion in 2005, an increase of almost 13% on 2004. The increase in exports can mainly be explained by higher prices for important species like salmon, herring and mackerel. The quantity of salmon and herring also increased from 2004 to 2005, while the quantity of mackerel decreased by 27%. The share of salmon increased from 40% to 42% from 2004 to 2005, while the share of pelagic products increased from 18% to 19% in the same period.

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 has decreased gradually, from 58% in 2000 to 50.3% in 2005. Japan and Russia remain important markets for Norwegian exports of seafood products. The major export market for trout is still Japan. The importance of the Japanese market and also the Russian market appears to increase for Norwegian exporters of trout as the European Union imposed antidumping duties of 19.9% on Norwegian exports of large rainbow trout to the Community market on 8 March 2004.

Major trade policy changes have taken place recently. As from 1 July, 2001, a free trade agreement between the EFTA states and Mexico entered into force. In the field of fisheries, the agreement ensures free market access for Norwegian exports of important fish and fish products to Mexico. Since then, second generation EFTA Agreements have entered into force with Chile and Singapore. These agreements will have a positive impact on fish trade and investments in the fishery and aquaculture sector.

Following an anti-dumping and subsidy investigation initiated by the European Commission in the autumn of 2004, a safeguard measure directed towards the imports of farmed salmon was replaced by a provisional anti-dumping measure against the imports of farmed Norwegian salmon on 22 April 2005. This measure was replaced by a permanent anti-dumping measure in January 2006. The measure has been challenged by Norway under the WTO Dispute Settlement Understanding and a panel report is expected to be issued in May 2007.

## Outlook

As a basis for the management plan of the Barents Sea, status reports of the environment and the most important sector activities as well as impact assessments are being developed. Environmental objectives and suitable indicators will also be developed for this area, to guide overall management.

The development of a new "Marine Resources Law" is now in good progress. This law will establish a new comprehensive framework for the management of all living marine resources. A Green paper was finished in 2005 and the government is working on the finalisation of the new law.

Knowledge about sea floor structures and bottom habitats in Norwegian waters is very limited. There are plans for co-ordinated mapping of various aspects of the sea floor, which would give useful information to a number of sectors. The mapping has started on a limited scale for the time being, but may be increased in the future. A selection of coral reefs will be considered protected against all threats as part of a national representative network of marine protected areas. This process will be finalised in 2007.

The outlook for the traditional fishing industry seems better than it has done for several years, with an improved stock situation for most stocks except for the cod stock in the North Sea and capelin in the Barents Sea. The traditional fishing industry has been through a period of numerous bankruptcies due to low prices and unfavourable exchange rates. As a consequence, the capacity of the fishing industry should now be better adapted to the current resource base and profits are expected to rise.

The structural adjustment program is currently under close scrutiny with regard to effects and set up. The outcome of this process is crucial for the future development of the Norwegian fishing fleet. The statutory authority given by the Norwegian Parliament to impose a fee on landed values to build up a fund for the decommissioning of smaller home based vessels lasts until the summer of 2008. The statutory authority thereafter disappears (sunset law). So far, the program has contributed to a significant capacity reduction in the smallest coastal fleet. The decommissioning scheme is under evaluation as part of the SQS review.

From a global perspective, capture fisheries resources are unlikely to increase in the future. 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 aquaculture production. The export share of aquaculture products is expected to increase in the years ahead. Globalisation in trade of fish and fish products means stronger competition on the world market. The filleting industry in the north of Norway in particular faces stiff competition from the whitefish sector. Globalisation is a challenge to the industry sector, which, *inter alia*, has to improve technology to become more efficient.

Significant barriers such as tariffs and non-tariff barriers still exist. Average tariffs for fish and fishery products are, in many countries and in many important markets for Norwegian exports, considerably higher than tariffs for other industrial goods. Such barriers are important constraints for further growth of the aquaculture sector as well as the wild capture fishing industry. As an example of non-tariff barriers, the Norwegian aquaculture industry has gone through dumping cases in both the EU and USA.

Norwegian exporters of seafood are highly dependent on good and predictable market access; for this reason the WTO-negotiations has a high priority. The objective is to eliminate or reduce tariffs and non-tariff barriers globally. Another important tool to ensure free market access is free trade agreements through EFTA (European Free Trade Association). As a member of EFTA, Norway has concluded 15 free trade agreements and is negotiating with 4 more countries.

In accordance with the EEA-agreement, Norway has obtained better market access for fishery products to the EU market. Partly as a consequence of market dependence, Norwegian authorities put great emphasis on having a good framework for health and hygiene measures to assure the protection of human, animal or plant life and health. Quality regulation and control are not only executed at the production stage, but apply until products reach their final destination. In order to have well functioning contacts with foreign quality authorities, Norwegian authorities are expanding their international work in this field. In addition to the work in international bodies such as the Codex Alimentarius, the authorities are working to establish bilateral agreements governing trade in fish and fishery products.

Over the last 30 years, the aquaculture industry has proved to be an important export industry as well as an important industry in coastal communities. Norwegian fish farming is strictly controlled by a number of laws and regulations, which regulate the freedom of



action of the actual operators of fish farms. To enable the industry to fulfil its potential production capacity and improve its 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 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.

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 important in the years ahead.

The administrative regulation for sea ranching entered into force in 2001. The first allocation of licences for this type of aquaculture was limited to lobster and scallop. In the period 2003 to 2005, 18 licences for sea ranching were allocated.



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*Chapter 25*

## **Poland**

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## Main characteristics of the Polish fishing sector

Fisheries management at the national level is the responsibility of the Department of Fisheries of the Ministry of Agriculture and Rural Development. The Department of Fisheries directly supervises the work of the three Regional Sea Fisheries Inspectorates in Gdynia, Słupsk and Szczecin.

Polish marine catches in 2005 totalled 136 300 metric tonnes (mt), a decrease of 37 300 mt (21.6%) over the previous year. This was the result of a decrease in Baltic Sea catches (19%). Of the species of fish and marine animals caught by Polish fisheries in 2005, sprat was the most common and comprised 54.5% of total catches.

In 2005, an estimated 27 000 people were employed in the fisheries sector. This figure is lower by 1 300, in comparison with 2004. A loss of 900 jobs was seen in fishing companies, 100 in trade and 850 in the coastal fishery. There has been an increase of 600 jobs in the processing sector. Although there is no data regarding inland fisheries employment, it is estimated that 4 600 people work in this sector.

Baltic fisheries are managed in compliance with the regulations of the Council of the European Union on Agriculture and Fisheries. After fishing quotas were exchanged with other Baltic countries, the allowable catch in Polish sea areas, as well as division among fishing boats and cutters, is determined annually by the Minister of Agriculture and Rural Development.

New vessels can be put into service if a vessel with a comparable fishing capacity is scrapped from the register. Total vessel length, width and motor power are used to determine comparability. Withdrawal of excessive fishing potential began after Poland acceded to the EU.

Total fish and fish product imports into Poland in 2005 totaled 315 500 mt. This is an increase of 314 000 mt (9.9%) in comparison with the previous year and a substantially higher value increase of 27.4%. Total Polish exports of fish and fish products registered in SAD customs declarations and from Polish deep-sea trawlers and Baltic cutter landings abroad was 204 500 mt. This was 26 900 mt (13.2%) more than in the previous year. The value of total exports increased by about 27.9%. The largest export market is Germany.

## Poland – Summary statistics

Figure III.25.1. **Harvesting and aquaculture production**

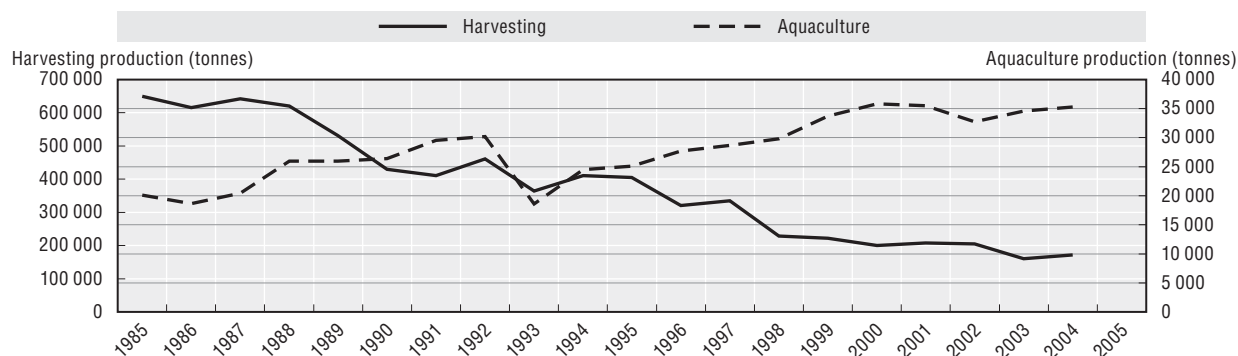


Figure III.25.2. **Key species landed by value in 2005**

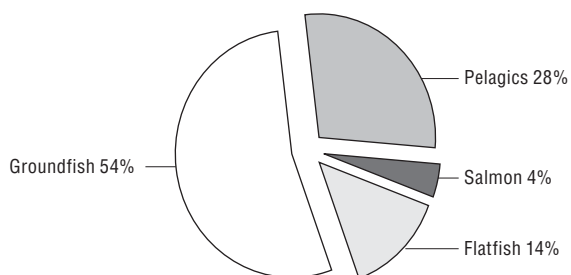


Figure III.25.3. **Trade evolution**

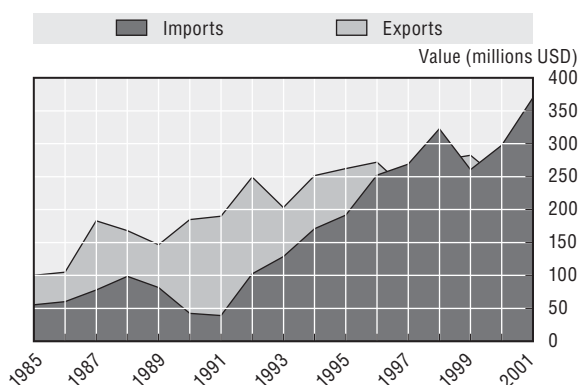


Figure III.25.4. **Production profile**

	1996	2005
Number of fishers	8 796 <sup>1</sup>	4 940
Number of fish farmers	5 000 <sup>2</sup>	5 000
Total number of vessels	13 998 <sup>1</sup>	975
Total tonnage of the fleet	143 409 <sup>1</sup>	30 252

1. Data for 1997.
2. Fish farmers in 2000.

Source: Figures III.25.1 and III.25.3: FAO; Figures III.25.2 and III.25.4: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

Fisheries management at the national level is the responsibility of the Department of Fisheries of the Ministry of Agriculture and Rural Development. It is comprised of the following units: Inland Fishery, Structural Policy, Fish Market, Sea Resources Management, and the Control, Monitoring and Reporting of the use of Assistance Funds. The Fisheries Monitoring Center is located in Gdynia.

The Department of Fisheries directly supervises the work of the three Regional Sea Fisheries Inspectorates in Gdynia, Słupsk and Szczecin. The inspectorates supervise fishing activities at sea and in adjacent waters and monitor landings, fishing gear and manage the fishing vessel register. Inland fisheries are supervised by the corresponding local government administration.

### Capture fisheries

Polish sea catches in 2005 totaled 136 300 mt – a decrease of 37 300 mt (21.6%) over the previous year. This was the result of a decrease in Baltic Sea catches (19%). Catches in 2005 in the Baltic and its lagoons constituted 91.2% of total Polish catches in comparison to 88.9% in the previous year. The remainders of the catches were from deep-sea fishing grounds, the most important of which is the Antarctic sector of the Atlantic Ocean (last year the Central Eastern Atlantic contributed 8.8%).

Of the species of fish and marine animals caught by Polish fisheries in 2005, sprat was the most common and comprised 54.5% of total catches. Herring comprised 16% of total catches and cod (9.3%), krill (3.1%) and unlimited catches of flat fishes (14.8%) were also common. These species together accounted for 91.1% of total marine catches.

The deep-sea fleet decreased by two ships in 2005 in comparison with the previous year. On 31 December 2004, Polish fishing companies owned five trawlers. At the end of 2005, the average fleet age was 25 years. At the end of 2005, Polish Baltic fisheries had 249 cutters, 149 cutters fewer than in the previous year. The boat fleet in 2005 consisted of 722 motor and row boats, which was a decrease of 123 boats in comparison to 2004.

### Status of fish stocks

**Cod.** The abundance of the generation from 1999-2003 was 22-64 million individuals in the 1st age group, which contributed to a decrease of spawning stock biomass to 17 000 mt in 2003. The generation from 2004, (46 million individuals), was considered to be far below the long-term number of individuals (calculated in the 1970-2004 period). The generation from 2005 is preliminarily regarded as being at 2004 levels.

**Sprats.** The biomass of the spawning stock of Baltic sprat has been increasing rapidly since 1988 and reached a maximum level of 1.8 million mt in 1996-97. Over the next few years, the biomass level fell to 1 million mt, before reaching the highest level of 1.4 million mt in 2005. The catch mortality rate decreased in the period 1987 to 2003 from 0.40 to 0.25. A decrease in sprat biomass occurred in 2002-03, due to diminished generations in 1998 and 2000-01, as well as intensive stock exploitation. The stock is in the biologically safe limit, but the catch mortality rate should not exceed 0.40.

**Herring.** The biomass of the spawning stock has systematically decreased over the last 30 years. In 1991, it reached 310 000 mt, but by 1998-99 it had fallen to 120 000 mt and in 2002-05 it increased to 180 000 mt. The highest catch mortality rate was observed in the

years 1997-2001, when mortality fell to 0.2-0.3. This stock is being exploited beyond biologically safe limits due to excessive catch mortality.

### **Management of commercial fisheries**

Baltic fisheries are managed in compliance with the regulations of the Council of the European Union on Agriculture and Fisheries. In order to protect decreasing fish resources, the following measures are being taken: imposing catch limits, temporary restrictions for fishing activities and closed regions, protecting juvenile fish by establishing minimum sizes and net mesh sizes.

After fishing quotas are exchanged with other Baltic countries, the allowable catch in Polish sea areas, as well as the division among fishing boats and cutters, is determined annually by the Minister of Agriculture and Rural Development and is published as a regulation in the Official Journal (*Dziennik Ustaw*).

The maximum, allowable fishing effort for the Baltic fleet was laid out in the Ministry of Agriculture and Rural Development regulation, as the number of fishing vessels permitted to fish in the territorial seas and the adjacent Szczecin and Vistula lagoons. New vessels can be put into service if a vessel with a comparable fishing capacity is scrapped from the register. Total vessel length, width and motor power are used to determine comparability. Withdrawal of excessive fishing potential began after Poland acceded to the EU.

### **Access**

Since Poland acceded to the European Union, all bilateral agreements on fisheries have been managed by the European Commission.

### **Management of inland and recreational fisheries**

Inland fisheries are conducted in surface waters and are based on the natural production potential of rivers, lakes and dam reservoirs with a total area of almost 600 000 ha. The commercial catch is approximately 36 400 mt annually. Approximately 14 900 mt of fish are caught by recreational fisheries. The majority of the almost 2 million active, recreational fishermen in Poland are rod fishermen.

## **Aquaculture**

Polish aquaculture is based on the production of freshwater fish throughout the country. Ponds are supplied with surface water; the amount and quality of which limit production. Polish law does not make any provision for preferential water access for fish farms. Permits are required to use surface water, which is the property of the state. The majority of Polish pond production involves two fish species, producing approximately 18 300 mt of carp and over 16 200 mt of rainbow trout in 2005.

## **Government financial transfers**

The state provided the fisheries sector with the following types of aid: subsidies for purchasing deep-sea fishing licenses for trawlers, subsidized loans for the purchase and storage of raw fish material, VAT and fuel excise tax exemptions for fishing vessels, interest subsidies for investment loans under the Sectoral Program of Fisheries Development in Poland between 2000-06, and funding the stocking of Polish sea areas and inland waters. These ended on 1 May 2004 when Poland acceded to the EU.

## Post-harvesting policies and practices

The fish processing sector has been almost entirely privatized and, over the past several years, it has become one of the most rapidly developing branches of the food processing sector. The greatest number of fish processing firms, approximately 120 (60%), are located in coastal areas. The main task facing these companies is to comply with EU veterinary and sanitary requirements.

In 2005, 195 companies complied with EU hygienic and veterinary standards and had permits to export to EU countries (category A). Another 39 companies were classified in category B.

## Markets and trade

### *Trends in domestic consumption*

In 2005, Alaska pollack dominated supply and consumption of fish. Supplies of it were slightly higher than in 2004 with a per capita consumption of 2.90 kg. Herring was the second most common species consumed. Consumption of salmon increased dramatically (0.39 kg per capita) but there was also a large decrease in consumption of Spratt (by 50% to 0.77 kg). Overall consumption of mackerel decreased by about 7% in comparison to 2004.

The estimated supply of fish to the Polish market in 2005 was 408 100 mt, which means that average per capita consumption was about 11.4 kg in live weight equivalent. These figures are little lower than those for the previous year – 433 400 mt and 12.74 kg.

The promotion of fish and fish products is still very limited in Poland and advertising campaigns are sponsored mainly by large companies at their own cost.

### *Trade*

Total fish and fish product imports into Poland in 2005 totaled 315 500 mt. This is an increase of 31 400 mt (9.9%) in comparison with the previous year at a substantially higher value (an increase of 27.4%).

Raw fish material and semi-processed products such as frozen fish, fillets and fish meat, which require further processing in Poland, dominated imports at 66.8% of the total. This stemmed from the Polish deep-sea fleet's limited access to resources and low technological usability as well as often low quality Baltic raw materials. The greatest amount of fish (mainly raw fish material) was imported from EFTA countries. Herring was the most frequently imported species comprising 27.6% of total imported fish.

In 2005, total Polish exports of fish and fish products registered in SAD customs declarations and from Polish deep-sea trawlers and Baltic cutters landings abroad, was 204 500 mt. This was 26 900 mt (13.2%) more than in the previous year. Total export value increased by about 27.9%. Germany is the most important export market. Herring is the primary export fish species (26.9%). Salmon, cod and herring had the highest export value (68.5%).

## Outlook

As part of the PHARE 2000 Fisheries Administration project, a vessel monitoring system (VMS) has been implemented, the fishing vessel register has been brought into compliance with EU requirements and fisheries statistics have been further developed in order to make catch quota management more efficient.



PART III  
*Chapter 26*

## **Turkey**

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## Main characteristics of the Turkish fishing sector

Turkish fisheries sector is in institutional, legal and structural transformation period and major steps have been taken regarding this issue. The most important reforms are; the amendment of law which is aimed to be completed in 2006 and successively the regulation which will be enforced, updating of the vessel registration system, the setting up of fisheries information system and vessel monitoring system.

Fisheries production totalled 644 492 tons in 2004. Of which 505 497 tons (78%) was from marine origin, 45 585 tons (7%) was from freshwater origin and 94 010 tons (15%) came from aquaculture. In 2005, total production decreased to 544 773 tons, of which 380 381 tons (70%) was from marine, 46 115 tonnes (8%) was from inland fisheries and 118 277 tons (22%) came from aquaculture.

No new fishing license has been given to any fishing vessels as from 2002 with the aim of reducing the fishing pressure on the stocks and to maintain sustainable fisheries. At the end of 2005, the country's registered fishing fleet comprised 18 836 vessels totaling 195 165 GT. There is a decline in the number of vessels in 2005 since the number of vessels was frozen and no new vessels have been admitted to fleet to replace the leaving ones since 2002.

There is no quota management system set for commercial fishing industry, except for the bluefin tuna.

In 2004, 73 889 fishers in harvesting sector, 5 164 in aquaculture and 2 950 as permanent in processing have been employed. In 2005, these figures were 98 787, 5 914 and 4 990 respectively.

Total imports of fishery products were 57 694 tons, worth USD 54 million in 2004 and 47 676 tons, worth USD 69 million in 2005. Total exports of fishery products (except canned products) were 32 804 tons, worth USD 181 million in 2004 and 37 655 tons, worth USD 206 million in 2005. In terms of trade balance in fishery products, there was a surplus of USD 126 million in 2004, USD 137 million in 2005.

In 2006, the proposed legal and structural transformation of fisheries is expected to be completed. Fishery Information System (FIS), Vessel Monitoring System (VMS) and Port offices will be activated in 2007. The medium and long-term objectives of the fisheries sector will be determined in sector strategy report and within this framework the future activities will be carried out. Apart from these, management plans for key species have been prepared.

## Turkey – Summary statistics

Figure III.26.1. **Harvesting and aquaculture production**

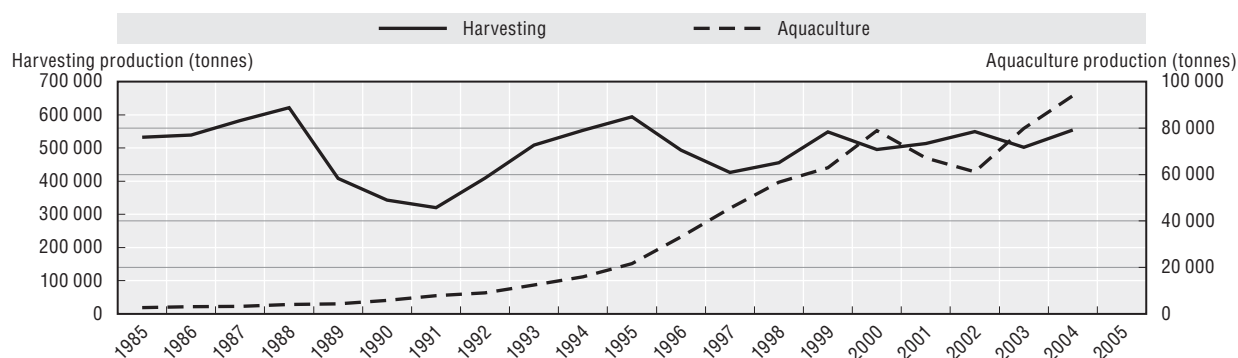


Figure III.26.2. **Key species landed by value in 2005**

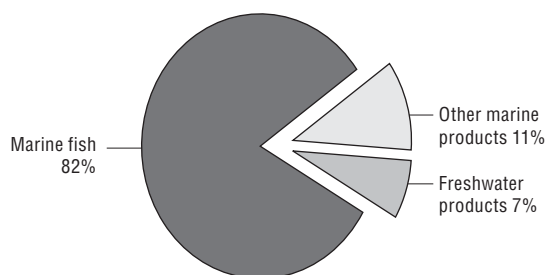


Figure III.26.3. **Trade evolution**

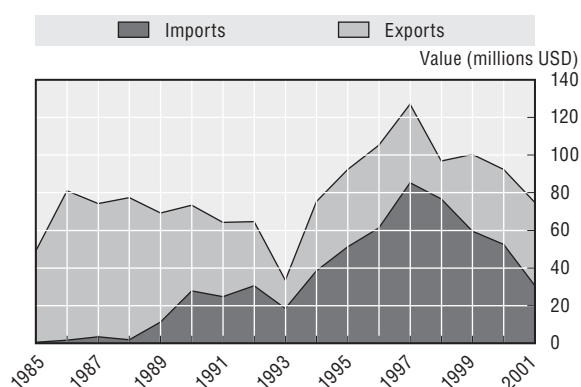


Figure III.26.4. **Evolution of government financial transfers**

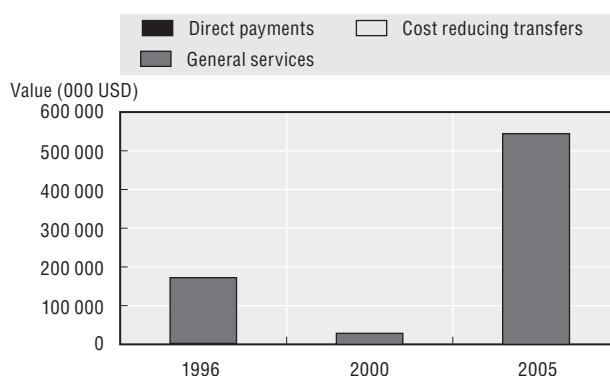


Figure III.26.5. **Production profile**

	1996	2005
Number of fishers	54 000 <sup>1</sup>	98 787
Number of fish farmers	4 021 <sup>1</sup>	5 914
Total number of vessels	17 475 <sup>1</sup>	18 836
Total tonnage of the fleet	n.a.	195 165

n.a.: Not available.

1. Statistics in 1998.

Source: Figures III.26.1 and III.26.3: FAO; Figures III.26.2, III.26.4 and III.26.5: OECD.

## **ADDITIONAL DETAILS**

### **Legal and institutional framework**

The Ministry of Agriculture and Rural Affairs (MARA) is the main state 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 1380, enacted in 1971 which was amended by Laws 3288 of 1986 and 4950 of 2003. The Preliminary draft law amending "Fisheries Law No. 1380" has been drawn up in order to be sent to the parliament.

In accordance with the Laws, every two years commercial fisheries and sport fishing circulars are published and announced in the official Journal about the prohibitions, limitations, and liabilities and controls.

### **Capture fisheries**

The total capture fish production decreased by 22%, from 550 482 tons in 2004 to 426 496 tons in 2005. The ten species account for approximately 90% of the total marine catches. Small pelagic species especially anchovy, horse mackerel and pilchard constitute an important portion in total catch amount.

#### **Status of fish stocks**

Despite the fact that the anchovy production contributed historically over 60-70% of total marine catch, its ratio declined by 60% in 2005. Accounting for 138 569 tons, therefore representing 36% of total marine capture fisheries. This was the second dramatic fall after the "anchovy crisis" experienced during 1989-92. Apart from this, the most significant change was observed in Atlantic bonito production which increased sharply from 5 701 tons in 2004 to 70 797 tons in 2005. When past years production figures are taken into account, this is the highest figure recorded in Turkey.

In the past, not only for anchovy but also for other commercial species, several assessment works have been done. However, the following of these assessments has been hardly pursued. Therefore, a new assessment work is necessary in order to update information on the exact size of stocks. MARA has very strong intention to put into practice a national stock assessment project and works for setting up a system for continuous monitoring of the biological parameters of the catches at the landing ports and these works have already started.

#### **Management of commercial fisheries**

No new fishing license has been given to any fishing vessels as from 2002 with the aim of reducing the fishing pressure on the stocks and to maintain sustainable fisheries. Despite interruptions, the applied policy had positive effects on control of increasing fleet capacity during 2004 and 2005. New entries to the fleet are only allowed when a vessel of same size is exiting the fleet. In such cases a maximum of 20% increase in length is tolerated. Similarly, in case of modification or modernisation of fishing vessels, a maximum of 20% increase in size is allowed; both in case of modification and replacement of vessels, engine power or tonnage are disregarded. However, this application will be terminated in the near future.

There is no quota management system set for commercial fishing industry, except for the bluefin tuna. It is ensured that the amount of tuna fish to be caught by fishing boats remain within the quotas allocated by ICCAT. To this end, fishing amounts and fishing

season are defined each year by a circular in accordance with the rules of ICCAT. Not every fishing vessel is authorised to fish for bluefin tuna.

Technical measures on fishing in Turkey are dynamic in nature and are re-evaluated by the Fisheries Advisory Board twice a year with the participation of private sector, scientific organisations and other stakeholders. In the Commercial Fishing Regulations, prohibitive provisions are set forth about mesh size, depth, and distance from the coast, fishing gear, region, area, species, length and time. Besides, every kind of fishing activity is prohibited in the area with a radius of 500 m off the river estuaries. Trawling is completely prohibited in the Sea of Marmara in order to protect demersal species. In other seas, trawling is prohibited in some bays and gulfs and in certain areas. There are also some areas that are totally closed for any types for any types of fishing activities.

### **Management of recreational fisheries**

For the reporting period, no major changes have been implemented in the recreational fisheries management regime in Turkey. Commercial fishing and recreational fishing differ from each other in terms of fishing permit, catch amount and the use of gears. While it is obligatory to obtain a license for commercial fishery, it is not required for recreational (amateur) fishing activities. An identification document is issued for the recreational fishermen, upon request. Catch amount of recreational fishing is too low compared to the amount obtained from commercial fishing and is estimated to be below 1%.

### **Monitoring and enforcement**

Turkey has been carrying out one of the most extensive works for the EU alignment starting from 2005 within the framework of the Fisheries Project “Fisheries Sector-Legal and Institutional Alignment to the EU Acquis”. The project consists of 4 components; which are “Institutional Strengthening, Legislation and Structural Policy”, “Conservation, Control and Resource Management”, “Common Organisation of the Market” and “Vessel Monitoring System and Fisheries Information System”.

In this framework, the technical process of setting up a satellite based Vessel Monitoring System for the first time in Turkey has been initiated and the construction of 30 Fishing Port Offices has already started. The VMS and Fishing Port Offices are expected to be operational within the year 2007. Data to be collected from the landing ports will be transferred to Central Fisheries Information System.

### **Access agreements**

According to fisheries laws 1380 of 1971 (as amended by 3288 of 1986) and Continental Waters Law of 2674, foreigners are not allowed to take part in commercial fishing activities.

## **Aquaculture**

The initiatives conducted during the 2004-05 period were aimed at increasing fish supply and provided opportunities for industry diversification, in particular the farming of new commercial species such as Common Dentex (*Dentex dentex*), Common Seabream (*Pagrus pagrus*), Common Pandora (*Pagellus erythrinus*), Sharpnose Seabream (*Puntazzo puntazzo*), Shi drum (*Umbrina cirrosa*), sturgeons (*Acipenser* spp.), Brown meagre (*Sciaena umbra*), Striped Seabream (*Lithognathus mormyrus*) and mussel (*Mytilus galloprovincialis*).

In the year 2004-05, when fisheries subsidies – started to be granted in 2003 – have been allocated in increasing amounts, aquaculture production increased with the momentum gained and by directing 35 % inactive capacity existing in the sector towards production. Protocol signed between MARA and Ministry of Energy and Natural Resources (MENR) was revised in 2004 and areas separated for cage culture in dam lakes increased from 1 % to 3 %. In addition, semi-intensive and extensive aquaculture is also permitted in dam lakes. In order not to exceed quota limits, the issuing of permits for opening new tuna farms has been stopped and a limitation has been imposed on production and export amounts of approved projects as of 2004.

Aquaculture production in Turkey started to rise again in 2004-05 period. Overall production increased by approximately on average 26% rising from 94 010 tons in 2004 to 118 277 tons in 2005. Production from coastal aquaculture of seabass, seabream, rainbow trout and mussel constitutes 53% of total production in 2004 and for the first time this production amount exceeded freshwater production. This trend continued and reached 59% in 2005.

### **Fisheries and the environment**

There is a growing awareness regarding the development of environment-friendly fisheries and aquaculture in Turkey. There are a number of regulations concerning environment and they have been published in the circular.

“Regulation on Aquaculture” prepared to ensure more efficient conduct of fisheries activities, sustainability of aquaculture, protection of environment, realisation of investments in a planned manner and effective supervision during production, entered into force following its publication in the Official Gazette dated 29 June 2004 with No. 25507. Regulation about Amendments to “Regulation on Aquaculture” entered into force following its publication in the Official Gazette dated 15 October 2005 with No. 25967.

Fish farms with the annual production capacity of 30 tons or over are subject to “Environmental Impact Assessment”. Especially, the production activities of tuna fish in the Mediterranean Sea and the Aegean Sea have continuously been monitored in co-operation with the universities. In addition, some fish farms carried out production within the framework of Environment Management System (TS EN ISO 14001) and this application was encouraged. Monitoring studies were carried out at certain periods by the Ministry of Agriculture and Rural Affairs and Ministry of Environment and Forest in order to find out the environmental impact of the farms.

### **Governmental financial transfers**

Total government financial transfers were around TRY 175 million (USD 130 million) in 2005, showing an increase of 75% in comparison with 2004. It is clear that the majority of government financial transfers devoted to Marine Capture Fisheries (around TRY 135 million [USD 100.7 million]). Under this category, General Services covers Tax Relief Scheme for Diesel Oil used in fishing vessel, construction of fishing ports, monitoring, surveillance, control of fisheries activities and research. There are no direct payments to the fishing industries in any categories.

Subsidies for aquaculture started in 2003 and continued during the year under review with an increase in their amounts (around TRY 1 million [USD 0.75 million]). The amount of transfer to Export Refund for Prepared and Preserved Fish was relatively small.

## Post-harvesting policies and practices

The operation, inspection and control of fisheries processing and handling facilities in Turkey are carried out in conformity with the directives prepared within the framework of EU regulations. According to the current practices, fishery products' conformance for the human consumption, consumer information controls are carried on within the scope of "Implementing Regulation on Fisheries", "Implementing Regulation on Wholesale and Retail Fish Markets" and related articles of Implementing Regulation on Fisheries, published in the Official Gazette on: 19 June 2002, No. 24790 and amended on 14 July 2004, No. 25522.

Controls within this context are carried out by the MARA inspectors and authorized personnel of municipalities in every phase of marketing. Freshness criteria laid down in these regulations are to a great extent compatible with the Annex 1 of EC Regulation No. 2406/96. Freshness criteria are not applied in the first sale of fisheries products, but applied at every stage of marketing.

According to the Implementing Regulation on Wholesale and Retail Fish Markets, information included in the documents arranged for the fishery products entering and leaving wholesale market meets the information laid down in the EC Regulation No. 2065/2001. For fishery products at the retail sale stage, the only obligation is to put a label indicating the name and price of the product.

Harmonisation of national legislation with EC Regulations No. 104/2000, 2406/96 and 2065/2001 is still being carried out. The Preliminary draft law amending "Fisheries Law No. 1380" has been prepared to harmonise National Law with that of the EU Regulations regarding marketing standards and consumer information for the implementation of the common market rules.

## Markets and trade

### **Trends in domestic consumption**

The consumption of fishery products in Turkey is primarily dependent on the marine fisheries catch and the fish are generally consumed fresh. In 2005, fish-consumption per capita (7.2 kg) decreased compared to the last year figure (7.8 kg), which can mainly be seen as a result of falling anchovy production.

Another interesting development is the growth in consumption of aquaculture product in domestic market which today absorbs 30% more than it did a few years ago. Previously while 70% of the sea bass and sea bream production was exported, today that figure is down to 40%. Recently, large companies have been putting more and more efforts on domestic market because of consumers' growing interest in fisheries and seafood.

### **Trade**

Total import of fishery products was 57 694 tons, worth USD 54 million in 2004 and 47 676 tons, worth USD 69 million in 2005. While the amounts of imported fisheries products decreased by 17% in 2005, its value increased by 26%, compared to 2004. Among the imported fish, chilled and frozen fish constitute about 90% of the total. Dominating imported species are mackerel, sardines, herrings, anchovy, skipjack stripe-bellied bonito species, pilchard and salmon species. Norway was the main source of fishery products supply to Turkey. Other importing countries were Spain, Netherlands, Mauritania, and Ghana.

Total exports of fishery products (except canned products) were 32 804 tons, worth USD 181 million in 2004 and 37 655 tons, worth USD 206 million in 2005. The exports increased both in the volume and in value, by 15% and 14%, respectively. The major export markets were Italy, Greece, Netherlands, France and Germany accounting for almost 70% of both quantity and value of exports. Other markets include Japan, Lebanon and Korea. Among the exported fresh and chilled fish, sea bass, sea bream, anchovy, Bluefin tuna, silverside and smoked trout are the most important species. Bivalves, sea snails and mollusks are the second important group in the total exports.

## Outlook

In 2003, “Circular on Residue Monitoring in Fishery Products, Poultry and Their Meat, Honey and Raw Milk” put into effect. This circular determines issuing of control certificate for import of live, fresh, chilled and frozen fishery products, controls on customs and principles to be followed in the inspections.

“Circular regarding the grand of registration number to fishing vessel for the export of fishery products” is also other important one put into effect in 2003. This circular covers the issues such as granting a registration number to fishing vessel (out of factory vessel) packing of fresh, chilled and frozen fishery products, in accordance with the EU Directive (92/48/EEC), issuing health certificate belonging to products to be packed on these vessels, preparation and implementation of HACCP plans, packing of products and transporting.



PART III

*Chapter 27*

**United States**

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## Main characteristics of the United States' fisheries sector

Commercial landings (edible and industrial) by US fishermen at ports in the 50 states were 4.6 million metric tons (mt) valued at USD 3.8 billion in 2004 – an increase of 261 000 metric tons (up 1%) and USD 305.8 million (up 9%) compared with 2003. Alaskan pollock, menhaden, Pacific salmon and cod remained the five most important species in terms of landings, while crab, shrimp, lobster and scallops remained highest in terms of value. Since 2000, revenue from commercial landings has increased to USD 145 million, representing a 4% increase in nominal terms but after adjusting for inflation, a 5% decrease in landed value.

It is estimated that there are 25 000-27 000 commercial fishing vessels licensed to operate in the US EEZ. The National Marine Fisheries Service (NMFS) is currently developing a national permit database that will enable it to readily quantify the total number of Federally-permitted craft.

In 2004, there were 65 690 workers employed in 3 242 wholesale and processing plants. The commercial marine fishing industry, in 2004, contributed USD 31.6 billion (in value added) to the US Gross National Product.

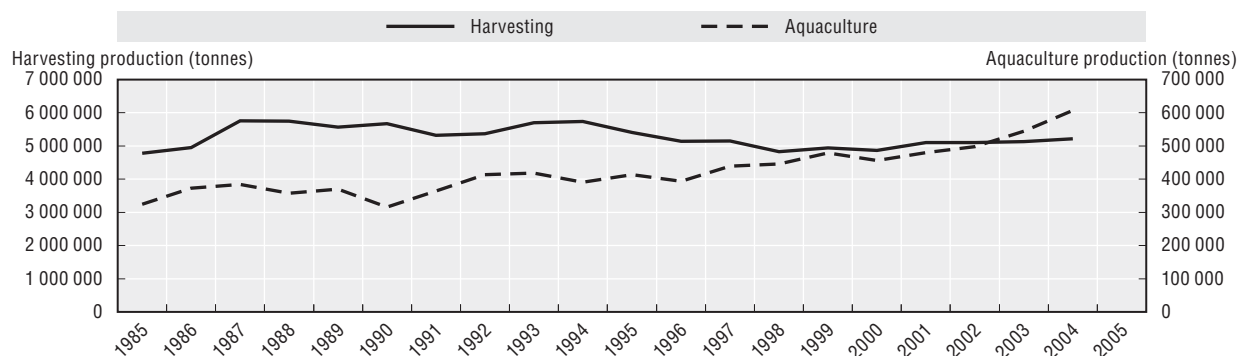
The primary legal authority for fisheries management in the US Exclusive Economic Zone (EEZ) is the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). This statute establishes eight Regional Fishery Management Councils (Councils), which are responsible for recommending fishery conservation and management measures via fishery management plans (FMPs) to the Secretary of the US Department of Commerce for approval.<sup>1</sup>

The United States employs a wide range of management instruments, including total allowable catch (TAC), gear and vessel restrictions, seasonal and area closures, restrictions on size/weight, and individual fishery quotas. The majority of US fisheries are managed under limited entry or regulated open access programs using a variety of these tools to manage catch.

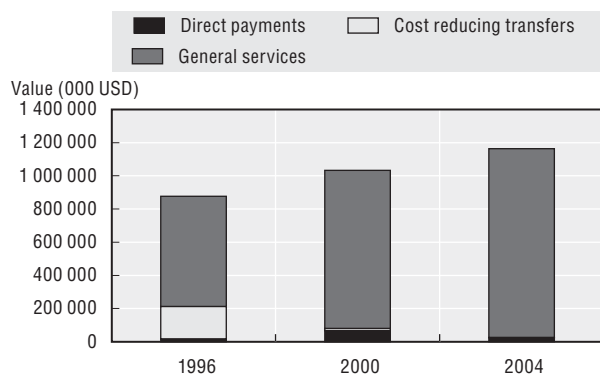
United States imports of edible fishery products in 2005 were valued at USD 12.1 billion; USD 768 million more than in 2004 and a billion more than in 2003. The quantity of edible imports was 2.3 million mt in 2005, a 74 449 mt increase from the quantity imported in 2004 and a 94 522 mt increase from 2003.<sup>2</sup> In 2005, US exports of edible fishery products of domestic origin were 1.3 million tons (valued at USD 3.8 billion), compared with an increase from 1.2 million tons (USD 3.5 billion) exported in 2004 and 1 million tons (USD 3.1 billion) exported in 2003.

## United States of America – Summary statistics

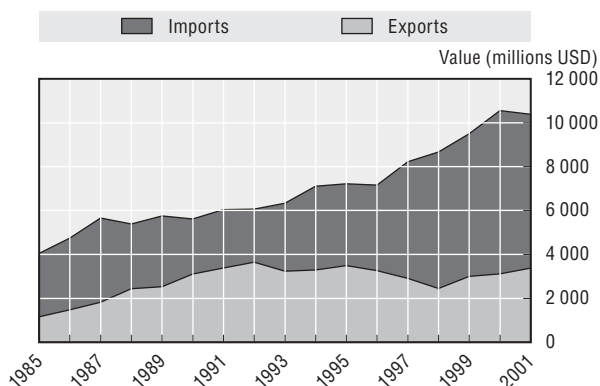
### Figure III.27.1. Harvesting and aquaculture production



### Figure III.27.2. Evolution of government financial transfers



### Figure III.27.3. Trade evolution



Source: Figures III.27.1 and III.27.3: FAO; Figure III.27.2: OECD.

## **ADDITIONAL DETAILS (see also [www.nmfs.noaa.gov/](http://www.nmfs.noaa.gov/))**

### **Legal and institutional framework**

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) was extensively amended in October 1996 with the passage of the Sustainable Fisheries Act (SFA). Some of the key provisions of the SFA required actions be taken to: prevent and end overfishing; rebuild overfished stocks to levels consistent with maximum sustainable yield (MSY); reduce bycatch and minimise mortality of unavoidable bycatch; designate and conserve essential fish habitat, and to the extent practicable, minimise adverse effects on such habitat caused by fishing; account for impacts of management measures on fishing communities and minimise negative impacts; and establish a fishing capacity reduction program.

Upon passage of the Oceans Act in 2000, Congress mandated a formal review of all US oceans-related programs and policies by a commission appointed by the President. The US Oceans Commission issued its final report in September 2004, which provided a summary of the commission's findings and over 200 recommendations addressing all aspects of ocean and coastal, including fisheries, policy.

In response, the Bush Administration developed the "US Ocean Action Plan", which was released in December 2004. The Ocean Action Plan was central to the development of the Administration's proposal to reauthorize the MSFCMA, which was provided to Congress in September 2005. Some of the most important issues being addressed by Congress in MSFCMA reauthorization are: the establishment of annual catch limits; national standards and requirements for Limited Access Privilege programs, which would allocate harvesting privileges to individuals, fishing communities, or regional fishery associations; promulgation of a uniform and consistent environmental review process for fishery management decisions; improvements for data collection and management; development of technologies and modifications to fishing gear to minimise bycatch; and ecosystem approaches to fishery management.

### **Capture fisheries**

Evidence suggests that overall economic performance of the fleet has been at a non-optimum level for many years (although performance varies substantially between fisheries). A recent report by NMFS, *Assessments of Excess Fishing Capacity in Select Federally-Managed Commercial Fisheries*,<sup>3</sup> indicates that the majority of fisheries and fleets examined have significant excess capacity.

#### **Management of fish stocks**

The United States employs a wide range of management instruments, including total allowable catch (TAC), gear and vessel restrictions, seasonal and area closures, restrictions on size/weight, and individual fishery quotas. The majority of US fisheries are managed under limited entry or regulated open access programs using a variety of these tools to manage catch.

US Federal fisheries management has demonstrated on a selective and case-by-case basis a willingness to devolve management authority to local (state) government and to user groups.

### **Foreign access arrangements**

Foreign investments in the US fish harvesting sector are regulated by flagging, ownership, and cabotage requirements that were amended in the American Fisheries Act of 1998. Essentially, fishing vessels that participate in 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 three current ITQ fisheries is prohibited under the FMPs. Foreign investments in other sectors such as processing, trading, marketing, and aquaculture, are not currently subject to analogous restrictions.

Only one Governing International Fishery Agreement (GIFA) is in force (Russia). Historically, small quantities of Atlantic herring and Atlantic mackerel were available for joint venture operations in US waters (i.e., operations in which US-flag vessels harvest fish specified as available for joint ventures and sell their catches over-the-side for processing by authorized foreign vessels). However, no species were available for joint ventures processing in 2004 or 2005. No US fishers have operated outside US waters under similar bilateral fisheries access arrangements for a decade.

US access to foreign fisheries primarily occurs via the provisions of the 1987 Multilateral Treaty on Fisheries between the governments of Certain Pacific Island States and the government of the United States of America (also known as the South Pacific Tuna Treaty). Under the terms of the Treaty, US-flag tuna purse seine vessels have access to fisheries in the waters of the 16 Pacific island nations that make up the Forum Fisheries Agency (FFA). The US tuna industry currently pays USD 3 million in annual access fees for up to 40 licenses, with an additional 5 licenses for joint ventures. Under an economic assistance agreement associated with the South Pacific Tuna Treaty, the US government annually provides USD 18 million in economic support funds to the Pacific Island Parties. In recent years, the number of US vessels licensed under the Treaty has declined considerably, with only 13 vessels operating in the central and western Pacific in 2005.

### **Recreational fisheries**

Recreational fishing in the US EEZ is defined by the SFA of 1996 as “fishing for sport or pleasure”. Federal regulations do not provide for the sale of recreationally caught fish. However, each State sets regulations for its waters and, in a few cases, State regulations allow for the sale or barter of recreationally caught fish. With the exception of highly migratory species, recreational fishing regulations are, in most cases, set by each State. For species under Federal regulation, State and Federal governments work together to develop appropriate regulations. While there is no Federal saltwater sport-fishing license in the United States, many States do require a license. Daily recreational catch limits vary by State and species – from zero for some depleted species to unlimited amounts for other more abundant species. Size limits and gear restrictions are also applied in some fisheries.

Nearly 59% of the marine recreational catch was released live in 2002-03. The economic importance of marine recreational fishing to the US economy was last estimated in 2000. Economic importance, in 2000, was estimated at over USD 30.5 billion in sales and USD 12.0 billion in income. In addition, marine recreational fishing supported over 350 000 jobs. NMFS is currently conducting a study on marine fishing expenditures, expected to be completed in the next reporting period (2006-07).

### **Fishery rights of Federally-recognized tribes**

The US government has a trust responsibility to Federally-recognized entities, including tribes, nations, villages, pueblos, etc. These entities are tribal governments, exercising a measure of governmental authority over their membership and territory. Special arrangements and provisions relating to fishing rights arise from various treaties, statutes and court rulings.

### **Enforcement**

NMFS Office for Law Enforcement (OLE) is the primary investigative arm of the Federal government regarding the enforcement of Federal fisheries laws and regulations. OLE continues to investigate both criminal and civil violations. There has been a significant increase in the identification of ongoing international violations as revealed by investigations that have identified numerous multi-national/international schemes to smuggle both wild caught and aquaculture sea food products into the US. The 2003 observed domestic compliance rate (97.1%) was just above the program goal of 97%. The 2004 and 2005 rates were slightly lower at 96.3% and 96.4% respectively. NMFS has increased the number of fisheries covered by VMS to over 3 00 US-flag vessels.

### **Aquaculture**

Aquaculture production in 2004 was 408 000 mt with a value of USD 1.6 million (420 000 mt with a value of USD 961 000 in 2003).

The United States continues to take steps to promote safe and environmentally and economically sound aquaculture. In 2004, the US Environmental Protection Agency (EPA) issued final regulations under the Clean Water Act (CWA) establishing Effluent Limitations Guidelines (ELGs) and New Source Performance Standards for the Concentrated Aquatic Animal Production (CAAP) Point Source Category.

### **Government financial transfers**

Total government financial transfers (GFT) to the fishing industry amounted to USD 1 232 million in 2005. While this corresponds to a third of the ex-vessel value of landings, 92% of the GFT were for general services.

### **Fisheries and the environment**

During the 2004-05 reporting period, the United States continued efforts to develop and apply measures that would improve fishery sustainability. These initiatives were promoted by both the US. Government and selected user groups, and included: a) legislative proposals; b) indicators and measures of resource sustainability; and c) ecolabels. The Administration's legislative proposal to reauthorize the MSFCMA included numerous provisions relating to ecosystem-based approaches to fishery management. This is a complex topic, but the key element in this proposal is the authority to develop fishery ecosystem plans. In addition, NMFS is in the process of developing economic and social indicators of sustainability for fishing communities.

## Outlook

Upon the passage of MSFCMA legislation, the NMFS will shift its focus towards implementation and meeting the requirements set forth in the Act. Additionally, the United States will continue to work toward liberalising trade in the fisheries sector. To this end, the United States will pursue bilateral and regional free trade agreements as appropriate and, should the Doha Round of multilateral negotiations be revived, continue working towards a successful conclusion of the Doha Development Agenda or its successor at the World Trade Organisation.

NMFS published a proposed rule in January 2006 that would govern the establishment and operation of Seafood Marketing Councils. If finalized, this rule would encourage the industry to promote increased per capita consumption of seafood.

The US trade policy for fish and fisheries products is driven by a number of underlying precepts. The United States recognizes that, without sustainable fisheries, there can be no long term, commercially-viable trade in seafood. Conservation and sustainability are therefore concepts at the core of US trade policy. Additionally, the United States takes the position that tariffs and quantitative restrictions on trade are not, for the most part, effective substitutes for good management. As a country with relatively low tariffs on fish and fish products, the United States supports liberalising global trade in these products. To accomplish these outcomes, the United States has actively promoted market access and fisheries subsidies reform negotiations at the World Trade Organisation.

## Notes

1. The one exception is highly migratory species along the Atlantic coast of the United States which are managed directly by the National Marine Fisheries Service within the US Department of Commerce's National Oceanic and Atmospheric Administration.
2. Quantities and values of imports and exports of specific products can be found at: [www.st.nmfs.gov/st1/publications.html](http://www.st.nmfs.gov/st1/publications.html).
3. National Marine Fisheries Service, 2006. Assessments of Excess Fishing Capacity in Select Federally-Managed Commercial Fisheries. Silver Spring, MD.





PART III

*Chapter 28*

**Argentina**

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### **Main characteristics of the Argentinean fishing sector**

Fishing policy in Argentina, for the period 2004-05, was designed to meet the aim of strengthen resource conservation to cause the least possible damage to economic activity. This period was marked by a drop in catches of some of the major marine resources (*i.e.* squid *Illex argentinus* and shrimp *Pleoticus muelleri*) and prolonged conflicts with crews.

Over the period analysed, total landings remained stable. Larger catches of Argentinean hake more than compensated for the decrease in squid and shrimp. Present landing levels, although stable, are lower than those reached during the last five years of the 1990s, when the amount of fishing effort applied had negative implications on the sustainability of some resources.

Noteworthy during this period was the allocation of a catch share of Argentinean hake (*Merluccius hubbsi*) to individual vessels for the different fishing grounds and a yearly distribution. This measure was adopted as an improvement to open-access fishing in order to link actual catches to resource availability, avoiding over-fishing. The allocation of catch shares is considered a step towards the adoption of an ITQ system in Argentina.

Exports in 2004 reached USD 816 million and 494 000 metric (mt). In 2005, there were no significant variations and exports were 495 000 mt. In 2005, Argentinean imports of fishing products increased by 27%, reaching USD 55 million.

## Argentina – Summary statistics

Figure III.28.1. **Harvesting and aquaculture production**

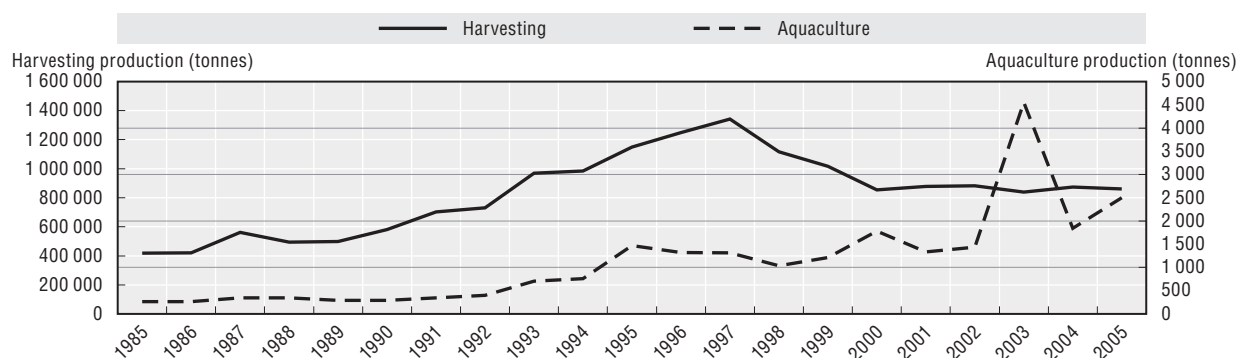


Figure III.28.2. **Key species landed by tonnage in 2005**

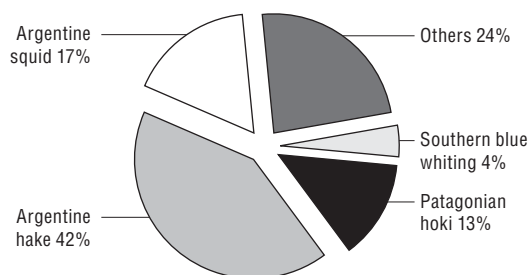


Figure III.28.3. **Trade evolution**

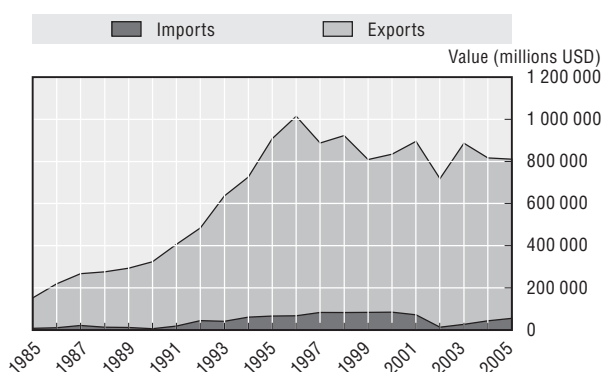


Figure III.28.4. **Production profile**

	2003	2005
Number of fishers	15 234	15 549
Number of fish farmers	n.a.	n.a.
Total number of vessels	816	971
Total tonnage of the fleet	218 326	196 296

n.a.: Not available.

Source: Figures III.28.1 and III.28.3: FAO; Figures III.28.2 and III.28.4: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

The Undersecretariat of Fisheries and Aquaculture is the enforcement authority for decisions taken by the Federal Fisheries Council (CFP); the body that governs national fishing policy as well as research policy. It grants permits for fishing on the high seas to vessels flying the Argentinean flag and willing to operate outside the Exclusive Economic Zone. This rule takes into account the international legal framework on conservation and management for fishing vessels on the high seas.

### Capture fisheries

Total landings were 839 288 mt in 2003, 873 100 mt in 2004 and 861 851 mt in 2005. This is a decrease from an average of 981 966 mt for the period 1992-2005.

Over the period analysed, total landings remained stable. Larger catches of Argentinean hake more than compensated for the decrease in squid and shrimp. Present landing levels, although stable, are lower than those reached during the last five years of the 1990s, when the amount of fishing effort applied had negative implications on the sustainability of some resources.

In 2004, catches of Argentinean hake (*merluccius huhbsi*) reached 416 740 mt, not exceeding the Total Allowable Catch established by the Fishing Authority on the basis of technical advice provided by INIDEP. As mentioned above, catch allocations were assigned to individual vessels on a regional and seasonal basis. Fishing areas accessible to freezer trawlers was extended to include the area to the South of 41°S. In 2005, the Argentinean hake TAC was set lower in response to scientific advice provided by INIDEP. Landings (361 971 mt) were well below the TAC, probably due to a two-month fish workers' strike.

After a biological crisis at the end of the 1990s, hake is now recovering. However, the authorities still enforce restrictive measures on fishing effort in order to aid the recovery of both the total and reproductive biomass. Therefore, compulsory stops in ports, the closure of areas, maximum by-catch of Argentinean hake in other fisheries, minimum size of catch, etc. are strictly complied with.

In 2004, shrimp catches (*Pleoticus muelleri*) decreased from April onwards. As a result, it was necessary to introduce temporary closures for the recovery of the resource. The decrease was 49% (27 127 mt). As in previous years, capture was mainly in the San Jorge Gulf. This situation worsened in 2005 when catches barely exceeded 7 400 mt, the lowest on record for this species over the period 1989-2006. The observed decrease in resource availability was similar in all jurisdictions.

The main shrimp fishing grounds are located in the San Jorge Gulf and are shared by the provinces of Chubut and Santa Cruz. By the end of 2005, a dispute on the granting of fishing licenses in each jurisdiction was settled, leading to a new Agreement on the Joint Administration of the San Jorge Gulf. The Agreement is a valuable tool in achieving a more comprehensive assessment of the state of this dynamic resource and the implementation of mobile closure areas. This protects juveniles and spawners significant to the ongoing sustainability of the resource, without imposing unnecessary restrictions on fleet activity.

The squid (*ilex argentinus*) fishery comprises two management units to the South and North of latitude 44°S. Each of these includes two populations spawning in different seasons. The Argentinean fishery has been largely dependent on the southern management unit, specifically on the autumn-spawners known as the South Patagonian stock.

In 2004, squid landings reached their lowest historical value (76 485 mt), which represented a 45% drop from 2003 landings. This decline was largely due to the dramatic decrease in the availability of the Southern Patagonian stock. The Southern management unit was supported by the summer spawners. Measures were adopted in order to proceed to an early closure of the fishery to secure the necessary escapement of spawners.

Squid landings in 2005 peaked at 146 097 mt, but were still largely dependent on the summer spawning stock and below the historical mean value, estimated at over 218 000 mt. There was, again, an early closure of the fishery to the south of 44°S and an anticipated start of fishing activity on the northern management unit. A large share of the catch (85%) corresponded to Argentinean jiggers. The number of bare boats chartered decreased as some licences expired.

Landings of Patagonian hoki (*Macruronus magellanicus*) over the period 2004-05 were above the historic average, yet below the established TAC (200 000 mt) based on scientific advice. Landings were somewhat higher in 2004, reaching 116 994 mt. Patagonian hoki is fished both as a substitute to Argentinean hake by trawler freezers and as raw material for surimi vessels. The participation of the former increased, whereas catches of the latter dropped from 36 196 mt to 19 225 mt during the analysed period.

Patagonian toothfish (*Dissostichus eleginoides*) is still in a critical situation despite the restrictive measures imposed. Catches reached their lowest level in 2005, with just 1 219 mt. Only the historical fleet with its corresponding catch assignment was allowed to fish. Still in force are precautionary measures such as total by-catch, catch minimum depth, minimum size of catch, etc.

In 2004, Argentinean anchovy (*Engraulis anchoita*) catches increased by 31% (37 266 mt) with regard to the previous year. However, in 2005, catches decreased by 7.5% compared to those in 2004. Ice trawlers fished this species as an alternative to Argentinean hake, especially in 2004, catching more than 70%. Nevertheless, in 2005, this fleet could not fish for an extended period due to trade union problems and catches decreased. The increase mentioned above is related to changes in the international market as a consequence of low catches in other fisheries. It is worth noting that the tonnages are lower than the Total Allowable Catch and, consequently, there are real possibilities for development.

A multi-specific fishery has been established in the coastal waters of Buenos Aires province. Fishing is carried out by a diverse multi-strata fleet. This resource comprises over 30 species. The dominant species is the White croaker (*Micropogonias furnieri*), with catches increasing over the last few years, with a large percentage of juveniles. Precautionary measures were adopted in order to protect nursery grounds.

Catches of the second most important resource – the Stripped wreckfish (*Cynoscion guatucupa*) – have decreased. On the other hand, there has been an increase in coastal skates (*Sympterygia bonapartii*, *Sympterygia acuta*, *Rioraja agassizi*, *Psammobatis spp.*, *Dipturus chilensis*, *Atlantoraja cyclophora*, and *Atlantoraja castenau*), Red porgy (*Sparus pagrus*), Bastard halibuts (*Paralichthys patagonicus*, *Paralichthys orbignvanus* and *Paralichthys isosceles*), flatfish (*Xystreuris rasile*) and Argentinean croaker (*Umbrina canosai*).

This area is under a joint management administration by Argentina and Uruguay through the Rio de la Plata Treaty and its Maritime Front. The CTMFM (Technically Mixed Commission of the Argentinean-Uruguayan Maritime Front) establishes tonnage per species and measures for conservation, protection and rational exploitation of the resource.

### **Monitoring and enforcement**

The Overall Surveillance System of Fishing Activity (SICAP) is undoubtedly important for controlling compliance with established management measures. VMS controls 416 vessels in the Argentinean fleet, enhancing the capacity of the Fishing Authority to impose time and space closures on different fisheries. During the analyzed period, it captured 13 foreign vessels that were fishing illegally in national waters.

### **Fishery management**

Efforts were made to promote new fisheries in order to divert fishing effort from traditional resources. As a result, an experimental fishing program for benthic decapods was established in accordance with INIDEP recommendations – the National Institute for Fisheries Research and Development. In addition to this, the Research Plan for the Development of a Sustainable Fishery for Argentinean anchovy in Patagonia still remains in force.

The decrease in availability of some resources – namely, shrimp, squid and Patagonian toothfish (*Dissostichus eleginoides*) – made catch restrictions necessary. In order to achieve transparency, consensus and avoid conflict, multi-sectoral advisory bodies were created. These Commissions included representatives from national and provincial governments, researchers from both jurisdictions and relevant members of the fishing industry. In addition to the resources mentioned above, Advisory Commissions were also created for the Argentinean hake and Patagonian scallop (*Zygochlamis patagonica*) fisheries.

### **Aquaculture**

With regard to Aquaculture, a Unique Register of Fish Farmers (RENACUA) was created. Zone classification for bivalve molluscs (mussels and oysters) was completed for two provinces and a Sanitary Plan for salmonoids was instigated.

Development of new technologies and value added products continue. In addition, development of biological and chemical fish silage with the following purpose is ongoing: replacement of the use of fishmeal for breeding fish, reducing costs, and pollution reduction.

The Aquaculture Unit continued with its Annual Training Program for producers, technicians and professionals. Institutional strengthening for aquaculture research was one of the priorities of the Undersecretariat of Fisheries and Aquaculture.

### **Markets and trade**

#### **Exports**

Although total export values remain stable, some fishing products show important changes. Volume of crustaceans exported in 2005 (7 123 mt) was 74% less than in 2004. The value of crustacean exports showed a decrease of 60%, from USD 217 million in 2004 to USD 86 million in 2005.

Exports in volume of fillets and other fish meats showed a decrease of 5% in 2005 in relation to those of 2004. However, the value of these exports increased by about 7% over the same period. Decreases observed in crustaceans and, to a lesser extent, in fillets and other fish meats were counterbalanced by an increase in molluscs. They reached USD 206 million, increasing 89% in relation to 2004. Accordingly, the volume of molluscs exported increased from 57 000 mt to 98 000 mt during the period analyzed.

The largest share of fishing products exported was fillets and other fish meats. Within this, primary products are Argentinean hake (66%), Patagonian hoki (9%) and surimi (8%). In 2004, fillets and other fish meats accounted for 36% in volume and value of exports. In 2005, the share of this decreased 34% in volume but increased to 38% in value.

Molluscs increased in total value exported from 13% in 2004 to 25% in 2005. Main species are Argentinean squid, which accounts for 82% of this and scallops, with 17% in 2005. On the other hand, crustaceans (mainly shrimps that accounted for 98% of exports of this group in 2005) experienced a significant fall in tonnage exported, thus reducing share in total exports from 27% in 2004 to 11% in 2005.

Spain remains the main destination of Argentinean fishing products. In 2004, Spain received 46% of total exports, comprising 94 000 mt and USD 271 million. Spain also dominated all other destinations in 2005, reaching 110 000 mt and USD 272 million. Brazil became the second most important destination for Argentinean fishing product exports in 2005, showing an increase of 24% in relation to the previous year. On the other hand, Italy decreased its share from 2004 to 2005. This decline was more significant in value (29%) than in tonnage (16%).

It is worth mentioning the rise of Russia as a destination of Argentinean fishing product exports. In 2005, the country received 22 000 mt, which implies an increase of 80% in exports from the previous year.

### **Imports**

In 2005, Argentinean imports of fishing products increased 27%, reaching USD 55 million. Prepared or preserved fish is the most important with an incidence of 70%. Tuna imports account for 60%. Fresh or chilled fish (except fillets) show a smaller contribution of about 10% (almost exclusively Atlantic salmon).

It should be pointed out that in 2005, imports of molluscs and crustaceans showed a considerable increase that surpassed others, such as prepared and preserved seafood, fillet and other fish meat. Frozen octopus accounted for 41% of all molluscs imported. Imports of crustaceans were comprised mostly of softshell red crab, which represented 54% of all crustaceans.

In regard to the origin of Argentinean fishing imports, it should be pointed out that most of them (96%) come from only 7 countries (Chile, Brazil, Ecuador, Singapore Thailand, Spain and Peru). Among them, Chile has the largest share at about 36%. Chile exported 14 876 mt to Argentina, valued at USD 19 million in 2005. This represented an increase of 43% in relation to 2004. Brazil is the second most important exporter of fishing products to Argentina. Brazilian sales reached USD 9 million in 2005, increasing 17% in relation to 2004. This was 18% of the total value of all Argentinean fishery imports.





PART III

*Chapter 29*

**Chinese Taipei**

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## Main characteristics of the Chinese Taipei fishing sector

Chinese Taipei is the 20th top producer in the world. Historically, fisheries have played a significant role in the development of geographically disadvantaged regions in Chinese Taipei, as well as providing stability to society and food supply. Some 130 000 fishing households with a workforce of 340 000 fishers participate in the sector. In recent years, the production of fish has reached 1.5 million mt (metric tons), with a value of just under TWD 100 billion (around USD 3 billion). The aquaculture sector provides an additional 300 000 tons of fish valued at TWD 30 billion and its aquaculture technology, in particular, enjoys a worldwide reputation.

The Chinese Taipei fishing industry is highly diversified and comprised principally of two sectors: a large-scale deep sea commercial fishery targeting tuna and squid in international and foreign waters, and a community-based coastal and offshore fishery harvesting a wide range of species within the Chinese Taipei EEZ. Deep sea fishing plays a dominant role in Chinese Taipei. The deep sea long-distance fleet, targeting tuna and squid, harvests around 800 000 tons per annum, representing 58% of overall activity measured by landings. The Central and Western Pacific are principal hunting grounds for tuna while squid jigging takes place mainly in the South Western Atlantic, Western and Eastern Pacific Oceans. Some 71 foreign ports serve as principle ports for these activities. To manage issues of overcapacity, flags of convenience (FOC) and IUU fishing by the deep sea tuna fleet, a two year vessel buyback/scrapping program (2005-06) has reduced the active tuna fleet from 614 units to 454. This has been coupled with a prohibition to export tuna vessels built in Chinese Taipei. Also, authorities are working on equipping all deep sea vessels with vessel monitoring systems (VMS).

Coastal and offshore fisheries produce around 250 000 tons; these fisheries are varied and management is based on conservation of resources and restoration of the marine ecology: vessel buyback programs, fishing closures, the set up of closed areas, conservation areas and protected habitats are the principal management instruments, coupled with active stock enhancement through the release of fish seed.

Chinese Taipei reported government financial transfers of TWD 1.47 billion (roughly USD 44 million); fairly modest compared to the overall value of landings. The major element of direct payments to fishers is TWD 268 million towards compensating fishers for closed fishing seasons and TWD 63 million towards a fishing vessel buy-back program. One program, the Fishing Vessel Marine Insurance Reward, reduces costs for fishers by TWD 84 million. By far the largest amount of money finances general services, in particular the Chinese Taipei Fisheries Agency's annual administration budget.

The Chinese Taipei fisheries sector is heavily export orientated. Major markets for Chinese Taipei fisheries are Japan, Thailand and the United States. The Japanese market alone takes close to 62% of the export value; products mainly include high valued sashimi-grade tuna. Thailand imports an important quantity of lower grade tuna for canning.

## Chinese Taipei – Summary statistics

Figure III.29.1. **Harvesting and aquaculture production**

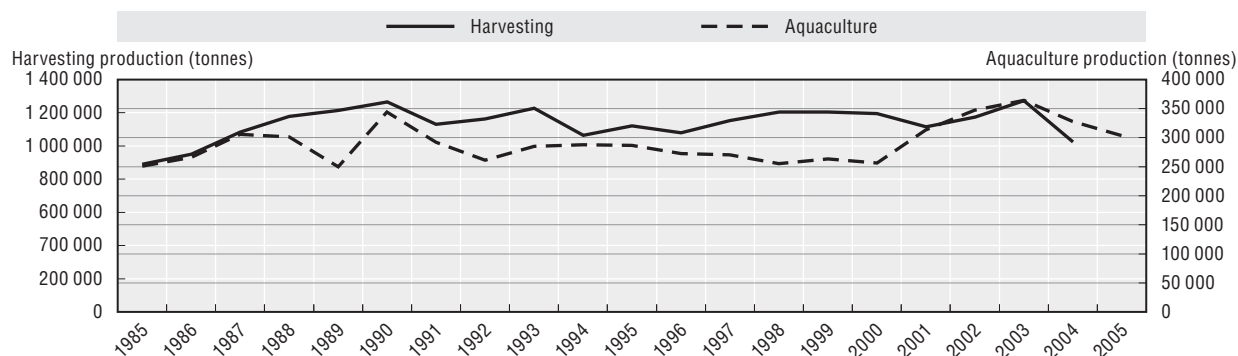


Figure III.29.2. **Key species landed by value in 2005**

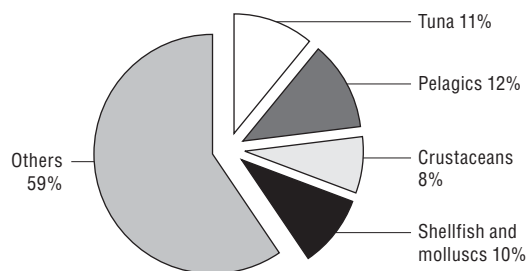


Figure III.29.3. **Age structure of fishers**

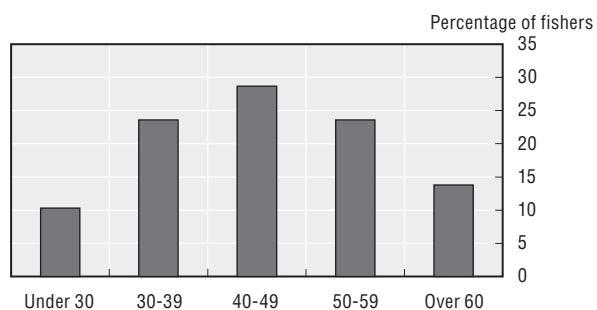


Figure III.29.4. **Evolution of government financial transfers**

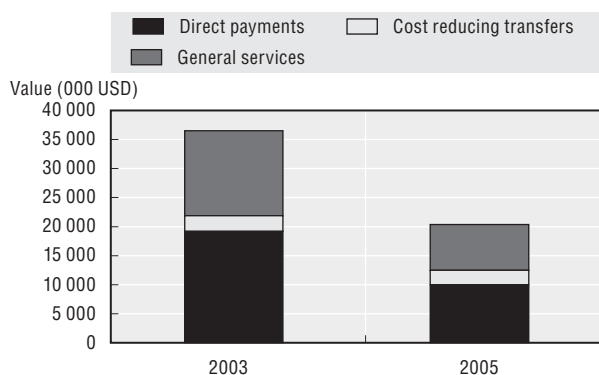


Figure III.29.5. **Trade evolution**

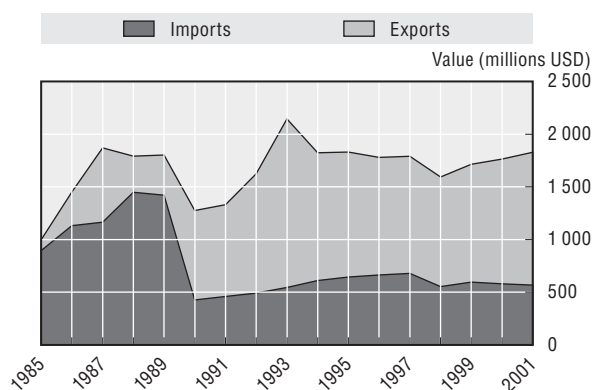


Figure III.29.6. **Production profile**

	1996	2005
Number of fishers	n.a.	8 154
Number of fish farmers	n.a.	105 123
Total number of vessels	n.a.	13 569
Total tonnage of the fleet	n.a.	766 385

n.a.: Not available.

Source: Figures III.29.1 and III.29.5: FAO; Figures III.29.2, III.29.3, III.29.4 and III.29.6: OECD.

## ADDITIONAL DETAILS\*

The Chinese Taipei government has taken necessary measures and corresponding action to develop frameworks for superior quality and safe fish, recreational and environment-friendly fisheries and fisher welfare. This has been done with a view to improving the competitiveness of the industry and ensuring the sustainable development of Chinese Taipei's fisheries in the wake of the extension of the 200-mile exclusive economic zone by coastal nations, and the trend towards common management of high seas resources.

### Legal and institutional framework

The Fisheries Act constitutes the legal basis of Chinese Taipei's fishery management. Promulgated in 1929, it has been amended five times in order to effectively accommodate the changing fisheries environment. A few new regulations addressing management issues related to FOC and IUU vessels are currently in the process of preparation or enactment.

In terms of international co-operation, Chinese Taipei participates in the following international and regional fisheries organisations in various capacities, ranging from full membership to observer status; WCPFC, ISC, CCSBT, IATTC and ICCAT. In addition, Chinese Taipei is also the current Chair of the Fishery Working Group of the Asia Pacific Economic Co-operation (APEC).

### Capture fisheries

Major fishing methods in the deep sea fishery include tuna long-lining, tuna purse seining, trawling, squid jigging and the torch light saury fishing. In recent years, production has surpassed 800 000 mt, accounting for over 58% of overall fisheries production. Tuna long-lining can be divided into super-freezer tuna long-lining and conventional tuna long-lining. Tuna fishing grounds cover major oceans of the world. The tuna purse seine fishery is concentrated in the Central and Western Pacific Ocean. Squid jigging mainly takes place in the South-Western Atlantic Ocean, the Northern Pacific Ocean and the Eastern Pacific Ocean, depending on the fishing season.

Trawlers currently operate mainly in the waters off Indonesia under joint venture partnerships. Some squid jiggers travel to the Northern Pacific Ocean to carry out torch light saury fishery on a part-time basis after the squid fishing season is over. Most tuna long-liners and purse seiners use foreign ports as supply bases, repairs and for transshipments. Some 71 foreign ports have been approved as base ports for fishing activities.

### Management

Major coastal and off-shore fisheries include trawling, long-lining, torch light fishing, mackerel purse seine fishing, and set-net fishing. Annual production is approximately 250 000 tons with a value of TWD 18.7 billion. In order to promote sustainable development of coastal and offshore fisheries resources, management focuses on conservation of resources and restoration of ecology. With such targets in mind, measures such as vessel buybacks, fishing closures, establishment of closed areas, conservation areas and protected habitats are in use for the protection of fishery resources and stock enhancement programs such as the releasing of fish seeds to improve the productivity of

\* The Fisheries Agency of Chinese Taipei runs an English language website on: [www.fa.gov.tw/eng/guide/guide.php](http://www.fa.gov.tw/eng/guide/guide.php).

fishing grounds. Furthermore, assistance has been provided to fishers engaging in such recreational activities as sea angling and dolphin watching, to diversify development of coastal and offshore fisheries.

To cope with recent developments in fishery resource management, Chinese Taipei is in the process of implementing a series of policy measures to address issues such as responsible fishing, FOC, IUU and integrated coastal management. First of all, a policy to reduce fleet size has been in effect since 2004. This is a two-year program aiming to reduce the number of large-scale tuna long-line vessels in 2005 and 2006 respectively. After the completion of this fleet size reduction program, it is expected that the total number of large-scale tuna long-liners in Chinese Taipei will be reduced from 614 to 454, thereby aiding the meeting of an objective proposed by the FAO of a 20% reduction in the world's total large-scale tuna long-liners.

Secondly, to co-operate with international fisheries organisations and deal with the issues of FOC and IUU, Chinese Taipei has continually made efforts to adopt measures, including:

1. In co-operation with Japan, 48 FOC fishing vessels, built in Chinese Taipei, have been registered to the Chinese Taipei flag and since 1999 have operated under domestic management systems.
2. In order to prevent the expansion of fishing capacity resulting from vessels exported by Chinese Taipei or foreign-owned fishing vessels, a regulation has been in force since June 2005, prohibiting the exportation of any tuna vessels built in Chinese Taipei, except when intended to replace a sunk or scrapped fishing vessel of equivalent capacity, while ensuring in advance that the vessel is on the positive lists of RFMOs.

Yet another policy initiative to enforce responsible fishing is to equip all large scale long line vessels with VMS. Also, legislation to implement integrated coastal management is in the process of undergoing public consultation. The coastal fishery will be under the jurisdiction of this new law once promulgated, and concepts such as Marine Protection Area (MPA) will be introduced for the first time in to the fisheries management domain. Through a better integration of coastal and fishery management, it is expected that a sustainable fishery can be better maintained.

Finally, to restore coastal fish resources, plans are in place to prohibit fishing for Whitefish flying fish, larval fish, Japanese anchovy and Buccaneer anchovy for three years. Harvesting of coral reef will also be prohibited.

## Aquaculture

Aquaculture in Chinese Taipei consists of fresh water farming, brackish water farming and marine aquaculture. Total farming acreage amounts to about 60 000 hectares, with an annual production of 250-300 000 mt and a value of TWD 30 billion. Development of aquaculture will continue to be focused on the rational use of land and water resources and the upgrading of product quality *inter alia* through the implementation of a Land Restoration Program. Aquaculture farms are subject to strict regulations in terms of acreage, intensity of use, groundwater draft and other environment-related aspects.

Through core development of specialized aquaculture areas and refined aquaculture, the acreage of fish ponds will be reduced and water supply infrastructure will be constructed. Marine cage farming will be developed in order to allow the building of sea parks so that aquaculture production areas will incorporate multi-faceted developments involving recreational and hands-on experience of fish farming.

Current policy focuses on promoting environmentally-friendly aquaculture. The government will continue to assist aquaculture fish farms to meet certification criteria while introducing organic aquaculture and the recycling of pond water. It is planned to increase organic aquaculture by 400 hectares per year in 2007 and 2008, while 100 hectares of organic aquaculture have been in production since 2006.

## **Fisheries and the environment**

To achieve sustainable aquaculture and rational utilisation of land and water resources, the Fisheries Agency has been actively promoting the recycling of water in aquaculture by allocating budgets each year to subsidise fish farmers with funds for the installation of such facilities.

In addition, the establishment of Marine Ecological Restoration Areas is planned. Various types of artificial fish reefs have been launched and different species of fish, shellfish, crustacean, algae and coral have been stocked. Through better management and the artificial planning of fishing grounds, recreational scenic points will be developed for sea bottom touring, sea angling and scuba diving.

Assistance has been provided to the Chinese Taipei Fishermen's Association for the joint establishment of teams for fishing affairs and the domestic economy, in conjunction with the 39 district fishermen's associations under its supervision. Fisheries extension trainings, domestic economy trainings and Four-H extensions have been carried out by the Four-H Club. Professors and experts from fisheries related colleges, universities and research institutes have been invited to provide training and instruction to fishers, with the hope that through the organisation of local specialized teams, they will be able to receive the latest knowledge on fishing technology, distribution channels for fish products and government policy directions.

## **Government financial transfers**

The largest amount of government financial transfers is devoted to deep sea fishing and secondly, to the Fisheries Agency's annual budget, which peaked in 2004. With a few exceptions such as the Fishery Radio Station and the Deep Sea Fishery Development Centre, the largest type of government financial transfer is direct payments, which outweigh the sum of cost reducing transfers, general services and cost recover charges by a very large margin. As such, government financial transfers are decoupled from production volume or input factors.

When divided into sub-sectors, it is clear that the majority of government financial transfers are devoted to marine capture fisheries, accounting for between 45% and 68%. Aquaculture, as well as marketing and processing, receive relatively small amounts that never exceed 5% of the total.

## **Post-harvesting policies and practices**

Excellent quality and ample supply of raw materials are the basic requirements of Chinese Taipei's fish processing industry. Coupled with demand from foreign markets, a variety of processed sea products have been developed. For processed seafood, the processing technique and quality of frozen roasted eel for export are most prominent. Processing of traditional frozen food products such as fish ravioli, shrimp ravioli, fish steaks, squid balls, etc. has been developed. Due to years of development, production of

cured and canned food is already fully automated. In addition, there has been significant demand for seafood snacks that include shredded dried squid, tuna candy, kelp candy, etc. The development of items such as eel calcium, eel oil essence, clam essence and collagen from fish skins, has pushed the seafood industry to a new level of using fish offal to produce by-products, thus enabling the industry to enter into an era of high refinement. With respect to fish distribution, the function of fish markets and direct sales centres will be strengthened. A system of computer auctions of fish and fish products will be promoted in order to establish a fair, transparent, efficient and service oriented marketing and distribution system.

Chinese Taipei is one of the major fish and fish products exporters in the global trade system with deep sea fisheries and aquaculture being the major sources. Major export markets, as indicated in Table III.29.1, are Japan, Thailand and the United States. These three markets account for over 70% of Chinese Taipei's total fishery product exports, both in terms of value and quantity.

Table III.29.1. **Major export markets, 2005**

	Quantity	Quantity in %	Value	Value in %
<b>Total</b>	<b>650 477</b>		<b>50 504 506</b>	
Japan	202 196	31.08	31 251 808	61.88
Thailand	161 702	24.86	3 969 022	7.86
USA	67 137	10.32	4 960 632	9.82
Viet Nam	25 580	3.93	518 067	1.03
Singapore	13 869	2.13	651 042	1.29

Source: Fisheries Statistical Yearbook Chinese Taipei, Kinmen and Matsu Area, 2005.

## Outlook

To meet the trade challenge of Chinese Taipei's accession to the World Trade Organization and to improve the competitiveness of Chinese Taipei's fishing industry, enhancement of overseas markets through the promotion of Chinese Taipei's fishery products, will be key for the fishing industry. Premium quality fish products with export potential have been selected and with a focus on such markets as the USA, Japan, Korea and the EU, assistance has been provided to fishers and fisheries associations to participate in international food and seafood exhibitions and for overseas marketing campaigns. Extensive fisheries trade information will be collected to establish export opportunities. Those organisations with marketing capability will be institutionally strengthened or integrated, and an international label for sea products will be established.

In terms of the domestic market, there were 52 regional fish wholesale markets in 2005, including 15 consumption area fish markets and 37 production area fish markets. In 2005, wholesale fish market transaction amounted to 589 475 mt with a total value of TWD 31.2 billion, showing a decrease in volume of 1 276 mt and a decrease in value of around TWD 541 million compared to 2004.





PART III

*Chapter 30*

**Russian Federation**

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## Main characteristics of the Russian fishing sector

The total Russian marine catch in 2003 amounted to 3.3 million mt, about the same as in 2002. Most of the catch came from the Russian EEZ (approximately 64%), while 14% came from the 200 mile zones of foreign countries, 10% from the open ocean areas outside of 200 mile limits, 7% from inland waters and 5% from freshwater basins. This amount of catch is still well below historic levels of 7 million mt in 1991.

In 2004, the Russian fleet was comprised of 3 073 vessels, of which there were 2 574 fishing vessels, 54 processing vessels, 406 freezer vessels and 39 other transport vessels. Of the 2 574 fishing vessels, 17% were large vessels (over 64 metres length overall (LOA)), 51% medium-sized (34-65 m LOA) and 32% were small vessels (24-34 metres LOA). At present, the fishing fleet is characterized by a significant number of physically worn-out and obsolete vessels. It is estimated that about 63% of total vessels are beyond the exploitation time norms for the vessel.

In 1991, the fishing industry provided employment to 556 000 people in Russia, while in 2003 the total number of employees in fisheries was estimated at 370 000 persons. The decline in employment can be directly attributed to the national crisis of the 1990s and the subsequent negative macroeconomic factors that influenced the industry immediately thereafter.

Domestic consumption of fish and seafood products declined sharply after the fall of the Soviet Union as the overall seafood industry was compelled to change its structure due to the resulting economic crisis. The average level of fish consumption fell from more than 20 kg per capita in the 1980s to less than 10 kg in the 1990s. The Central Statistics University has estimated that annual per capita consumption is on the rise; at 11 kg (product weight) in 2003. New product forms and food marketing strategies that enhance convenience, quality and choice as well as the role of increasing incomes, have undoubtedly been a factor in this increase.

The Russian fishing industry is strongly export oriented. In 2003, total Russian exports of seafood products amounted to 1.2 million mt, more than one third of annual national production. Russia imported more than 800 000 mt of seafood at a cost of USD 547 million in 2003, this being the highest amount of seafood imports, both in terms of volume and value, over the last two decades. After the crisis of 1998, the exports of fish products did not reach pre-crisis levels (1.2 million mt) again until 2000. Since then, exports have been relatively stable with a slight increase in value to USD 1.5 billion from USD 1.1 billion in 1998. The main markets for the Russian seafood exports are South Korea, Japan, China, the EU and the USA.

## Russian Federation – Summary statistics

Figure III.30.1. **Harvesting and aquaculture production**

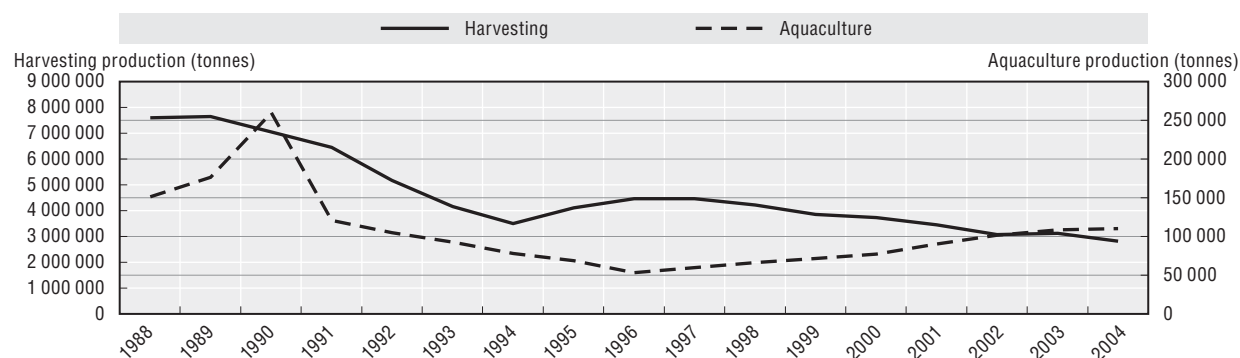


Figure III.30.2. **Key species landed by tonnage in 2003**

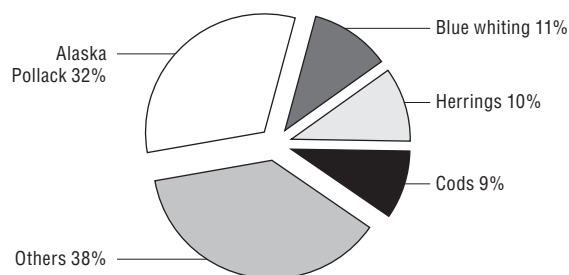


Figure III.30.3. **Trade evolution**

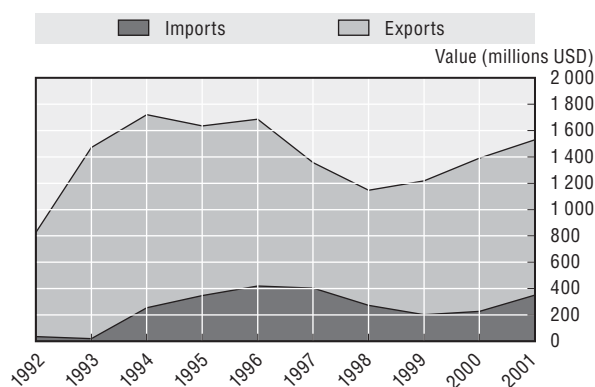


Figure III.30.4. **Production profile**

	1996	2004
Number of fishers	n.a.	124 000
Number of fish farmers	n.a.	n.a.
Total number of vessels	n.a.	3 073
Total tonnage of the fleet	n.a.	n.a.

n.a.: Not available.

Source: Figures III.30.1 and III.30.3: FAO; Figures III.30.2 and III.30.4: OECD.

## ADDITIONAL DETAILS

### Legal and institutional framework

#### *The Far East region*

The Far East region is the most important territory for the Russian fishing industry, accounting for approximately 60% of the total national catch. The Pacific Ocean is the main location of Russian marine resources, where almost 2 million mt of fish and seafood were caught in 2003 (43% of the TAC). Almost all the catch was taken exclusively in the Russian EEZ (98%). Most of the catch in the Russian Far East was taken in the northwest part of the Pacific Ocean. Major fish resources in the Russian EEZ are located in the Okhotsk Sea (35.3%), the western Bering Sea (14.6%) and from the East Kamchatka zone (9%).

During the period 2000-03, the overall catch in the Far East basin has declined by 15%, which is reflected in the decreased catches of the following species: Alaska pollack by 13%, plaice by 20%, herring by 47% and cod by 24%. However, in 2003 a positive growth trend in catches was observed for some species. Salmon catches increased by 37% over 2002 values, and the harvest of pollack roe increased by 26%.

#### *The North administrative region of the Russian Federation*

The North administrative region of the Russian Federation is the second most important region for the national fishing industry, with estimates of production at 20% of the total national catch. In 2003, the harvest of fish and seafood in the North administrative region of the Russian Federation decreased by 20%, down to 727 000 mt. The main part of the catch from the North administrative region of the Russian Federation came from the Northeast Atlantic Ocean.

#### *The western administrative region of the Russian Federation, including the Baltic coast*

The western administrative region of the Russian Federation, including the Baltic coast, constituted 11% of the total Russian catch at 372 000 mt in 2003. The catch was 5% lower than the 2002 harvest. During the last three years, however, catches have increased by 11%. The greater proportion of catches came from the Northwest Atlantic Ocean (83%).

The western area includes all the regions on Russia's borders with Finland, Estonia, Latvia and Belarus. The Kaliningrad region is separate from Russia proper and this area borders Poland and Lithuania. The region meets the Baltic Sea in the west. Fishing vessels operate from here in the Baltic Sea, North Sea and Norwegian Sea, as well as in the Equatorial and South Atlantic.

#### *Southern region*

The Southern region catch (including the Caspian Sea) was 123 000 mt in 2003. The region contributes around 7% of the total Russian catch. One half of the catch (60 000 mt) comes from the Caspian Sea, while catch from the Black Sea was estimated at 29 000 mt, and the Sea of Azov contributed 12 000 mt.

The main fishing regions in the southwest territory of Russia are the Krasnodarsky Krai, Adygeia and Rostov regions. The Krasnodarsky territory is situated in the western area of the Caucasus and is washed by two seas – the Black Sea in the southwest and the Azov Sea in the northwest. The Rostov region lies in the south of the East-European Plain and in the Caucasus and is washed by the Azov Sea in the West.

## Capture fisheries

The Russian fishing includes about 170 species of finfish and invertebrates of more than 100 commercial species. In terms of volume, the largest part of the national harvest for human consumption comes from Alaska pollack (30-40% of total catch). Herring is second with 10% and Atlantic and Pacific cod accounts for 9%. Salmon catches contribute 7%, but the species is very important in terms of its high value. Other important catches include mackerel, capelin, Pacific saury, halibut, haddock and crabs (23%). Blue whiting, which accounts for 11% of the total catch, is mainly used for production of fish meal.

## Aquaculture

Aquaculture production in Russia has been growing steadily over the last 7 years reaching almost 108 751 mt in 2003. The majority of output is represented by carp (Common carp, Silver carp and Gras carp), trout and whitefish. Sturgeon farming is a Russian specialty and scallop aquaculture is a new trend.

The development of aquaculture in Russia has also been encouraged by the government. The government established a particular state system aimed at developing the nation's freshwater aquaculture industry and provided financial support to fish farms. Accordingly, it is expected that the production of inland fish will rise to 600 000 mt by the year 2006.

## Government financial transfers

### *Fisheries employment*

In 1991, the fishing industry provided employment to 556 000 people in Russia, while in 2003 the total number of employees in fisheries was estimated at 370 000 persons. Thirty three per cent (124 000 persons) of all employees in the Russian fishing industry are working as crew on the fleet. Fifteen per cent of the total, or 56 000 persons, are directly employed in the fish processing industry while 51 000 persons work in the fish trade/marketing sector. Fleet-based support employees, excluding crews, comprise 40 000 persons; 30 000 persons are engaged in the fish catching industry; 19 000 persons are engaged in the shipbuilding sector; and 15 000 work in Russian seaports.

### *Policies*

During the period 1995-2004, the State Fisheries Committee was the main authority responsible for managing the overall Russian fishing sector. Its key functions were: 1) to distribute fish quotas; 2) to monitor the utilisation of fish resources; 3) to license fishery and aquaculture activities; 4) to formulate the national strategy for the fishery sector; and 5) to represent Russia at international events.

In 2004, the Russian President issued an order changing the structure of his ministerial cabinet. By this order, the former Russian State Fisheries Committee was abolished and a new agency called the Federal Agency for Fisheries was formed under the Ministry of Agriculture to manage the Russian fishing industry. According to the decree, a Federal Agency is described as an organ of executive power carrying out within its specified spheres the functions of law-enforcement, government services and control of properties, except for the functions of inspection. The new ministerial structure is planned to provide more authority to the Ministry of Agriculture to more effectively supervise the fishing sector.

The government has set targets to boost the nation's shipbuilding and modernisation of fleet facilities over the period 2003-10. The strategies are: 1) Evaluation and revision of the fishing and processing fleet focusing on its technical condition and capacity; 2) Creation of incentives for design and construction of highly efficient fishing vessels; 3) Monitoring of the fleet capacity; and 4) Consolidation of small fleet enterprises.

## **Post-harvesting policies and practices**

### **Strategies**

In order to optimise the complex fishing sector and implement a whole range of changes, the government has developed a strategic plan for the period until the year 2020. The overall target is to develop a long-term mechanism in order to resolve current problems in various aspects of the fishing industry, including legislation, management, resource utilisation, and support facilities.

Moreover, Russian industry will seek to double its fish catch from the current 3.3 million mt a year by 2020. This target is expected to be achieved by increasing fish catches in Russian waters and signing agreements with other countries, allowing Russian vessels to fish in their EEZ waters. Such agreements have recently been signed with Morocco and Mauritania and a similar agreement may be prepared with Peru.

### **Seafood processing industry**

Over the last decade, significant changes have occurred in the Russian food processing sector. Large fish processing plants that functioned effectively in Soviet times were left in a difficult position as sharply reduced state financing together with the reduced supply of raw fish forced them to adjust to new market realities. Some fish processing plants closed, others survived by implementing new techniques and changing their overall management structure. In addition, many smaller private companies emerged, investing in modernisation and providing a new range of fish products.

In 2003, output from the processing industry amounted to more than 3.1 million mt, including 2.9 million mt for human consumption. For several years, production growth has been relatively stable with an annual increase of 4-6 %. The major output of the Russian seafood processing sector included frozen and semi-frozen fish. It comprised some 67% of total production or 1.8 million mt in 2003. Canned products comprised 464 000 mt in 2003, or 16% of production. This primarily consisted of herring, mackerel, sprat and some high value fish like salmon. The Russian canned sector is also moving towards an increasing range of products.

General trends observed in the Russian seafood processing sector include: 1) The move by national processors towards more value-added products; 2) The ongoing trend of local processors to compete for quality oriented customers, rather than for price-oriented ones; 3) An increasing number of Russian consumers who prefer "easy-to-cook" seafood products such as fish fillets, fish cakes, ready to use seafood salads and other convenient products; 4) Domestic processors and marketing specialists who now offer a wider range of seafood products due to increased competition in the marketplace; 5) Better labelling and packaging of local products in response to the demand of many Russian consumers. This applies particularly to canned fish as many consumers find it difficult to recognise one company's production from another.

### **Trends in consumption**

Ongoing modernisation of the overall distribution and retail structure has enhanced the availability of fish and seafood products in the market place. This change is especially noticeable when reviewing the facilities for storing fresh fish. Formerly, many shops had to refuse fresh fish due to the lack of appropriate storage capacity. The establishment of numerous hyper- and supermarket chains has now allowed more fresh fish to be available on the market. For an example of this trend, the present ratio of fresh to frozen Norwegian salmon is 50:50 on the market that previously bought only frozen salmon. Furthermore, this restructuring of the distribution system has also facilitated the supply of more fish to remote rural regions through the active expansion of retail chains.

The diversity of fish species, product forms, and seafood specialties has played a major role in explaining increased seafood consumption. Products such as mussels, oysters, shrimps, octopus, squids and sea scallops were not familiar to the regular Russian customer. Now, if reasonably priced, many consumers are eager to try them. In other price segments, the increased range of fish species and processed forms encourages customers to forget the previous image of fish as being a boring meal.

The changing trend in the increase of fish demand has been due to consumers with relatively high or increased disposable incomes. It is noted, however, that Russian consumers are becoming more interested in variety and quality rather than cost. Many people have also started to eat fish more frequently due to health concerns.

### **Wholesalers and retailers**

At present, there are more than 2 000 companies engaged in seafood wholesale trade and distribution. Most fish and seafood importers and distributors are located in Moscow, making this the main transshipment point for the outer regions. More than 300 wholesalers, traders and distributors supply fish and seafood products to the Moscow region alone. For the Russian Far East, Vladivostok is home to most major importers/distributors and serves the same focal point function as Moscow for eastern traders.

Russian food retail structure consists of about 340 000 food and beverage retail outlets. Open markets account for about 43% of total sales; traditional grocery shops for 35%; kiosks and specialty shops for 13% and hypermarkets, supermarkets and discounters for the remaining 9%. While modern retail chains currently account for less than 10% of total national retail sales and 28% in Moscow, these chains are expanding rapidly and should be considered as prime targets for sales of fish and seafood products in the future.

## **Markets and trade**

### **Exports and imports**

Most exported fish comes from the Russian Far East region and the Barents Sea. Almost half or 517 000 mt of total Russian seafood exports are frozen groundfish, which includes such species as Alaska pollack, whiting, haddock, saithe, ling, tusk and hakes, except cod. Export of this large group of fish products was worth USD 320 million, or approximately one fifth of the total value of Russian seafood exports. South Korea and Japan have, respectively, market shares of 29% and 30% of the total Russian seafood export market. China takes approximately 17%, while EU countries and the USA have 12% each.

Russia imported more than 800 000 mt of seafood at a cost of some USD 547 million in 2003. Frozen herring is the main species imported by Russia, both in terms of volume and value. In 2003, Russia imported 200 000 mt of herring valued at USD 84 million. Almost all herring supply comes from Norway. Russia imported some 35-40% of its total seafood imports from Norway in 2003, the largest supplier to Russia.

It is estimated that one third of national fish imports are from catches by Russian fishermen, landed abroad. For example, a significant part of the Russian-caught cod landed in Norwegian ports is processed and then exports to Russia. Alaska pollack, delivered to South Korea, is also imported to Russia as surimi or surimi-based products.

Russian imports of frozen Atlantic mackerel were estimated at 109 000 mt for a value of USD 59 million. The imports of sardines, sardinellas, brisling and sprat in frozen and canned categories amounted to 68 000 mt and 39 000 mt respectively. Those species are mainly imported from the EU countries. The Russian market for shrimps and prawns is growing very fast. In 2003, 26 000 mt of frozen shrimps and prawns were imported, mainly from Denmark and Canada.



PART III

*Chapter 31*

**Thailand**

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## Main characteristics of the Thai fishing sector

Most recent figures show the Thai marine catch to be 2.65 million mt in 2003, valued at USD 1.6 billion. 70% of this catch was sourced from the Gulf of Thailand while the Andaman Sea accounted for the remainder. The industry is characterized by both small-scale and large-scale or commercial fisheries. Demersal fish resources in coastal waters have been severely depleted and are mainly caught by otter-board trawls, pair trawls, beam trawls and push nets.

Several factors may have contributed to over-fishing, notably increasing human population, increased pressure from Thai trawlers who lost access to foreign fishing grounds after neighbouring countries declared EEZs, developments in processing techniques for turning low-priced demersal fish into human food, increasing numbers of animal feed plants that utilise trash fish, and trash fish itself. Trash fish is currently around 60% of the total trawl catch. Between 18% and 32% of trash fish are juveniles of commercially important fish species.

In 2003, the production in inland water fisheries reached 198 700 mt valued at USD 176.7 million and this seems to have stabilized. Fishing gear used includes gillnets, longlines, hook and line, scoop nets, cast nets, and lift nets, etc. Among utilised fishing gear, gillnets are the most popular and efficient, particularly in swamps and reservoirs. Species caught are Thai silver barb, snakehead, walking catfish, local carp and Nile tilapia.

Aquaculture has developed considerably since the beginning of the century. Aquaculture contributes about 27.2% in volume and 46% in value of total fisheries production (2003). Aquaculture has long term potential for increasing fisheries production for local consumption or export, in particular of high-valued shrimp and fish species. Aquaculture activities in Thailand can be divided into two categories; freshwater aquaculture and coastal aquaculture. There are 281 199 inland farms with a total cultured area of 101 952 hectares producing a variety of freshwater fish, and 30 000 coastal shrimp farms and hatcheries.

In terms of trade, total export of fish and fish products was USD 4.9 billion in 2005. Compared to 2004, this represents a 10.24% increase in value terms and an 11.13% increase in terms of volume. Thai imports reached USD 1.5 billion in the same year, providing a trade surplus of USD 3.4 billion, considerably higher than the previous year.

## Thailand – Summary statistics

Figure III.31.1. **Harvesting and aquaculture production**

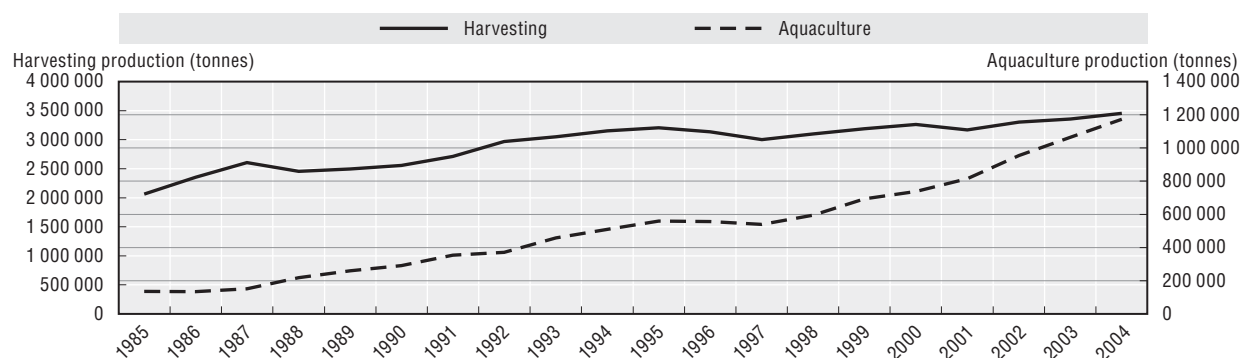


Figure III.31.2. **Key species landed by value in 2004**

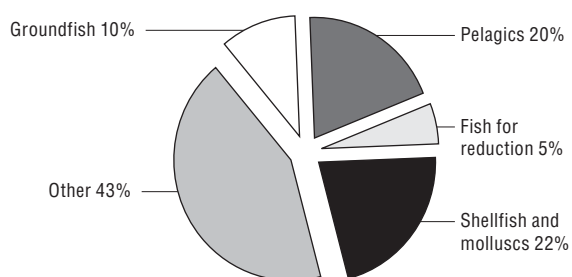


Figure III.31.3. **Trade evolution**

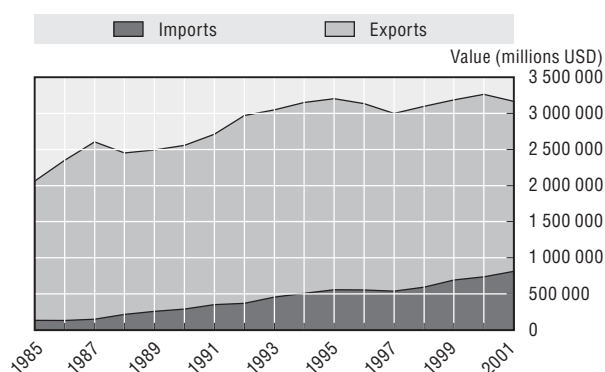


Figure III.31.4. **Production profile**

	2004
Number of marine fishers	80 538 <sup>1</sup>
Number of fish farmers <sup>2</sup>	62 598 <sup>1</sup>
Total number of vessels	16 432
Total tonnage of the fleet	487 717

1. Data for 2000.
2. In the coastal areas.

Source: Figures III.31.1 and III.31.3: FAO; Figures III.31.2 and III.31.4: OECD.

## ADDITIONAL DETAILS\*

### Legal and institutional framework

#### Management

The Department of Fisheries (DOF) is the management authority responsible for fisheries in Thailand and the lead national agency for policy development in fisheries, although central government, provincial government and local government, with public participation, have jurisdiction over fisheries according to decentralised policy.

For commercial and small-scale fishing, the DOF has implemented a number of management instruments including a boat-tenure system (freezing the number of trawlers), no transfer of licenses except to a son and licenses will be cancelled unless continued annually. Other measures include closed areas and closed seasons including limits on certain fishing methods, conservation areas for juvenile fish and invertebrates. Furthermore, the department promotes community-based fisheries management by using demarcated areas for small scale fisheries. The DOF is also the competent organisation in fisheries research, development and management of fisheries resources and aquatic animal production for domestic consumption and export of high-quality products.

### Capture fisheries

#### Status of fish stocks

Most demersal resources and some pelagic fish stocks are over-exploited. Furthermore, catch rates from research vessels that have been well known for a long time, have been showing decreasing trends since 1966. In 1961, before the introduction of otter-board trawls in Thailand, monthly catch rates from research vessel surveys were over 300 kg/h. After 1966, the catch rate was 172.9 kg/h and further declined to 75.1 kg/h in 1976. In 1998, the catch rate was around 18 kg/h. In general, it can be concluded that marine resources are over-exploited and about 86% of the resource has been removed.

Penaeid prawn (*Penaeus* spp.) resources and small sized shrimps (*Trachpenaeus* spp. and *Metapenaeopsis* spp.) have also been overexploited. Cephalopods in Thai waters consist of 10 families, 17 genera and over 30 species. These resources are also considered fully exploited.

#### International arrangements

Thailand has engaged in fisheries co-operative arrangements with several countries. At present, its fishing vessels are operating in the waters of Indonesia, Cambodia, Malaysia, Bangladesh, Somalia, Madagascar and Myanmar. Fish caught under these arrangements have to be brought back to Thailand in order to support domestic consumption as well as to supply the domestic fish processing industry.

Apart from negotiating for resource access, Thailand is also involved with regional economic groups such as Asia-Pacific Economic Co-operation (APEC), Bay of Bengal Initiative for Multi-sectoral Technical and Economic Co-operation (BIMSTEC), Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT), and Indian Ocean Rim Association for Regional Co-operation (IOR-ARC). Thailand also co-operates with various international organisations and under both bilateral and multilateral technical co-operation programs.

\* The Thai Department of Fisheries official website can be accessed via: [www.fisheries.go.th/english/index.php](http://www.fisheries.go.th/english/index.php).

## Aquaculture

The development of freshwater aquaculture started in 1922 after the import of Chinese carp for culture. The Department of Fisheries established an aquaculture promotion program in 1951. At present, more than 27 freshwater aquatic animals are cultured with volumes of between 360 000 and 370 000 mt from 2003 to 2005 (Table III.31.1).

Table III.31.1. **Freshwater aquaculture production in Thailand: 2003-05**

Main species	2003		2004		2005	
FAO English name	Mt	USD	Mt	USD	Mt	USD
<b>Total</b>	<b>361 125</b>	<b>317 490</b>	<b>365 501</b>	<b>358 807</b>	<b>370 000</b>	<b>358 809</b>
Asian barbs nei	49 066	33 285	56 710	44 742	59 740	44 742
Nile tilapia	98 336	66 185	97 630	80 635	99 720	80 635
Torpedo-shaped catfishes nei	101 606	71 187	102 722	72 075	103 919	72 076
Pangas catfishes nei	23 085	11 647	17 330	8 553	14 975	8 553
Snakeskin gourami	34 123	32 386	32 820	39 409	33 411	39 410
Striped snakehead	4 060	5 763	6 480	10 738	6 670	10 738
Macrobracium	28 151	70 923	28 500	76 314	29 000	76 314
Freshwater fishes nei	22 698	26 114	23 309	26 341	22 565	26 341

The most important species cultivated in coastal aquaculture are shrimps (*Peneaus monodon*, *Litopenaeus vanamei* and *P. merguensis*), sea bass (*Lates calcarifer*) and grouper (*Epinephalus* sp.). Shellfish (*Anadara granulosa*, *Perna viridis* and *Crassostrea* spp.) and crustaceans such as mud crab (*Scylla serrata*) are also cultured extensively. This includes both systematic rearing of the species from fry stage onwards and fattening of wild juveniles in captivity, as in the case of mud crab. Volumes from 2003 to 2005 grew from 700 000 to 780 000 mt (Table III.31.2) of which marine shrimp, Vanamei and Jumbo Tiger Prawn contributed significantly with 330 000 to 360 000 mt.

Table III.31.2. **Coastal aquaculture production in Thailand: 2003-05**

Main species	2003		2004		2005	
FAO English name	Mt	USD ('000)	Mt	USD ('000)	Mt	USD ('000)
<b>Grand total</b>	<b>703 238</b>	<b>1 144 110</b>	<b>780 125</b>	<b>1 134 794</b>	<b>700 340</b>	<b>1 045 438</b>
<b>Marine shrimp</b>	<b>330 725</b>	<b>1 049 424</b>	<b>362 780</b>	<b>1 025 225</b>	<b>340 000</b>	<b>940 136</b>
Vannamei	132 364	320 464	269 600	736 433	293 800	802 539
Jumbo tiger prawn	194 909	719 579	91 600	284	45 000	134
Other shrimp	3 452	9 381	1 580	288 508	1 200	137 463
<b>Marine fish</b>	<b>14 568</b>	<b>39 849</b>	<b>16 945</b>	<b>46 872</b>	<b>17 490</b>	<b>47 288</b>
Seabass	12 230	28 011	14 550	34 368	15 400	36 376
Grouper	2 338	11 838	2 395	12 504	2 090	10 912
<b>Marine shell fish</b>	<b>357 945</b>	<b>54 837</b>	<b>400 400</b>	<b>62 696</b>	<b>342 850</b>	<b>58 013</b>
Green mussel	263 946	20 289	296 900	23 519	239 700	18 988
Blood cockle	67 359	24 037	75 600	27 822	75 850	27 914
Oyster	26 640	10 511	27 900	11 355	27 300	11 111

Since 2000, DOF has put more emphasis on quality-production of aquaculture rather than on quantity. DOF together with the Thai aquaculture industry has developed and implemented two standards i.e. the Code of Conduct (CoC) and Good Aquaculture Practice

(GAP). The CoC standard focuses on environmentally-friendly production, quality and safety (including prohibition of antibiotic residues). The GAP standard focuses on quality and safety as well as farm sanitation.

In terms of inspection and quality control systems, all aquaculture farms are required to register with the DOF in order to ensure that fish and shrimp from certified farms do not contain toxic substances. Activities include checking on farm sanitation; disease controls; record keeping on feeds, drugs, and chemicals used; water quality and sediment determination; inlet, outlet, and surrounding water quality determination; and inspection of drug residues in fish, shrimp and others.

### **Government financial transfers**

Thai government financial transfers amounted to USD 15.6 million in 2005. They included one cost reducing transfer program, a diesel fuel price reduction program, for a total of USD 5.3 million. The remainder covered general services for fisheries management and research.

### **Post harvesting policies and practices**

DOF is the competent authority for the control of fish and fish products for export. In realising the importance of quality and safety of fish and fish products, DOF operates several programs to ensure food safety using the farm – to – table approach, such as; control programs for drugs and chemicals in aquaculture, bivalve and mollusc production and sanitation programs, shrimp import control, fish monitoring programs and a product surveillance program.

Fish processors who wish to be registered and approved by DOF must implement a quality control program based on General Principles on Food Hygiene and Good Manufacturing Practices (GMP). Every approved processor must develop and implement an effective Hazard Analysis Critical Control Point (HACCP) program specific for their individual products. DOF inspectors audit the implementation of HACCP activities on a yearly basis. Processors are subject to DOF full plant inspection on a regular basis. The inspection involves observation, taking measurements, interviews, record review and sample collections as necessary.

Recently, the Ministry of Agriculture and Co-operatives (MOAC) launched a quality label called “Q-mark” for certifying agricultural commodities including fishery products. The Q-mark logo represents high quality agricultural commodities and ensures safety for consumption. This national logo is awarded on a voluntary basis. Both production systems and agricultural products can apply for the label provided they are in compliance with the standards established by MOAC. The Q-mark is being promoted internationally. Consumers can be assured of premium quality agricultural products produced and exported from Thailand. Q-mark is another tool to assist Thailand in competing in the world market and achieving the national goal of being the Kitchen of the World.

### **Markets and trade**

#### ***Consumption and trade***

Estimated annual per capita fish consumption in Thailand is about 35 kg, illustrating that fish is important to Thai consumers. The fish consumed comes mostly from capture fisheries (73%) and the remainder from aquaculture.

Fish production has played an important role in the Thai economy. In terms of exports, the total export of fish and fish products reached USD 4.8 billion in 2005. Compared to 2004, this represents a 10.24% increase in terms of value and 11.13% increase in terms of volume.

**Table III.31.3. Fish products exported during 2004-05**

Fish product	2004		2005	
	Volumes (MT)	Values (USD million)	Volumes (MT)	Values (USD million)
Shrimp	240 956.98	1 682.70	282 974.30	1 789.82
Cephalopod	106 411.45	424.59	99 611.54	401.39
Fish	421 481.60	471.09	497 121.22	536.53
Other fisheries product	888 297.82	1 834.56	961 889.81	2 136.95
<b>Total</b>	<b>1 657 147.85</b>	<b>4 412.94</b>	<b>1 841 596.87</b>	<b>4 864.69</b>

In 2005, Thai imports amounted to USD 1.48 billion (an increase of 15.63% to 2004), and the trade surplus rose by 8.03% to USD 3.38 billion.

**Table III.31.4. Fish products imported during 2004-05**

Fish product	2004		2005	
	Volumes (MT)	Values (million USD)	Volumes (MT)	Values (million USD)
Shrimp	23 741.25	91.42	23 748.94	78.88
Cephalopod	36 376.64	63.05	38 854.68	67.53
Fish	1 113 242.60	986.15	1 298 962.36	1 181.85
Other fisheries product	80 835.94	140.83	96 730.44	153.54
<b>Total</b>	<b>1 254 196.43</b>	<b>1 281.45</b>	<b>1 458 296.42</b>	<b>1 481.80</b>

Thailand has adopted a dual track policy with regard to its international trading relations based on multilateral agreements and regional trade agreements/free trade area agreements. Thailand is currently conducting negotiations with several countries including China, Australia, New Zealand, Bahrain, India, etc., for free trade area agreement. Thailand is also a member of the WTO, APEC, ASEAN and BIMSTEC i.e. regional trade agreements. As for the ASEAN agreement, it affects fish and fishery products by making increasing quantities of raw material available for processing and also opens a bigger market for fish products. Free trade agreements can serve as a catalyst for further co-operation and liberalisation.

Thailand does not have any tariff quotas for fish trade. Most of the tariff rates for fish in Chapter 03 of HS codes are 5% and some HS codes in Chapters 16 is 20 to 30%.

## Outlook

Future developments will concentrate on reducing fishing capacity for trawl and push net gear and promoting non destructive gear for commercial fisheries. Small-scale fisheries will be developed and fishery co-management or community-based fisheries management will be promoted. Overall, resource and habitat rehabilitation and resource enhancement will receive more attention; stakeholder involvement will be increased. The sea safety program for fishers will also be promoted. The law and legal framework will be revised to catch up with the present fisheries situation. In this respect, fishing gear license fees will be revised so that more efficient gear will be charged more than inefficient gear.

Fisheries on the high seas of the Indian Ocean will be promoted under the terms and arrangements of the IOTC with a view to increasing tuna catches. Thailand adopted the Code of Conduct for Responsible Fisheries as one of the major tools of fisheries management. Moreover, Thailand has accepted the IPOA-IUU and is also in the process of implementing the IPOA-IUU in order to promote a responsible fishing nation.

The Department of Fisheries of Thailand has put high priority on standards for both coastal and inland aquaculture. To have high quality and safe farm products, free of drug residues, is the prime concern of DOF policy. Moreover, environmentally-friendly aquaculture practices have been in place and will be further promoted to ensure that both coastal and inland environments are sustainable.



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# Review of Fisheries in OECD Countries

## POLICIES AND SUMMARY STATISTICS

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